Blueprint To Bluewater

THE INDIAN NAVY 1951 – 65

Rear Admiral Satyindra Singh AVSM, (Retd.)

Shri C. SubRamanian.
Governor of Maharashtra.

Looks dear with kind regards.

(L. RAMDAS).
ADMIRAL
CHIEF OF THE NAVAL STAFF

At Sea off BOMBAY.
07 October 1992

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LANCER INTERNATIONAL

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First published in India, 1992, Lancer International, B-3 Gulmohar Park, New Delhi-110049

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Printed at Central Electric Press, New Delhi.

ISBN 81-7062-148-8

FOREWORD

We find early references to the seas not only in the Vedas but also in the Indian mythology of *Samudramanthan* - the Elixir of life, came from the churning of the seas. The tradition of the Kumbh Mela is also a reminder of the eternal linkage of the rivers and seas with the destiny of India. Geography has thrust upon India all the ingredients of a maritime nation. It had flourished when the seas and its resources were well utilised and by the same token it lost its independence when these were neglected. This is the lesson of history to remember.

We have to now once again look forward to the seas for solving many of our problems of meeting the demands of increasing population, development and economic prosperity. These are also intricately woven in many ways with security and defence of our nation.

It has indeed been fortunate that the leaders of Independent India were acutely aware of the dangers posed due to the neglect of our sea frontiers. This set the foundation for a balanced growth of the Indian Navy from the very outset. In retrospect, therefore, we should be extremely grateful to the naval leadership for charting the correct course.

The decade following independence and especially the period between 1951-65 could be termed as the *Golden era* of Naval growth. Not only were a number of significant new acquisitions made but, for the first time an Aircraft Carrier was acquired to provide the long reach so necessary in modern Naval warfare. It is indeed fortunate that we were one of the few Navies and the first and only developing country to acquire this capacity.

It is no coincidence therefore, that the growth of the modern Indian Navy with a *Bluewater* capacity was realised under the flag of the first Indian Chief of the Naval Staff, Admiral R.D. Katari. Many more actions were also set in motion which laid the foundation and traditions of *Espirit de corp*, training and professionalism.

The India-China war in 1962 did cause a considerable slowing down of our maritime growth due to diversion of funds. Despite these setbacks, we have come some way along our charted course since then, although much more needs to be still done. It is however, inevitable that as India's economic conditions improve, its focus towards maritime interests will also grow. The dependence of human kind on the seas and their resources will un-

doubtedly raise the importance of the seas. Indeed the next century could well become *The Century of the Seas*. In this fast changing world lies a decade of opportunity for India to take its rightful place as a leading maritime nation in Asia in furtherance of international peace and security. This work which covers the Navy's history from 1951 to 1965 will help all lovers of History and the people at large of our glorious maritime past.

I am aware that a project like this takes a lot of painstaking research and hard work. I would therefore like to extend our deep appreciation of the excellent work done by Rear Admiral Satyindra Singh (Retd) and all the others who have enabled the successful completion of this work.

Navy House
New Delhi
December 4, 1991

L. RAMDAS
Admiral

PREFACE

Soon after the publication of *Under Two Ensigns (the Indian Navy 1945-1950)*, it was conceived that work on the next volume should be undertaken to cover the period from 1951-65. However, progress on the project was a halting one, due to one reason or another.

I was fortunate when compiling this volume in so far as the availability of records and documents etc. Maintaining and preserving records, regrettably, is not our forte but as time has gone on, happily we are devoting more attention to this vital requirement and hopefully, future chroniclers will have more to fall back upon. Where records have not been available, I was fortunate to be able to draw sustenance from the very valuable reminiscences of many stalwarts of our service - some of them are no more with us - who were not only intimately associated with its progress and development but were also participants in some of the very significant events during this period. There are some others, whose testimony has also been invaluable and here, I would particularly, like to mention the material I was able to obtain from the late Shri L.K. Jha, the then Principal Secretary to the late Prime Minister Lal Bahadur Shastri, which sheds considerable light on the pre-1965 developments which led to the 1965 Indo-Pak conflict and the thinking at the highest level about the role the Navy was expected and indeed, directed to play in this conflict. A detailed chapter on the subject has, therefore, been written, not only to draw lessons but for the benefit of posterity.

Although this period covers only 15 years in the development of the Indian Navy, it is a most significant one, which saw much progress and development from a truncated service at the time of Independence in 1947 to what it emerged as in 1965. Apart from two capital ships which were inducted during this period, *Mysore* which was commissioned in 1957, the commissioning of the first aircraft carrier *Vikrant* in 1961, not only ushered in the era of naval aviation in South East Asia after World War II but also completed the process of setting up a balanced naval force in the region for the first time.

A number of frigates were also inducted, some of which were prototype vessels constructed for the Indian Navy by the British Government. Six minesweepers and the first Indian built survey ship *Darshak*, which carried

a helicopter, were also commissioned.

Plans for the 3rd dimension i.e. the submarine arm which had been made earlier, also fructified and the first submarine was commissioned two years later in 1967. It has been thought necessary to include introductory chapters on the submarine arm and the evolution of naval aviation for readers to know the history and evolution of both these arms.

This period also saw the Indian Navy becoming fully Indianised on April 26, 1958 when the first Indian Chief of the Naval Staff, Vice Admiral R.D. Katari, assumed command of the service - nearly 11 years after Independence.

The Indian Navy has had a very long association with the Royal Navy and in fact, its evolution, in a way is taken from September 05, 1612 when the Indian Marine was formed on arrival of a squadron of ships in Swally, the roadstead off Surat on the West Coast of India to shedding its Royal nomenclature when the country became a Republic on January 26, 1950. The stage was now set for snipping the umbilical cord that had linked the Indian Navy to the British Navy for centuries; expanding the fleet to a size commensurate with the tasks and responsibilities of free India, establishing a number of training establishments and maintenance facilities on both coasts of the peninsula, commencing the process of indigenising the design and construction of major and minor war vessels along with the development of associated propulsion systems, weapons and equipment, and restructuring its tactical doctrines to suit the requirements of the region.

The necessity of switching over to other sources for some of our vital defence equipment also now became inevitable and happily, there was a speedy adjustment and absorption of the new equipment.

SATYINDRA SINGH
Rear Admiral

ACKNOWLEDGEMENTS

To Admiral L. Ramdas, the Chief of the Naval Staff and Vice Admiral S.P. Govil, the Vice Chief of the Naval Staff, my gratitude for approving the chapters and for steering this project through. Their guidance and interest has been a most fortifying factor. I am grateful to the review panel at various stages, particularly to Admiral J.G. Nadkarni, Vice Admiral S.C. Chopra, Vice Admiral H. Johnson, Vice Admiral V.S. Shekhawat, Rear Admiral M.M. Chopra and Rear Admiral S.C. Gupta for their support and assistance.

I received invaluable assistance from Captain G.S. Sen and his consistent hard work and deep research were of immense help.

I would also like to record the intrinsic assistance provided to me by Commander R.S. Narang, Deputy Director of Naval Operations (Historical Cell) and for his indefatigable efforts which he put in very cheerfully.

My thanks are also due to Mrs B.K. Gomathi for the secretarial assistance and for painstakingly undertaking the laborious work of typing.

SATYINDRA SINGH
Rear Admiral

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ABBREVIATIONS

AA	Anti-Air
ABCD	Atomic Bacteriological and Chemical Damage Control
ACR	Aircraft Control Room
ADR	Aircraft Direction Room
AIO	Action Information Organisation
A/S	Anti Submarine
ASDIC	Allied Submarine Devices Investigation Committee
ASW	Anti Submarine Warfare
C	Communication
CCA	Carrier-Controlled Approach
CAM	Catapult-Armed Merchantman
CBE	Commander of the Order of the British Empire
CBR	Central Board of Revenue
C-in-C	Commander-in-Chief
CHO	Civilian Hydrographic Officer
CME	College of Military Engineering
COMINS	Commodore-in-Charge Indian Naval Squadron
CONA	Chief of Naval Aviation
CRPF	Central Reserve Police Force
CW	Commission Worthy
C of Y	Commander of the Yard
D	Diving
DSC	Distinguished Service Cross
DSO	Distinguished Service Order
ETI	Educational Test One
FDEO	Flight Deck Engineer Officer
FDO	Flight Deck Officer
FLYCO	Flying Control
FOB	Flag Officer Bombay
FOCIF	Flag Officer Commanding the Indian Fleet
FOCINC WEST	Flag Officer Commanding-in-Chief West
FOCRIN	Flag Officer Commanding Royal Indian Navy
FOFIF	Flag Officer Flotilla, Indian Fleet
FRU	Fleet Requirement Unit
G	Gunnery

GL	Gun Layer
HAL	Hindustan Aircraft Limited
HDML	Harbour Defence Motor Launch
HET	Higher Educational Test
HE/VT	High Explosive/Variable Time
HF/DF	High Frequency/Direction-Finding
HO	Hostilities Only
HMS	His/Her Majesty's Ship
HMAS	His Majesty's Australian Ship
HMCS	His Majesty's Canadian Ship
HMI	Himalayan Mountaineering Institute
HMIS	His Majesty's Indian Ship
HMNZS	His Majesty's New Zealand Ship
HT	Hindustan Trainer
HRH	His Royal Highness
IAF	Indian Air Force
IAS	Institute of Armament Service
IAT	Institute of Armament Technology
IFF	Interrogation Friend and Foe
IHO	International Hydrographic Organisation
IMA	Indian Military Academy
INCOR	Indian National Committee for Ocean Research
IN	Indian Navy
INAS	Indian Naval Air Squadron
INHS	Indian Naval Hospital Ship
INS	Indian Naval Ship
ISPCC	Inter Service Pre-Cadet College
ISW	Inter Service Wing
JAF	Judge Advocate of the Fleet
JAG	Judge Advocate General
JET	Joint Exercises off Trincomalee
JSW	Joint Service Wing
LCA	Landing Craft for Assault
LCM	Landing Craft Mechanised
LCPL	Landing Craft for Personnel
LCT	Landing Craft Tank
LR	Layer Rate
LSGL	Long Service Good Medal
LSI	Land Ship for Infantry
LST	Landing Ship for Tanks
MATCH	Medium-range Anti submarine Torpedo Carrying Helicopter

MCO	Mirror Control Officer
MAD	Mutual Assured Destruction
MET	Meteorology
ML	Motor Launch
MSM	Meritorious Service Medal
MTB	Motor Torpedo Boat
MMS	Motor Minesweeper
MV	Motor Vessel
NARO	Naval Aircraft Repair Organisation
NATO	North Atlantic Treaty Organisation
NATS	Naval Air Technical School
NBCD	Nuclear Bacteriological and Chemical Damage Control
NCML	Naval Chemical Metallurgical Laboratory
NDA	National Defence Academy
ND	Navigation and Direction
NM	Nao Sena Medal
NPC	National Productivity Council
NSOC	Naval Scientific Orientation Course
NWFP	North West Frontier Province
OBE	Officer of the Order of the British Empire
PAF	Pakistan Air Force
PCHO	Principal Civil Hydrographic Officer
PCO	Principal Control Officer
PNS	Pakistan Naval Ship
POK	Pak Occupied Kashmir
P&O	Peninsular and Oriental
PSU	Public Sector Undertaking
QA	Quarter Armour
QR	Quarter Rate
RACINS	Rear Admiral Commanding Indian Naval Squadron
RC	Radar Controller
RAF	Royal Air Force
RIFR	Royal Indian Fleet Reserve
RIM	Royal Indian Marine
RIN	Royal Indian Navy
RINR	Royal Indian Naval Reserve
RINVR	Royal Indian Naval Volunteer Reserve
RNAS	Royal Naval Air Station
RNR	Royal Naval Reserve
RPN	Royal Pakistan Navy
SAR	Search-and-Rescue
SBA	Sick Berth Attendant

SCC	Sea Cadet Corps
SD	Special Duty
SDB	Seaward Defence Boat
SFNA	School for Naval Airmen
SLBM	Submarine Launched Ballistic Missile
SNOM	School of Naval Oceanology and Meteorology
SONAR	Sound-Aided Underwater Detection Device
SOS	Save our Soul
SS	Steam Ship
SSAC	Supply and Secretariat Advance Course
STOL	Short-Take-Off-Landing
SWATH	Small Waterplane Area Twin Hull
TAS	Torpedo Anti Submarine
TS	Training Ship
UNCLOS	United Nations Conference on the Law Of the Sea
UNO	United Nations Organisation
USNS	United States Naval Ship
USS	United States Ship
VCNS	Vice Chief of the Naval Staff
VGI	Very Good Indeed
VIP	Very Important Person
VTOL	Vertical Take Off and Landing
WACI	Women's Auxiliary Corps India
WECORS	Weapons and Control System Repair Shop
WRINS	Women's Royal Indian Naval Service

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A PEEP INTO OUR MARITIME PAST

A Resumé of India's Maritime History from Her Hoary Past to 1950

On March 28, 1958, standing on the quarterdeck of *INS Mysore*, the second cruiser to be acquired by independent India's Navy, Prime Minister Jawaharlal Nehru said,

> From this ship I look at India and think of our country and its geographic situation - on three sides there is the sea and on the fourth high mountains - in a sense our country may be said to be in the very lap of an ocean. In these circumstances I ponder over our close links with the sea and how the sea has brought us together. From time immemorial the people of India have had very intimate connections with the sea. They had trade with other countries and they had also built ships. Later on the country became weak. . . . Now that we are free, we have once again reiterated the importance of the sea. We cannot afford to be weak at sea . . . history has shown that whatever power controls the Indian Ocean has, in the first instance, India's seaborne trade at her mercy, and in the second, India's very independence itself.

Named after peninsular India which juts into its centre and occupies a unique position, the Indian Ocean washes the shores of the entire East Coast of Africa, the South Coast of Arabia, the Southern shores of Iran and Baluchistan, the Malaysian Peninsula and Indonesia's Sumatra. The Eastern and Western waterways at the Straits of Malacca and Babel Mandeb control ingress into and egress out of the Ocean. The former leads to the Indonesian Archipelago, the South China Sea, the Far East and the vast expanse of the Pacific Ocean, while the latter controls the entrance to the Red Sea. The 'chokepoint' controlling the landlocked Persian Gulf in the North West is Hormuz, then known as Ormuz, while Al Adan (Aden) at the Southern tip of Arabia, was the home and main base of the Arab corsairs for centuries. The Arabian Sea and the Bay of Bengal, the two offshoots of the Ocean, wash the 5600-kilometre-long shores of the Indian Peninsula and those of Pakistan, Bangladesh, Burma and the island of Sri Lanka which is separated from India by the narrow Palk Strait.

The Indian Ocean has always been regarded as an area of great geopolitical significance because of its unique features and India as its centre of gravity. It was Sardar K.M. Panikkar who observed:

> In spite of the vastness of its surface and the oceanic character of its currents and winds, the Indian Ocean has some of the features of a landlocked sea. The Arctic and the Antarctic, circling the Poles have but little connection with inhabited land. The Pacific and the Atlantic lie from the North to the South like gigantic highways. They have no land roof, no vast land area jutting out into their expanse. The Indian Ocean is walled off on three sides by land, with the Southern side of Asia forming a roof over it. The continent of Africa constitutes the Western wall, while Burma, Malaya and the insular continuations protect the Eastern side. But the vital feature which differentiates the Indian Ocean from the Pacific or the Atlantic is not the two sides but the subcontinent of India which juts out far into the sea for a thousand miles to its tapering end at Kanyakumari. It is the geographical position of India that changes the character of the Indian Ocean.

The major islands in the Indian Ocean are neither as numerous nor as evenly spread out as those in the Pacific. The major ones are Sri Lanka and Malagasy, while the minor ones are Socotra (near the Arab Coast, Zanzibar and Seychelles off Africa's Coast), Mauritius and Reunion (on the Tropic of Capricorn, the Lakshadweep group and the Maldives near the west coast of India), the Bahrain group (near the Persian Gulf, the Andaman and Nicobar group in the Bay of Bengal) and the Diego Garcia group (in the Chagos Archipelago).

The bays, gulfs and bights of the Indian Ocean have also assumed considerable geopolitical significance over the years. The Persian Gulf, virtually a landlocked sea with its only link with the Ocean at Hormuz; the Arabian Sea which separates the Indian and Arabian peninsulas; the Gulf of Al Adan, entry to which is controlled by the island of Socotra; the Red Sea whose gate-post is at Babel Mandeb; the Bay of Bengal separating the Indian and Malaysian peninsulas and the Gulf of Malacca, entry into which is commanded by Singapore, have all played a significant role in shaping the region's maritime history.

Oceanic activity and oceanic traditions developed in this region before any other part of the earth because of the unique feature of the monsoons and the growth of the nucleus of civilisation around this ocean. Centuries before the development of seafaring activities in the Aegean Sea, oceanic traditions had been developed by the littoral states of peninsular India.

For centuries, politico-military thinkers have appreciated the naval and geopolitical importance of landlocked countries establishing links with the seas by acquiring sovereignty over waterways or even over land corridors. For instance, the potential of their presence in the Indian Ocean or even in its seas, bays and straits, had led some major powers to attempt to gain access to this ocean overland, even in the last century. The British appreciation of the balance of power in and around Asia after World War II and its future plans made during the 1940s also catered for these contingencies. What is most striking and not generally known is the fact that Maharaja Ranjit Singh, the great ruler of the Punjab, had also realised the importance of establishing a link with the sea after his victory over the Pathans and Afghans during the third decade of the last century. To quote a historian, "If the Punjabi empire was to expand any further, it could only be across the Sindh desert to the sea or across the Sutlej to India. (the portion of India then held by the British)". The British were clever enough to persuade the Maharaja to sign a commercial treaty in December 1832 and to make him abandon his plans to extend his empire to the sea. These facts and today's rivalry between superpowers to establish their presence in the Indian Ocean confirm the wisdom of the observation made centuries ago by Khairoddin Barbarosa, the Egyptian Admiral, "He who rules on the sea will shortly rule on the land also."

A careful analysis of the sequence of events in our maritime past reveals the fact that during the last five millennia, those who came to India overland from other parts of the world mainly through the mountain passes in the North West, did rule some parts of the Indian sub-continent for a while. But they were eventually absorbed in the mainstream of Indian culture and traditions and, over the centuries, became an integral part of the Indian milieu. Some of these were the Aryans, the Pathans, the Moghuls, the

Afghans, the Sakas and even the Huns. But there were those who came by sea, - the Portuguese, Dutch, French, British, Germans, Danes, Flemish, Armenians and the Jews - during the last two millennia, who maintained their identity even though they stayed here for hundreds of years, some of them holding sway over considerably larger areas and for longer periods than those who came overland.

There are five distinct periods in India's maritime history - the Hindu period extending from our hoary past to the middle of the 15th Century A.D.; the Portuguese period from the closing years of the 15th Century to the end of the 16th Century; two British periods, one from 1612 to 1830 and the other from 1830 to 1947; and the Indian period which commenced on August 15, 1947. The British period is divided into two parts, because in 1830 the East India Company's Navy in India underwent two major changes; it was constituted as a combatant Service and given the name Indian Navy and the first ship of the Service to sail under steam, the 411-ton *Hugh Lindsay*, covered the distance from Bombay to Suez in 21 days, thus ushering in the era of steam propulsion.

Ancient Indian literature such as the Vedas, Buddhist Jatakas, Sanskrit, Pali and Persian literature, Indian folklore and mythology, and even the Old Testament, bear testimony to the fact that as far back as the days of Mohenjodaro, Lothal and Harappa (3000 to 2000 B.C.), i.e., during the Indus Valley Civilisation, there was considerable maritime activity between India and the countries in Africa, Southern Europe, Western Asia and the Far East. Seals and potsherds portraying anchors, tools and kitchen implements made of coral and musselshell found at these places and in Java, Sumatra, Indochina, Sri Lanka and Egypt, and a huge dry-dock recently unearthed at Lothal in Gujarat, further confirm the existence of India's seaborne trade not only with these countries, but also with Sumer, and Crete, and other countries in Central Asia and Persia at that time. The late Professor Buhler, the well- known German Orientalist, observed that passages in ancient Indian works indubitably establish the existence of navigation of the Indian Ocean by its littoral states in ancient times and the subsequent trading voyages undertaken by Hindu merchants to the shores of the Persian Gulf and its riverports.

Further evidence of such activities is available in the littoral linguistic works of the Indian peninsula, viz., in Sindhi, Gujarati, Marathi, Konkani, Kannada, Malayalam, Tamil, Telugu, Oriya and Bengali writings; in the writings of foreign travellers and historians - Chinese, Arabic and Persian - in the evidence available from archaeology - epigraphic, monumental and numismatic; in Indian and foreign art, and in foreign literature - English, Greek, Portuguese, French, Dutch, Persian, Chinese, Japanese, Arabic, Thai, Malay, Burmese and Sinhalese.

The extent of the commercial and cultural influence of India and her seaborne trade using indigenously built ships during the Hindu period (pre-Christian era to the middle of the 15th Century AD) is evident from some little-known facts such as the existence of the *Matsya Yantra* (the fish machine), a magnetised iron fish floating on oil and pointing to the North, serving as a primitive compass used by Indian seafarers for several millennia) *Matsya* was the first incarnation of *'Vishnu'* whose last incarnation was the *Buddha;* the similarity in the names of some of the places in Southern and South East Asia such as Socotra which is a derivative of the word *Sukhadhara* (container or island of happiness), Sri Lanka which originally was *Swarna Alankar* (gold ornament), Nicobar which was derived from *Nak-Dweep* (the island of the naked) and Calicut which originally was Kallikote (in Kannada, a stonefort); references to Indians as Klings in Thailand and Telangs in some parts of Burma because of the conquests of these countries by the Kalingas and Andhras millennia ago; the similarity between the Thai and Oriya scripts due to the long Kalinga rule over Thailand; the scriptures recited every morning by the monks, even today, in a Buddhist temple in Japan, are in the 6th Century A.D. Bengali script; and the fact that in 323 B.C. eight hundred Indian-built sailing vessels were used for the transfer of the weary and demoralised army of Alexander the Great from the mouth of the Indus to the shores of the Persian Gulf.

While the Arabian Sea and the Indian Ocean were used during this period mainly for purposes of maritime trade, the Bay of Bengal provided a highway for the countries on the Eastern seaboard to embark on proselytisation, cultural and colonising missions to Sri Lanka and countries as far as the Indonesian archipelago and Japan.

Considerable maritime activity took place in the waters around India during the Hindu period. As described by Megasthenes, the royal shipyards of the Mauryas built seagoing ships of various classes. The War Office of Emperor Chandragupta had, as one of its six boards, a Nav Parishad (Board of Admiralty) which controlled national shipping. During the days of Emperor Ashoka in the 3rd Century B.C., his sister, Princess Sanghamitra sailed from Tamralipta in Bengal to Sri Lanka on her historic mission of spreading Buddhism there. Ashoka also had a strong seagoing fleet and used it for regular commercial intercourse with Syria, Egypt, Cyrene, Macedonia and Epirus. Between 200 B.C. and 250 A.D., for a period of nearly half a millennium, the Andhras carried out maritime trade with Western Asia, Greece, Rome, Egypt, China and some other Eastern countries and even set up embassies and consulates in some of these countries. Roman coins discovered in India, especially in the South, establish the existence of trade between these countries even before the dawn of the Christian era. Persecution at the hands of the Romans forced some Jews to flee Rome and

take refuge in Malabar in 68 A.D. Large sailing vessels built by the Cholas, Pandyas and Keralas of South India and the Kalingas of Orissa were used for trade, passenger traffic and naval warfare. These ships were considered excellent for navigation across the oceans as their lower parts were reinforced with triple planks in order to enable them to withstand the force of gales and tempests. Some of the leading communities in organising seaborne commerce were the Manigramman Chetties, Namdasis, Valangais and Elangais of South India. It is a well-known fact of history that during the first decade of the seventh century, a ruler of Gujarat, who was faced with defeat at the hands of his enemy, sent his son with thousands of followers comprising cultivators, artisans, warriors, physicians and writers in over 100 vessels to Java. There they laid the foundation of a new civilisation whose contribution to the world was Borobudur, a temple town of buildings and sculptures in the Indian style of that period, depicting the life of the enlightened one - a unique monument to Lord Buddha.

A strong naval fleet was maintained on the Coromandel Coast by the Cholas (985-1054 A.D.). The Chola emperors, Rajaraja I and Rajendra I, had strong armadas which were used to capture Sri Lanka. In 1007 A.D. the Cholas launched an expedition against the Sri Vijayas, who at that time ruled the Malayan Peninsula, Java, Sumatra and some neighbouring islands and the sea areas contiguous to them, and defeated them to bring the Malayan Peninsula under their sovereignty.

The existence of trade in various commodities between India and Europe for at least three millennia has been confirmed by evidence from various sources. India maintained trade relations with the Phoenicians, Jews, Assyrians, Greeks, Egyptians and Romans during the earlier centuries and with the Turks, Venetians, Portuguese, Dutch and English during the later centuries of the period. While India imported a limited number of items such as tin, lead, glass, amber, steel for arms, coral and medicinal drugs from Europe and West Asia, Arabia supplied frankincense to India for use in her temples. The items exported to Europe, North Africa and West Asia included wool from the fleece of sheep bred on India's north-western mountain ranges, armour, onyx, chalcedony, lapis lazuli, jasper, resinous gum, furs, asafetida, musk, balm, myrrh, embroidered woollen fabrics, coloured carpets, silk which was considered most valuable and was exchanged by weight with gold, various types of cotton cloth ranging from coarse canvas and calico to muslins of the finest texture, peacocks, apes, oils, brassware, ivory, ebony, pearls, sugarcane extracts, salt, indigo, drugs, dyes, rice, sandalwood, timber for building ships, aromatics, pepper, cinnamon and edible spices which were, during the later years, mainly traded for precious metals, especially gold. The existence of trade relations is confirmed by the fact that the word for peacock is *tuki* in Hebrew and *tokei*

in Tamil and by the fact of the adoption of certain Tamil words by the Greeks and vice versa, for there was considerable sea-borne trade between Greece and South India during the Hindu period. It is interesting to note that the words for rice, ginger, cinnamon and foreign merchants in Greek and Tamil respectively are *oryza* and *arisi*, *zingiber* and *inchiver*, *karpion* and *karava* and *Iaones* and *Yavana*.

In April 800 A.D., as described in the 199th Chapter of the Japanese document *Ruijukokushi* an Indian was cast up on the shores of Japan and some seeds of the cotton-plant, which was so far unknown to that country, were found in his ship and sown in the provinces of Kii, Awaji, Sanuki, Jyo, Tosa and Kyushu. Thus, cotton was introduced into Japan. There is also the evidence of Herodotus (450 B.C.), who wrote that the Indian contingent of Xerxes' Army wore (cotton) garments which had been woven from the "wool which certain mild trees in India bear instead of fruit that in beauty and quality excels that of sheep." It was India, therefore, that introduced the use of cotton in the Far East as well as in West Asia and Europe.

The sensational discovery of the regularity of the seasonal winds of the South-West Monsoon by a Greek named Hippalus in 45 A.D. helped maintain and develop trade between India and the West, as has been described in *The Periplus of the Erythraean Sea*. His discovery helped him in finding a direct route to Malabar which was far shorter than the older coast-hugging route. Towards the end of the summer months, "ships used to depart from the mouth of the Arabian Gulf or Kane on the coast of Arabia Felix and sail straight in 40 days to Muziris (modern Kodungallur) on the West Coast of India. They began their homeward voyage in December by sailing with the North-East Wind, entered the Arabian Gulf, met with a South or South-West Wind and thus completed the voyage by using the trade winds throughout the period." The discovery of the directions and regularity of the monsoon air currents was a major contributory factor towards the continuance of maritime trade over the centuries between India and the Western countries.

The existence of oceanic navigation during the earlier centuries of the Christian era is further borne out by the writings of the celebrated Chinese monk, Fa Hien, who came to India overland to study Buddhism at Buddhagaya, Sarnath and Varanasi in 413 A.D. On his homeward journey he sailed from Tamralipta in Bengal and 14 days later reached Sri Lanka where he embarked for Java. He called at the Nicobars before passing through the Straits of Malacca and sailing back to China.

During the period from the 5th to the 12th centuries Hindu supremacy over the Eastern waters reached its zenith with the Sri Vijaya Empire ruling the entire sea area between India's eastern seaboard and the Far East. The cultural and colonising expeditions of the Sri Vijayas took them to such far-

flung areas as Sumatra, Burma, the Malayan Peninsula, Java, Thailand and the countries in Indochina. Besides spreading Hindu, culture, the Sri Vijayas maintained regular political and commercial intercourse with the Cholas, Pandyas and Keralas. However, as a result of rivalry between the Cholas, the Tamil Kings, and the Sri Vijayas, a series of sea battles were fought between their navies towards the end of the 10th century A.D., resulting in the weakening of these empires and opening the way for Arab supremacy in the region. About the same time, the rulers of Gujarat and Calicut also maintained large fleets of sailing vessels for commercial purposes which sailed with cargoes of silk carpets, precious stones, pearls, ivory, spices and other valuable goods to Europe and West Asia. With the weakening of the Indian rulers, the seaborne trade routes between the two regions passed into the hands of the Arabs who became great intermediaries of maritime commercial intercourse.

The Arabs acted as a trade link between the East and Europe during this period. They used to transfer the Indian merchandise to the Venetians who supplied the Indian goods to the European markets, where they were in great demand. The Venetians soon became immensely prosperous which aroused the jealousy and cupidity of the seafarers of the Iberian nations, i.e., Spain and Portugal, and other Mediterranean countries, which led to the beginning of a quest for establishing a direct route from Europe to India.

Ships had been traversing the Indian Ocean for several millennia carrying valuable merchandise and cultural emissaries between India and the West. Cities that directly engaged in the maritime trade or stood on the ancient trade routes continued to grow in importance and prosperity. Some of these centres of commerce were ancient Chaldea, Babylon, Nineveh, Ophir, Tadmore and the ports in the Mediterranean, Persian Gulf and the Red Sea. The Phoenicians had for some years arrogated to themselves a major share in the Mediterranean trade but were later driven out by the Assyrians, Greeks and Romans. The Arabs, however, continued to hold sway over the Red Sea, the Persian Gulf, the Indian Ocean and the Arabian Sea region.

Alexandria was developed by Egypt into the most important port in the world during the days of the Ptolemies. Ptolemy Philadelphus planned to construct a canal between the Red Sea and the Nile, a hundred cubits wide and thirty cubits deep in order to transport Indian goods to Alexandria wholly by water, but for reasons not known, this project was never undertaken and thereafter a new port called Berenike was developed on the Western shore of the Red Sea. Ships from India carried merchandise, sailing from Tatta at the head of the lower delta of the Indus or other ports on the west coast to the coast of Persia and, after following the Arabian shore, to Berenike. From Berenike the goods were carried overland to the city of

Koptos, which was very close to the Nile, where they were loaded into ships which navigated along a canal to Alexandria. Carthegian merchants carried Indian goods to all Mediterranean ports. During the period of Egyptian supremacy, the northern countries of Europe received Indian goods which were carried overland from India to Oxus from where they went to the regions bordering the Caspian Sea and the Black Sea.

The Roman Empire monopolised the trade with India for many years after its conquest of Carthage, Egypt and Syria while Alexandria continued to be the principal port for Indian merchandise. Later, however, the conquest of Persia and Egypt by the Mohammedans deprived the European countries of the use of Alexandria for trade and access to Indian merchandise. This led to the founding of Basra at the head of the Persian Gulf which controlled the movement of merchandise in both easterly and westerly directions and became as important a trading centre as Alexandria.

The Arabs, who later gained control of the trade routes, stopped supplying Indian goods to the Mediterranean sea-ports, but an alternative was found in the overland route to Constantinople and eventually Constantinople became the focal point for the movement of merchandise from India to European trade centres.

The movement of goods engendered a bitter struggle between Venice and Genoa over the Eastern trade and subsequently led to Venetian supremacy over this trade. With the annexation of Constantinople and the trading routes to India by the Turks towards the end of the 15th century and with the continued piracy on the Alexandrian trade route by the Egyptians, a new pattern of rivalry emerged, involving South European, North African and West Asian countries over trade with the East. Since mastery over these trade routes had a direct bearing on the power and prosperity of these nations, these countries had acquired adequate seafaring experience and expertise, an alternate route to India was now sought to be established by some of these countries.

Sailing down the West Coast of Africa in 1487, in quest of a different route skirting the African and Asian coasts, the Portuguese Navigator, Bartholomew Diaz, discovered the Cape of Tempests, later to be renamed the Cape of Good Hope. To complete the work done by Diaz, Vasco-Da-Gama was deputed by King Manoel of Portugal in July 1497, i.e., five years after the discovery of the West Indies by Columbus. The King's astrologer, Abraham Ben Zakut, having studied his horoscope, found it favourable for the discovery of the sea route to India, raising high hopes of success in the venture. Four ships, the *Sao Gabriel* (120 tons) commanded by Vasco-Da-Gama, the *Sao Raphael* (100 tons) commanded by his brother Paulo-Da-Gama, the *Berrio* (50 tons) under the command of Nicolas Coelho and a 200

ton storeship, set sail from Belem on March 25, 1497. A violent storm was encountered while rounding the Cape and the crew, which wanted to go back, hatched a mutiny. But Vasco-Da-Gama suppressed the mutiny by arresting the ring-leaders and threatening to throw them overboard. In March 1498, the *Sao Gabriel* and *Sao Raphael,* reached Mozambique, the storeship having returned to Portugal after transferring her stores and the *Berrio* having been found not sea-worthy was broken up and cannibalised to repair the other ships. Vasco-Da-Gama now needed a pilot to take him to India by sailing across the Indian Ocean and Arabian Sea and not by hugging the coast which the Arabs would resist. He found a seafarer from Gujarat, Davane, who was an experienced navigator and knew the seas contiguous to Africa, West Asia and India very well. His expert pilotage not only provided security from the jealous Arabs but also helped Vasco-Da-Gama to proceed to Melinde from where the ships sailed on August 26, 1498. Had Davane not assisted Vasco-Da-Gama, the Portuguese would not have reached India for some more decades and if this had happened, the course of India's maritime history could well have been different.

Compared to the feats of Columbus and Magellan, Da Gama's discovery of the sea route to India was of no great significance. The importance of his achievement, however, lies in the fact that while the seas were regarded by the Arabs as a pathway for carrying out maritime trade, the Portuguese were the first to lay claim to sovereignty over these waters to project their national interests and influence. This claim was further sanctified by a bull of Pope Calixtus III which considered the seas they sailed to be their possession. The Portuguese thus began considering themselves to be lords of the seas which justified the confiscation of the merchandise of all ships that sailed without their authority. Thus, "it may truly be said that India never lost her independence, till she lost command of the sea in the first decade of the 16th century," observed Panikkar.

Though the papal bull justified the Portuguese claim to sovereignty of the seas and Da Gama's strong stand at the Court of the Zamorin of Calicut, it displeased the latter, and the challenge to the ruler's limited sea power led to a series of indecisive skirmishes and sea battles off the coast of Malabar in the years that followed. The Portuguese intruders were detested by the Arab traders, who joined hands with the Zamorin and in 1500, the Portuguese Admiral, Pedro Cabral, bombarded Calicut. Eighty ships of the Zamorin, manned by 1500 intrepid sailors and reinforced by the ships of a rich Arab trader, Khoja Amber, pushed him back southwards to Cochin. Two indecisive battles were fought, one off Cochin in 1503 and the other off Chaul in 1508. In 1509 the next battle of importance was fought off Diu when ships of the Zamorin, under the command of the courageous Kassim and reinforced by an Egyptian fleet under Admiral Mir Hussain, fought

against a strong Portuguese force led by Don Francesco d'Almeida. This battle also failed to produce a decisive result because of the treachery of the Sultan of Gujarat which led to the Egyptian fleet sailing away in disgust. The Indian Ocean was thereafter dominated by the Portuguese, with Albuquerque, the great commercial empire-builder and statesman, bringing the area under Portuguese supremacy.

Under the leadership of the Ali Marakkars, however, the Zamorin's fleet played an outstanding role by giving valiant battle to the Portuguese for well over ninety years. The Marakkars, who had their headquarters at Ponnani, a natural harbour South of Calicut, held sway over the waters around Calicut. The most illustrious name in the family of the Ali Marakkars was that of Kunjali Marakkar II, who sank a number of Portuguese ships (the tally in the particular year being as high as 50) and struck terror in the hearts of the Portuguese forces. For some reasons, however, Mohammed Kunjali Marakkar, the third Kunjali to command the Zamorin's fleet, was the last of the Kunjali Admirals. He won many a battle against the Portuguese, though eventually he fell out with the Zamorin leading to the gradual weakening of the Zamorin's fleet and eventually its capitulation to the Portuguese. The main contribution of the Kunjalis during the 16th century was that for over 90 years they prevented possible Portuguese incursions in the mainland by harassing their fleet and keeping them at bay.

In 1510, following his failure to defeat the Zamorin, Albuquerque seized Goa and its surrounding areas. Operating thereafter from Goa which occupied a commanding position in the prevailing scenario on India's western seaboard, Albuquerque hounded the Arab traders out of their favourite haunt and subdued the Sultan of Hormuz relegating him to the level of a vassal of the Portuguese ruler. He also developed Socotra into a powerful naval base with a well-defended fort, established a strong government in Cochin after bypassing the Zamorin. He brought immense power and wealth to his country by exercising mastery over the Arabian Sea. In 1513, he mustered a strong naval force and seized and fortified the Straits of Malacca. After prolonged negotiations, he also established amicable relations with the ruler of Pegu, who controlled the Arakan Coast in Burma. The Portuguese supremacy over the waters around India reached its zenith during the days of Albuquerque.

In 1580, Portugal joined hands with Spain against the British but the Spanish Armada suffered a crushing defeat. This changed the course of events around the globe, one of its offshoots being the decline of Portuguese power in the Indian region. It is a moot point that if the Spanish Armada had triumphed, as some historians aver, India would in all probability have become a Portuguese dominion and the United States, a Latin American

country!

The Dutch first exploited this sudden change in the power equation by forming the Dutch East India Company at Amsterdam in 1592. Their first merchant fleet reached India in 1595 but they did not challenge Portuguese supremacy. Instead, they occupied Java and established a naval base at Batavia. Meanwhile, the British and the French also decided to benefit from fishing in India's troubled waters and came to India during the earlier years of the 17th century.

It is thus apparent that while the Hindus controlled the trade routes until the beginning of the 15th century, the Arabs took over the main bulk of it from them for a while with a short period of overlap. But supremacy over these routes passed into Portuguese hands towards the end of the 15th century. The Portuguese then reigned supreme for nearly a century but with the defeat of the Spanish Armada and their decline came the ascendance of British maritime power in India and the Indian Ocean.

The main component of the navy of the Mughal ruler, Akbar was a fleet of ships and craft based at Dacca. These were used for operations in rivers and creeks for the protection of deltaic South Bengal from the Magh (Burmese) and Feringhee (half-caste) pirates who had the support of the Arakan rulers. Akbar had a full-fledged Admiralty which looked after the supply of ships and smaller craft, recruitment of suitable personnel for the ships and craft, security of rivers and waterways and collection of port revenue. The Mughals, however, did not appreciate the importance of building up a bluewater navy and developing seaborne trade and commerce. Nevertheless, shipping and ship-building, oceangoing and riverine, flourished during the Mughal days in various parts of India such as Bengal, Kashmir, Lahore and Surat. There is evidence available to establish the high standard of technology maintained in the construction of these vessels.

While Akbar had a formidable and versatile navy, Aurangzeb's navy was superior in size and efficiency. Besides naval ships, he had four ships at Surat for carrying Haj pilgrims free of cost to Mecca but he lost some of his larger ships to British pirates because of the lack of adequate seagoing naval ships to provide security.

The Honourable Company of the Merchants Trading to the East Indies, better known as the East India Company, was founded by the British on December 31, 1600 by a Royal Charter of Queen Elizabeth I. A ship of the Company, the *Hector*, with Captain Hawkins as the Commanding Officer, arrived in Surat bringing a letter to Emperor Jahangir requesting for permission to trade with India. Hawkins reached Agra on April 16, 1609 and permission for trade was duly granted and trading facilities promised by the Emperor. But the Portuguese did not appreciate the British encroachment on their trade preserves. The British sensed this and sent a squadron

of warships, the *Dragon*, the *Osiender*, the *James* and the *Solomon*, under the overall command of Captain Thomas Best, which reached Swally, the roadstead of Surat, on September 5, 1612. This date is regarded by the British as the foundation day of the Royal Indian Navy (RIN) because on this day a squadron of their warships arrived in India for the first time and the Indian Marine was formed.

Since Portuguese monopoly over trade in the region had been challenged by the British, they attacked the ships of the Indian Marine on October 29, 1612 off Surat with four galleons and forty other craft but had to admit defeat after a protracted battle. They withdrew, leaving the British as masters of the land and sea area around Surat. The British proceeded to set up factories and formed a fleet of Indian small craft known as Ghurabs (the British called them Grabs) and Galivats for the protection of their seaborne commerce from the Portuguese. The sobriquet 'The Grab Service' by which the British Indian Navy was known for many years does not necessarily bracket it with the pirates of various nationalities who at that time had infested the waters around the Indian peninsula.

The Indian Marine at that time consisted mainly of some warships built in England and a larger number of smaller vessels built in India. The Ghurabs were heavy beamy vessels (about 300 tons) of shallow draft and were armed with six guns ranging from 9-pounders to 12-pounders while the Galivats were smaller craft (about 70 tons) mounting half a dozen guns comprising 2-pounders and 4-pounders. Hindu fishermen from the Konkan Coast constituted the crews of these vessels.

The Jack of the Indian Marine has an interesting history. It was the late Commander (Special) G.E. Walker, the Judge Advocate General of the RIN immediately before Independence, who 'discovered' the fact that the Jack flown by the Indian Marine in 1612 was the flag worn by ships on the American side during the War of Independence when they rejected the Union Jack. The Jack of the Indian Marine was thus the first flag of the USA which over the years developed into the present 'stars and stripes'. The Indian Marine's Jack had seven red and six white stripes and, in the position occupied by the stars today, displayed the St. George's Cross. This flag forms a part of the insignia of the existing RIN Association, a society of British officers who had served in the RIN before Independence.

The second major battle with the Portuguese took place in 1614 with the Indian Marine emerging victorious. The East India Company was granted further trading rights by Emperor Jahangir. In the following years, King James I appointed Sir Thomas Roe his Ambassador to the Moghul Court. Merchandise manufactured at the Surat factories started moving by sea to the West for trade with the Persian Gulf ports in 1618. Having had the monopoly of trade in these ports for nearly a century, the Portuguese tried

to block the passage of these ships across the Arabian Sea but were successfully thwarted from doing so by the British who annexed Hormuz from the Portuguese in 1622 and thus began their uninterrupted trade with Persia. This, however, did not deter the Portuguese from seeking another battle at Swally in 1630 where they were defeated once again and a truce was declared, leading to the East India Company's ships being granted access to the Portuguese ports.

The change in the balance of power in this region didn't escape the notice of the Dutch who, in their efforts to consolidate their base at Batavia (now known as Jakarta), captured the Strait of Malacca in 1641 and drove the Portuguese away from the Eastern gateway to the Indian Ocean. Realising the strategic importance of Colombo as a naval base for launching operations for the annexation of the Indian mainland, the Dutch then befriended the ruler of Sri Lanka which helped in driving the Portuguese away from Colombo also, in 1654. Soon thereafter, they made inroads into the Portuguese bastions on the Malabar Coast. This was rendered even more effective by the main base of the Dutch at Batavia, their control of the Strait of Malacca and the advanced operational base at Colombo. Cochin was captured in 1663, this feat was further made possible by the British preoccupation with other problems but their friendly relations with Emperor Shahjahan prevented the Dutch from making any forays into the waters around Surat where the British factories were situated. However, a year later, Shivaji, the Maratha ruler, carried out an attack on Surat by land but this attack was repulsed by the British forces.

In 1662 Infanta Catherina of Braganza, the Portuguese princess, was given in marriage to King Charles II of England and Bombay was ceded by the Portuguese to him as a part of his dowry. The official version of the transfer document described the gift as 'the Port and Island of Bombay in the East Indies, together with all the rights, profits, territories and appurtenances thereof whatsoever.' Since, however, it was virtually impossible for King Charles II to administer Bombay successfully from England, he transferred it to the East India Company at an annual rental of 10 pounds in 1668 - one of the most significant events in Bombay's variegated history.

In 1685 Sir John Child was appointed the Admiral of the East India Company's land and sea forces between the Persian Gulf and Kanyakumari and soon decided, despite his counsellors' advice to the contrary, to adopt an aggressive policy towards the Moghuls. Having taken on a far superior force, Child suffered an ignominious defeat at the hands of the Moghuls who, with the support of the Sidis' fleet, captured most of Bombay island and besieged Child in the Bombay Castle, which is now known as the Naval Barracks. Peace was, however, restored by redeeming Bombay on the payment of 15,000 Pounds in 1690 and some kind of a reconciliation having

been effected between Aurangzeb and the Company. Meanwhile, in 1685 the Indian Marine Headquarters was shifted to Bombay and the Service was rechristened the Bombay Marine in 1686.

The Danes appeared on the scene in 1698 and, after obtaining the permission of Prince Azim-us-shan, grandson of Emperor Aurangzeb, set up their trade. They set up a factory and hoisted the Danish flag in Serampore, Bengal, by 1755. The British authorities forcibly seized Serampore in 1801 but restored it immediately. In 1808, however, a detachment of British troops from Barrackpore occupied Serampore once again. The Danish East India Company recovered it later but in 1844 the Danes left the country after transferring all their assets to the British Government.

The earlier decades of the 18th century witnessed the emergence of an Admiral of Shivaji's Maratha Fleet, the distinguished Kanhoji Angre, whose name became a legend during his own lifetime. His exploits are written in letters of gold in the annals of the navies of India. Shivaji was a firm believer in the doctrine 'Jalaim Jasya, Valaim Tasya' (he who rules the sea is all- powerful) and his admiral, Tukoji Angre, and the other Angres that followed him, put this doctrine into practice. The fleet of Kanhoji, Tukoji's son, menaced and considerably reduced British trade between Bombay and the lower Malabar Coast and captured Colaba from the Sidis in 1706. A year later, maritime trade in the Indian Ocean was threatened by Arab pirates operating from Muscat who plundered a large number of ships. Equipped with a fleet of 10 Ghurabs and 50 Galivats, the Maratha Fleet, under the command of Kanhoji Angre, challenged the Arab fleet and drove it away from the Indian Ocean. Thereafter, Kanhoji established mastery over the Konkan Coast by fortifying his base at Gheria (Vijaydurg). The fortress at Gheria was manned by a specially trained garrison, armed and provisioned to withstand severe attacks from land and sea and prolonged periods of blockade. Behind the fortress, built on a river front was a dockyard, equipped to build larger and sturdier sea-going vessels than were in use at that time.

By this time the Portuguese had been reduced to an insignificant sea power and consequently the Sidis and then the British faced a strong challenge from the Maratha Fleet. The size, manoeuvrability and fire-power of the Maratha Fleet continued to grow. As a result the British Council were compelled to build corvettes for the Bombay Marine, to escort the merchant ships of the Company and prevent their capture by Angre's fleet. In 1717 the Governor of Bombay, Charles Boone, decided to attack Gheria with a strong fleet under the command of Captain Barleu. A bitter engagement followed; the Marathas forced the Company's ships to beat a hasty retreat after inflicting severe damage on them and killing a large number of the Company's soldiers and sailors. Undeterred by the near-

catastrophe, Charles Boone carried a surprise attack on Gheria on November 5, 1718 and silenced many Maratha guns after a ship-shore artillery engagement. Next day, however, when his forces landed, the Maratha guns which had been strategically positioned to cover the entire beachhead, mowed them down and forced the few British survivors to withdraw from the scene.

The Governor of Bombay then made a petition to the King of England for naval reinforcements. Four warships under Commodore Mathews were sent to provide support to the fleet of the Bombay Marine. The British fleet aided by Portuguese ships attacked Colaba, 5 miles from Gheria, in October 1722 but were successfully repulsed by the Marathas who inflicted damage on the enemy, entailing losses of ships, men, guns and ammunition and forcing them to retreat to Bombay.

Soon an attempt to seize Gheria was made by the Dutch who appeared on the scene, having been angered by the capture of some of their ships by the Maratha Fleet. They attacked Gheria in 1724 with a powerful squadron of seven men-of-war, each mounting 30 to 50 guns, but were beaten back after suffering heavy losses.

The superiority of the Maratha Fleet over bigger and better equipped ships of England, Portugal and Holland and even those of the Moghuls and the Arabs stretching over several decades was mainly due to Kanhoji's tactics. He used a large number of adequately equipped light, strong and fast craft which could surround the heavier vessels of the enemy and simultaneously attack them from all sides, thus overwhelming the crews of the enemy ships. Then they would board them and put them out of action by setting them on fire or by scuttling them.

Kanhoji Angre's career was cut short with his death in 1729; he had had the unique distinction of maintaining naval supremacy over the sea area off the Konkan Coast for many years.

In 1733 the British and the Sidis signed a treaty of alliance to fight the Angres. Kanhoji's son Sambhaji captured some British merchant ships on December 16, 1735 inflicting a heavy blow on British trade. The Peshwas of Poona, who were not quite friendly with the Angres, were wooed by the British and a treaty of alliance was signed in 1739 between the two. By this time the might of the Maratha navy, whose control of the seas now extended from Kutch to Cochin, severely hampered British trade.

Meanwhile, in 1735, in order to build ships at a site closer to the scene of action, the British transferred their naval dockyard from Surat to Bombay. Led by Admiral Watson with his 16 ships and 1400 sailors, and Lieutenant Colonel Robert Clive with his 1400-strong infantry and a company of artillery, supported by the Peshwas with their land forces, four *Ghurabs* and forty *Galivats*, the combined forces besieged and captured

Gheria in 1756, reducing Maratha sea power to naught. It may not be out of place to mention here that only a year later, the Battle of Plassey would see Admiral Watson and 50 sailors of the Marine assisting Clive in defeating Siraj-ud-Daula's forces.

In the second decade of the 18th century Ostend, Antwerp and other Flemish towns had deputed merchants to Bengal on board a ship laden with merchandise. The Ostend Company, set up in 1722 with the blessings of Nawab Murshid Kuli Khan set up a factory in Banki Bazaar, south of Chandernagore. However, faced with considerable opposition from the other European trading communities, the Nawab's Charter was withdrawn in 1727. Soon thereafter, a naval engagement took place between the Flemish and Nawab's forces which resulted in the defeat of the former and their withdrawal from India.

The French entered the scene in 1740 to challenge British sea power in the region. They began their operations by capturing Mauritius and converting it into a strong naval base and then sending a strong fleet into the Bay of Bengal to intercept and capture British merchant ships. The war of Austrian succession in Europe in 1744 saw the British and the French in opposing camps and Dupleix, the French Governor of Pondicherry, decided to act. Having already decided to capture the entire South Indian region, he used the French Fleet, which was under the command of La Bourdonnais, to launch an attack on the British Fleet which was led by Captain Peyton. The French Fleet succeeded in driving the British Fleet up the Hooghly. In southern India, they captured Madras after neutralising the British forces in a brief encounter.

The importance of sea power as an essential factor in maintaining supremacy over land areas contiguous to the sea had not been appreciated by Dupleix. La Bourdonnais was thus allowed to return to France in 1747 and the British regained command of the seas around India once again. They also brought six powerful ships and several small craft of Boscawen's Fleet to the Bay of Bengal in 1748 and besieged Pondicherry. This siege, however, was not successful but the British continued to make their presence felt by annexing strategic and important regions. One of these was Chandernagore, a French possession, which was captured by Admiral Watson, assisted by Clive, in 1756. Watson died in 1757 and the British Fleet, under the command of Admiral Pocock, attacked Madras. Despite some reverses suffered at the hands of the French, the British land forces took the offensive and defeated them in the Carnatic War. The British were left masters of the entire sea area around India after Admiral Pocock defeated the French naval force under D'Ache, and the French Fleet was driven away from the Indian waters.

However, the French made their presence felt a few years after the

British annexation of Pondicherry, when Admiral Suffren, a redoubtable naval tactician, appeared on the scene with a reinforced French Fleet and attacked the British Fleet which was at that time under the command of Admiral Sir Edward Hughes. A series of encounters ensued but, following a treaty between England and France, the Indian Ocean was converted into a British lake when Admiral Suffren and his Fleet left the area. The later half of the 18th century saw the extinction of Portuguese power in India, the British seizure of the island of Salsette and other Portuguese holdings in India and the British victory over Haider Ali's navy at Honavar and Mangalore.

Haider Ali and his son, Tipu Sultan, were formidable adversaries who had inflicted a severe defeat on the British and came very close to wrecking the power of the East India Company. But their operations were confined to the south and did not directly affect the fortunes of India as a whole. Haider Ali was a remarkable man and a notable figure in Indian history. He had some kind of a national ideal and possessed the qualities of a leader with vision. Continually suffering from a painful disease, his self-discipline and capacity for hard work were astonishing. He realized, long before others did, the importance of sea power and the growing menace of the British, based on their naval strength. He tried to organize a joint effort to drive them out and, for this purpose, sent envoys to the Marathas, the Nizam and Shujaud Dowla of Oudh but unsuccessfully. He started building his own navy and, capturing the Maldive Islands, made them his headquarters for shipbuilding and naval operations. He however, died soon after. Haider Ali had lamented that he could beat the English forces on land but he could not dry up the oceans and could not prevail against them in naval operations. After him, his son Tipu continued to strengthen the navy and in connection with this Tipu communicated with Napoleon and with the Sultan in Constantinople.

Nearly two and a half centuries ago, in 1753, the Germans too made an attempt to establish a footing in Bengal. Some merchants from Emden, a town in Germany, founded a company, popularly known at that time as the Bengal Company of Emden or the Royal Prussian Bengal Company. The British, French, Dutch and the Danes, who had already set up factories on the banks of the Hooghly, however, combined against the newcomers. Orders were issued forbidding their pilots, masters and mates to render any assistance to the Germans. Further, the setting up of a German establishment was prevented by the Moghul Nawab who had allowed the other Europeans to do so. A fleet of German ships, however, soon arrived, the largest of them being the *Prince Henry of Prussia*. The Germans set up a factory near Chandernagore and overcame the Nawab's opposition after paying him Rs 5,000 as a 'nazrana' (gift). The other European competitors

continued to offer bitter resistance to the Germans who were unable to expand their trade nor make any headway towards constructing buildings and warehouses for the purpose. By 1760, therefore, they decided to return to Germany and wound up their trade in India.

It is not generally known that Lord Nelson, when he was only 16, had visited Bombay and Calcutta while on board the *Seahorse*, a twenty gun ship, during its voyage to the 'East Indies' in 1775. The ship reached Bombay on the morning of August 17, 1775 and later visited Calcutta when Nelson contracted some 'distressing illness and fevers.' He was sent home on board the Royal Navy (RN) frigate, *Dolphin* and completely recovered before reaching England. It was Carola Oman who recorded the details of Nelson's journey from the Hooghly to Portsmouth in the book *Nelson*.

In 1635 the East India Company set up a shipbuilding yard at Surat and during the first year this yard built four pinnaces and other larger vessels. This was the first record of their shipbuilding activities in India. The shift to Bombay in 1735 was necessitated by its being safer and closer to the scenes of action. It was Lowjee Nusserwanjee Wadia, ancestor of a long line of famous Parsi master-builders of ships, naval and commercial, who selected the site for the Naval Dockyard. During the course of the next 100 years this yard proceeded to build not less than 115 war vessels and 144 merchant ships, including 84 gunships for the RN. The quality of construction of these ships was of such a high order that they were acclaimed by shipbuilding nations around the globe. The Wadias proved to the world that Indian-built Malabar-teak ships were far superior in seaworthiness and far more capable of withstanding the detrimental effects of the elements, than British-built oaken ships. One of these ships, *HMS Trincomalee*, which was built by the Bombay Naval Dockyard in 1817 for the RN and which saw many battles during the period of her commission, is still in use at Portsmouth as *TS Foudroyant*, for training school and college students in seamanship and navigation. She is the oldest sail- driven warship afloat today. Her Malabar-teak hull and superstructure, despite several major modifications and damages suffered during battles and storms and inspite of continuous use for training purposes, is still as good as new and, according to a wellknown shipbuilder, she is likely to remain afloat for another three centuries.

In 1986 the *Foudroyant* Trust decided to dispose of the ship and arrangements were finalised to transfer her to India so that she could be preserved as a monument to the country's millennia-old shipbuilding traditions but the Trust later changed its decision and thus the ship continues to be a training ship at Portsmouth.

A number of pirates belonging to an Arab tribe called the Joasmis arrived in the Indian waters during the earlier decades of the 19th century.

They operated from the Arab side of the Persian Gulf covering the coast from Bahrain to Cape Mussendon and, with their headquarters at Ras-ul-Khymah, they held sway over the entire Persian Gulf. Originally merchants and pearl-fishers, they now took to piracy. For many years they left the ships of the East India Company alone and attacked and plundered only ships and craft belonging to the others but since the Company ships took no action against the Arab pirates, this was interpreted by the Joasmis as a sign of weakness and later they resorted to attacking the Company's ships as well.

To set things right a fleet of 12 ships of the Bombay Marine, led by Captain Seaton, attacked Ras-ul-Khymah in 1809 and bombarded this focal point of the Joasmis' operations but were beaten back by the well-entrenched Joasmi forces. The squadron of ships had, therefore, to return to Bombay and the Arab pirates continued to seize and plunder the Company's ships. Under the command of Captain Collier, the Company later dispatched another fleet of 11 ships under Major General Sir William Grant Keir, they blockaded the town of Ras-ul-Khymah for four days, as a result of which Sardar Hasan Bin Rehman, the Joasmi Chief, gave himself up and admitted defeat. The Arabs then guaranteed safe passage to British ships in a treaty in 1820 and the East India Company was not subjected to any further harassment.

It is not generally known that the Punjab Regiment of the Indian Army is probably the only example in the world of a landbased force having a naval craft as its cap badge with the motto *Sthal-wa-Jal* (earlier *Khushki-wa-Tari*). This regiment was permitted to adopt the galley as an emblem because between 1796 and 1824 it took part in many military expeditions overseas.

In 1829 two important events took place - the Bombay Marine was assigned the new nomenclature, the Bombay Marine Corps, and a steam engine for ship propulsion was installed for the first time on board the *Hugh Lindsay*, a ship of the East India Company. This 411-ton ship of the Bombay Marine Corps, steamed out of Bombay on March 20, 1830 and reached Suez after 21 days of actual steaming, averaging a trifle under six knots. Thus began the gradual conversion of the Company's ships from sail to steam which was completed during the next 15 years. In 1830, there was another change in the name of the Service - the Bombay Marine Corps became the Indian Navy (IN).

The next seven years were relatively peaceful. But in 1837, a pilgrim ship of the East India Company, whilst on passage to Mecca, with a number of rich pilgrims on board, was seized and plundered near Aden. A squadron of the Indian Navy's men-of-war, led by Commander Haines, was then sent to attack Aden. However, since the Sultan of Aden was in a repentant mood

and ready to pay an indemnity of Rs 3 lakh, the ships spared Aden and returned to Bombay in 1838. The indemnity promised was, however, never paid by the Sultan and consequently the Company ships returned to Aden the same year and captured it once again.

During the Anglo-Sikh War of 1848, the Indian Navy provided a contingent of 100 sailors and seven officers with their guns to participate in the siege of Multan. The Company's Navy was thus employed for land operations for the second time.

Captain Lynch led a strong fleet of the Indian Navy to attack and capture Rangoon in 1852. The Raja of Burma had refused to be cowed down by the naval might of Lord Dalhousie, the Viceroy of India at that time and his defiance of British authority resulted in the loss of the strategic city of Rangoon. Meanwhile, Persian and Russian seafarers in the Persian Gulf began harassing the Company's ships while the latter were on passage for maritime trade. A strong fleet of the Indian Navy under Sir Henry Leeks was sent to deal with the pirates and captured Bushire (Basra) after defeating the Persian Fleet in 1853. In 1860, during a war in the Chinese waters, piracy was suppressed by ships of the Indian Navy working in tandem with those of the Royal Navy.

It was during the 1857 uprising that the two highest decorations ever to be awarded to the personnel of the Indian Navy before Independence were earned and on shore. An Indian Naval Brigade comprising 78 officers and 1740 men was assigned shore service during the uprising. Mister Midshipman Mayo of the 4th Detachment was awarded the Victoria Cross for his bravery at Dhaka (now in Bangladesh). This VC was later presented to the RIM (later RIN) Officers Mess at Bombay with a photograph of the young officer and is now on display at the Naval Museum at Bombay. The other recipient of the VC was Mister Acting Master G.B. Chicken of the 3rd Detachment in recognition of his desperate single-handed action in which he killed five out of a party of 20 armed men that attacked him

Manned entirely by naval officers, a Marine Survey Department was started in India in 1863 which, during the course of the next century, has developed into a full-fledged Hydrographic Survey organisation of free India's Navy.

Hydrographic survey was being carried out by the Bombay Marine/ Indian Navy itself before the formation of the Marine Survey Department. In fact, survey work had started in 1772 and officers of the Service surveyed the coastal waters of not only India and the neighbouring countries and islands but also the Persian Gulf, the Red Sea, the East African Coast, the East Indies, the Philippines, the Pelew Islands in the Pacific, the Chusan Archipelago in the East China Sea and Tasmania in the Far South East. Considering the primitive instruments, the limitations of the ships used by

these officers and the dangers of venturing into the unknown, the feats of eminent hydrographers such as Captains McCluer, Ross and Blair would be comparable to the most daunting expeditions undertaken in any sphere.

The Indian Navy was reorganised as a non-combatant force in 1863 with two branches at Bombay and Calcutta which were renamed the Bombay Marine and the Bengal Marine, naval protection of Indian waters having been taken over by the Admiralty.

Their new role was the marine survey of India and the transport of troops and Government stores, maintenance of 'station ship' duties at Aden, the Andaman Islands (Port Blair), Burma and Persian Gulf, maintenance of gunboats on the Irrawaddy and Tigris, maintenance of all Government light craft employed for military duties and the maintenance of lightships and lighthouses around the coasts of India and Burma and in the Southern portion of the Red Sea.

The nomenclature of the Service was to undergo several changes. In 1871 an Indian Defence Force with two ships was constituted and yet again in 1877 when the Government restored the combatant status to the Service, it was called His Majesty's Indian Marine once again with two divisions at Bombay and Calcutta. The Service was rechristened the Royal Indian Marine (RIM) in 1892.

The RIM did not make any significant contribution to the maritime history of this country from 1892 till the outbreak of World War I. Before the War, the main tasks assigned to the RIM were marine survey, maintenance of lighthouses and transportation of troops. During the war, however, there were notable exploits of the RIM in various theatres of naval operations. Its ships transported troops, arms, ammunition and stores to Egypt, Iraq and East Africa. While on patrol in the Suez Canal, the 'RIM ship Hardinge' fought against the Turks and thwarted their efforts to block the canal. During the action she suffered severe damage and lost one of her funnels but succeeded in preventing the blocking of the canal. RIM ships landed troops in Mesopotamia and its smaller ships, designed for operations in inland waters, rendered excellent service in the Euphrates and Tigris rivers. Three other ships, the *Northbrooke*, *Minto* and *Dufferin*, carried out patrolling duties in the Red Sea. While carrying out these duties, the *Minto* called at Jeddah and transported some Haj Pilgrims safely back to India. The RIM was once again reverted to its non-combatant role in 1918 after the end of the war.

At the end of World War I the RIM was adversely affected by the international situation, shortage of funds and extensive retrenchment. With the task of naval defence of India once again entrusted to the Royal Navy, the combatant status of the RIM had been lost. For the services rendered by the Royal Navy, the Government of India had to pay a

staggering sum of 100,000 pounds annually to the British Government. The RIM had, therefore, to be reduced to a small force entrusted with minor coastal duties. Most of the World War I veterans were demobilised and no reservists were left for calling up during emergencies. This led to the mobilisation of Indian public opinion against the wilful eradication of the country's naval and maritime traditions and a number of committees were appointed to examine the future role of the Service and to make recommendations for suitable changes or expansion. The Rawlinson Committee, the last such committee to be appointed, recommended the formation of a small combatant force, which was to be controlled from a major port by a suitably constituted administrative authority.

Though recruitment to the RIM was open both to the Indians and the British, very few Indians joined the Service at that time. The first Indian to join the RIM as an officer was Engineer Sub- Lieutenant D.N. Mukerji, commissioned on January 6, 1928. He rose to the rank of Captain and took premature retirement from service in 1950. He emigrated to England where he died on January 31, 1986.

One such officer was Lieutenant H.R. Bowers of the RIM. He had the distinction of being chosen to accompany the great explorer, Captain Scott, on his expedition to the Antarctica, in 1910. Even though he was not an Indian, he was the first representative of this sub-continent to embark on an expedition to the South Pole. He died with Scott on his way back from the South Pole. In the words of Commander G.E. Walker, RINVR, author of *The Historical Background of the Royal Indian Navy:*

> Lieutenant Bowers had the high honour of being selected as one of the party which made the last great journey to the South Pole itself. Scott wrote of him, I believe he is the hardiest traveller that ever undertook a Polar journey, as well as one of the most undaunted. Never was seen such a sturdy, active, undefeatable little man.

Some articles belonging to Lieutenant Bowers along with the piece of the Union Jack carried by him to the South Pole are now on display at the Naval Museum at Bombay.

The first Indian to set foot on Antarctica was also, by coincidence, a Naval Officer, Lieutenant Ram Charan, a specialist in meteorology, who accompanied an Australian expedition to the South Pole in 1960. After returning to India, Ram Charan prepared a valuable report on his expedition. Unfortunately, in 1961 he met a tragic death in a road accident.

Personnel from the Indian Navy also took part in the first Indian expedition to Antarctica, Expedition Gangotri, in 1981. The Navy played a major role in subsequent expeditions launched annually.

The indomitable spirit of adventure of Indian Naval personnel h:

taken the Naval Ensign to the top of the world's highest mountain, Everest. The intrepid and renowned mountaineer of the IN, Instructor Lieutenant Commander (later Captain) Manmohan Singh Kohli has had the distinction of not only climbing to the highest altitude without oxygen but also of putting nine men atop the peak and hoisting the Naval Ensign on it for the first time in its history.

The RIM was reconstituted as a combatant force in 1928 and the White Ensign was hoisted for the first time in its history on November 11, 1928. The Indian Navy Discipline Bill, based on the recommendations of the Rawlinson Committee, was also taken up by the Legislative Assembly in the same year and, after 6 years of deliberations, the bill was passed by the Assembly and the Council of States on September 5, 1934.

A month later, i.e., on October 2, 1934, the Royal Indian Navy (RIN) came into being with the Naval Headquarters at Bombay under the Flag Officer Commanding Royal Indian Navy (FOCRIN).

The RIN was developed into a small and efficient naval force by 1939 and by the time World War II broke out, the RIN fleet comprised five sloops, a survey vessel, a patrol ship, a depot ship and a large number of small craft. Recommendations were made by the Chatfield committee in 1939 for assigning greater responsibility for the naval defence of India to the RIN. Modernisation of the Service was also recommended in order to enable the RIN to carry out these duties.

The recommendations made by the Chatfield Committee in 1939 were based mainly on the proposals put forward by the RIN for the expansion of the Service which was to be completed in five years. The main features of the Committee's recommendations were the construction of four Bittern class escort minesweepers, development of depots and training establishments and acquisition of local naval defence equipment. Even though the recommendations were to be implemented over a period of five years, the outbreak of the War in 1939 greatly hastened the process of expansion. The annual subvention of 100,000 pounds to be paid to the British Government along with miscellaneous other charges ranging from 15,000 to 20,000 pounds was also discontinued on the condition that it would be utilised towards expanding the RIN fleet and maintaining a squadron of six escort vessels which would carry out local naval defence duties, besides assisting the Royal Navy.

Before the commencement of the War the authorities had resorted to the formation of reserves for the RIN. The Royal Indian Naval Reserve (RINR) comprised serving officers of the Indian Mercantile Marine and had two branches, Executive and Accountant, to which the Engineering Branch was also added on the outbreak of the War. The Royal Indian Navy Volunteer Reserve (RINVR) was constituted by inducting qualified mem-

bers of the general public as commissioned officers and giving them six months' intensive training at Bombay. This was also done for sailors who used to be called 'ratings' at that time. In addition to the regular service 'ratings', 'special service ratings' were recruited who served for five years before being transferred to the Fleet Reserve for 10 years. These 'ratings' belonged to the cadre of the Royal Indian Fleet Reserve (RIFR). Personnel from the merchant marine were also recruited for service during the War as 'Hostilities Only (H.O.) ratings'.

During the early 1920s the Scindia Steam Navigation Company had been formed but its maritime activities were virtually limited to coastal trade as overseas contracts granted to the Company were very few. The training ship for cadets, 'SS Dufferin', was acquired by the Indian Mercantile Marine Department in 1926 and started training cadets for the merchant navy. A number of small shipping companies came into being during the early 1930s and these managed to capture a seizable chunk of coastal trade from foreign shipping companies but the tonnage under them was virtually negligible compared to the volume of exports and imports.

On October 1, 1939 the personnel strength of the RIN was 114 officers and 1,732 ratings with the Naval Headquarters, located inside the Naval Dockyard at Bombay, and manned by only 16 officers.

When hostilities commenced, the Royal Navy undertook the task of building, commissioning and working up fast seagoing motorboats for coastal patrol and corvettes and minesweepers which were suitably armed and equipped for carrying out anti- submarine and escort duties in the waters around India. Magnetic mines posed a major threat to the merchant marine at that time and hence 263 merchant and naval ships were fitted with degaussing (demagnetising) cables by June 1941. The first Basset class trawler, *HMIS Travancore*, was built at Calcutta and commissioned into the RIN in July 1941. This was followed by five more within a year and another six soon thereafter. The first Bangor class minesweeper built in India joined the RIN in 1943. To reinforce the RIN fleet, six sloops built in Great Britain and named after Indian rivers, the *Jumna, Sutlej, Cauvery, Kistna, Godavari* and *Narbada* were also acquired soon.

New Delhi was the focal point for command and control for the RIN. The Naval Headquarters, however, functioned from Bombay. In order, therefore, to maintain effective control over the operational and organisational aspects of the Service, the FOCRIN could pay only occasional visits to New Delhi. This led to considerable delay in obtaining New Delhi's clearance on important matters as the bulk of the exchanges between the capital and Bombay had to be by correspondence or by signal. A Naval Liaison Office was positioned at New Delhi in October 1939 to reduce the time taken in processing important papers but even this proved unsatisfac-

tory and hence, in March 1941, the Naval Headquarters was transferred from Bombay to New Delhi.

All training establishments of the RIN were concentrated inside the RIN Dockyard, Bombay when the war broke out. These were the Seamanship School, the Signal School, the Gunnery School, the Mechanical Training Establishment, the Boys' Training Establishment and the Anti-submarine School. There were no schools for training in torpedo, radar and electrical disciplines. There were also no training facilities for officers who had to undergo their basic and advanced training in all disciplines at the Royal Naval establishments in the United Kingdom.

As the tasks assigned to the RIN multiplied and its size increased, several new naval establishments came up at Jamnagar, Cochin, Mandapam, Madras, Coconada (Kakinada), Vishakhapatnam and Calcutta. To cope with the increased intake of sailors and the requirements of equipping the fleet, expansion and modernisation of the existing naval bases at Karachi and Bombay was taken up.

In terms of the strength of the fleet and personnel, the RIN grew extremely rapidly and thus posed grave problems of training personnel in the specialist and general tasks. For example, by June 1940 when Italy jumped into the fray, the RIN had doubled its strength and by 1942 it had expanded to nearly six times its pre-war complement.

While the fleet continued to expand, so did the number of shore establishments. To augment training of Boys at *HMIS Dalhousie* at Bombay, *HMIS Bahadur* was commissioned at Karachi. In addition, for training officers and ratings, two more establishments, *HMIS Himalaya*, the gunnery training establishment, and *HMIS Chamak*, the radar training establishment, were commissioned at Karachi. The other naval bases that came up about this time were *HMIS Shivaji*, the mechanical training establishment at Lonavala, *HMIS Akbar*, the ratings' training establishment at Thane, *HMIS Talwar*, the Signal School at Bombay, and a mechanical training establishment at Pilani. At Karachi, Bombay and Calcutta, ships were armed for defence and at Vishakhapatnam, Madras and Cochin, inspection organisations were set up.

The need was soon felt for a major merchant shipbuilding yard in order to neutralise wartime mercantile marine losses. Accordingly, a site was located at Vishakhapatnam by the Scindia Steam Navigation Company but the first major ship, a freighter, could only be launched well after the War in 1948. The problem created by United Kingdom's inability to send supplies to the Allied forces in sufficient quantities, was solved by the Indian mercantile marine which shouldered the responsibility of delivering stores to places as far as Hongkong in the east and Malta in the west.

Sloops of the RIN took part in the operations in the Red Sea, Gulf of

Aden and the Persian Gulf in 1940 under the overall command of the Commander-in-Chief, East Indies. The *Jumna* and *Sutlej* took part in the Battle of the Atlantic in 1941. In the same year, reoccupation of Berbera in the Gulf of Aden was made possible by the first combined operations, i.e., amphibious operations, by the Indian Army and the Royal Indian Navy. The RIN also played a vital role during the advance of the Allied forces in Sudan. While *HMIS Clive* softened up the area between Port Sudan and Massawa with her armament and *HMIS Hindustan, Indus, Parvati* and *Ratnagiri* led the attack, the port of Massawa was annexed from the Italians.

In the operations in the Persian Gulf, *HMIS Lawrence* and *Lilavati* earned distinction and two officers of the RIN were awarded the Distinguished Service Cross (DSC). These were Lieutenant (later Vice Admiral) N. Krishnan for his act of gallantry while boarding and overpowering the crew of an armed tug belonging to the Axis during Operation Countenance for the capture of Abadan in 1941 and Engineer Lieutenant (later Vice Admiral) D. Shankar who, while boarding an Italian vessel, *Cabote*, during the Persian Gulf operation in the same year, captured the crew of the vessel after going through the blazing bridgedeck at considerable risk to his life.

HMIS Bengal, a Bathurst class minesweeper of the RIN, covered herself with glory on November 11, 1942 when, while escorting a Dutch tanker, *MV Ondina*, from Fremantle in Australia to Diego Garcia, she was attacked by two Japanese 10,000 ton armed merchant raiders. The raiders opened fire with 4 inch and 5.5 inch long range guns but the *'Bengal'* could defend herself with one 12 pounder gun and a few close-range anti-aircraft guns. However, instead of making an attempt to escape, the *'Bengal'* instructed the *Ondina* to increase her distance from the raiders and herself pressed home an attack. The raiders opened fire once again at 3,500 yards and the *Bengal* retaliated with her small calibre armament. Her first salvo to hit one of the raiders fortuitously landed on the latter's magazine resulting in an inferno which caused the raider to blow up and sink within minutes. The second raider soon left the scene after causing considerable damage to the *Ondina* and killing a few members of her crew including the Commanding Officer. Though the *Bengal* suffered damage in the superstructure, no lives had been lost and the minesweeper was still operational. The *Ondina* was virtually immobilised but the *Bengal*, succeeded in escorting her back to Fremantle.

Lieutenant Commander W.J. Wilson, RINR, Commanding Officer of *'Bengal'*, was awarded the Distinguished Service Order. Two Indian ratings also to be decorated were Leading Seaman Ismail Mohammed, one of the 12 pounder gun's crew, who was awarded the Indian Distinguished Service Medal for gallantry and devotion to duty, and Petty Officer Mohammed Ibrahim, captain of the 12 pounder gun, who was awarded the

Indian Order of Merit Second Class for setting an excellent example of steadiness and resolution and using his weapon to the very best advantage even after the *Bengal* had been considerably damaged by the raiders.

Ships of the RIN carried out sustained attacks on the Arakan Coast of Burma while operating from Chittagong and Koronge Island. They also provided close support to troops that had been landed by the RIN landing craft for driving the Japanese away from the area. Despite its success in operations in various theatres of war around the globe, the losses suffered by the RIN were negligible and ships of the RIN and their men were still 'raring to go' when VJ (Victory over Japan) Day arrived.

The nuclear holocaust perpetrated on the innocent residents of Hiroshima and Nagasaki in Japan on August 15, 1945 led to Emperor Hirohito's surrender, hastening the end of the War. At the time of cessation of hostilities, the RIN fleet comprised seven sloops, four frigates, four corvettes, 14 minesweepers, 16 trawlers, two depot ships, 30 harbour craft, several motor launches and harbour defence motor launches and a personnel strength of over 25,000.

World War II, which was a veritable catastrophe, ended on August 15, 1945, exactly two years before India was to gain Independence. The stage was set for carrying out the post war tasks, viz., sanitising, i.e., sweeping large areas for mines and other sunken hazards in and around Indian waters, preventing any further repetition of the traumatic experience, decommissioning or assigning peace time roles to a large number of ships and craft with the RIN which had been rendered redundant and meeting the post-World War II requirements by refurbishing the RIN.

A Victory parade was held in London on June 8, 1946 in which representatives of the three Indian Armed Forces participated. The senior Indian Naval officer was Commander (later Rear Admiral) A. Chakravarti and the Naval Contingent was led by Lieutenant (later Rear Admiral) P.S. Mahindroo. In keeping with the inter-Service seniority in which the Navy was the senior service, the parade was led by the Naval Contingent.

Rear Admiral Mahindroo, who later commanded our first aircraft carrier Vikrant, reminisces on the occasion, "Needless to say, that as a turbaned officer leading the Naval Contingent, I was most prominent and I must have given hundreds of autographs amongst thousands of spectators who probably slept on the pavement for one or two nights to witness this historic parade."

With the end of World War II the need was felt for, firstly, assessing the requirement of future weapons and weapon platforms for the peacetime role of the RIN and to whittle the Navy down to an appropriate size for that purpose. As mentioned earlier, at the outbreak of the War the RIN fleet comprised five sloops, a survey vessel, a patrol ship, a depot ship and a

number of small craft but by the time the War ended, the fleet consisted of seven sloops, four frigates, four corvettes, 14 minesweepers, 16 trawlers, two depot ships, 30 auxiliary vessels, 150 landing craft of various types, 200 harbour craft and several motor launches and harbour defence motor launches. Personnel wise the strength had risen during the course of six years from 1,850 in 1939 to over 25,000 in 1945. These figures do not include the six ships that were lost during the War - *HMIS Pathan* (escort patrol ship) by explosion off Bombay on June 23, 1940, *HMIS Parvati* (auxiliary) mined off Massawa on April 30, 1941, *HMIS Prabhavati* (auxiliary) sunk off Goa on December 8, 1941, *HMIS Sophie Marie* (auxiliary) mined in Macpherson Strait on March 1, 1942 and *HMIS Indus* (sloop) sunk at Akyab on April 6, 1942 and *HMIS Lady Craddock* (auxiliary) sunk in the Hooghly river on October 16, 1942 - and, the men who went down with these ships. The RIN had in fact expanded by 1,800 per cent - an average annual growth rate of 300 per cent.

It was decided in 1944 to develop the peacetime RIN after due demobilisation of personnel recruited for the duration of the hostilities and decommissioning the large number of vessels acquired for wartime operations at sea, in two stages. Stage I had a time frame of two years from 1945 to 1947 for replacing the 'existing inefficient ships' by frigates and modern sloops, acquiring eight destroyers and training of personnel for cruisers that had been planned to be acquired. During Stage II, which was to be put into effect after the cessation of hostilities, the strength of the RIN would be raised to 1,500 officers and 15,000 sailors who would gradually replace the Royal Navy personnel then serving in the RIN. These plans were later modified to include aircraft carriers, cruisers and submarines.

The RIN was thus envisaged to develop into a full-fledged 'dominion' naval force towards the late 1940s and be deployed as a vanguard of Commonwealth interests. This, however, did not happen because, first, massive demobilisation undertaken after the war left only a small number of ships and trained personnel, both in the commissioned and lower-deck cadres, in the Service. Next, the scars of the mutiny which took place in February 1946 took a long time to disappear. Third, what was left of the RIN was truncated to two-thirds of its size when British India was partitioned in August 1947. Fourth, the 'land-frontiers-only' concept continued to occupy Indian minds at the highest level for many years. And, last, the gross inadequacy of funds made available during the earlier decades of Independence for the development of India's maritime force prevented it from speedily expanding into a powerful entity.

Reducing the fleet strength, which was virtually bursting at the seams, entailed paying off aging ships to a reserve fleet, returning vessels commandeered from the merchant marine to trade and consigning very old

ships to breakers' yards.

Demobilisation of two categories of personnel, those who had been recruited for the duration of the hostilities and those who had been retained till the end of the War despite the expiry of their contracted periods of service during the War, was also taken up. Nearly 2,000 officers and 18,000 sailors were released by the beginning of 1947. In addition, over 700 officers and sailors of the Women's Royal Indian Naval Service (WRINS) were released and 25 officers and 25 sailors transferred to the Army Wing, viz., Women's Auxiliary Corps, India (WACI). As far as was possible, personnel released received pre release and post release vocational training and assistance in resettlement.

In its wake, demobilisation brought about considerable set back in the morale of the Service. Rejection of a large number of applications from serving officers for permanent commission led to acute disappointment amongst Indian officers. Sailors due for release faced the uncertainty of resettlement in civil life. To make matters worse, the existing scales of low pay and pension, inadequate travelling facilities, the poor quality of food and amenities and the ill treatment meted out to them by some of the British officers of the RIN, brought the situation to a flash point. The spark was provided by the political situation in the country which led some of the sailors to believe that the gerontocratic structure of the political parties led by Mahatma Gandhi would not be able to force the British masters to grant full freedom to the country and an armed demonstration by the uniformed Services was called for.

The combination of these contributory factors led to a mutiny by RIN personnel originating at the *Talwar*, a shore establishment at Bombay, on February 18, 1946. This soon spread to ten establishments, 56 ships and four flotillas at Bombay, Karachi, Madras, Calcutta, Cochin, Lonavla, Jamnagar, Vishakhapatnam, Mandapam, Aden, Bahrain, the Andaman & Nicobar Islands and New Delhi.

Some of the broad features of the mutiny were:

Bombay - processions taken out by RIN sailors, shouting of slogans, burning of the American Stars and Stripes at the US Information Office, hoisting the Congress, 'Jai Hind' and Muslim League flags, lowering the Naval Ensign, acts of violence and exchange of fire at Castle Barracks between mutineers and military personnel who had been called in to quell the mutiny.

Karachi - acts of violence on the *Bahadur* and the *Himalaya*, a procession from there to the radar training school, the *Chamak*, and an exchange of fire between the military and the mutineers of sloop, the *Hindustan*.

At other places - generally non violent measures such as refusal to

work, defiance of orders and hunger strikes occurred. With rare exceptions, the behaviour of the mutineers towards their officers was courteous with the usual marks of respect.

The casualties suffered by the mutineers and the others included:

Bombay - one sailor killed and six wounded, one RIN officer killed and one wounded, two British Other Ranks wounded.
Karachi - eight sailors killed and 33, including British soldiers, wounded.

Later, in response to appeals made by political leaders of eminence such as Shri Jawaharlal Nehru and Sardar Vallabhbhai Patel, the mutineers surrendered. The mutiny, however, had wide repercussions all over the country and the Central Legislative Council discussed it on February 22 and 23, 1946. When it was taken up by the Defence Consultative Committee on March 8, Field Marshal Sir Claude Auchinleck, the Commander-in-Chief of the three Services, recommended a high power commission of inquiry to go into 'the causes and origin of the recent mutiny in the Royal Indian Navy'.

Based on the recommendations made by the Commission of Inquiry comprising three Indian Chief Justices, a Vice-Admiral of the RN and a British Major General of the Indian Army, the conditions of service, food, leave travel facilities and amenities for sailors were improved and short service commissions were offered to a large number of officers who were about to be released, thus allaying their fears about their immediate future.

One of the leaders of the mutiny, Leading Telegraphist B.C. Dutt, who was discharged after the mutiny in March 1946, has authored a book entitled *Mutiny of the Innocents*, wherein he has stated that the mutiny was the penultimate, nay, ultimate, nail in the coffin of foreign rule and that the mutineers, the real freedom fighters, had been let down by the aging political leaders from whom they had sought advice and guidance - mutineers who, he thought, were politically innocent. He said, "In India a new generation had grown by wearing the soldier's uniform and exulting in the sound of gunfire. Most of them wanted the total overthrow of the Raj. The means did not much matter. Nor were they, at that point in Indian history, the only ones to feel the way they did. Other segments of society were also similarly inclined. The leadership would not have it. They nipped what the young thought was the revolution in the bud."

The fact that the process of gaining independence was considerably accelerated by the RIN mutiny was further corroborated by the former Chief of the Naval Staff, Admiral S.N. Kohli, who was serving in the *'Talwar'* at the time of the mutiny. He said, "It is my view that the Naval Mutiny,

coming as the culmination of a number of similar incidents in the Indian Defence Services, was largely instrumental in convincing the British that holding India was no longer feasible without the use of large-scale British force and was, 'inter alia', responsible for ushering in freedom.

When independence was eventually ushered in on August 15, 1947, the Partition Council divided the RIN into two navies - the Royal Indian Navy and the Royal Pakistan Navy (RPN) - respectively for the dominions of India and Pakistan which came into being that day. The ships and craft allocated to the two Services were:

> India - four sloops *Sutlej, Jumna, Kistna, Cauvery,* two frigates *Tir, Kukri,* one corvette *Assam,* 12 minesweepers *Orissa, Deccan, Bihar, Kumaon, Rohilkhand, Khyber, Carnatic, Rajputana, Konkan, Bombay, Bengal, Madras,* one hydrographic survey vessel *Investigator,* four trawlers *Nasik, Calcutta, Cochin, Amritsar,* four motor minesweepers *130, 132, 151, 154* one motor launch '420', four harbour defence motor launches *1110, 1112, 1117, 1118* and all existing landing craft.
> Pakistan - two sloops *Narbada, Godavari,* two frigates *Shamsher, Dhanush,* four minesweepers *Kathiawar, Baluchistan, Oudh, Malwa,* two trawlers *Rampur, Baroda,* two motor minesweepers *129, 131* and four harbour defence motor launches *1261, 1262, 1263, 1266.*

Soon after Independence, negotiations were started with the British authorities for the acquisition of one cruiser, three destroyers and other craft for free India's navy. The number of ships that could be kept in commission in the truncated and reconstituted RIN was restricted by the shortage of personnel. Available trained personnel were inadequate for the numerous and varied duties that they could be called upon to perform. An easy solution to this problem could not be found as the training of personnel was handicapped by the lack of experienced instructors and the fact that a number of well equipped training establishments, which were located in Karachi, were no longer available.

However, before any concrete steps could be taken for the IN's expansion, the Navy had to undertake an amphibious, operation - Exercise Peace - to land an army contingent off Junagadh in Gujarat on the Arabian Sea - the first high-water mark in the history of Independent India's navy.

Unlike the other members of the Kathiawar states which, based on their geographical contiguity to India, had acceded *en masse* to India, the Nawab of Junagadh, Sir Mahabatkhan Rasulkhanji, on the advice of his Dewan, Sir Shah Nawaz Bhutto (father of Mr Z.A. Bhutto, who later became the Prime Minister of Pakistan), signed the instrument of accession to Pakistan on August 15, 1947 and ordered his troops to occupy the adjacent

states of Babariawad and Mangrol, which had already acceded to India.

After having waited for two months for the Nawab of Junagadh to rectify his mistakes, the Government of India issued instructions to the Navy on October 17, 1947 to land an army task force on the Kathiawar Coast to help the Nawab change his mind. Accordingly, under the planning and control of Commodore M.H. St. L. Nott, Chief of Staff at Naval Headquarters, New Delhi, a naval force comprising three frigates *Kistna, Cauvery* and *Jumna*, three fleet minesweepers *Konkan, Madras* and *Rohilkhand*, three landing craft for tanks *LCTs, 1310, 1358* and *360* and one motor launch *ML 420* was placed under the command of Commander (later Admiral and Chief of the Naval Staff) R.D. Katari. The task assigned to the force was the landing of three columns of troops with arms, equipment and armour at Porbandar, Jaffarabad and Mangrol on the Kathiawar Coast, the columns having been designated 'Namcol' (after Major Nambiar, the Commander of the troops) 'Jaffcol' (after Jaffarabad) and 'Ratcol' (after Major Ratan).

After a hydrographic survey of the beach carried out by *Jumna*, the first column, Namcol, was landed at Porbandar by *Kistna, Cauvery, Konkan* and *Madras, LCTs 1310, 1358* and *1360* and *ML 420* on October 5, 1947. The second column, Jaffcol, was landed at Jaffarabad by *Kistna, Jumna* and *Konkan* and *LCTs 1358* and *1360* on October 17 and the third column, Ratcol, was landed at Mangrol by *Kistna, Cauvery, Konkan* and *Rohilkhand* and *ML 420* on, November 1. Immediately on the landing of these columns, the Junagadh Army surrendered unconditionally and the Nawab fled to Pakistan.

Soon after Independence, based on the recommendations of the first Plans Paper, the Navy's first cruiser, *HMS Achilles* (a Leander class cruiser of World War II's Battle of the River Plate fame) was acquired from the UK. It was rechristened *HMIS Delhi* with Captain H.N.S. Brown as the Commanding Officer and Commander R.D. Katari as the Executive Officer. Out of the four landing ships for tanks (LSTs) that had been borrowed from Britain during World War II, one - *HMS Avenger* - was acquired for the RIN and rechristened *HMIS Magar* on April 11, 1949. She was essentially a tank landing ship but was also capable of carrying vehicles, landing craft, men and 2,000 tons of stores.

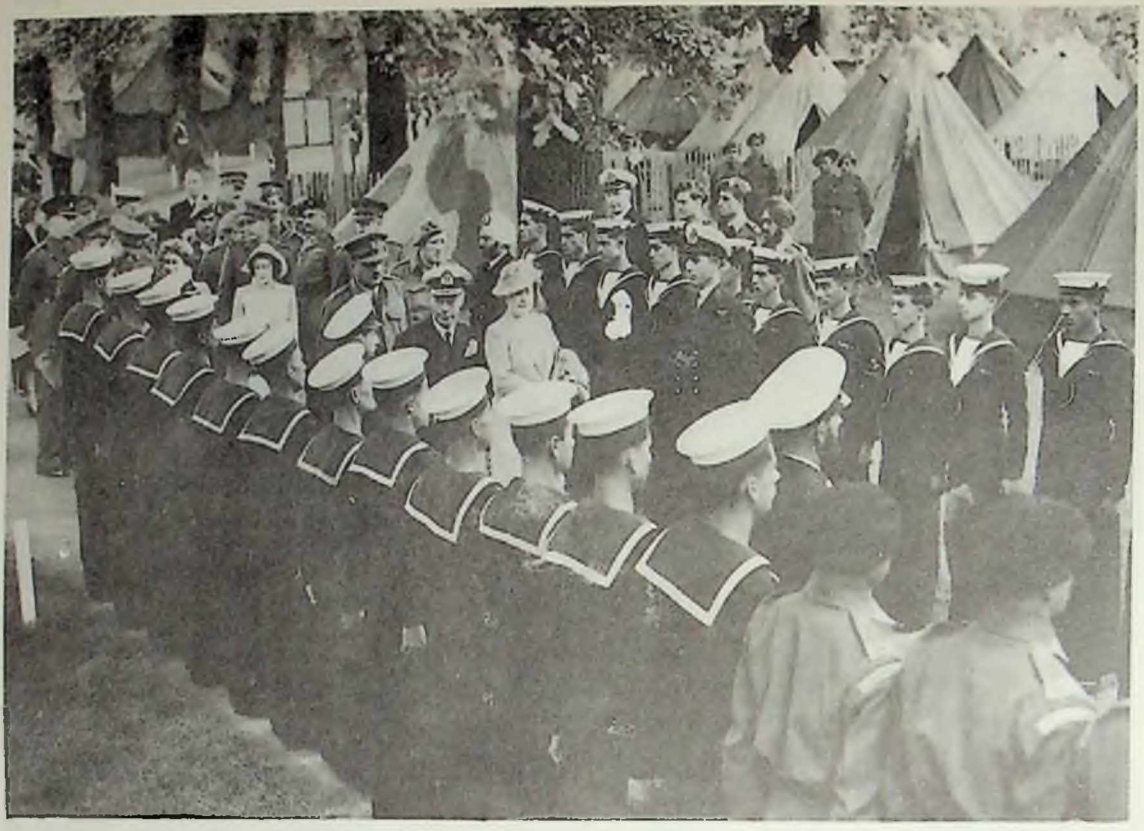
Also acquired in 1949 were three 'R' class destroyers, *HMS Rotherham, Redoubt* and *Raider*, which were respectively renamed *HMIS Rajput, Rana* and *Ranjit*, constituting the 11th Destroyer Squadron with the *Rajput* as the senior ship of the squadron.

In tune with the practice prevailing in the UK the RIN was traditionally the Senior Service in India during the pre independence period with the Indian Army and the Royal Indian Air Force in that order of seniority. Thus the order of the Service Colours in the 1939-1945 star (war ribbon) was navy

blue, red and air force blue. Even after Independence, since India continued to be a 'dominion' until the formation of the republic, the prefix 'Royal' to the nomenclature of the Navy and the Air Force continued to be used and the order of seniority of the three Services remained unaltered. The Indian authorities however, decided to revise the order of seniority on the basis of relative size and historical background. Thus, on January 26, 1950 when India became a republic, the prefix 'Royal' was dropped to change the nomenclature of the Navy and the Air Force to the Indian Navy (IN) and the Indian Air Force (IAF), respectively. Along with that the order of seniority was altered to Army, Navy and Air Force.

In 1950, the stage was thus set for snipping the umbilical cord that had linked the IN to the British Navy for centuries, expanding the fleet to a size commensurate with the tasks and responsibilities of free India, establishing a number of training establishments and maintenance facilities on both coasts of the peninsula, commencing the process of indigenising the design and construction of major and minor war vessels along with the development of associated propulsion systems, weapons and equipment, and restructuring its strategic and tactical doctrine to suit the requirements of the region.

The Frigate Foudroyant built by Wadias – Master builders of the Bombay Dockyard – as *HMS Trincomalee* (a 46 gun ship) at Bombay in 1817. Foudroyant is the oldest warship still afloat.

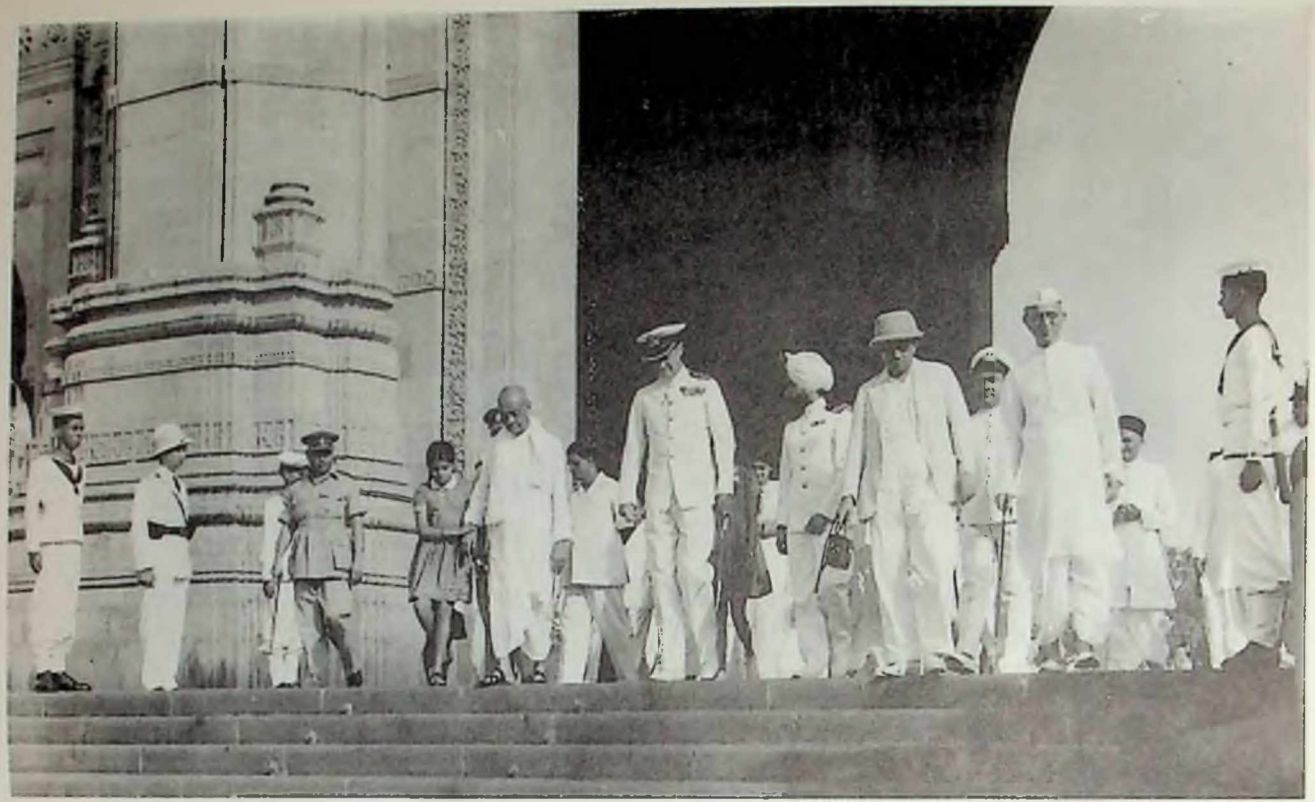


The Royal Indian Naval contingent for the Victory Parade being inspected by King George VI at Regent's Park, London in June 1946. Also seen in the picture are Field Marshal Sir Claude Auchinleck, Major General A.A. Rudra and Lieutenant PS Mahindroo.

Courtesy Rear Admiral PS Mahindroo (Retd)

Victory Parade in London 8 June 1946. Picture shows the Naval contingent led by Lieutenant PS Mahindroo. Also the senior Indian Naval officer, Commander (later Rear Admiral) A Chakraverti and Senior Army and Air Force Officers.

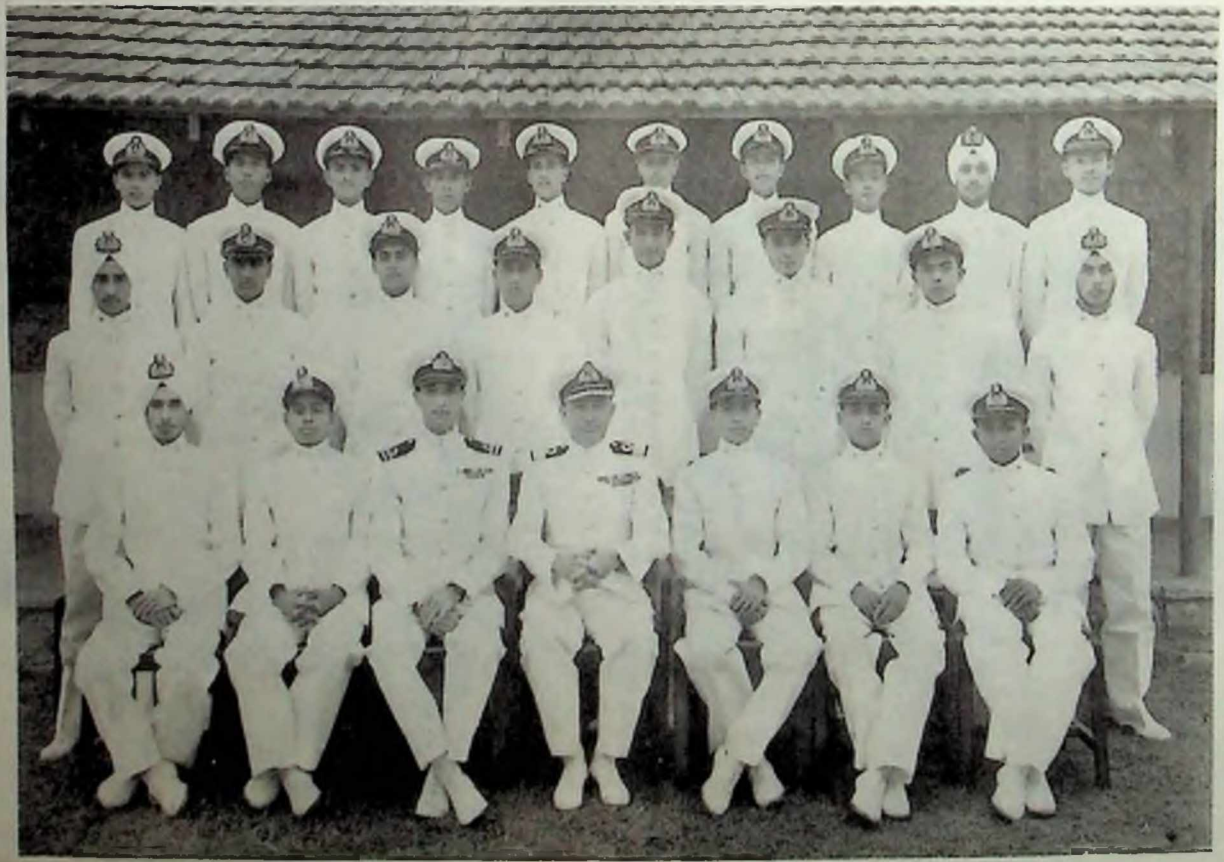
Courtesy Rear Admiral PS Mahindroo (Retd)



Sardar Vallabbhai Patel, then Deputy Prime Minister of India embarking on board Delhi from Gateway of India, Bombay. Also seen in the picture are Shri Morarji Desai, Shri V Shankar, Commodore HR Inigo-Jones, then Commodore-in-Charge, Bombay, Lieutenants RS Malia & MB Samuel.

Chief of the Naval Staff's Exercises at sea in 1951. Admiral Sir Edward Parry, Rear Admiral G. Barnard, Captain SG Karmarkar and Air Commodore Arjan Singh on the bridge of *Delhi*

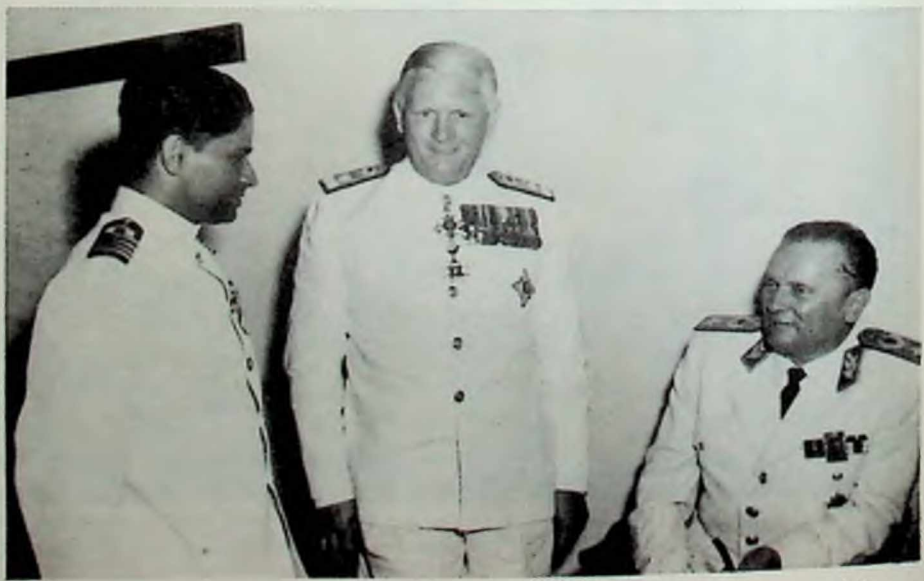
Presentation of President's Colours to the Indian Navy by President Dr. Rajendra Prasad at Bombay on 27 May 1951. Colours being received by Lieutenant MP Awati. The Indian Navy was the first Service to be honoured with the President's Colours.



First batch of Indian Naval Cadets-1951.

Courtesy Commodore TS Khurana (Retd)

Admiral Sir Edward Parry with two of our naval pilots, the pioneer aviator of the Indian Navy, Commander YN Singh and Lieutenant BD Law in 1951.

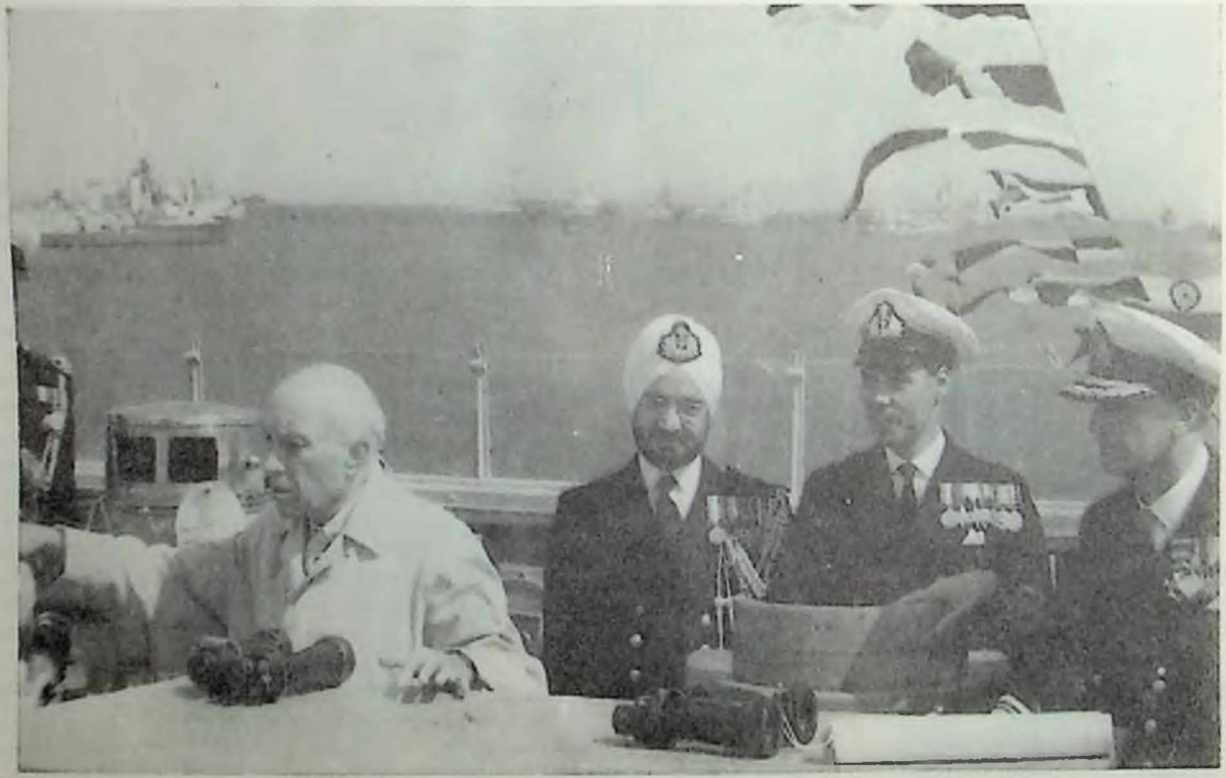


Marshal Tito on board Yugoslave yacht in 1952 after presentation of the order of the Yugoslave Army 1st class.Also seen in the picture are Admiral Sir Mark Pizey and Captain KR Nair.

Prime Minister Jawaharlal Nehru on board *Delhi* in a Sailor's mess in 1952. Also seen are Admiral Sir Mark Pizey and Commander J Cursetji.

Courtesy Admiral Sir Mark Pizey

Rear Admiral NV Dickinson Flag Officer Commanding Indian Fleet with the Fleet Commanding Officers in 1953, Captains RD Katari, SG Karmarkar and MK Heble and Commanders SM Nanda, KR Nair, KL Kulkarni and G Douglas.



Prime Minister Jawaharlal Nehru on the bridge of *Delhi* at Queen Elizabeth II's Coronation Review of the Fleet at Portsmouth in June 1953. Others in the picture are the Fleet Commander, Rear Admiral N.V. Dickinson, the Staff Officer Operations, Lt. Cdr. D.R. Mehta and the author.

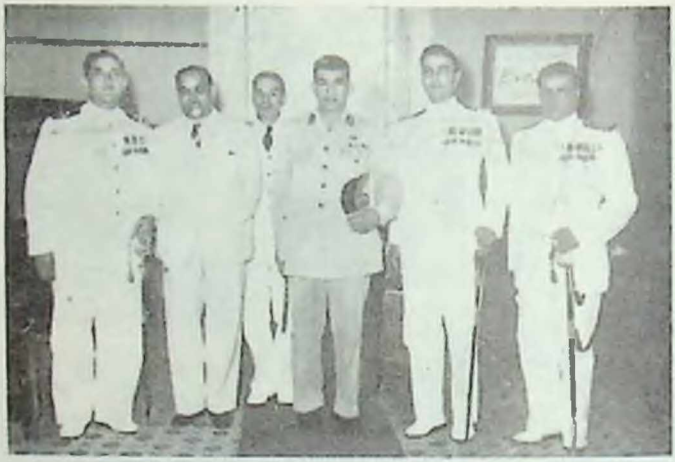
President's Yacht (P3110)	Commander JS Mehra IN Lieut. A.W. Coelho IN
INS DELHI. Flagship of Flag Officer (Flotilla) Indian Fleet	Rear Admiral NV Dickinson CB, DSO, DSC Captain AK Chatterji, IN
INS RAJPUT	Captain RS David
INS RANJIT	LCdr GC Nahapiet, IN
INS RANA	Commander JD Mody, IN
INS GODAVARI	Commander SN Kohli, IN
INS GOMATI	Lieut. Cdr. Inder Singh, IN
INS GANGA	Lieut. Cdr. KK Sanjana, IN
INS JUMNA	Commander SM Nanda, IN
INS KISTNA	Lieut. Cdr. H. Sopher, IN
INS CAUVERY	Lieut. Cdr. M.L. Barua, IN
INS TIR	Commander N. Krishnan, DSC, IN.
INS BOMBAY	Commander JB Simmons, IN.
INS KONKAN	Lieut. Cdr. U. Tekchand, IN.
INS RAJPUTANA	Lieut. Cdr. J. Chatterjee, IN.
INS BENGAL	Lieut. Cdr. R. Pinto, IN.

INS MADRAS	Lieut. Cdr. H.E. Dubash, IN
INS ROHILKHAND	Lieut. Cdr. B. Nag, IN.
INS MAGAR	Lieut. Cdr. DHR Dadabhoy, IN.
INS INVESTIGATOR	Captain SJ Henessy OBE, RN
INS SUTLEJ	Lieut. Cdr. S. Rajendra, IN
SEALANDS (NAVAL AIRCRAFT)	Lieut. Cdr. Y.N. Singh, IN

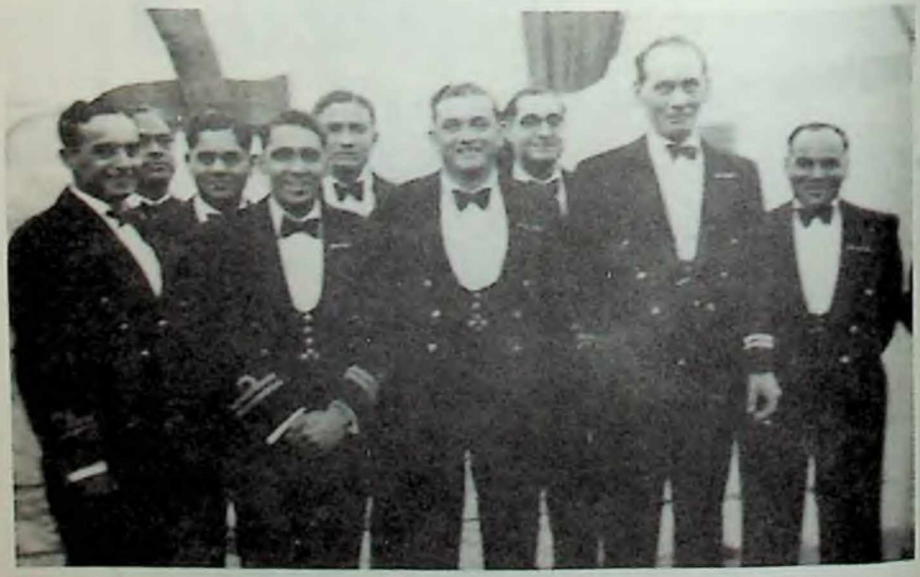
CACHELOT (DREDGER), CHILKA (OIL TANKER), SAMBHAR (OIL TANKER), NIRMAL (HOPPER BARGE), ELEPHANTA (TUG), ACQUEDUCT (WATER BOAT), PYTHON (FLOATING CRANE)

IMMTS DUFFERIN	Captain GD Hazari
SS JANETA	Master Capt. HM Lande
SS JALAMAYUR	Master Capt. Rozario
MV JAG GANGA	Master Capt. Robson
SS BHARATKUMAR	Master Capt. Monia
ASHOK (FISHING TRAWLER)	Skipper Menon

Indian Naval Fleet Review by President Dr. Rajendra Prasad on 10 October 1953 at Bombay.



Commanding Officers of the 22nd Destroyer Squadron 1953 Commander SN Kohli, Lieutenant Commanders Inder Singh and KK Sanjana – with General Neguib & Sardar KM Panikkar.



Commanding Officer & Officers of *Ganga* at Liverpool 1953. Also seen are Lieutenant Commander KK Sanjana Commanding Officer, Lieutenant VEC Barboza and Sub Lieutenant JG Nadkarni.

Inauguration of the new Electrical School, *INS Valsura* on 27 April 1955 by Lt Gen., His Highness, Maharaja Shri Digvijay Sinhji Ranjit Sinhji Jateja, Maharaja Jam Sahib of Navanagar, Raj Pramukh of Saurashtra. Also seen in the picture are Admiral Sir Mark Pizey, Commodore AK Chatterji, the then Commodore-in-Charge, Bombay and Captain NE Warner, Commanding Officer.

Commander J Chatterjee taking over 149 Minesweeping Squadron on board *Karwar* in August 1956.

Captain SM Nanda showing Shrimati Vijay Lakshmi Pandit, the then High Commissioner of India in UK round the *Mysore* at the time of commissioning of the ship in 1957. Also seen in the picture is Captain SN Kohli, the then Indian Naval Advisor.

2

A MARITIME RESURRECTION GETS UNDER WAY

Plans for the Navy's Development and Expansion of The Naval Squadron into a Fleet

The RIN's Raison d'Etre

The renowned theorist of sea power, Admiral A.T. Mahan (1840-1914), laid down six important factors contributing to the growth of a naval power: geographical position, physical conformation, extent of territory, population, national characteristics and Governmental institutions, besides scientific achievement and industrial strength. At the time of partition, India possessed nearly all these factors, barring perhaps the last two, in adequate measure. She was in a position to formulate and adopt a suitable policy to set up a number of national institutions, develop her industry and evolve a scientific temper conducive to designing and manufacturing state-of-the-art weapons, weapon systems and weapon delivery platforms such as ships, smaller craft, aircraft and helicopters for the Indian Navy. In 1945 Sardar K.M. Panikkar, the distinguished historian, wrote in his *India and the Indian Ocean:*

> In modern times no country can be a great naval power unless its

> science of nautical engineering is of the highest standards and is continuously keeping up with improvements elsewhere: if the industrial potential of the country is not large enough to produce not merely the necessary warships and auxiliary craft, but a hundred other things required for its efficient equipment and maintenance . . . it will take her (India) many years before her industry can reasonably be expected to undertake the building, equipment and maintenance of a great navy. Equally her scientific work will have to be improved and extended many times before it can shoulder independent responsibility in these matters. . . . With these limitations it is obvious that India must have both a long-term and a short-term policy in regard to naval matters. The long-term policy can easily be laid down. Its object will be to develop India as a naval power capable by herself, of defending her interests in the seas vital to her and of maintaining a supremacy in the Indian Ocean area. This objective can be attained only when India has emerged as a major industrial power, with her scientific achievements and technological skill equal to those of other advanced countries. . . The short-term policy (would be) the development of a balanced regional navy capable of, (a) operating as a task force within its own area, and (b) co-operating with the high sea fleets of friendly nations in the strategy of a global naval warfare. As a regional navy its purpose will be to keep inviolate and free from enemy action, the seas vital to India, the Bay of Bengal and the Arabian Sea, to protect the commercial routes, to deal with raiders, keep the sea clear of submarines and mines, and afford protection to shipping. . . . There is no reason why a small, efficient and well-balanced Indian Navy should not secure control of the Bay of Bengal and of vital stretches of the Arabian Sea.

In order to achieve this aim within a reasonably short period, Panikkar recommended that the Indian Navy:

> must, in the first place, develop her training institutions for *all types* of naval warfare. Without an adequate supply of trained personnel, no navy, big or small, can be created . . . The second step is the acquisition of light crafts, frigates, destroyers and light cruisers with ancillary vessels, which constitute the effectiveness of a small navy. If the navy is well-organised and amply supplied with these vessels, its expansion in times of war would present no difficulty. Thirdly, India must develop, as fast as she can, a merchant navy which would provide the necessary reserve of the skills and also vessels which could be converted in times of war. Fourth, at all costs, she must develop her own shipbuilding industry, for a country which has to buy all her vessels

outside cannot be a naval power. The ground organisation of dockyard, repair establishments and other institutions which a navy implies has to develop side by side with this.

Equally important, especially for a country like India with a vast coastline, is the development of a naval air arm, as an integral part of the sea forces. The function of the air force should not be confused with that of the naval air arm. The air force is an independent service whose objectives are governed by other factors. The naval air arm has an important part to play in naval warfare, by patrolling the coasts, by keeping the sea clear and affording air cover to the navy. Its main duty is to sweep the air over the sea approaches and work in co-operation with the navy.

Post-World War II Development Plans

In the changed circumstances prevailing at the time of the cessation of hostilities in 1945, the tasks and responsibilities of the then Royal Indian Navy, as envisaged by the Chiefs of Staff Committee in its *Report on the Size and Composition of the Post-War Forces in India* which was prepared a year before the war was over, were significantly different from those postulated by Panikkar whose book was published in the same year. The differences in their points of view apparently arose from the fact that the Committee was deliberating on the future of a dominion navy, as the status of the Service then was, while Panikkar, after taking into account the winds of change blowing across the subject nations of Asia at that time, was attempting to concretise the shape of the navy that independent India should have.

The Committee conceded the fact that India's unique and strategically significant position in the Indian Ocean rendered her particularly sensitive to the need for an increased naval force with larger and more versatile warships than the RIN possessed as a *de facto* satellite of the RN. It felt that these ships would adequately represent India in other parts of the Commonwealth and foster better relations with the 'Empire'. The tasks and responsibilities of the RIN, the Committee felt, should be confined to those of a dominion navy, i.e., a navy mainly responsible for coastal defence. Hence, the primary post-World War II responsibilities of India's navy would be the safety of Indian and 'Empire' shipping in the sea areas contiguous to India's coastline, their approaches and the trade routes in the Indian Ocean. The RIN, the Committee felt, would also be responsible for the combined operational training of the Indian Army's specialist amphibious formations and for providing escort and assault ships and craft for landing these formations on hostile shores, whenever necessary, for which a nucleus force of assault ships and craft as well as a training organisation

was to be maintained. Besides these, the Navy, in conjunction with the Air Force, was to ensure neutralisation of any foreign invading force attempting a landing on the shores of India by timely interception and neutralisation of such threat. It was also essential for India's navy, the Committee felt, to have an adequate air component which was to be used for seaward reconnaissance and as a striking force to support surface forces.

The threat perception of the Committee was restricted to one country, viz., the USSR, since the launching of a war by Russia against Great Britain was considered a possibility at that time. It was assumed that the brunt of the attack would have to be borne by India, even if she was granted freedom, because she was likely to continue as a member of the Commonwealth.

Based on the assumption that the RIN had a limited coastal defence capability and a modest seagoing strength with obsolescent ships, weapons and equipment, the Committee recommended the creation of a complet force comprising one squadron of three cruisers, a destroyer leader with a flotilla of eight destroyers, one eight-ship training flotilla of sloops, one eight-ship flotilla of frigates for miscellaneous duties, eight Bangor/Bathurst class minesweepers and eight motor minesweepers (MMSs). As regards smaller amphibious and auxiliary craft, a total strength of eight motor torpedo boats (MTBs), eight motor launches (MLs), eight harbour defence motor launches (HDMLs), two hydrographic survey vessels, along with auxiliaries, trawlers, assault ships and craft and one repair ship, was considered essential.

The case for the expansion of the RIN received support from various quarters. These included a detailed proposal submitted in 1944 by Vice Admiral J.H. Godfrey, Flag Officer Commanding the RIN (FOCRIN), to the Reorganisation Committee on the 'Future of the Royal Indian Navy', some papers and reports on the subject prepared immediately prior to and after World War II; communications from the then Viceroy of India, Viscount Wavell, to the then Secretary of State for India, Mr Amery; statements made by the Viceroy, Viscount Mountbatten, in 1947, at a meeting of the India and Burma Committee and certain other papers prepared during this watershed phase in the chequered history of the Navy.

The recommendations made for the expansion of the service included weapon platforms operating in all three elements with aircraft carriers and submarines, for developing it into a viable dominion naval force. This force was to be deployed for India's coastal defence as a vanguard of Commonwealth interests, tied to the apron strings of the Royal Navy, with the British Admiralty continuing to exercise monopoly over the Indian Navy's jugular by way of supplying ships, weapons, equipment, maintenance facilities, training technology and even its tactical philosophy.

The Post-Independence Metamorphosis in Strategic Philosophy

When, however, Independence came on August 15, 1947, the threat perception underwent a metamorphosis and plans for the future Indian Navy consequently underwent considerable change. Undivided India's navy had in commission by mid 1947, six sloops, four frigates, one corvette, 16 minesweepers, six trawlers, one survey vessel, six motor minesweepers, one motor launch, eight harbour defence motor launches and a fleet of landing craft. But after partition India's fledgling naval fleet comprising roughly two- thirds of the strength of the RIN, consisted of four sloops, two frigates, one corvette, 12 minesweepers, four trawlers, one survey vessel, four motor minesweepers, one motor launch, four harbour defence motor launches and all existing landing craft. With a coastline exceeding 6,000 kilometres in length, to the Arabian Sea, the Bay of Bengal and the Indian Ocean, and proximity to countries which, if turned belligerent, could threaten her sea lanes and coastal waters, India needed to expand her navy quickly and tailor it to suit her requirements of maritime strategy.

Within a week of the country attaining Independence, therefore, an *Outline Plan for the Reorganisation and Development of the Royal Indian Navy* was prepared by Naval Headquarters. In its preamble, the plan paper said:

> The Navy and Army of India as united forces have existed for over 300 years. The Army at the date of partition numbered some 480,000 men and was fully equipped as a modern fighting machine. The RIAF has existed for 10 years and at the date of partition possessed some 11 squadrons. The Navy, by contrast, possessed but a handful of small ships.
>
> The reason for this state of affairs is to be found in the fact that the Government of the past needed troops, and to a less extent aircraft, both for the defence of India and for its policies abroad whereas it relied entirely on the Royal Navy for its major naval defence.
>
> India, till recently, has been little interested in her overseas trade nor has she appreciated her position in world strategy as the focal country of the Indian Ocean area.
>
> Today all is changed. India intends to develop and probably to reserve her coastal trade; she has plans for the expansion of her overseas ocean-going shipping upto 2,000,000 tons within five years; she aspires to a position of pre-eminence and leadership among the nations of South East Asia.
>
> These plans and aspirations will entail obligations and commitments. Peace-loving India will never attain security or pre-eminence

> till she is in a position to maintain her position against every aggressor. India stands at the threshold of a new era - an era of industrialisation, of contacts with foreign countries never dreamed of in the days that are past, and a fast expanding overseas trade. A Navy commanding the respect of the world is not a luxury for her but a vital necessity.

The ships that independent India's navy at that time had were the sloops *Kistna, Cauvery, Jumna* and *Sutlej*; frigates *Kukri* and *Tir*; corvette *Assam*; minesweepers *Orissa, Deccan, Bihar, Kumaon, Khyber, Rohilkhand, Carnatic, Rajputana, Konkan, Bombay, Bengal* and *Madras*; survey ship *Investigator*; trawlers *Nasik, Calcutta, Cochin* and *Amritsar*; motor minesweepers *MMS 130, MMS 132, MMS 151* and *MMS 154*; motor launch *ML 420*; harbour defence motor launches *HDML 1110, HDML 1112, HDML 1117* and *HDML 1118* and a large number of landing craft. Out of these, the sloops and frigates had some small operational utility and two minesweepers, two motor minesweepers, the motor launch and the harbour defence motor launches could, if required, be used only as tenders to training establishments. The remaining 10 minesweepers were of no real value as they were already obsolescent and had been laid up at Trombay near Bombay since the end of the War. Most of the landing craft too had very little potential left. India's navy would have to be, therefore, virtually reconstructed from scratch.

As visualised at that time, the eventual role of the navy of India would be:

> To safeguard her shipping on the high seas from interference in war; to ensure that supplies can both reach and leave India by sea in all circumstances; to keep open her ports and coastal shipping routes; to prevent an enemy landing on her shores; and to support the Army in any operations which may be required in furtherance of the national policy.
>
> So long as India remains within the British Commonwealth of Nations, her task will be very much lightened by the assistance she will receive from the Royal and other Dominion Navies. But even in these circumstances, she will be expected and indeed she will wish to contribute to the general Naval Defence of the Commonwealth in accordance with her status as the Principal sovereign state in the Indian Ocean.
>
> The immediate task before us, therefore, is to build up, in the shortest time, a balanced naval task force, officered and manned by Indians, which is capable of exerting, when the need arises, a definite influence on Eastern waters. The minimum force which would be likely to achieve this object would be two light fleet carriers (cost about

3 million pounds or Rs 4 crore), three cruisers (cost about two million pounds or Rs 2.6 crores), eight destroyers (cost about 500,000 pounds or Rs 66.7 lakh), four submarines (cost about 500,000 pounds or Rs 66.7 Lakhs) and such smaller ships as are necessary as tenders to training establishments and for auxiliary purposes. With this force as a nucleus, it should be possible to develop rapidly in times of strained relations or war.

Our object should be to build up such a force within a definite period of time which it is suggested should be put at a maximum of 10 years. It may be that within that time great changes in naval warfare may occur due to the development of atomic power and guided missiles, but these we must deal with as they arise and be prepared to modify our plans to meet any new development.

India's Navy cannot for many years be a large one, (mainly due to the prevailing financial constraints) - it can however, be efficient and it is important that it consists only of the most modern units armed with the latest weapons and supported by properly equipped training establishments on shore which will enable it to expand rapidly in emergency.

As regards the existing sloops and frigates, these should be retained for the present and used as tenders to training establishments. For this purpose one sloop and one frigate are to be used as sea-going training ships for Boys, one sloop is to be used as a gunnery training and radar target ship, one frigate and two minesweepers are to be used as antisubmarine and torpedo-firing ships and for training in minesweeping, one motor launch and one harbour defence motor launch are to be used as antisubmarine target and torpedo recovery vessels, three harbour defence motor launches are to be used as harbour training vessels for Boys, one sloop is to be used as an artificer apprentices training ship and one demilitarised sloop is to be used as a fleet tender to transfer ratings (sailors) for courses between Bombay and Cochin.

Plans for Expansion

By September 1948, the plan for the expansion of India's navy had achieved considerable concretion and a fresh assessment of the navy's tasks and responsibilities was made. These were the destruction or neutralisation of the enemy's naval forces, protection of India's essential sea-borne trade on both coastal and ocean-trade routes, protection of the transfer by sea of India's land and air forces and their supplies, destruction of the enemy's sea-borne trade, prevention of the enemy from using the sea to transport his land or air forces, prevention of the enemy from landing by sea in India's

own or adjacent territory and provision of assistance to India's army and air force in combined amphibious operations.

In order to determine the size of the navy that Independent India would require to fulfill these functions, the two possible forms of war that India could be engaged in, were taken into account. These could be either another world war, though its probability was considerably remote, or a localised war, involving neighbouring countries with or without the support of a superpower with global ambitions. In the case of a world war, India, it was felt, was likely to remain neutral but her important strategic position, commanding international sea lanes could draw her accidentally into an unintended involvement. In such an eventuality, there would be consistent enemy submarine activity against merchant shipping and warships and sporadic raids by fast surface units. Hence it was felt necessary that India should possess a navy strong enough to repel sea-borne attacks on her merchant shipping, coastal forces, ports and installations.

In the case of a localised war, it was felt that India would require a navy stronger than that of any other neighbouring country or combination of countries in the neighbourhood. In times of war such countries would be dependent on vital sea-borne supplies which could be quickly strangled by blockades and further harassed by vigorous naval activity and amphibious operations along their coasts. For this purpose a navy strong enough to meet these eventualities was considered essential.

However, since India had just gained her independence and thus could spare only a limited amount of her meagre financial resources for the development of her navy, in view of other important commitments such as social reform, industrialisation, etc., her navy had to be confined to the minimum size and strength necessary to safeguard her vital commitments and interests.

The experience of World War II had made it abundantly clear that the hard fighting core of a balanced fleet consisted no longer of battleships but of aircraft carriers. The most powerful fighting force at sea now was the carrier task force generally comprising four fleet aircraft carriers, with four cruisers (or, in the absence of these, battleships) and 16 antisubmarine, antiaircraft, radar and general-purpose-type destroyers as escort. The proposal therefore recommended a balanced naval force for India spearheaded by aircraft carriers.

According to the battle philosophy of the late 1940s, aircraft carriers provided the main striking power of such a force but since the aircraft carrier herself was highly vulnerable due to her light armour and inability to carry heavy guns, cruisers were provided as escorts for cover against surface attacks and to augment antiaircraft fire against enemy air strikes. Destroyers were also stationed on the outer screen which, in addition to providing

cover against air and surface attacks, provided the all-important submarine screen and acted as a radar picket to give early warning of the approaching enemy. Battleships had by now become obsolete and had been reduced to large slow-moving targets that were likely to fall easy prey to the latest armour-piercing shells of the long-range rapid-firing guns borne on cruisers, destroyers and frigates.

It was recommended that the Indian Navy begin its expansion and modernisation with the acquisition of two light fleet carriers, which were smaller vessels whose complement of aircraft was about half that of fleet carriers. These two light fleet carriers would be replaced by two fleet carriers. Eventually, four fleet carriers would be acquired, the aircraft complement of each carrier being two 16-aircraft fighter squadrons and two 16-aircraft strike squadrons.

In the strategic perception during the 1940s, the biggest threat to merchant shipping was expected from the submarine and hence a large number of fast escorts in the form of destroyers and modern frigates became imperative for guarding convoys and for patrolling at focal points. Therefore, a nucleus force, capable of rapid expansion in war, of four destroyers with three frigates retained for training in this form of warfare was to be set up. In order to protect the convoys against the new fast submarines which had been acquired by some navies, it would also be necessary to provide air escorts. Aircraft carriers would escort each convoy or be stationed at suitable positions on important convoy routes. But instead of requisitioning additional carriers for the purpose, the carriers acquired for the task forces would be diverted, whenever required, to carry out this task.

Since cruisers could also be used as escorts for aircraft carriers or important convoys for defence against heavy surface craft, two training cruisers were to be acquired. In an emergency, these two cruisers could also be employed for trade protection duties.

Should relations with another power be strained or on the outbreak of hostilities, ships employed on training duties could be used for local naval defence. Merchant ships from coastal trade could also be requisitioned and converted rapidly for antisubmarine, escort and minesweeping duties.

Four harbour defence motor launches were to be retained from the existing fleet for sea training of Boys during the period of their training in shore establishments. In addition, the six frigates recommended for retention for training in escort duties were to be used for training of ratings in the first instance, until an adequate number of cruisers had been acquired. Of these, two frigates could be used for the training of Boys and one for the training of engineroom and electrical artificers. As mentioned earlier, the other three frigates would be used for training in antisubmarine warfare.

Besides these ships, the specialist schools in the various training estab-

lishments that were being set up all along the Indian coast, would also require ships for specialist training. Of the existing fleet at the disposal of the truncated RIN, one antiaircraft sloop was to be used as a gunnery training ship and one frigate as a torpedo firing ship. A converted landing ship for tanks was to be used as a radar training ship; one antiaircraft sloop as a navigation training ship and an antisubmarine frigate was to be used as an antisubmarine training ship.

As regards the shore establishments that were proposed to be set up for training in naval aviation, it was felt that a total of 82 aircraft would be required out of which 22 would be used for basic flying training, 30 for operational flying training and the remaining 30 for training in naval air warfare. In addition, a few squadrons of aircraft would have to be positioned at naval bases where ships were likely to be stationed and at the site of the Gunnery and Navigation Schools for training purposes. Hence two Fleet Aircraft Requirement Units (FRUs) would have to be set up, one on each coast. The Unit attached to the training schools on the West Coast would require 14 aircraft and the second Unit on the other coast would require 10, making a total of 24 aircraft for fleet requirement purposes.

During World War II the immense value of landing craft in naval warfare had been established. Many important operations undertaken during the war had begun with amphibious operations and an appreciable proportion of the total personnel of the various navies had been employed in combined operations. Therefore, it was decided to establish and maintain a landing craft wing in India's navy. But the establishment of a large wing of this type was not economical in peace, as these craft have a short life-span and are both difficult and expensive to maintain. It was therefore decided to set up a small landing craft wing, with 30 such craft of different types, comprising one landing ship for tanks (LST), one landing ship for infantry (LSI), four landing craft for tanks (LCTs), eight landing craft mechanised (LCMs), eight landing craft for assault (LCAs) and eight large landing craft for personnel (LCPs).

In order to carry the war into the enemy's waters, to deny his fleet access to his advanced coastal air bases for refuelling and repairs and to prevent him from attacking India's ports and cities it was felt necessary to develop the capability of operating India's fleet for prolonged periods, far from its main bases. For this purpose, the navy needed support ships such as tankers, store carriers, repair ships, depot ships, air sea rescue launches, battle practice targets, barges, lighters and certain other types of small craft. According to the proposal, the navy would need three 10,000-ton tankers for replenishment of fuel at sea, as each carrier would require 5,000 tons of oil fuel and aviation spirit and each cruiser 2,000 tons of oil fuel; two store carriers would be required for naval stores, naval armament stores and

victualling stores; one repair ship would be needed to undertake minor repair of larger ships and all types of repairs for destroyers at sea; two depot ships would be necessary for the submarines, each depot ship providing the normal amenities of life for submarine crews, acting as the parent ship and repair ship to each submarine flotilla; two hydrographic survey vessels would be required for preparing hydrographic charts of the sea areas contiguous to the long Indian seaboard, and for locating and defining new navigational dangers for the navy and the mercantile fleets in peace as well as for surveying advance bases for operations. The survey vessels would prepare special data on such navigational aspects as beach extent, beach gradients, etc., and, if necessary, operate as frigates, after due conversion, in war; eight tugs - four at Bombay, two at Cochin and two at Vishakhapatnam - would be required for berthing duties for heavy ships and 'rescue' duties in war; for gunnery practice at sea, the navy would require four battle practice targets and four high speed battle practice targets; eight air sea rescue launches would be required for rescue of personnel in the event of an aircraft crash into the sea; 16 amphibian aircraft, eight for each coast, would form two air sea rescue squadrons, for use in areas not accessible to air sea rescue launches. These squadrons would also engage in coastal reconnaissance in areas not heavily defended by the enemy. A squadron of 16 transport aircraft would be needed for expeditious transportation of personnel and stores between various bases and, in an emergency, for reconnaissance purposes when aircraft from the air sea rescue squadrons were not available; three dredgers of various types would be necessary for dredging the entrance to naval harbours, basins, docks, etc., and approaches to berths and jetties; certain other minor craft such as self-propelled barges for stores and oil fuel, dumb barges, boats, launches, etc., classed as yard-craft, would be required for efficient harbour ship-handling and turn-round operations.

The summary of the proposal to refurbish the post-Independence RIN is given in Table 1.

Table 1. List of vessels, ships and other craft recommended (under the 15 year plan) for refurbishing the post-Independent RIN.

Main Fleet			
Fleet Carriers	4	Destroyers	16
Light Fleet Carriers (to be given up when two Fleet Carriers were acquired)	2	Submarines	16
		Fighter Aircraft	128
Cruisers	4	Strike Aircraft	128

Trade Protection and Local Defence			
Frigates (to be used as training vessels in the first instance)	3	Escort Destroyers	4
		Fleet Minesweepers	6
Training Vessels and Aircraft			
Cruisers	2	Motor Launch	5
Frigates	3	Service Training Aircraft	22
Destroyers	1	Operational Training Aircraft	30
Landing Ship (Tank)	1	Fleet Requirement Unit Aircraft	24
Landing Craft Wing			
Landing Ship (Tank)	1	Landing Craft (Assault)	8
Landing Ship (Infantry)	1	Landing Craft (Mechanised)	8
Landing Craft (Tank)	4	Landing Craft (Personnel) (Large)	8
Fleet Train			
Fleet Tankers	3	Repair ship	1
Store Carriers	2	Depot Ship	2
Surveying Service			
Survey Vessels	2		
Other Vessels and Aircraft			
Fleet Tugs	8	Communication Aircraft	16
Targets	8	Dredgers	3
Air Sea Rescue Launches	8	Other minor Vessels and Crafts	Not indicated
Air Sea Rescue Aircraft	16		

Resource Limitations Whittle Expansion Plans

This proposal, if approved by the Government of India, was to be implemented over a period of 15 years, i.e., by 1963. However, the limitations of financial resources, the absence of any provisions to offset escalating prices and the gross inadequacy, of training facilities, both for officers and sailors, resulted in the division of the expansion plan into a number of phases. Added to these difficulties was the lead time required between the indenta-

tion of naval hardware and its actual acquisition. For instance, during the late 1940s it took four years to build an aircraft carrier and about two years to build a destroyer. The lead time for training personnel and bringing the level of their performance to an acceptable level too was considerably long. Due to these factors and the compulsions of diverting the meagre financial resources for national development, the 15-year plan was reduced to a six-year plan and the ships and aircraft that were now proposed to be acquired by 1954 were as given in Table 2:

Table 2. List of Vessels and Ships in the revised six-year plan

Warships			
Light Fleet Carriers	1	Submarines	6
Cruisers	3	Survey Vessels	1
Destroyers (Including three to be acquired in 1949)	7	Landing Ships (Tank)	1
Fleet Train			
Fleet Tankers	1	Depot Ships	1
Repair Ships	1	Landing Ships (Infantry)	1
Aircraft			
Fighter Aircraft	32	Second-Line Aircraft	24
Strike Aircraft	16	Training Aircraft	82

It was also decided to review the position each succeeding year and to obtain Government approval for the development programme progressively six years ahead, a planning procedure which later came to be known as a 'roll-on' plan.

These plans were modified once again to suit the immediate needs of an expanding navy with limited resources and a pragmatic threat perception. The revised immediate objective was to build up a balanced modern naval force, more powerful than the navy of any of the nations situated in or close to the Indian peninsula. This navy would include ships designed for all types of warfare at sea, and would be large enough to provide an appropriate foundation for rapid and sound expansion, to suit the country's changing needs. The essence of the revised proposal was to provide a naval task force based on the updated concepts of naval warfare. It would be sufficiently powerful to exercise an effective influence in the Indian Ocean in the event of hostilities and could also be used for other purposes such as convoy protection, interdiction, contraband control, for blockade, for protection of our coastlines, island territories, offshore interests and sea lines of

communication in times of war.

The revised plan envisaged a small balanced carrier task force and reduced its strike content to two light fleet carriers, three cruisers and 12 destroyers. Light fleet carriers were considered suitable for the dual purpose of forming part of an attacking force or for playing a defensive role in escorting convoys. A minimum of two such carriers was considered necessary for a majority of offensive operations. This would provide a sufficient number of aircraft for a strike and, at the same time, ensure sufficient fighter protection for our own forces. Since vessels designed for surface action constitute an essential part of a task force in order to follow up and destroy enemy forces which could be sighted or slowed down but not sunk by carrier aircraft, cruisers would be required to perform these tasks. They would also provide cover against surface attacks and augment antiaircraft fire against enemy air strikes. For these roles, a minimum of three cruisers would be required for a small carrier task force. As regards destroyers, a carrier task force would have destroyers stationed on the outer screen, which, in addition to providing cover against air and surface attacks, would provide the all-important submarine screen, a radar screen and early warning of the approach of the enemy. A minimum of twelve such destroyers was considered necessary, eight of these being of the escort type and four of the fleet type (British Battle and Weapon classes) which were more powerful and suitable for offensive operations. In addition, in certain circumstances, a number of cruisers and destroyers of the carrier force could be formed into a surface force and detached for surface action, especially for night operations or during low visibility.

The requirements of all other types of ships, craft and aircraft were also suitably altered to meet the challenges that were likely to be encountered in the immediate future. However, due to the practical limitations concerning the availability of resources and the rate at which personnel for the expanding navy could be trained, it was now proposed to phase the development of the navy over a period of ten years. Accordingly the proposal made the recommendations as given in Table 3:

Table 3. Recommendations made in the revised ten-year plan

Light Fleet Carrier	2	One in 1954, one in 1956
Escort Destroyers	9	Three in 1949, two each in 1953, 1955 and 1956
Fleet Destroyers	4	Two each in 1957 and 1958
Submarines	4	Two each in 1957 and 1958
Antiaircraft Frigates	4	Already with the RIN
Antisubmarine Frigates	2	Already with the RIN

Fleet Minesweepers	6	Already with the RIN
Landing Ships (Tank)	1	Already with the RIN
Survey Vessels	1	Already with the RIN
Motor Launches	5	Already with the RIN
Minor Landing Craft	28	Already with the RIN
Fighter Aircraft	32	16 each in 1952 and 1954
Strike Aircraft	32	16 each in 1953 and 1955
Operational Training Aircraft	18	12 in 1951, 2 in 1953 and 4 in 1954
Observer Training Aircraft	8	4 each in 1951 and 1952
Fleet Aircraft Requirement		All in 1950
Unit Aircraft	13	
Advanced Trainer Aircraft	10	3 each in 1950 and 1951
		2 each in 1952 and 1953
Air Sea Rescure Aircraft	4	2 each in 1953 and 1955

Nomenclature Policy Revised

It was at this time that a general policy was formulated for naming ships and craft that were being acquired. According to this policy the names to be chosen were, as a rule, to be of Indian origin and the choice of names was to be based on three considerations - functional, historical and geographical. The functional names would express the function of the ship in naval warfare, the historical names would perpetuate names from India's maritime history and the geographical names would commemorate such Indian geographical features as rivers, mountains and capital cities. Uniformity of nomenclature was to be ensured for each class of ships.

The light fleet carriers were to be named after mountains or peaks such as *Vindhya, Vikrant, Satpura* and *Gauri Shankar*; cruisers were to be named after the national capital or the capital cities of our principal maritime states, such as *Delhi, Mysore, Bombay, Calcutta* and *Madras*; destroyers were to be named in such a manner that members of each flotilla or squadron would have the same initials, such as *Rajput, Rana*, and *Ranjit* or *Ganga, Gomati* and *Godavari*; antiaircraft frigates were to be named after rivers such as *Jumna, Sutlej, Cauvery* (earlier spelling of *Kaveri*) and *Kistna* (earlier spelling of *Krishna*); antisubmarine frigates were to be named after Indian weapons such as *Khukri, Kirpan, Kuthar, Talwar* and *Trishul*; submarines were to be named after the various species of fish such as *Hilsa* and *Matsya*; minesweepers were to be named after states such as *Bengal, Bombay* and *Madras* (earlier name of Tamil Nadu); major landing craft were to be named after ferocious predatory animals, reptiles and birds such as *Magar*, and miscellaneous craft were to have appropriate functional names, such as *Shakti* for a tanker,

Dharini for a stores carrier and *Hathi*, for a tug.

Further Cuts in Development Plan

The proposals made by Naval Headquarters to the Government in 1948 were approved by the Defence Committee of the Cabinet and adequate funds were made available for the express purpose of replacement of obsolete or obsolescent ships. The first phase of the development plan was formulated in July 1950 which, dictated by financial considerations, catered for the replacement, as stated before, of only a small number of ships. In an attempt to further reduce the expenditure on the Armed Forces of India during the period from 1952-53 to 1955-56, the Armed Forces Reorganisation Committee examined the Naval Development Plan in great detail. It decided to reduce the number of ships to be acquired for the navy during the planned period without making any provision for funds for replacement of ships. According to the recommendations of this Committee, two cruisers were to be acquired (one in 1953-54 and one in 1954-55) besides *INS Delhi*, during the plan period and the acquisition of the carrier was shelved indefinitely. The number of destroyers was to go up to eight including three 'R' class destroyers acquired in 1949 and three smaller Hunt class destroyers to be acquired during 1953-54. In addition, the navy would have, after some replacements, four frigates, two survey ships, eight minesweepers, one store ship, twelve seaward defence motor launches, one dredger, one mooring vessel, two fleet tankers and two tugs.

The former Vice Chief of the Indian Navy, Vice Admiral V.A. Kamath reminisces on the development of the Service:

> The Defence Committee of the Cabinet, under the Chairmanship of Pandit Nehru, finally approved the Navy's proposals in 1953. The Service Chiefs were in attendance at the Cabinet Meeting and I, as the Director of Naval Plans, a lowly Commander, was in attendance on the Naval Chief, then Vice Admiral Sir Mark Pizey. I well remember when the Service Chiefs came out of the Cabinet room after the item was approved, the then Army Chief, General Maharaj Rajendra Sinhji, turned to Admiral Pizey and said, 'Mark, congratulations! That was the greatest naval victory after Trafalgar!' In the climate then prevailing with regard to spending money on the Armed Forces, especially on the Navy which unfortunately took the lowest priority, this was no understatement.

However, in 1955 the development plans for the Navy had to be revised once again to match the availability of ships and craft from various

sources. According to the revised plans and replacement programme prepared under the personal supervision of Admiral Sir Mark Pizey, by 1962 there would only be one cruiser in the Navy, *Mysore*, as the earlier acquisition, *Delhi*, was to become a training ship and replace *Tir* in 1958; there would be no destroyers as the three 'R' class destroyers, *Rajput*, *Ranjit* and *Rana*, were to be attached to training establishments in the Reserve Fleet in 1957; the three escort destroyers, *Godavari*, *Gomati* and *Ganga*, were to be either returned to the British Admiralty as they had been obtained on loan, or consigned to the Reserve Fleet. The Operational Fleet would thus have four Types 41 antiaircraft frigates, two Type 12 surface escort frigates and six Type 14 antisubmarine frigates, eight coastal minesweepers, eight inshore minesweepers, and two tenders to training establishments - *Kistna* and *Cauvery*. The Reserve Fleet would thus comprise the three 'R' class destroyers, four fleet minesweepers and the three Hunt class escort destroyers.

Another factor emerging from a careful assessment of the material state of the existing ships was, that, of the 16 major vessels in the Indian Navy, nearly all would be paid off soon. *Rajputana* had already become due for superannuation in 1952, *Konkan*, *Rohilkhand*, *Bombay*, *Bengal* and *Madras* in 1953, *Rajput*, *Rana*, *Tir* and *Investigator* in 1957, *Delhi* would be taken off active service in 1958, *Jumna* and *Sutlej* in 1958 and *Kistna* and *Cauvery* in 1959. This would mean that even with a reasonable extension of life of nearly 10 years, if the projected acquisitions were not accelerated, there would virtually be no navy left by the middle of the 1960s!

Refurbishment of Acquisition Plans

Earnest efforts thus began to be made to expeditiously acquire a few ships to refurbish the navy, especially because by now the proposal to acquire a light fleet carrier had been revived and fast, modern escorts to operate against the enemy in all three elements would also be required for the protection of the carrier.

If the carrier was to have its full complement of aircraft embarked, the need for a surface escort would be less than that for a cruiser but with a reduced outfit of aircraft, the carrier's reconnaissance and strike effort would be limited, which could permit a hostile surface unit to bring the carrier to within its effective gun range before air effort could be ranged against it. It was, therefore, considered necessary to provide the carrier with surface escorts comprising cruisers or destroyers for protection against hostile surface forces.

Since it was not possible for carrier aircraft to intercept each hostile aircraft, and its antiaircraft armament was limited to the 40-mm close-range variety, it was considered desirable that long-range antiaircraft ships should

also be in attendance on the carrier.

With the increasing importance of and emphasis on the development of submarines around the globe and their ever-increasing lethal power, protection of heavy fleet units such as carriers and their escort cruisers from threats in the subsurface element was considered vital and for this purpose, the carrier would also need adequate sonar protection which was to be provided by antisubmarine escorts.

In addition, the carrier would at times be required to operate at a speed of 30 knots or thereabouts for launching and recovering aircraft, the maximum speed of both carriers and cruisers being around 30 knots at that time, and the escorts would be required to position themselves at vantage points ahead, astern or abreast of the carrier and to manoeuvre to engage the enemy whenever necessary. Therefore they would require to have an advantage of at least 5 or 6 knots over the carrier, i.e., their maximum speed should be around 36 knots. Besides, because of their increased speed and enhanced responsibilities, their sonar domes needed to be strengthened and their detection range enhanced.

In short, the escort vessels would be required to carry heavy antiship, antiaircraft and antisubmarine equipment, state-of-the-art radar, sonar, weapons and detection devices and speeds of over 30 knots. For surface and antiaircraft defence, modern fleet destroyers were considered suitable and first-rate antisubmarine frigates would provide adequate antisubmarine and antiaircraft defence.

The optimal choice for the protection of the carrier would thus be various categories of frigates designed specially for certain tasks but for reasons of paucity of financial resources, a compromise was accepted and a type of ship was selected, that would have a combination of antiship, antiaircraft and antisubmarine offensive capabilities, which could be provided by a post-World War II destroyer. The vital statistics and capabilities of some of the ships that could be made available for the purpose by Great Britain at this time are given in Table 4.

Table 4. Data on ships to be provided by Great Britain

	Destroyers	
	Weapon Class	*Later Battle Class*
Displacement (tons)	1980 to 2800	2460
Dimensions (feet) (length, beam, draught)	341x38x17	355x40x17
Guns (Long Range)	Four 4-inch	Five 4.5-inch
Guns (Close Range)	Six 40-mm	Eight 40-mm
Antisubmarine Weapons	Two Squids*/	One Squid*

	Limbo*	
Torpedoes	Ten 21-inch	Ten 21-inch
Speed (knots)	34	36
Complement	234	232 to 268

* Antisubmarine multiple-barrel projectile launchers of different types

	Frigates		
	Type 12 (Surface escort)	*Type 14 (Antisubmarine)*	*Type 41 (Antiaircraft)*
Displacement (tons) (length, beam, draught)	2,000	1,300	1,750
Dimensions (Fleet)	360x41x12	300x33x10	330x40x10
Guns (Long Range)	Two 4.5-inch	-	Four 4.5-inch
Guns (Close Range)	Six 40-mm	Three 30-mm	Two 40-mm
Antisubmarine Weapons	Limbo	Limbo	Squid
Torpedoes	-	Four 21-inch* (Two twin)	-
Speed (knots)	27	24	23
Complement	221	149	204

* Planned but not fitted

It is evident from this data that the frigates of various types, while being somewhat superior in their antisubmarine capability, were markedly inferior to the destroyers in speed and antiaircraft and antiship armament.

While the UK, France, Japan, the USA, Sweden, the USSR and certain Eastern Bloc countries were capable of undertaking the construction of destroyers for carrier escort, the IN was still tied to the British Admiralty's apron strings and hence the Indian authorities decided to follow perforce the beaten track and ask Britain to supply these ships. The Admiralty, however, were unable to spare any existing destroyers of the type required by India from out of those in commission with the RN or already under construction. At the same time the lead time required for the construction of new destroyers was far too long for India's requirements. It was, therefore, decided to acquire a mixed bag of new vessels - two type 12, three Type 14 and three Type 41 frigates - from the UK in the first instance, with provision for acquiring three additional Type 14 and one Type 41 frigate at a later date, if required.

International developments during the decade following World War II, however, began changing the maritime threat scenario in South East Asia. Based on the 1948 objective "to build up a *balanced naval force* on modern lines which will be *more powerful than* the navy of *any* of the nations in the

Eastern Area" (emphasis author's), India had been developing her navy at a comfortable pace, commensurate with the availability of trained manpower, technical expertise and financial resources and occupied the top spot in the region so far as naval might was concerned. But ominous clouds developed over the horizon when in early 1956, the USA announced its decision to transfer one cruiser, four destroyers and some submarines to Pakistan (Pakistani naval personnel were already training in Turkish submarines). The cost of the ships, as well as the expenditure to be incurred on their refit and modernisation, and the training of Pakistan Navy personnel was to be borne by the USA. Pakistan, as a result of her alliance with the Baghdad Pact powers and the South East Asia Treaty Organisation (SEATO), had jockeyed herself into a bargaining position for obtaining military and naval equipment from member nations of these organisations. In addition, she was likely to make her fleet considerably stronger as a result of the UK policy of dispersal of valuable fleet units to 'friendly' countries, due to the threat of nuclear weapons.

As a result of this windfall to the Pakistan Navy from the USA and the UK and India's modest acquisition plan, the state of the two navies during the course of the next four years, exclusive of non-effective ships such as training ships, survey ships, etc., was likely to be as given in Table 5:

Table 5. Comparative strengths of the envisaged Indian and Pakistan Navies

Date	*Cruisers*		*Destroyers*		*Frigates*	
	India	*Pakistan*	*India*	*Pakistan*	*India*	*Pakistan*
June 1, 1956	1	nil	3	4	5	2
June 1, 1957	1	nil	3	6	5	2
December 1, 1957	1	1	3	8	5	2
June 1, 1958	2	1	3	8	7	2
December 1, 1958	2	1	3	8	4	2
December 1, 1959	2	1	-	8	10	2

It was thus apparent that the Indian Navy would be superior to the Pakistan Navy till the middle of 1957, when the latter would achieve parity. With Pakistan acquiring a cruiser thereafter and India returning three frigates to the UK, Pakistan would achieve a marked superiority from December 1957 to June 1958 and a reduced superiority thereafter till December 1959. In addition, three destroyers acquired on loan by India from the UK in 1949 were due to be returned in 1959 in which case, Pakistan's superiority in naval might would again become marked and would remain so for many

years to come. If, in addition to the ships in the pipeline, there were future additions to Pakistan's naval fleet as a result of her alliance with the Baghdad Pact powers and the SEATO, it was likely to become a grave threat to the security of our ports and the safety of our shipping, both coastal and foreign. It was, therefore, considered most desirable that the ratio of two to one between the navies of India and Pakistan, as was adopted when the assets of the RIN were divided between the two countries in 1947, be maintained throughout. This was considered imperative because, firstly, the commitments of the Indian Navy were far greater than those of the Pakistan Navy and, secondly, it was necessary to ensure proper exercise of maritime power in the seas around the Indian peninsula and her island territories to enable her to sustain her trade with any country in peace and war.

The proposed strength of the Indian Navy was, therefore, to be expanded as given in Table 6:

Table 6. The proposed strength of the Indian Navy

Strike Force	One Aircraft carrier - approved, to be acquired. Two cruisers (*Delhi, Mysore*) Six destroyers (Three `R' class - *Rajput, Rana, Ranjit* - in service, three to be acquired in lieu of three proposed Type 14 Frigates). Three escorts destroyers (three Hunt class - *Ganga, Gomati, Godavari* - on loan).
Convoy Protection Force	Four Type 41 antiaircraft frigates (three on order, fourth approved). Two Type 12 surface escort frigates (on order). Three Type 14 antisubmarine frigates (on order but recommended to be replaced by three destroyers). Three antiaircraft sloops (*Kistna, Cauvery, Tir* in service).
Seaward Defence Force	*Motor Launch 6420* and five shore patrol craft in service. Six shore patrol craft (three on order, three approved).
Minesweeping Force	Eight coastal minesweepers (four completed, four approved). Eight inshore minesweepers (two in service, six approved). Four Fleet Minesweepers (*Bombay, Bengal, Ma-*

	dras and *Konkan* - to be kept in commission till the coastal minesweeper fleet strength rose to eight).
Fleet Train	Two tankers (*Shakti* in service, one approved), *Dharini* (stores ship) *Magar* (landing ship tank), *Hathi* (tug), etc.
Hydrographic Fleet	Four survey vessels (*Jumna, Sutlej, Investigator,* one approved).

Besides the proposal to induct an increased number of ships, it was also recommended that some of the existing ships be refurbished for retention in the navy according to the following programme:

Cruiser *Delhi*: Instead of being converted into an officers' training ship, the cruiser should be kept operational till about 1965 by suitably improving her radar detection capability and weapon control systems.
'R' class Destroyers: *Rajput, Rana, Ranjit:* Should be refitted and modernised for retention till 1964.
Hunt Class Escort Destroyers: *Ganga, Gomati, Godavari.* Instead of being returned to the Admiralty in 1959 on expiry of the loan period, these ships, which were considered suitable for operational use for many years, should be bought outright and retained in the Navy.
Frigates: *Kistna, Cauvery, Tir*: These ships which had recently been refitted, were being used respectively for the training of Cadets and as a temporary flagship and were expected to be available till 1963. The three ships could be quickly converted for operational use if hostilities were imminent.
Fleet Minesweepers *Bombay, Bengal, Madras, Konkan*: Since the indigenous construction of four coastal minesweepers and six inshore minesweepers had been delayed considerably, it would be necessary to extend the life of the four fleet minesweepers in service.

If these measures were implemented, the Indian Navy's fleet would, by 1961, comprise one aircraft carrier, two cruisers, three new destroyers, three 'R' class destroyers, three Hunt class escort destroyers, three Type 14 antisubmarine frigates, two Type 12 surface escort frigates, four Type 41 antiaircraft frigates, three antiaircraft frigates *(Kistna, Cauvery, Tir)* three survey ships, four fleet minesweepers, eight coastal minesweepers, eight inshore minesweepers, one motor launch, 12 seaward defence motor launches, one landing ship for tanks, two fleet tankers, one repair and store ship, two tugs, two dredgers, one battle practice target and one mooring vessel. It was also proposed to divide the major ships of the Fleet into two task forces to

operate in the Arabian Sea and the Bay of Bengal

In course of time, however, the proposal to acquire three new destroyers and one Type 41 antiaircraft frigate fell through as the Admiralty expressed its inability to make these available, the order for three additional Type 14 antisubmarine frigates was cancelled and the third Type 12 surface escort frigate was never ordered. The Fleet strength practically remained the same, with ships approaching obsolescence being given a fresh lease of life with periodical refits and replacement and modernisation of equipment, sensors, weapon systems and propulsion machinery.

A Fleet to Counter the Sino-Pak Axis

When the Sino-Indian conflict broke out in 1962, the situation had to be assessed once again. The Chiefs of Staff Committee were aware that Pakistan might take advantage of India's involvement with China, and seize the opportunity to annex Kashmir. It could also start border incidents in the then East Pakistan as a prelude to commencing general hostilities, and in that event India would be faced with a war with China and Pakistan simultaneously.

At this time the Chinese Navy had one cruiser, five destroyers, 16 frigates, 25 submarines, 400 shore-based jet fighters and bombers and over 300 smaller ships and craft such as minesweepers, motor torpedo boats, etc., and out of these only the submarines could pose a threat to our shipping or ports, as 21 out of these 25 submarines had the necessary endurance to operate for prolonged periods in the Bay of Bengal and the Arabian Sea. The Chinese could easily make refuelling arrangements by positioning supply ships in the isolated anchorages in the Andaman and Nicobar group of islands and thus operate up to seven or eight submarines in the Indian waters at any one time. These submarines could be used for launching attacks on our shipping, mining the approaches to our ports and also for clandestine activities.

At the time of the Sino-Indian conflict the Pakistan's naval fleet comprised one cruiser, five destroyers, two frigates, one fully armed survey ship and nine minesweepers with plans to acquire one fleet tanker, some submarines and an aircraft carrier through American military aid in the immediate future. The main threat from Pakistan was likely to be in the form of sporadic attacks on our shipping, on our ports and harbours, laying mines on the approaches to our ports on the West Coast, infiltration into the Sunderbans, and an air threat to our shipping, warships and the carrier task group in the Arabian Sea, from the strike and bomber aircraft of the Pakistan Air Force.

At this time the material state and availability of the Indian Navy's

ships and aircraft was well below the mark. The fleet could boast of only a light fleet carrier with half the complement of her air component consisting of nine Seahawk strike aircraft, four Alize antisubmarine aircraft and one Alouette search-and-rescue (SAR) helicopter, two cruisers which were both undergoing extensive repairs, six destroyers of which five were not operational due to their age and poor material state, two old frigates, eight modern frigates out of which three had severe operational limitations, six minesweepers, three seaward defence craft, one small tanker and one repair and maintenance ship.

It was estimated by Naval Headquarters that in order to be able to effectively counter the possible combined threat from China and Pakistan, the additional ships that would be immediately required by the Indian Navy would include three destroyers to escort the carrier, 10 modern minesweepers, two fleet tankers, one supply ship, four submarines, two landing ships for tanks, six medium patrol vessels or submarine chasers for the Andamans, six patrol craft for the Sunderbans, one dredger, 60 aircraft for the carrier including 18 Skyhawks, 16 Seahawks, six Alizes, 12 Alouette helicopters and eight jet trainers, two squadrons of eight Neptune aircraft each for the Indian Air Force for maritime air reconnaissance (the responsibility for maritime air reconnaissance was transferred to the Navy years later) and an adequate supply of weapons, equipment and spares for these acquisitions. The Alouette helicopters were to be positioned on board the carrier and the naval bases at Cochin and Goa for search-and-rescue operations, on board the survey ships and tankers for logistic support and on board the indigenous frigates under construction as antisubmarine weapon carriers and for surveillance. The number of Alouette helicopters embarked on the *Vikrant* later rose to three.

A reassessment of the threat from the two countries ruled out the naval involvement of China in the conflict though the presence of Chinese submarines had been confirmed, both in the Arabian Sea and the Bay of Bengal, and the likelihood of Pakistan joining hands with China to pose a combined maritime threat was considered low. Most of the proposals were, therefore, shelved but the ongoing process of replacement of obsolete ships, weapon systems and equipment, modernisation of obsolescent ships, indigenisation of warship construction, development of indigenous designs, etc., continued beyond 1965.

Acquisitions During the Late 1940s

After Independence acquisition of ships for India's truncated Navy began, as mentioned before, with the commissioning of *HMS Achilles*, (renamed *HMIS Delhi*,) of the World War II Battle-of-the-River-Plate fame; (along with

HMS Ajax and *Exeter*, this cruiser, which had been loaned to the New Zealand Navy, defeated the German battleship *Admiral Graf Spee* on December 17, 1939). The *Delhi* was independent India's first cruiser and was commissioned on July 5, 1948, less than a year after Independence. She had a standard displacement of 7,114 tons (full-load displacement 9,740 tons); her length was 554.5 feet, her beam a little over 55 feet and her draught 16 feet forward and 20 feet aft. Powered by four-shaft 72,000-horse-power turbines, she had a maximum speed of 32 knots. Her armament package comprised six 6-inch guns for surface operations and eight 4-inch guns, fifteen 40-mm guns and four three-pounders for antiaircraft defence. The ship had eight 21-inch torpedo tubes which were later removed in 1958. Her oil fuel capacity was 1,800 tons and she had been designed for a complement of 800 officers and men. Her pentagonal crest depicted a caparisoned elephant carrying a ceremonial umbrella with the logo *Sarvato Jayamichchami* - may you be a victor everywhere.

On commissioning, *Delhi* was handed over by the Commander-in-Chief of Nore to Shri V.K. Krishna Menon, the then High Commissioner for India in the United Kingdom. Her first Commanding Officer was Captain H.N.S Brown of the Royal Navy and her first Executive Officer, i.e., Second-in-Command, was Commander (later Admiral) R.D. Katari. The ship arrived at Bombay on September 16, 1948 and received a very warm welcome from the large crowd which had gathered at Ballard Pier. Prime Minister Jawaharlal Nehru, Defence Minister Sardar Baldev Singh and a large number of civilian dignitaries visited the ship as soon as she came alongside the pier. The Prime Minister addressed the officers and ratings and expressed his pride in the floating fortress and the hope that the men on board would, if the occasion arose, effectively defend the country's shore with all their might.

Of the four landing ships for tanks (LSTs) of the RN, *HMS Smiter, Thrasher, Bruiser* and *Avenger* which were in Indian ports at the time of Independence, having been borrowed from the British Government by the Quartermaster General of the Indian Army, on behalf of the Government of India, for dumping surplus ammunition into the sea, only one, *Avenger*, was in operation, owing to an acute shortage of trained personnel. Since there was an immediate need to transport large quantities of stores and equipment from Bombay and Calcutta to Cochin and Vishakhapatnam for the development of the latter as full-fledged naval bases and the Navy's premier training establishments, it had been decided to acquire one of these landing ships for the purpose and thus *Avenger* was transferred to the RIN and recommissioned as *HMIS Magar* on April 11, 1949. This ship had a cruising speed of 13 knots and bunked accommodation for 18 officers and 150 men in addition to her normal complement. She could carry 2,000 tons

of stores or, alternatively, a varied combination of lorries, landing craft and tanks and land them directly on beaches for amphibious operations and disaster relief. Her displacement was 2,256 tons (4,980 tons full load), overall length 347.5 feet, width 55.25 feet and draught 11.25 feet. She was powered by a 5,500-horse-power twin engine developing a speed of 13 knots, her armament included two 40-mm and six 20-mm antiaircraft guns and she had a complement of 180 officers and men.

Early in 1948 the British Government had agreed to transfer three 'R' class destroyers, *HMS Rotherham, Redoubt* and *Raider* to the RIN after renaming them *HMIS Rajput, Rana* and *Ranjit* after extensive refit and modernisation. They constituted the 11th Destroyer Squadron with the *Rajput* as the senior ship. The standard displacement of these ships was 1,725 tons (2,424 tons full load) and their dimensions were 362 feet (length), 35.7 feet (beam) and 16 feet (draught). The armament consisted of four 4.7-inch guns which could be used against both surface and aerial targets and four two-pounder pompoms for close-range antiaircraft defence. Besides, the *Rajput* had six 20-mm antiaircraft guns while each one of the other two ships had four 40-mm antiaircraft guns. For antisubmarine warfare, each ship was fitted with eight 21-inch torpedo tubes on quadruple mountings and four depth-charge throwers. The propulsion machinery of each ship comprised Parson's geared turbines, delivering a shaft horse-power of 40,000 on two shafts giving her a maximum speed of 32 knots.

On July 28, 1949, the *Rajput* with Captain (later Rear Admiral) A. Chakraverti as its Commanding Officer and Senior Officer of the squadron of destroyers (D 11), later designated the 11th Destroyer Squadron (11 DS), was commissioned with much ceremony at Portsmouth. Earlier, the *Ranjit* with Commander (later Rear Admiral) G.S. Kapoor as its Commanding Officer, had been commissioned on July 4, 1949. The third destroyer, *Rana*, whose Commanding Officer was Commander (later Admiral and Chief of the Naval Staff) S.N. Kohli, was the last to be commissioned on September 9, 1949 at Devonport.

The three 'R' class destroyers were supplied at a cost of 1,045,000 pounds while *Delhi*, acquired earlier, had cost 736,500 pounds. All four ships proved to be excellent bargains, as similar ships from any other source would easily have cost twice as much.

Quest for New Ships Begins

While these ships were acquired without much difficulty it became a problem convincing the British authorities of the Indian intent, regarding her maritime interests, after she became a Republic on January 26, 1950. To quote from *The Parted Garment: The Royal Navy and the Development of the*

Indian Navy 1945-65 by Lieutenant Commander James Goldrick of the Royal Australian Navy, a research scholar specialising in naval history:

> The British may well have proved more co-operative, even to the extent to which they supported the Australian and Canadian efforts to acquire light fleet carriers, had the widely diverging strategic interests of Britain and the Indian Government not been such a considerable stumbling block. It was this issue which was to restrict British support in the years ahead, if only because the British were not prepared to subordinate the requirements of services which were formally allied to the Royal Navy to Indian requests.
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> India was pursuing a neutralist policy and it was determined to remain within the British Commonwealth, particularly after the declaration of the Republic in 1950, only on the understanding that this did not involve commitment to any collective defence arrangements with other members of the organisation.
>
> In consequence, the system which the British had evolved of encouraging the creation of Commonwealth naval forces which were capable of local defence operations and of contributing to joint activities, particularly in trade protection, was incapable of application to India. While the British wanted India to acquire modern ASW (antisubmarine warfare) and AA (antiaircraft) escorts, minesweepers and harbour defence craft, the Indians were more interested in developing naval forces which had the capacity to dominate the region (what is now termed a bluewater navy - author).
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> The strains in the relationship between the Admiralty and the Indian Navy were becoming apparent in 1949. Perhaps the most notable point is the extent to which Admiral Parry (the Flag Officer Commanding the RIN) and his fellow loan officers (officers on loan to the Indian Navy from the Royal Navy) pursued arguments which took a markedly 'Indian' line against the objections from Britain and it was over aircraft carriers that matters came to a head.
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> The Admiralty position was somewhat awkward because between 1946 and 1949 the merits of a two-carrier force were being publicised in support of the expansion of the Royal Australian Navy. If two light fleet carriers were being proposed as the minimum force capable of independent operations, it was inevitable that Indian naval authorities should be interested in the argument. Furthermore, the British had made Australia the offer of two carriers for the price of one, which was a gesture as public in its demonstration of how far the Admiralty was prepared to go when it wanted to be generous.
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the Admiralty in 1947 had included provision for two light fleet carriers. The British Naval Staff later reflected that they had probably been over enthusiastic in discussions with the Indians. The VCNS (Vice Chief of the Naval Staff of the Royal Navy), Vice Admiral Sir George Creasy, reflected that 'he had, perhaps injudiciously, suggested that the ultimate aim of India should be to have a "balanced naval force", which would naturally contain an aviation element'.

Since Admiral Parry was 'convinced of the need' for carriers in the Indian Navy when he left the United Kingdom in 1948, the limited political interest which he detected in India was sufficient for him to importune the Admiralty for support.

The Admiralty was not impressed. The British were well aware that assistance in the creation of a naval air arm required Government-to-Government agreement and this would be impossible without the formal Defence talks with India which Nehru had already indicated that, '. . . he would be embarrassed if (Britain) initiated proposals to hold them'.

In fact, the British had already decided that India and Pakistan 'should be able to maintain, in some ten to fifteen years, forces of the order of: India - 3 cruisers, 8 destroyers, 8 frigates, 12 minesweepers; Pakistan - 1 cruiser, 4 destroyers, 8 frigates, 12 minesweepers.'

In general, these predictions for 1958-63 were to prove rather more sensible assessments than those of the Indian Naval Staff. By 1959, the latter were suggesting that their force levels for major units were to be: 1960 - 2 light fleet carriers, 3 cruisers, 9 escort destroyers, 4 fleet destroyers, 4 submarines, 4 antiaircraft frigates, 2 antisubmarine frigates, 6 fleet minesweepers; 1968 - 4 fleet carriers, 2 light fleet carriers, 6 cruisers, 21 destroyers, 16 submarines, 6 frigates, 6 fleet minesweepers. In the circumstances, the suggestion by the British VCNS that these proposals were 'grandiose' had a point. Strategic considerations aside, it seems in retrospect that the Admiralty had a more realistic idea of the financial situation of India than did the Indian Naval Headquarters.

After some agonising on the subject, the Admiralty took a firm line with the Commander-in-Chief when the Fifth Sea Lord wrote to him on June 23 1949, saying: 'it would be undesirable to embark on detailed examination of your scheme on the present semiofficial basis before the strategic background has been agreed (upon) and a decision has been reached, in general Defence Talks, on the future size. shape and role of the Indian Navy'.

Parry pleaded in return that India was not politically ready for Defence Talks and that he had no other means but those of personal

contact which he could employ. Since he had made the open admission that the Indian view was that 'Pakistan is the enemy', apparently during the course of a visit to Britain earlier in 1949, it was odd - although perhaps an indication of his enthusiasm for naval development for its own sake - that Parry showed so little apparent appreciation of Britain's strategic reservations.

It seems, however, that the Commander-in-Chief eventually took the hint, although not before the First Sea Lord himself had warned that India should not attempt to develop a sea-going Fleet Air Arm for some time yet. By late 1949, Indian horns were being drawn in. Parry explained to the Admiralty that financial difficulties had forced him to plan within rather restricted means and that carriers were no longer an immediate goal.

In a letter addressed to the Right Honourable Viscount Hall, the First Lord of the Admiralty, Mr Patrick Gordon Walker, the Secretary of State for Commonwealth Relations, said on November 20, 1950:

> The fact is, as I think we all realise, that there is a fundamental divergence of view between the Indians and ourselves on what the function of the Indian Navy should be. We naturally wish to see them build up a navy which, while providing adequately for their own home defence needs, would also in the future be able to make a significant contribution to Commonwealth naval strategy, on the assumption that India would be willing to cooperate. Hence the importance which we have all attached to the provision in the Indian Navy of adequate antisubmarine and minesweeping forces. The Indians, on the other hand, have been pressing for United Kingdom help in building up what they describe as a fully balanced force, including a substantial naval aviation element.
>
> I entirely agree with your view that it is not possible to give proper advice to the Indian Government unless they are prepared to tell us the role which they intend their navy to play. I should have no hesitation in suggesting discussions with the Indian authorities if I thought this would help. But we have already consulted our High Commissioner about the possibility of such talks and his strong advice was that the mere suggestion that such talks should be held would do harm. It was for this reason that the talks between the Vice Chief of the Naval Staff and Admiral Parry were arranged this summer. There is, of course, the further underlying difficulty that we learn this summer, in strictest confidence from the two British Chiefs of Staff in India, that the aim of Indian defence policy was to produce balanced forces in all three arms

which would be capable of dealing with any force that Pakistan might have and that planning throughout the Indian armed forces was based on the assumption that Pakistan was the potential enemy.

Unsatisfactory as it may be, it seems preferable to leave things as they are, until we are able to make some progress with the Indian Government on the whole front of their willingness to cooperate with us in defence matters.

The Admiralty's Viewpoint

About this time, i.e., at the beginning of the 1950s, in an appreciation of the future naval requirements for India and Pakistan, however, the Admiralty said that it was in the interest of the Commonwealth as a whole that India and Pakistan should maintain such naval forces as could be supported by their resources in material, manpower and finance and that the functions of these naval forces in war would primarily be to provide for the security of India and Pakistan including provision for harbour defence, minesweeping and coastal convoys, and, secondarily, to contribute to the overall security of the British Commonwealth. This would also include a share in the control of sea communications in the Indian Ocean, particularly in the Arabian Sea and the Bay of Bengal.

In order to ensure effective co-operation it was essential, the Admiralty felt, that India and Pakistan should share a common strategy. In peace, these countries were to provide basic forces (capable of expansion in war) for 'police' duties and adequate training facilities. To be able to carry out their primary functions in war, these two navies would require frigates, minesweepers, antisubmarine trawlers and coastal forces and such light forces should for some years form the hard core of both navies. To carry out the wider function of contributing to the Commonwealth's security, balanced forces consisting of cruisers and destroyers would be required. But India had already signified her intention of building up to a strength comparable to that of the Royal Australian Navy and Pakistan, though she had so far not given any indication of the strength she was planning to attain.

In addition, as a long-term policy, the Admiralty strongly felt, if India and Pakistan were to continue to remain firm adherents to the British Commonwealth of Nations, their naval aspirations should be encouraged, though not at the expense of their army and air force, and suitable guidance provided for their naval build- up which, over the next ten to fifteen years, should raise the level of their forces to three cruisers, eight destroyers, eight frigates, 12 minesweepers and small craft for India and one cruiser, four destroyers, eight frigates, 12 minesweepers and some small craft for Pakistan. As the expansion of the two navies progressed, the short-term policy

would be the establishment of suitable training, maintenance and logistic facilities, the development and maintenance of ships and craft to be used for 'policing' and sea training, thus welding the fleets into efficient forces capable of integration with other British dominion forces. Towards this end the Admiralty would provide necessary assistance to the two countries in developing their flotillas of ships and craft, expertise in the maintenance of ships and equipment and training of personnel.

Accordingly, in July 1951 the Admiralty received a proposal to transfer three old Type 2 Hunt class escort destroyers to the Indian Navy on three years' loan in lieu of the offer for the cruiser 'Jamaica' which was going to be the Indian Navy's second cruiser out of a three- cruiser force, which they now had decided to withdraw. In a letter to the Right Honourable Lord Pakenham, the First Lord of the Admiralty, on July 2, 1951, Mr E. Shinwell, Minister of Defence, said:

> I am aware that these ships are in poor condition, having been in low category reserve since the war, and that there is little prospect that the Admiralty will be able to do any work on them in peacetime to prevent them from deteriorating still further. I also understand that one of the conditions of the loan would be that the ships should be returned to the Admiralty on demand in emergency.
>
> Nevertheless, I must confess that I have grave doubts of the wisdom of allowing any more of the antisubmarine vessels which we now possess to pass out of our own control by transfer to another country . . . we have no defence arrangements with India, nor are we likely to have while the Kashmir dispute remains unsettled. Nor do I think that India's attitude over this and other important political questions in the past few months has been so helpful to us as to make it particularly desirable to show her a friendly gesture of this kind at present.

In his reply made on July 11, 1951, the First Lord of the Admiralty said:

> The Admiralty policy for some time has been to encourage India to build up the type of navy which we feel to be most suitable for her own defence, and which at the same time would be most useful if it were to be ranged alongside the Royal Navy in war. To this end we have advised her against embarking immediately on an aircraft carrier programme and have suggested rather that a force of cruisers, destroyers, frigates and minesweepers should be her first objective, with emphasis on antisubmarine vessels. India, acting on our advice, has strengthened and expanded her navy in readiness to man the cruiser

which we encouraged her to believe we could lend. This offer had to be withdrawn with the result that India is left with surplus personnel and is, understandably, keenly disappointed. This can be mitigated but not entirely offset, by the present proposal to lend three frigates. . . .

The three vessels now under consideration are not required for our peacetime fleet but we cannot dispose of them permanently outside NATO as there is an overall shortage of frigates. In the circumstances it is clearly in our interests to meet India's requirement if we can thereby ensure that the frigates will be maintained in good running order and will be immediately available to us in emergency. The only circumstances in which this would not be achieved would be those in which India ranged herself against us in war, and I am convinced that we need not look to such a future.

The Secretary of State for Commonwealth Relations, Mr Patrick Gordon Walker, still had reservations on the transfer of the escort destroyers to India. While admitting that if these ships, along with a large number of ships of their class which lay in British mothball yards in varying states of disrepair, were to be fitted in British yards and were to be made available on completion if necessary, it would be far better then letting them remain unused and unusable, he felt. ". . . it would be very difficult to expect India to give any undertaking about refraining from using the vessels in any particular contingency."

The various authorities continued to dither on the issue and the situation was about to reach an impasse when the First Lord of the Admiralty wrote to Mr E. Shinwell, Minister of Defence, on October 18, 1951:

Although it was decided at the Defence Committee on 10th September (1951) that it was important in dealing with requests from Pakistan to ensure that the jealousy of the Indian Government was not aroused and answers to requests and complaints of both Governments should be made with equal impartiality, and although you were invited to arrange with the Arms Working Party to examine the request for equipment from the Pakistani Government together with any requests for equipment from the Indian Government and to report to the Defence Committee, nevertheless the Prime Minister (Clement Attlee) has informed you that he wishes arrangements for the transfer of three frigates (escort destroyers) to India to be put in hand.

And on October 22, 1951 a note from the office of the British Prime Minister to the Minister of Defence put the seal on the deal, 'The Prime Minister's Principal Private Secretary has confirmed that it is in order to

proceed with the proposed transfer of three frigates (escort destroyers) to India.'

Three Hunts Join the Fleet

It was on the same day, October 22, 1951, that the Admiralty officially conveyed to the High Commission of India in London the availability of three Hunt class escort destroyers on loan to the Government of India on seven conditions: firstly, India would be responsible for any work required before taking over the selected ships, including any equipment installed to meet her needs; secondly, outfits of naval armament and logistic support would be supplied free of charge but equivalent amounts were to be returned at the end of the loan period; thirdly, the standard of maintenance and refits, and the periods between refits, would be the same as for the Royal Navy; fourthly, all additions and alterations would be subject to the approval of the Admiralty and at India's expense; fifthly, the vessels were to be returned, with stores, in as good condition as when loaned excepting fair wear and tear; sixthly, in the event of any losses, adequate compensation would be payable and, finally, the loan was to be for a period of three years in the first instance and subject to extension by agreement, but the vessels were to be returned in an emergency. The most significant aspect of the conditions laid down was that barring any additional equipment required to be fitted by the Government of India, the cost of refitting the three ships, which would take approximately eight months, was expected to be of the order of 120,000 pounds.

Out of the four vessels that were available for transfer to the Commonwealth navies, namely, *HMS Bedale* (Pennant No. F126), *HMS Chiddingfold* (Pennant No. F131), *HMS Lamerton* (Pennant No. F88), *HMS Croome*, the first three were earmarked for the Indian Navy and the fourth for the Royal Ceylon (now Sri Lanka) Navy. While the *Bedale*, after her refit, modernisation and recommissioning, would become *INS Godavari* (Pennant No. D92), the leader of Indian Navy's 22nd Destroyer Squadron (22DS), the *Chiddingfold* (Pennant No. F131) and *Lamerton* (Pennant No. F88) would become *INS Ganga* (Pennant No. D94) and *INS Gomati* (Pennant No. D93), respectively, the other two ships of the three-ship destroyer squadron. The three escort destroyers *Bedale*, *Chiddingfold*, and *Lamerton* had originally been laid down on May 29, 1940, March. 1, 1940 and April 10, 1940 respectively and completed on June 18, 1944, October 16, 1941 and August 16, 1944. All three had seen service during World War II and were put in the mothball fleet when the hostilities ended in 1945.

By January 1952 escalation of prices and the cost of carrying out major refits had taken its toll and the estimated expenditure on reconditioning the

three ships nearly doubled itself to 200,000 pounds.

Work on all three destroyers was taken up by different shipbuilders at Liverpool towards the end of 1952. The three officers selected to command the destroyers soon arrived along with their key personnel for familiarisation and specialist training. The first Commanding Officer of the *Godavari* and Senior Officer of the Squadron (D22) was Commander (later Admiral and Chief of the Naval Staff) S.N. Kohli, the Executive Officer was Lieutenant Commander (later Commander) G.S. Gupta and the Squadron Engineer Officer was Lieutenant Commander later Vice Admiral) J.T.G. Pereira. The first Commanding Officer of the *Gomati* was Lieutenant Commander (later Commodore) Inder Singh and her Executive Officer was Lieutenant (later Commander) R.N. Batra. The first officer to command the *Ganga* was Lieutenant Commander (later Commodore) K.K. Sanjana and the Executive Officer was Lieutenant (later Vice Admiral) V.E.C. Barboza. One of the junior officers in the commissioning crew of the *Ganga* was Sub-Lieutenant J.G. Nadkarni who later rose, in 1987, to occupy the highest office in the Navy - that of the Chief of the Naval Staff, as an Admiral.

All three ships were commissioned during the second quarter of 1953, *Gomati* on April 24, *Godavari* on April 27 and *Ganga* on May 26. Each one of these ships had a standard displacement of 1,050 tons, dimensions of 264.25 feet (length), 31.5 feet (width) and 14 feet (draught), a weapon package of six 4-inch antiaircraft guns, four two-pounders and four 20- mm antiaircraft guns, propulsion machinery comprising twin shaft geared turbines producing 19,000 shaft horse power at a maximum speed of 25 knots, a radius of operation of 3,700 nautical miles at 14 knots and a complement of 200 officers and men. The commissioning ceremony for all three ships was performed by Shrimati Saraswati Kher, wife of Shri B.G. Kher, the then Indian High Commissioner in Britain.

The three escort destroyers were commissioned as British ships with the HMS prefix and the commissioning orders were issued by Admiral Sir Maurice James Mansergh, Commander-in-Chief, Plymouth. Hence, when the coronation of Queen Elizabeth II took place on June 2, 1953, all three ships flew the RN ensign on their mastheads. When the queen reviewed the British Fleet at Spithead on June 10, 1953, these three ships, still flying the British colours, along with three other ships of the Indian Navy *Delhi*, *Ranjit* and *Tir* flying the Indian colours, took part in the review.

It was on June 18, 1953 that the ships were formally transferred to the Indian Navy at Liverpool, assuming their Indian names, with the Indian Navy ensign replacing the RN ensign on the masthead. The then Indian Naval Adviser to the High Commissioner for India in London, Captain (later Rear Admiral) G.S. Kapoor represented the Indian Navy at the transfer ceremony and the traditional breaking of coconuts (in replacement

of bottles of champagne) against the bows of the ships was done by his wife, Shrimati Sundari Kapoor.

Soon after their transfer to the IN, the three ships left Liverpool and sailed for Plymouth to embark stores and ammunition and to undergo a brief 'work-up' (on-the-job practical training for the improvement of operational and material efficiency). After a short stay there, the ships left for Malta to join some of the ships of the Indian Fleet under the command of Rear Admiral N.V. Dickinson of the RN who was at that time on deputation to the India Navy as the Flag Officer Commanding the Indian Fleet (FOCIF) and was flying his flag on board the flagship, *Delhi*, whose Commanding Officer was Captain (later Admiral and Chief of the Naval Staff) A.K. Chatterji. The other ships of the IN in company were *Ranjit* commanded by Commander (later Admiral and Chief of the Naval Staff) S.M. Nanda and *Tir* commanded by Commander (later Vice Admiral) N. Krishnan.

The three escort destroyers took part in exercises with the British Mediterranean Fleet, under the command of Admiral Horris, Flag Officer Second-in-Command, Malta, with Admiral Lord Louis Mountbatten acting as umpire for the exercise from his flagship.

At the end of the exercises, the ships paid the first goodwill and flag showing visit to Italy during the third week of July 1953, commencing with their berthing alongside at the Italian Naval base at Naples on July 22. Commodore K.K. Sanjana, the then Commanding Officer of *Ganga* reminisces:

> We also had the unique honour of a private audience with His Holiness, the Pope. The three of us accompanied by our Ambassador from Switzerland, who is accredited to the Vatican, were ushered into the Pope's private study. The three of us and our Ambassador lined up and awaited His Holiness' arrival. As soon as the Pope entered the study, one of the Swiss Guards, thumping his mace on the floor, made the formal introduction, starting with `Commander Sourendra Nath Kohli of the Indian Navy, not of our faith'. Unfortunately, the other two Commanding Officers i.e. Inder Singh and myself were also not of His Holiness' faith! However, the Pope presented each one of us with a small personal medallion and turning to Commander Kohli, said `On return to India, please convey to the people of India my blessings and good wishes.' Commander Kohli very quickly replied, `We also bring the good wishes and blessings of the Indian people to Your Holiness'.

Early in August the ships proceeded to Benghazi in Libya and thereafter to Alexandria in Egypt. General Mohammed Neguib, the then President of Egypt, added to the significance of the Indian Navy's first goodwill cruise

to his country by paying a visit to the three ships on the very day of their arrival, August 6, 1953. The senior most Indian dignitary to grace the occasion was Sardar K.M. Panikkar, the eminent historian-diplomat who was then Indian Ambassador to Egypt.

The ships then returned for some more exercises to Malta, where they were honoured with a visit on August 28, 1953 by Admiral Lord Louis Mountbatten, Lady Edwina Mountbatten and their younger daughter, Lady Pamela Mountbatten.

The Squadron sailed from Malta on September 8, 1953 and, after calling at Port Said for a day, paid a goodwill visit to Jeddah in Saudi Arabia whose ruler then was King Ibn Saud. While reminiscing on the visit to Jeddah, Commodore K.K. Sanjana records:

> Since King Ibn Saud of Saudi Arabia was old and ailing, all the duties of the state were at that time being performed by the Crown Prince (he became the King later) who honoured the ships with a visit on September 15,1953. During his visit, His Royal Highness who had brought sacksful of Ryals with him, gifted handfuls of the bounty to the sailors of the ships and presented an expensive watch to each officer, the junior officers receiving Swiss chronometers while senior officers were gifted with solid gold watches with the dials in Arabic and the King's insignia and an inscription engraved on them. Being a Commanding officer I too received a solid gold watch.
>
> Many years later I happened to be wearing this particular watch at Bombay airport when I spotted the Consul General of Saudi Arabia and requested him to translate for me the Arabic inscription on the dial. Immediately on reading the inscription on the dial the Consul General nearly fell at my feet, exclaiming, 'The King gave you this!' Nearly 35 years have elapsed since I received the watch and I am still using that watch which, I am told, could well be a passport to enter Saudi Arabia any time!
>
> Whilst at Jeddah, we were treated to a proverbial Royal Banquet one evening. We were duly briefed by Shri M.K. Kidwai, the then Indian Consul General there, and were told that, in the Arab world, true friendship was judged by the amount of food one ate! The sit-down banquet table had been laid in a manner befitting a visiting monarch or head of state. The delectable and sumptuous fare included culinary delights from several countries - Arabian, European and South East Asian - and this had been made possible by flying in experienced chefs and cooks from various parts of the globe for this particular occasion.
>
> It was during this banquet that we learnt that roasted baby camels

were a delicacy in the Arab world. The huge table, therefore, proudly displayed, on giant dishes, roasted baby camels and, alternately roasted baby sheep! In typical Arab fashion we had to eat with our fingers and, not being familiar with most of the dishes placed before us, tried to play safe by gorging on what we had already savoured and liked during our visits to other Arab countries in the region. Fortunately, being the junior most of the three commanding officers, I was lucky to have a sheep in front of me. Poor Inder (Lieutenant Commander Inder Singh, Commanding Officer of *Gomati*) was not fortunate, and was confronted with a dish containing a roasted baby camel! The grand finale of the banquet was that at the end of the repast we had to wash our hands with perfumed soap and water following by rinsing them in Ming ceramic bowls containing Chanel No. 5!

The Executive Officer of the *Ganga*, Lieutenant Commander (later Vice Admiral) V.E.C. Barboza, adds:

> The presentations to our ships included wrist watches for each officer, a hefty donation of money to the ships' welfare funds, imported American rice and fruit and, to our amazement, forty live sheep. There was no way of embarking the animals except as carcasses - and that was discreetly arranged before we left.

After an eventful four-day stay at Jeddah, the ships sailed out of the Saudi Arabian port on September 18, 1953 and reached Cochin on September 21, 1953.

The setting up of the 22nd Destroyer Squadron comprising the three escort destroyers *Godavari, Ganga* and *Gomati* with *Godavari* as the senior ship of the squadron and the designation of her Commanding Officer as the senior Officer of the Squadron - Captain (D) abbreviated to D22 - were formalised on May 4, 1954.

Fleet Tanker

In November 1953 the Indian Navy acquired her first Fleet Replenishment Group tanker, *Shakti*, from Italy as an important constituent of the fleet train (a group of support ships) that was being set up for the logistic support of the fast-expanding Indian Fleet at sea. The tanker had a displacement of 3,500 tons, dimensions of 323 feet (length), 44 feet (width) and 20 feet (draught) and her diesel- powered propulsion machinery gave her an economical speed of nine knots and a maximum speed of 13 knots.

The Second Cruiser

The requirement of cruisers for the Navy having been reduced from three to two, the naval authorities had been looking around for a suitable second cruiser since the time the *Delhi* was acquired in 1948 and the search ended when it was decided to transfer the Colony class Royal Navy cruiser *HMS Nigeria* to the Indian Navy.

The *Nigeria*, originally built by Messrs. Vickers-Armstrong at Walker-on-Tyne, had been completed on September 23, 1940 though she had already been commissioned into the Royal Navy on August 3 the same year. Her keel had been laid down on February 8, 1938 and she had been launched on July 18, 1939. After her commissioning as a ship of the 10th Cruiser Squadron she had taken part in a number of operations during World War II and had won Battle Honours twice in 1941 (in Norway and the Atlantic), twice in 1942 (in the Arctic and Malta Convoys), once in 1944 (at Sabang) and once in 1945 (in Burma). In 1941 she had raided the Lofoten Islands in Norway, sunk a German trawler and damaged several enemy vessels; in 1942 she had taken part in convoy escort operations and had been torpedoed by a U-boat near Gibraltar; in 1944 she had carried out raids on the Norwegian coast and had taken part in attacks on Sabang along with the battleship *Queen Elizabeth*; in 1945 she had taken part in the bombardment and capture of Akyab and Cheduba Island, had assisted in the sinking of the Japanese heavy cruiser *Haguro* near the northern end of the Malacca Strait and had bombarded the coastal defences on Nicobar Island which was at that time under Japanese occupation.

After the hostilities ended, the *Nigeria* had taken part in several good-will cruises and exercises and in September 1950 she had been placed in reserve. In 1952 she had become an accommodation ship for the Royal Naval personnel at Rosyth.

The sale of the *Nigeria* to India at a cost of 300,000 pounds was announced on April 8, 1954. She thereafter underwent extensive refit and tropicalisation and several additions and alterations were made to her weapons and weapon systems, equipment, sensors, control systems, etc. She was reconditioned and modernised at the Birkenhead, Liverpool works of Messrs. Cammell Laird & Co., Ltd. She was finally commissioned as *INS Mysore* on August 29, 1957 when she was formally handed over by Lord Selkirk, First Lord of the Admiralty, to Shrimati Vijaya Lakshmi Pandit, the then Indian High Commissioner in the UK.

The *Mysore*

The Indian Navy's second cruiser, which was assigned Pennant No. 60, had

a standard displacement of 8,700 tons (full-load displacement of 11,040 tons) and her dimensions were 555.5 feet (length), 62 feet (width) and 19 feet (draught); she had a weapon package comprising nine 6-inch antiship guns (she originally had twelve such guns but one triple-barrel gun turret was removed during refit), eight 4-inch guns which could be used against both surface and aerial targets and twelve 40-mm Bofors antiaircraft guns; her propulsion system comprised four-shaft Parson's geared turbines with a shaft horse power of 72,500 at a maximum speed of 31.5 knots and a complement of 800. The modifications that the ship had undergone during her extended refit included the replacement of tripod masts with stepped lattice masts, removal of one triple-barrel 6-inch gun turret as mentioned earlier, and six 21-inch torpedo tubes and replacement of all electrical equipment.

The pentagonal crest of the *Mysore* depicted the legendary double-headed eagle which, like the Romanoffs of Russia, was the family emblem of the Wodeyars, the hereditary rulers of the Mysore State. The motto below the crest was *Na bibheti kadachana* (is never afraid).

When the *Mysore* later visited Vietnam in 1958, recalls Vice Admiral M.P. Awati, who was then the cruiser's Signal Communication Officer as a Lieutenant Commander:

> Everywhere the *Mysore* went she was besieged by curious and admiring throngs from littoral East Asia, come to see the new Indian Navy. The ship and her ship's company were lionised. No mean distinction for us and for India which until just ten years before was a thraldom. When we translated the ship's motto under the wings of her double-headed eagle into Vietnamese through an interpreter, they applauded. `Like the Vietnamese', they chorused. `We are not afraid of anyone or anything. We `*are* going to win.' One wishes, with hindsight, that the world had taken note of this Vietnamese determination back in 1958.

Reminisces Vice Admiral M.R. Schunker, who was the Vice Chief of the Naval Staff at Naval Headquarters before he retired in 1982 and who was the cruiser's first Gunnery Officer as a Lieutenant Commander, on the Mysore's commissioning ceremony:

> Having spent a sizable period in Blighty as Course Officer, Long Gunnery Course, here I was on a bleak Liverpullian jetty . . . the Union Jack fluttered lazily at the jackstaff of the imposing warship behind me, possibly aware that soon the Indian tricolour would supplant it. The day was 29th August 1957 and the occasion was the last day of *HMS Nigeria* and the first of *INS Mysore*. As the cruiser's commissioning

Gunnery Officer, I was a proud man indeed for, by tradition and regulation, I was responsible not only for the lethal firepower of the ship but also for the pomp and pageantry, the rituals and ceremonials which would be a part and parcel of this mighty warship's life.

There were a host of dignitaries present, from our gracious and charming High Commissioner, Madam Vijaya Lakshmi Pandit, to a galaxy of Royal Navy brass. One of them was Rear Admiral N.V. Dickinson who had earlier been the Flag Officer Commanding the Indian Flotilla .... I was thrilled, as a young Lieutenant Commander, to also meet a former Chief of the Royal Indian Navy - Vice Admiral Sir Herbert Fitzherbert - who headed the Service from 1937 to 1943.

As regards the ship's weapon system, Vice Admiral Schunker recalls:

When *Mysore* was acquired in 1957, she was by far the most powerful unit to grace the fleets of any one of the states on the Indian Ocean littoral. The Medium Range System Mark 6 was the most modern fire control system in the world at that time. Decades later, in the missile era of the eighties, may be, she had become an anachronism but in the late `fifties *Mysore* was indeed the sword arm of the Navy, the bulwark on which India's maritime interests rested. An idea of her awesome firepower can be obtained by a simple mathematical calculation. A six-inch shell carries a 51-kg warhead: nine of *Mysore*'s barrels could thus spew out 459 kg of destruction in a single broadside. With 4.5 broadsides per minute as the accepted rate of fire, *Mysore* packed a punch of over two metric tonnes of explosive a minute. Such fury of gunfire was just not available with anybody else. And I, as the `Guns' (Gunnery Officer), took justifiable pride in this fact!

Our 'work-up' at Malta was a Gunnery Officer's dream come true. So possessive was the crack gunnery team of its charge and its reputation that they would not let even the dockyard personnel anywhere near the guns. It must be mentioned in eternal tribute to this team that photographs of *Mysore*'s 6-inch gun-firing were proudly displayed in the office of the Fleet gunnery Officer attached to the C-in-C (Mediterranean) as a model for the Mediterranean Fleet.

Shrimati Vijaya Lakshmi Pandit also takes a journey down memory lane and remembers *Mysore*'s commissioning day:

I had never commissioned a ship before and was rather nervous about the formal ceremony involved. The fact that I had a severe cold did not help and seeing so many distinguished people around me, I looked

rather helplessly at my Naval Adviser, Captain (later Admiral and Chief of the Naval Staff) S.N. Kohli, for help. But he was very much on duty and I received no friendly glance from him. He and the ship's Commanding Officer, Captain S.M. Nanda, were obviously full of the importance of the occasion and their own part in the ceremonies. I felt somewhat forlorn and thought I would not be able to say the right thing! However, since there is a destiny which shapes our ends, I managed to get through the commissioning ceremony as well as the speech after the formal luncheon which followed. Once the formalities were over the world looked bright again and I could enjoy the occasion. The beautiful brooch I received is a reminder of this historic occasion.

After her commissioning on August 29, 1957 when she was formally handed over by the First Lord of the Admiralty, Lord Selkirk, and accepted by Shrimati Pandit, the cruiser carried out her acceptance trials for a month and was formally accepted into the IN at anchorage off Holyhead on September 29, 1957. She soon completed her work-up at Portland and was inspected by the First Sea Lord, Lord Louis Mountbatten. While on her passage to India, she visited Malta and the Yugoslav port, Split, and finally reached Bombay on December 31, 1957. While the first Commanding Officer of the cruiser was Captain S.M. Nanda, her first Executive Officer was Commander K.M. Nanavati.

Admiral Nanda Reminisces:

The arduous days of work-up having ended satisfactorily, we were on our way back to India. The grey forbidding waters off the English shores gave way to the deep blue of the sunny Mediterranean. By now I had the total grip of the ship and with a recklessness almost bordering on audacity invited the Commander-in-Chief of the Mediterranean (at Malta) to put the ship through her paces and tell us our weak points, if any. The C-in-C (Med) must have been intrigued by the gumption of the young Indian Cruiser Captain, as he ordered the entire Mediterranean Fleet to put to sea - an awesome armada of two Royal Navy cruisers, some five or six destroyers and a couple of submarines. We came through with flying colours and, I daresay, better than most of the Royal Naval ships!

More prestigious events were in store for us. Soon after parting company with the Mediterranean Fleet, *Mysore* steamed into the Adriatic port of Split. Those were the days when the Nehru-Nasser-Tito charisma was at its peak and the official visit of an Indian warship to a Yugoslav port was an apt enough occasion to cement the bonds of

friendship between the two countries. We were feted all the way during our stay in Split and I was even accorded the unique honour of an audience with President Tito. In fact, the genial Marshal sent a special aircraft for our ambassador, Shri Rajeswar Dayal, and I to be taken to his private Presidential villa on the isle of Brioni. What made the gesture more significant was the fact that just a week before, an American admiral, flying his flag on a destroyer which called at Split, had been denied the opportunity of even calling on the President.

The return home was as memorable as it was magnificent. The whole Fleet sailed out to meet us and the flag of Rear Admiral Katari was transferred from the *Delhi* to the *Mysore*. Later we triumphantly tied up at Ballard Pier. The Defence Minister who was at Bombay to receive us wasted no time in formalities and we were out to sea on the morrow with Shri V.K. Krishna Menon embarked.

Thus the *Mysore* replaced the *Delhi*, flying the flag of Rear Admiral R.D. Katari, the first Indian Naval officer to have risen to flag rank and commanded the Indian Fleet.

Six Minesweepers

While the acquisition of major ships such as cruisers and destroyers was in progress, the need for the refurbishing of the units of the minesweeping fleet and in some cases replacing them had also acquired considerable urgency and had been considered by the naval authorities. As a result of negotiations held earlier, it had been decided to acquire six minesweepers, two inshore ones of the Ham class and four coastal ones of the Ton class, from the UK.

Minesweepers are small vessels, sparsely armed, and do not impress visitors as they are not equipped with the destructive power or manoeuvrability of other warships. But they have a vital role to play - they are specially designed and equipped to sanitise or clear the coastal waters, sea lanes or approaches to enemy territory of defensive or offensive mines. The fact that the passage of over four decades after World War II has in no way diminished their importance or utility was highlighted recently during the Gulf War when the absence of minesweepers adversely affected the operations of the US task force and the American Government had to send several distress messages to the UK, requesting the latter for the immediate loan of a squadron of minesweepers.

An inshore minesweeper of the Ham class had a standard displacement of 120 tons (full load 170 tons) and dimensions of 107 feet (length) 22 feet (width), and 6.7 feet (draught); she had weaponry comprising one 20-mm Oerlikon antiaircraft gun, a propulsion system of twin Paxman 500-

brake-horse-power diesel engines giving a maximum speed of 14 knots, and a complement of 16 officers and men. The first inshore minesweeper of the Ham class, *HMS Littleham* had been built by Messrs. Brooke Marine Ltd., Oulton Broad, Lowestoft and launched on May 4, 1954. She was commissioned into the Indian Navy as *INS Bassein* with Pennant No. M2707 on June 14, 1955 with Lieutenant Commander (later Commodore) B.R. Kapoor as her first Commanding Officer. The other inshore minesweeper, *HMS Hildersham*, had been built by Messrs. Vosper Ltd., Portsmouth and launched on February 5, 1954. This ship was rechristened *INS Bimlipatam* with Pennant No. M2705 on her transfer to the Indian Navy on the same date, June 14, 1955 with Lieutenant (later Commodore) L. Gomes as her first Commanding Officer.

The four Ton class coastal minesweepers of wooden construction built for the Royal Navy were *HMS Whitton, Durweston, Wennington* and *Overton*. *Whitton* had been built by Messrs Freelands Shipyard Ltd., Gosport, and launched on January 30, 1956. It was commissioned into the Indian Navy as *INS Cannanore* with Pennant No. M1191 on August 21, 1956 and with Lieutenant (later Vice Admiral) S.L. Sethi as its first Commanding Officer; *Overton*, built by Messrs. Camper and Nicholson Ltd., Gosport and launched on January 30, 1956 was commissioned and transferred to the Indian Navy on August 28, 1956 as *INS Karwar* with Pennant No. M1197 and with Commander (later Commodore) J. Chatterjee as its first Commanding Officer and Senior Officer of the Squadron; *Wennington*, built by Messrs. J.S. Doig Ltd., Grimsby was rechristened *INS Cuddalore* with Pennant No. M1190 on August 30, 1956 with Lieutenant (later Lieutenant Commander) S.S. Dighe as her first Commanding Officer; *Durweston*, which was built by Messrs. Dorset Yacht Co., Ltd., Hamworthy, was commissioned as *INS Kakinada* with Pennant No. M1201 on August 17, 1956 with Lieutenant (later Commander) N. Rajagopal as the Commanding Officer.

Named after minor ports in India, all six minesweepers initially constituted the 18th Minesweeping Squadron but on September 1, 1956 they were split into two squadrons, the two inshore minesweepers constituting the 239th Minesweeping Squadron with *Bassein* as the senior ship and the four coastal minesweepers constituting the 149th Minesweeping Squadron with *Karwar* as the senior ship.

Each of the coastal minesweepers had a standard displacement of 360 tons (425 tons full load) and dimensions of 153 feet (length), 28.75 feet (width) and 8.25 feet (draught). The weapon package of each minesweeper consisted of one 40-mm Bofors and two 20-mm antiaircraft guns and the propulsion system comprised twin-shaft Napier Deltic engines developing 1,250 brake horse power at a maximum speed of 15 knots and a complement of 40 officers and men.

After a brief work-up with the Royal Navy, the two Ham class inshore minesweepers reached India before the end of 1955. The four Ton class coastal minesweepers which were commissioned in August 1956, soon proceeded to the Royal Naval minesweepers base at Hythe, situated across the river from Southampton, where they worked up under the guidance of Royal Naval personnel.

Mixing business with pleasure has been the hall-mark of all sailors, be they of any navy, and this was confirmed once again at Hythe when a 17-year-old junior sailor, Engine-room Mechanic Class II Iqbal Singh, a professional 'pop' dancer and 'rock and roll' specialist (Iqbal could imitate Elvis Presley, the world famous hip-swinging dancer-crooner better known as Elvis the Pelvis) was in great demand at the Port town's social gatherings. Iqbal soon walked away with the first prize at the South of England Rock and Roll Championship!

Lieutenant S.P. Govil, a sword of honour awardee (now Vice Admiral and Vice Chief of the Naval Staff) who is the only serving officer from the original commissioning crew of the Coastal Minesweepers and who has served in Cannanore reminisces:

> It was a great day for all of us undergoing the Sub Lieutenant's technical courses in the UK when we received our appointment letters appointing us to the four Coastal Minesweepers. From RN Gunnery School, Chatham, where we completed our last course, we proceeded to join our respective ships at Hythe on 06 Oct 1956.
>
> The few months we stayed at Hythe gave us a good grounding in handling these ships and operating the Minesweeping gear, which was then the latest in the IN inventory.
>
> We were given a touching farewell at Hythe by Captain S.N. Kohli, then our Naval Adviser in London, and his staff alongwith members from the Admiralty. At Plymouth, we were wined and dined by Admiral Sir Mark Pizey at the Admiralty House who on return from India as C-in-C Indian Navy had taken over as the Commander-in-Chief Plymouth. He alongwith Lady Pizey came out in the C-in-C's barge to see us off at the Plymouth Sound.
>
> After a brief stop over at Gibraltar we arrived in Malta where we had to cool our heels for a few months as the war clouds brought about the closure of the Suez Canal. This period was professionally the most satisfying as Captain Inshore Flotilla (RN) and his staff put us through our paces. We participated in joint manoeuvres, formation anchorings, major minesweeping exercises with the Royal Navy and played tactical games at the RN Tactical School, Malta.
>
> After cessation of hostilities, our's were the first ships to transit

through the Suez Canal and one could see the extensive damage that had been done.

We reached Bombay in May 1957 and our ships berthed alongside the Challanor steps, one alongside the other where we were received by the Defence Minister, Shri V.K. Krishna Menon, Admiral Sir Stephen Carlill, the then Chief of the Naval Staff and the Commodore-in-Charge Bombay - a great home coming for all of us indeed.

Six Seaward Defence Boats

Four Seaward Defence Boats (SDBs) were acquired from Italy during the period 1957-58. Constituting the 322nd Seaward Defence Boats Squadron, these four boats were *INS Subhadra, Suvarna, Sharayu* and *Savitri*. The *Subhadra* was commissioned on August 20, 1957 with Pennant No. SDB 3130 and with Lieutenant (later Commander) P. D'Souza as her first Commanding Officer; the *Suvarna* with Pennant No. SDB 3131 and Lieutenant (later Commander) V. Bhushan as her Commanding Officer when she was commissioned on August 28, 1957; the *Sharayu* with Pennant No. SDB 3129 was commissioned on October 28, 1957 with Lieutenant (later Commander) S.C.M. Chitale in command and the *Savitri* with Pennant No. SDB 3123 was commissioned on February 6, 1958 with Lieutenant (later Commander) C.R. Menon as her first Commanding Officer. These boats had a displacement of 63 tons and dimensions of 90.25 feet (length), 20 feet (width) and 5 feet (draught). They carried small arms for defence and were powered by two twin-shaft diesels developing 1,900 brake horse power at a maximum speed of 21 knots. The *Sharayu* was the leader of the Squadron.

These four craft had actually been acquired by the Central Board of Revenue (CBR) but were manned, maintained and operated by the Navy and hence were known as CBR craft. They were placed under the operational control of the Flag Officer, Bombay and their operations were coordinated by the Staff Officer (CBR craft) in liaison with the Central Revenue Intelligence organisation. These craft were essentially meant for gathering revenue intelligence and anti smuggling operations and hence had Central Excise inspectors on board during operational sorties. Since the operation of these craft in adverse sea conditions was fairly hazardous and the only navigational aid fitted on board was a magnetic compass, they could only be used in fair weather, i.e., between the months of September and May, and were brought back to their safe anchorage at Bombay before the onset of the monsoons.

Two Seaward Defence Boats were also acquired from Yugoslavia. These were the *Sharada* with Pennant No. SDB 3133 and the *Sukanya* with Pennant No. SDB 3132 which were respectively commissioned on Decem-

ber 5, 1959 and December 12, 1959 with Lieutenant (later Rear Admiral) P.P.I. Sivamani and Lieutenant (later Lieutenant Commander) S.K. Kulshreshtha as their Commanding Officers. These boats had a displacement of 86 tons, an overall length of 103.25 feet, carried small arms for self-defence and were powered by diesel engines. These two boats were originally included in the 322nd Seaward Defence Boats Squadron but were later separated and formed into the 324th Seaward Defence Boats Squadron with the *Sukanya* as the senior ship.

Three Antisubmarine Frigates

As regards modern frigates, initially it had been proposed to acquire six antisubmarine vessels of the Blackwood class but later it was decided to restrict the number of these frigates to only three for the time being. The three ships acquired, *Khukri* (the Khukri is the Gurkha broad-bladed knife), *Kirpan* (the Kirpan is the Sikh sword) and *Kuthar* (the Kuthar is an axe) were similar to the British frigates of the Blackwood class but were slightly modified to suit Indian requirements by removing the four 21-inch torpedo tubes which had earlier been proposed to be fitted but were later omitted.

Each antisubmarine frigate has a standard displacement of 1,180 tons (1,456 tons full load) and dimensions of 310 feet (length), 33 feet (width) and 11 feet (draught). The weapon package comprised three 40-mm Bofors guns for antiaircraft defence and two Limbo triple-barrel depth charge mortars for antisubmarine operations. Each ship was propelled by one set of geared turbines delivering 15,000 shaft horse power at a maximum speed of 27.8 knots and had a complement of 150 officers and men.

Built by Messrs. J. Samuel White and Co. Ltd., Cowes, Isle of Wight, the *Khukri* was launched on November 20, 1956 and completed and commissioned into the Navy on July 16, 1958 with Pennant No. F149 and with Commander (later Vice Admiral) S.H. Sarma as her first Commanding Officer. The *Kirpan*, whose first Commanding Officer was Commander (later Captain) K. Gopinath, and which was built by Messrs. Alex Stephen & Sons Ltd., Govan, Glasgow, was launched by Shrimati Beryl Shri Hari, wife of Air Commodore Victor Shri Hari, Air Adviser to the High Commissioner for India in London on August 19, 1958 and completed and commissioned on July 01, 1959 with Pennant No. F144. The third ship, *Kuthar* was launched on October 14, 1958 by Shrimati Usha Rajwade, wife of the Military Adviser to the Indian High Commissioner in London and completed and commissioned at the shipbuilding yard of Messrs. J. Samuel White & Co. Ltd., Cowes, Isle of Wight on July 15, 1959 with Pennant No. F146 and with Commander (later Commodore) S.S. Sodhi as her first Commanding Officer.

Three Antiaircraft Frigates

Three Type 41 antiaircraft frigates (similar to the British Leopard class and modified to suit Indian conditions) acquired from Great Britain were *Brahmaputra*, *Beas* and *Betwa*. The *Brahmaputra* being the first major warship to be built in a British yard for the IN since India became independent. Each of the ships had a standard displacement of 2,251 tons (2,515 tons full load) and dimensions of 339.25 feet (length), 40 feet (width), and 12.5 feet (draught); the ship's weapon system consisted of four 4.5-inch antiship and antiaircraft medium range guns in twin turrets controlled by the recently developed weapon control system, Fly Plane System Mark 5, and four 40-mm Bofors antiaircraft close-range guns controlled by another recently developed weapon control system, Medium Range System Mark 8 the antisubmarine weapon fitted on board was the Squid triple-barrel depth charge mortar, the propulsion system comprised twin-shaft standard range diesels developing 12,380 brake horse power at a maximum speed of 25 knots while the complement of the ship was 210 officers and men. The three Type 41 frigates were also the first to be fitted with controllable pitch propellers.

The *Brahmaputra* had originally been ordered as the *Panther* for the Royal Navy on June 28, 1951 but was later offered to the Indian Navy as her first 'state of the art' antiaircraft frigate. Built by Messrs. John Brown & Co. Ltd., Clydebank, she was the first major warship to be built in Great Britain for the Indian Navy after Independence and was launched on March 15, 1957 by the Indian High Commissioner Shrimati Vijaya Lakshmi Pandit. She was completed on March 28, 1958 and commissioned into the Indian Navy on the same day by Lady McNeil wife of Sir James McNeil, Managing Director of the shipbuilding company (Shrimati Pandit was also to commission the ship, but, due to last minute indisposition, she could not undertake the journey to Glasgow for the commissioning ceremony), with Pennant No, F.31 and with Commander (later Commodore) K.K. Sanjana as her first Commanding Officer. The shipbuilders, John Brown, prided themselves in having built the world's largest ocean liner - the *Queen Elizabeth*.

Built by Messrs. Vickers-Armstrong Ltd., Newcastle-on-Tyne, the *Beas* was launched on October 9, 1958 and completed and commissioned on May 24, 1960 with Pennant No. F 137 and with Commander (later Commodore) B.R. Kapoor as her first Commanding Officer.

The third ship, the *Betwa*, was launched on September 15, 1959 and completed and commissioned on December 8, 1960 with Pennant No. F139, her first Commanding Officer being Commander (later Vice Admiral) R.K.S. Ghandhi. The three frigates later formed the 16th Frigate Squadron with the *Brahmaputra* as the leader and her Commanding Officer the Senior

Officer of the Squadron (F16).

Commodore K K Sanjana takes a journey down memory lane and reminisces:

> A fortnight after commissioning, we sailed for Plymouth to embark ammunition etc., before proceeding to Portland to undergo an extensive work-up programme under the command of the Flag Officer Sea Training (FOST). The *Brahmaputra* spent nearly four months at Portland, undergoing very severe and strenuous operational exercises. After a very critical final inspection by the Flag Officer Sea Training and his staff, she was certified as 'operationally ready in all respects'.
>
> Out of the many evolutions and exercises conducted by the FOST and his staff, I remember very well a rather amusing incident. For a boarding party exercise, the officer-in-charge of the boarding party was Lieutenant Jeremy Black, a Gunnery Specialist, who was Staff Officer (Gunnery) with FOST. Before the boarding party, comprising a complete Royal Navy crew, could board the *Brahmaputra* I had passed orders on the ship's intercom that no one on board was to claim any knowledge whatsoever of English. We could only speak Hindi, Malayalam or Telegu! Lieutenant Black and his men, after boarding the ship, were totally flabbergasted as the Boarding Officers Handbook, perhaps issued by the Royal Navy in the days of Nelson, had no translations for any of the Indian languages: young Black put his hands up and admitted defeat. This young officer of 1958 is today Admiral Sir Jeremy Black, at present serving as the Vice Chief of the Defence Staff in the United Kingdom. I know for a fact that whenever he meets any Indian officer today, even after 30 years, he is the first one to relate this incident.
>
> *Khukri* joined us in August and a non-composite squadron of ships was formed as the 14th Frigate Squadron of the Indian Navy, comprising the *Brahmaputra* (Senior ship) and the *Khukri*. Both the ships finally sailed from Portland in the middle of October 1958.
>
> On our passage home, we paid an operational call at Malta for refuelling and rations. We left Malta for Port Said - again for refuelling and rations. After leaving Port Said on October 27, 1958, we passed through the Suez Canal on our passage to Aden, where we were scheduled to pay a formal visit. However, on reaching Aden, we found that there were some disturbances in the city and Aden had been placed under a curfew.
>
> To undertake the final long passage home from Aden to Bombay, both the ships, especially the *Khukri* needed fuel very critically. Thanks to the staff of the oil company responsible for our refuelling, we did

manage to get some, under the noise of small-arms fire outside the harbour precincts. Since the situation in Aden was getting worse and somewhat out of control, I was advised to get out of the harbour with the *Khukri* as quickly as possible. Under these circumstances, we could not receive the full quantity of fuel that we both needed.

On leaving harbour, the *Khukri* signalled to me that she did not have enough fuel to make the passage to Bombay. The *Brahmaputra* class of ships had a tremendous endurance and as such she had enough fuel on board even though not to her full capacity. Since we were required to keep to our schedule to reach Bombay on November 7, 1958, and as I was not happy with the thought of having to tow the *Khukri* unceremoniously into Bombay Harbour, I decided to take her in tow at sea. The *Brahmaputra*, therefore, towed the *Khukri* for nearly 36 hours of the passage to enable her conserve her fuel and enter Bombay ceremoniously on her own steam.

On entering Bombay Harbour, the two ships anchored off the Gateway of India and, a few hours thereafter, we had the honour of receiving Vice Admiral R.D. Katari, who was then the Chief of the Naval Staff, and had specially come to Bombay to receive us.

Recalls Vice Admiral Ghandhi, who was then commanding the *Betwa* and who later became the Governor of Himachal Pradesh:

Betwa was launched at Vickers Armstrong Shipyard at New Castle Upon-Tyne on September 15, 1959 by Mrs Kakkar, wife of the Commercial Counsellor at the Indian High Commission in the UK.

The ship was due to be completed on December 6, 1960 and was to be handed over on that date to the Indian Navy, but because I had handed over *Cauvery*, which had been an extremely lucky ship for me, on December 8, two years earlier, I deferred the formal commissioning by two days and commissioned *Betwa* on the morning of December 8, 1960. It was a bitterly cold but bright day. The chief guest was the Lord Mayor who happened to be a Lady at the time.

Speeches were made by the Naval Adviser, who also read out a message from the First Sea Lord, Lord Mountbatten. He was due to attend the commissioning ceremony but this had to be cancelled as he was away on tour at the time. The Chief Constable of Newcastle made a witty little speech and presented me with a policeman's baton saying that this symbolised authority without any need to wield it.

I read out the Commissioning Warrant, proceeded on board to the strains of the traditional bosun's ('bosun' is the abbreviation for boatswain) pipe. The Officer of the Day was Lieutenant (later Com-

mander) M S Rawat. I received Commodore Marsh, the Commodore Superintendent, Contract-Built Ships, who inspected the guard of honour, commanded by Lieutenant R.P. Sawhney (later Vice Admiral).

After commissioning, we went down to Portsmouth for what was called Part II Trials and thence to Portland for our work-up. I think *Betwa* was the only ship that carried out the full four-month work-up at Portland under the Flag Officer Sea Training, who then happened to be Rear Admiral Peter Gretton - a firebrand officer of World War II fame.

Whilst we were at Portland, because Admiral Mountbatten could not come for my commissioning ceremony, he paid us a visit, inspected the ship at Divisions (a ceremonial parade), made a thundering speech to the sailors and was highly impressed by the decor and the fittings of *Betwa*.

The work-up was intense and severe and taught not only the Captain but down to the last Seaman Boy how to set about seamanship and other drills in the foulest of foul weather. After a time, I just stopped reading the weather reports because they always mentioned gales, snow and sleet with force 8 and 9 winds. On more than one occasion, we had to secure to buoys in the middle of the night in the freezing cold and I have no hesitation in saying that my buoy jumpers (sailors who secure ships to buoys) were superb.

After a successful Flag Officer Sea Training's inspection, when I was absolutely exhausted after he had ordered me to do a 360 degree turn alongside a tanker at sea, in his summing up note, he told me that my Chief Petty Officer (Telegraphist) Masih and Lieutenant M.S. Rawat were the outstanding crew members of *Betwa*.

After our work-up, the plan was that *Betwa* would act as crash boat (ship used for rescuing the crew of crashed aircraft) to *Vikrant*, but because the *Vikrant* was delayed in her commissioning, we were ordered to return home and the highlight of our return journey was a visit to Monte Carlo. I called on Prince Rainier, the sovereign of Monaco, and he invited me to lunch with my ADC. Lieutenant Ravi Sawhney was appointed ADC for the day and he and I trooped off to the palace for lunch with the adorable Princess Grace of Monaco. On return back home, the wives were anxious to find out from us what Princess Grace ate for lunch that day and what she looked like and whether she was really very beautiful.

For the interest of readers, whilst we had a full five-course meal, Princess Grace only had fruit and raw vegetables, and on my inquiry, told me that two or three times a week, she had this for lunch; and on my questioning her reason for this, she said, 'It is good for my complex-

ion'.

It is all part of history now, but 'Betwa', when back in India, rode the waves strongly and I think I am right in saying that we captured every single trophy in 1961, including the Regatta Cock and the sinking of the Portuguese destroyer *Afonso de Albuquerque*.

Two Surface Escort Frigates

Two surface escort frigates of the Whitby class which had been tropicalised so that they could withstand the Indian coastal conditions, mainly high temperature and high humidity, were the *Talwar* and *Trishul*. Each of these ships had a standard displacement of 2,144 tons (though the full load displacement was different - *Talwar* 2,545, tons and *Trishul* 2,557 tons) and dimensions of 369.5 feet (length), 41 feet (width) and 12 feet (draught); the weapon package included two 4.5-inch medium range anti surface and antiaircraft guns controlled by Fly Plane System Mark 5 and two 40-mm Bofors close range antiaircraft guns controlled by Medium Range System Mark 8 and antisubmarine weapons comprising two Limbo three-barrel depth charge mortars; the propulsion machinery consisted of two sets of twin-shaft geared turbines delivering 30,430 shaft horse power at a maximum speed of 30 knots and the ship's complement was 231 (11 officers and 220 sailors). The original design for this class of frigates had provided for twelve 21-inch torpedo tubes but, once again, these were not fitted.

The *Talwar* was launched on July 18, 1958 from the shipbuilding yard of Messrs. Cammell Laird & Co., Ltd., Birkenhead, and completed and commissioned on April 26, 1960 with Pennant No. F140, with Commander (later Commodore) B K Dang as her first Commanding Officer. The other frigate of this class, the *Trishul*, was launched on June 18, 1959 at the shipbuilding yard of Messrs. Harland and Wolff Ltd., Belfast, and completed and commissioned on January 13, 1960 with Pennant No. F143, her first Commanding Officer being Captain (later Vice Admiral) V A Kamath. The two ships formed the 15th Frigate Squadron with the *Trishul* (F15) as the leader.

The Navy's First Indigenously-Built Craft

The honour of being the first vessel to be built indigenously for the Navy after Independence goes to *Ajay*, a Seaward Defence Boat built by the Garden Reach Workshop (now Garden Reach Shipbuilders and Engineers), Calcutta. The other two boats of this class, *Abhay* and *Akshay*, were, however, built by Messrs. Hooghly Docking and Engineering Co., Ltd., Calcutta. These boats had a standard displacement of 120 tons (the full-load displace-

ment was different - *Ajay* 146 tons and *Abhay* and *Akshay* 151 tons) and dimensions of 117.25 feet (length), 20 feet (width), and 5 feet (draught); one 40-mm Bofors close-range antiaircraft gun was the only weapon fitted and twin diesels provided propulsion, giving a maximum speed of 18 knots. The *Ajay* was commissioned on September 21, 1960 with Lieutenant Commander (later Commander) A.S. Bhat as the Commanding Officer; the *Abhay* had Lieutenant Commander (later Commander) P M Verghese in command when she was commissioned on November 13, 1961 and the *Akshay* was commissioned on January 8, 1962 with Lieutenant Commander (later Commander) G.S. Saini as the first Commanding Officer.

Logistic Support Ship

Another ship that was acquired for logistic support at sea at this time was *Dharini* which was formerly, the *SS Hermine*, a cargo ship, and was rated a repair and store ship as a constituent of the Fleet Train after her commissioning on April 2, 1959 with Commander G.S. Gupta as her first Commanding Officer. Her displacement was 4,625 tons, dimensions 328 feet (length), 46 feet (width) and 19 feet (draught) and she was powered by a triple expansion engine.

The tanker, *Shakti*, and the repair and store ship, *Dharini* were to be the nucleus of the Fleet Replenishment Group for the 'balanced naval force' that the planners were proposing to set up for the defence of India's seaboard and coastal waters.

First Indigenously Built Hydrographic Survey Ship

The commissioning of *Darshak*, a hydrographic survey vessel built indigenously for the Navy's surveying fleet, on December 28, 1964 marked a new stage in Indian shipbuilding for she was the first major ship to be built by an Indian yard for the Navy. She was also the first private ship (a warship smaller than a cruiser) of the Navy to carry a helicopter.

The keel of the *Darshak* was laid down at the Hindustan Shipyard, Vishakhapatnam on October 14, 1957, India's first privately-owned yard, later taken over by the Government of India. The hull was launched on November 2, 1959 and the ship was commissioned on December 28, 1964 with Captain (later Commodore) D.C. Kapoor as her first Commanding Officer. The ship displaces 2,790 tons and her dimensions are 319 feet (length), 49 feet (width) and 28.75 feet (draught). She carries a helicopter for marine survey of India's coastline and harbours and is fitted with the latest surveying and navigational equipment. She is propelled by two diesel-electric plants developing 3,000 brake horse power at a maximum speed of

16 knots and she has a complement of 180 officers and men.

Vikrant Joins the Fleet

The most significant event in the Fleet during the period from 1950 to 1965 was the acquisition of India's first aircraft carrier, *Vikrant*, which was commissioned into the Navy on March 4, 1961 not only to usher the era of naval aviation into South East Asia but also to complete the process of setting up a 'balanced naval force' in the region for the first time. While the light fleet carriers' acquisition has been discussed in detail elsewhere in this book, it must be emphasised that K.M. Panikkar's prognostication and justification made in 1945 for establishing a fleet air arm as an integral part of the Fleet, was adequately vindicated when the Pakistan Navy's Fleet was kept at bay during the 1965 operations and the Pakistan Navy units in the erstwhile East Pakistan were totally annihilated by *Vikrant* aircraft during the 1971 conflict.

The Fleet's Birth-Pangs

Vice Admiral V.E.C. Barboza, who retired as the Navy's Flag Officer Commanding-in-Chief of the Western Naval Command in 1981, had held many staff appointments at Naval Headquarters and reminisces on the growth of the Navy's fleet during the fifties and the sixties:

> I was Staff Officer (Plans) at Naval Headquarters from April 1950 to May 1952. When I joined duty, Indo-Pak relations had reached the brink of war and I was soon in the thick of all the urgent, extensive preparations to tackle the 'emergency' as it was referred to at the time. Our war plan included an attack on Karachi Harbour by *Delhi* and the three Rs (*Rajput, Rana* and *Ranjit*) - and Rear Admiral G Barnard (the Fleet Commander) had lost no time in working up his ships for this as well as other vigorous actions at sea. At Naval Headquarters, all of us were learning fast, gaining much from the experienced counsel of Admiral Sir Edward Parry (the Navy's C-in-C) and Commodore Peter Drew (Chief of Staff, the equivalent of the present Vice Chief). It was agreed by the respective Governments that, if hostilities broke out, all British Officers would instantly hand over their duties to nominated Indian officers and withdraw from the scene. This eventuality was borne in mind and faced with firm confidence. Though the Nehru-Liaquat Pact averted an armed conflict between their countries which I think we were well braced to win - the experience we gained in preparing for it was immeasurable.

Recalling the bureaucratic obstacles the Naval Headquarters had to negotiate in its efforts to develop the Service and its fleet, Vice Admiral Barboza says:

> When Indo-Pak tension appeared to ease, the Government directed its energies to mapping out its strategy for economic development in greater detail, with immediate emphasis on the Five Year Plan. A Committee headed by a bureaucrat, Shri B.B. Ghosh, was appointed to examine the Armed Forces development plans to see how they could best be meshed with the National Plan. Not surprisingly the Committee soon encountered the tricky problem of balancing our defence needs against the estimates of available financial resources. When Shri Ghosh seemed to veer to the view that the way to match defence demands and inadequate funds was to have a smaller Army, the soldiers were understandably alarmed. They regarded the idea of restricting the Army's strength to a couple of hundred thousand - teeth, tail and all - as a formula for fatal emasculation. And their consternation peaked when the Prime Minister reportedly made a passing remark in Parliament about scaling down the Army's force levels.
>
> By contrast the Navy was too diminutive to admit of any whittling of its strength: so our anxiety centred really on the volume and pace of expansion the Committee would recommend. A low gear crawl towards inconsequential goals would have made a mockery of naval development and enlarged the very problems it was supposed to solve.
>
> As things turned out, however, some armed skirmishes along the Indo-Pak border (which were seen as proof of Pakistan's implacable belligerence) as well as other political and economic factors, conspired to undermine whatever the Ghosh Committee was endeavouring to achieve and its work seemed to dissolve into a blur. The Army's strength was never run down and as time went by, it expanded to gargantuan proportions. What was nearly over killed, survived to become overgrown. I wonder whether the Ghosh Committee papers are traceable today. Perhaps they are all moth-eaten - unless the moths too found them unpalatable.
>
> Though the Navy did not have to wage too intense a crusade to have its *raison d'être* accepted, it faced heavy odds when it came to securing sufficient funds for its growth. As an equipment-oriented Service, the cost of its build-up was high - a cost that could not be met by the small change of niggardly budget allocations. Yet, since the continental threat bulked large in the Government's strategic perspectives, it seemed that the Navy would have to be content with the thin

beer of a watered-down development. But if there was anything that the Service could count on it was the enlightened maritime vision of leaders such as Prime Minister Nehru and, as long as he lived, Sardar Patel. Their positive confidence-generating understanding of the seas' importance did much to make the Navy's growth in the 'fifties gratifyingly sure and steady. True its budget slumped immediately after the Chinese aggression; but the ensuing lean years were wisely (and stoically) used to consolidate previous gains and prepare for the inevitable turn of the tide.

India Turns to the USSR for Submarines

It was in 1965 that, having failed to obtain any submarines from the UK India turned to the USSR and thus came to an end the flow of ships, equipment, weapons and technical expertise from the British Admiralty to the Indian Navy, which now began looking around for other sources for state-of-the-art naval hardware. While India had wanted Oberon or Porpoise class submarines from the Admiralty, the latter was prepared to offer only obsolescent 'A' class submarines of World War II vintage and in return for the request for Daring class destroyers, it offered to supply Battle and Weapon class destroyers which were also about to be consigned to the shipbreaker's yard. James Goldrick feels that this watershed in the Indian Navy's acquisition programme was inevitable:

"The conclusion which can be drawn from the abortive submarine negotiations," he says, "is that the British were determined to make a profit from any arrangements with India. From 1965 onwards, relations between the Indian and Royal Navies, however cordial, were marked by an emphasis on commercial advantage. India could have British equipment if it was willing to pay for it.

The announcement on the purchase of Russian submarines thus marks the end of an era for the Indian Navy in several ways. Despite the difficulties over naval aviation and the British reservations on strategic issues, the Admiralty provided a measure of support for the Indian Navy which had both material and personnel advantages for India. It may be argued that the RN (Royal Navy) deliberately restrained Indian naval development but there was sufficient realism in British judgments as to the effect of rapid expansion upon fighting efficiency for it to be suggested that such restraint was no bad thing.

Certainly, Britain helped India acquire cheap warships at a time when the Indian Navy was the lowest Service in Indian defence

priorities - and budgeting. Equally certainly, the majority of ships which India received would not have looked out of place as active Royal Navy units.

But the close relations could not last and it is perhaps most significant that they were sustained until 1965. Perhaps this was due as much to enthusiasm for naval activity for its own sake on the part of both the Admiralty and Indian Naval Headquarters as to any other single factor."

In fact the 'other single factor', as viewed by senior Indian Naval planners in retrospect, was the British policy of maximising its commercial benefits by turning its 'lame ducks' into potential moneyspinners. Ships, like destroyers of the Battle or the Weapon class, and submarines of the 'A' class would certainly have looked out of place as active Royal Navy units during the 'sixties' and 'seventies'. The fact that India acquired a large number of ships of various classes with reasonable seaworthiness and effectiveness of weapon systems at fairly moderate costs to the Indian exchequer was largely due to the influence of Lord Louis Mountbatten, who wished to see the Indian Navy quickly expand to a size commensurate with its tasks and responsibilities, to the efforts made by the British Chiefs of the Indian Navy and by Shri V.K. Krishna Menon, both as India's High Commissioner in the UK and, later, as India's Defence Minister. And the suggestion that 'the Royal Navy deliberately restrained Indian naval development because there was sufficient realism in British judgments as to the effect of rapid expansion upon fighting efficiency' appears to be a facile defence of the British policy of preventing a 'dominion' from developing its coastal flotilla into a 'balanced naval force.' The fact that British global naval policy, at least until recently, was structured around a British bluewater navy, supported by the brownwater navies of its 'dominions' in their respective coastal areas and perpetually tied to its apron strings, was evident even during World War II when, in 1944, the British Prime Minister, Winston Churchill, suggested that it be declared that 'the greater measure of cooperation that political parties in India give, the earlier the change-over is likely to be' with a 'promise of modern ships for the Indian Navy at the end of the war'. It was even at that time no better than a mere offer of *quid pro quo*.

Alternative Sources for Naval Hardware

Severing the British umbilical and then the apron strings during the mid 1960s, turning to other sources for naval hardware in 1965 and finally indigenously constructing and developing designs for warships and shipborne weapons and equipment has, after a brief period of gnawing doubt,

turned out to be a blessing in disguise. The degree to which ships of the Indian Navy were dependent on the Admiralty during the earlier decades of India's independence is evident from the following reminiscences of Vice Admiral M.P. Awati, who retired as the Flag Officer Commanding-in-Chief of the Western Naval Command in 1983:

> I clearly recall an incident in early 1951 when, as a Lieutenant in *Ranjit*, I had been told by my First Lieutenant (Second-in-Command) to chase up a consignment of paint buckets with the Naval Store Officer. That officer, whose office used to be in the Naval Dockyard, Bombay in 1951, told me that he was awaiting the galvanised iron buckets from the United Kingdom! At that time the country's industrial base was no doubt small and somewhat primitive. But India had been a manufacturer and supplier of an extensive range of war material by 1945. For her to require naval paint buckets to be supplied all the way from England in 1951 was a little bizarre. It was an example of the Navy's insistence on `quality' and reliance on the `Admiralty Pattern' for everything from paint pots to peg measures, from caps to coverlets, from guns to gunny sacks! The Navy could not as yet trust itself to indigenous items of stores. Substitution could not even be contemplated!
>
> This was one of several examples of sheltering under the umbrella of the Royal Navy. In 1951 it would have been unthinkable to break away from its protective tutelage. Only a year before, at the beginning of this period the great ex-Viceroy, now commanding a cruiser squadron in the Mediterranean (Lord Louis Mountbatten), had personally designed the new Republican insignia of the Indian Navy. The Ashokan capital atop the Admiralty foul anchor on the cap badge and buttons (of India's Naval uniform) could readily stand in for the erstwhile Royal Crown of the United Kingdom of England, Scotland and Northern Ireland! The white ensign too had been retained with the National Tricolour substituting the Union Jack in the left upper canton. The language and organisation of the Service, its manners and deportment, both afloat and ashore, remained very English or British. The pre-lunch gimlet and the post-prandial port would have been missed in the Wardrooms (officers' messes) had they been absent, and the President's health continued to be drunk seated - as it continues to be today - in Wardrooms afloat. But the change from port to the similarly-tinted aerated cola beverage for drinking the Loyal Toast had come almost on the heels of the Republic. An officer from the Royal Navy would not have found himself in an alien environment in the Indian Navy of 1951.

Indigenisation of not only the procedures for parades, ceremonials, rituals, traditions, etc., but also of ships, weapons and equipment was slow but deliberate and hence had no adverse effect on the naval ambience or its operating efficiency. Vice Admiral Awati feels that:

> The slow progress towards Indianisation has helped the Navy to lay a firm foundation of its training and discipline. The switch from the old traditions to the new ones has been almost imperceptible, so imperceptible in fact that we came to believe that things were always done that way. A tradition is as important to a fighting service when moving from an older format to a new order as mother's milk is to a child which is growing from a crawler to a toddler. Bereft of either, the Service or the child would have grown up ill-founded and incapable of facing the strains and stresses inherent in their respective growth to maturity. I do sincerely believe that the years of upheaval which followed Mr. Nehru's departure from the national scene, and which were inevitably reflected in the Navy, caused virtually no damage to the fabric of discipline and good order in the Navy.

3

NAVAL AVIATION FROM NASCENCY TO GLOBAL PARAMOUNTCY

Writing on the evolution of naval aviation around the globe, Admiral S.N. Kohli, a former Chief of the Naval Staff, had said in 1978:

> When one considers the aircraft carrier as a weapon system for achieving the primary role of sea control, it emerges as a cost-effective instrument of maritime warfare. Its ability to exercise this control in a wider and more efficacious manner than other less endowed vessels rates it very high in the naval armoury. The possibility of building relatively small carriers, shorn of much of the old launching and arresting equipment, using simple hulls - because V/STOL does not demand high speeds in the carrier vessels - and the developments in miniaturisation and automation, must be seen in this light.
>
> As the Indian Navy grows, so will its air arm. The percentage of manpower and resources likely to be utilised in this long arm of the Navy is also likely to increase, because of the changing pattern of warfare at sea. Naval aircraft will continue to be used in our environment for many, many years, till India reaches a stage in technology when satellites will carry out all surveillance, and a combination of missile and electronic warfare can meet all threats. Whether aircraft will operate at all at sea is difficult to foretell. That it will undergo much

change and increase in sophistication is, however, beyond doubt. And that it will continue to be one of the most vital elements of warfare at sea in the present century is also a certainty.

Tracing the evolution of warships over the last two millennia, we find that the galley, in its various forms, held sway in the Mediterranean region for over 1,000 years while the Norse longboat, its contemporary, ruled in the northern seas. The development of sailing warships in Western Europe gradually drove both these boats into extinction. The sailing warships reigned as sailing 'ships of the battle line' for about 300 to 400 years after which, over a relatively short span of time, they were replaced by ships (armoured with plates of iron) known as ironclads. The era of the heavily armed and armoured centre-line gun battleship was ushered in, by ships of the heavily armed Dreadnought class within the next half century or so. But the Dreadnoughts reigned only for about 40 years and were dethroned by the aircraft carrier during the early stages of World War II. The carrier has now been the capital ship in most of the major navies around the globe for over half a century.

It was George Santayana who wrote, 'He who fails to learn the lessons of history is doomed to repeat them.' And the history of the evolution of the warship tells us that any dominant weapon system or platform is eventually countered by obsolescence and new developments. 'These dominant weapon systems', avers a specialist in strategic offensive systems,' 'are a form of technology fruition and therefore show the same trends. The process of introduction, acceptance, dominance, obsolescence and demise of weapon systems - notably capital ships - has become progressively shorter.'

The Carrier's Pre-eminence at Sea

Since the middle of the 1940s the carrier has successfully reigned supreme as a surface weapon platform. During the post-World War II years its use in the Korean, Vietnamese and Falkland wars and in the eastern theatre of the 1971 Indo-Pak conflict, as well as its deployment in the various oceans as the long arm of the superpowers, have not only displayed its fighting capabilities but have also established its efficacy in continuously maintaining a credible stabilising and deterring presence of the superpowers in the world's more volatile areas.

It is, however, not yet clear what will finally dethrone the carrier and when. Some of the potential challengers to the carrier within the next two or three decades, as prognosticated by today's naval thinkers, are likely to be nuclear- powered submarines, hovercraft or surface effect ships, SWATH (small waterplane area twin hull) ships, land-based long-range

aircraft, long-range smart missiles launched from a great variety of platforms and helicopter carrier ships carrying V/STOL aircraft with their rapid deck-cycle capability and, with the concurrent development in surface and sub-surface nuclear propulsion, supersonic jet aircraft and electronic warfare.

History is replete with instances of naval strategists or fleet commanders coming to grief only because they refused to accept the changes that had come about in tactics, ship designs, propulsion technology, weapons and equipment. For instance, when King Philip of Spain decided to send an invasion armada against England, he was wise enough to replace his fleet of Mediterranean galleys with bigger and sturdier sailing ships, but retained two vestiges of the galley that spelt the armada's doom: short-range heavy guns characteristic of galleys which were predominantly manned by soldiers and not by sailors, as was the practice earlier. British seamen firing lighter but longer-range guns from smaller but nimbler English men-of-war easily defeated them and thwarted the invasion.

During the American War of Independence, confidence in conventional weapon platforms led the Union Navy to deploy wooden-hulled ships at Hampton Roads against the Confederate ironclad, *Virginia*, and were being heavily battered when the new *Monitor* (with two large centre-line guns, a new concept at that time), came to their rescue and effectively repulsed an attack launched by ships of the line with 80, 100 and even 120 guns each.

Till the beginning of World War I, as stated elsewhere in this volume, Britain had not developed enough confidence in the submarines as a potent weapon platform though some other countries already possessed the new lethal platform for operating on the surface and below the surface. But the sinking of three British armoured cruisers in one hour by a single German U-boat, soon after the beginning of World War I provided enough warning of this new and deadly form of naval warfare - an expensive lesson indeed.

The sinking of two British battleships in quick succession by Japanese aircraft spelt the doom of Singapore, Malaysia and Indonesia during World War II and exposed the weaknesses of this class of warships against air attacks. Besides, the Japanese carrier assault on Pearl Harbour causing a US battleship disaster and the significant US victory at Midway convinced the Allied forces of the superiority of the aircraft carrier over the battleship in naval warfare and antiaircraft defence. Though the battleship continued for some more time, her role was mainly confined to the artillery-equivalent at sea, viz., carrier air defence and shore bombardment, the carrier having become the most potent surface weapon platform of all major navies of the world.

The position of the aircraft carrier as the most potent and versatile

weapon platform in any fleet has remained unassailed during the last four decades, and has in fact been reinforced by the performance of carriers and carrier aircraft in Korea, Vietnam, Falklands and Bangladesh, albeit in the absence of any enemy challenge to the carrier itself in these four wars. During this period the carriers have progressed from operating propeller-driven to jet-powered aircraft, from catapults to the V/STOL mode of launching aircraft, from fair to all-weather flying, from steam propulsion to nuclear power, from coastal to global deployment, from antiaircraft guns to surface-to-air missiles, and from hit-and-run to stand-and-fight tactics.

However, the carrier is not going to remain the queen of the sea forever and, as mentioned earlier, is likely to 'yield place to new' within a few decades - as the portents of her replacement are neither expected to be ignored, discredited nor countered for long by the proponents of the 'reigning queens' for, it is hoped, naval strategists have already learned lessons from history.

However, the studies, simulations, war games, exercises and analyses of war games that have been conducted by the major navies and naval strategists, planners and thinkers, indicate that the carrier will continue to hold the prime position in naval warfare for at least two more decades. These evaluations incorporate all the current and programmed improvements in naval warfare and indicate an extended lease for the carrier until the first decade of the next century.

Another lesson to learn from the history of naval warfare is that immediately before the demise of a prime weapon system, there is an onset and blossoming of the process of involution - self-analysis - for redesigning the system to render it impregnable. The sole mission then becomes survival and everything else is subordinated to it.

For similar reasons, towards the end of the Mediterranean galley era, several unwieldy multi-tiered galleys - quadriremes with four tiers and even quinquaremes with five tiers of oars - with hundreds of galley-slaves and troops manning them were built but, unfortunately, the days of the galley were, by that time, sadly over and it did not survive. When the ironclads came in, the sailing ships became more and more ornate, elaborate and cumbersome as ships of the line, with 100 to 120 guns and over 1,000 men on board. When the battleships were about to be replaced by aircraft carriers, they were bristling with antiship and antiaircraft guns, had been fitted with virtually impregnable armour and had in some cases a complement of over 3,000 men.

In each of these cases, the weapon system or the weapon platform that reigned supreme for several years fell victim to a longer-range weapon platform with greater lethality. With the growing threat in recent years to today's queen of any naval power, the aircraft carrier, from modern vessels

with greater versatility and less vulnerability, this weapon platform is being rendered more and more impregnable and other vessels, specifically designed for the defence of the carriers - cruisers and nuclear submarines - are being built to indicate that involution is about to set in once again.

Nevertheless, this process is likely to take at least two decades - may be even longer in the developing countries - and hence the carrier is most likely to reign supreme for many years to come.

Early History

The honour of flying the first aircraft from the deck of a ship at sea goes to an American civilian pilot, Eugene Ely, who took off in a 50-horse power Model-D Curtiss biplane from a 57-foot wooden platform on the forecastle - the forward upper deck - of the US Navy's light cruiser, *USS Birmingham*, which was anchored off Hampton Roads, Virginia on November 14, 1910. The aircraft, designed by Glenn Curtiss, a pioneer designer, builder and flier of aircraft for both civilian and naval use, was the prototype of the all-purpose biplane that occupied the centre-stage of aviation for many years. Ely could reach a height of only 37 feet above sea level and the aircraft's wooden propeller, wheels and float touched the sea, drenching him and damaging the aircraft but he managed to maintain his perilously low altitude and flew a distance of 2.5 miles before landing ashore. It was decided next to attempt landing on a ship-borne platform.

A large wooden platform, 120 feet long and 32 feet wide, was built on the quarterdeck of the cruiser, *USS Pennsylvania*, with a ramp with a slope of 30 degrees and extending to 15 feet at the rear end of the platform, to prevent the aircraft from crashing into the stern. A canvas barrier was erected at the forward end of the platform to stop the aircraft from hitting the cruiser's superstructure in case it overshot the makeshift 'runway', and wooden guard-rails were built on the sides of the platform to prevent it from falling into the sea. Twenty two manila ropes were stretched across the platform at a height of one foot from the deck, each one of which was attached to a 50-pound sandbag on either side. The tail assembly of the aircraft was fitted with three hooks, one of which was expected to engage one of the manila ropes and the aircraft, while moving over the deck, would continue to pick up an additional 100-pound drag every three feet, thus experiencing and increasing braking effort and being brought to a stop after travelling only a little more than half the length of the 120-foot platform. This arrangement was the precursor to the present-day arrester gear, the only difference between the two being the replacement of ropes by wires and the sandbags by hydraulic brakes.

Two months after the historic take-off of his aircraft from the deck of

the *Birmingham*, Ely took off in a Curtiss aircraft from Tanforan airfield near San Francisco on the morning of January 18, 1911 and successfully landed on the deck of the *Pennsylvania* which had been anchored 12 miles away in the San Francisco Bay. About an hour later, he took off from the cruiser and landed at Tanforan, with the distinction of becoming the first person to have landed on and taken off from the deck of a ship in an aircraft.

Glenn Curtiss, the designer-builder-pilot, had also been engaged in developing the technique of taking off from and landing on the sea by replacing the tricycle undercarriage of his aircraft with a central wooden float below the fuselage and two small cylindrical floats below each wing-tip. He succeeded in flying his aircraft from San Diego Bay and landing back, a historic feat performed only a month after Ely's carrier landing. This aircraft was soon followed by the Triad A-1 biplane (the name Triad indicated the aircraft's ability to operate in the air after being launched from land, ship or sea) which had a wing span of 37 feet, was powered by a water-cooled Curtiss V-8 engine of 75 horse power, carried two persons including the pilot, had a ceiling of 1,000 feet and a range of 60 miles. This 'hydro-aeroplane', as it was called by Curtiss and later classified by Churchill as a 'seaplane', was the first aircraft to be acquired by the US Navy.

It is not generally known that Wilbur and Orville Wright, the heavier-than-air flying machine pioneers, had offered to sell the patents of their flying machine to the British Admiralty as early as March 1907 but the latter turned it down because they considered the invention to be "of no practical use to the naval service". The Wright brothers then returned to the USA and succeeded in selling the first military aircraft to the US Army two years later.

The major naval powers of the world at that time - the USA, Britain, Germany and Japan - had reposed all their faith in the Dreadnought class of battleships which, with their 12-inch guns and 21-knot speed, were considered the most invincible weapon platforms in the world and this resulted in the initial lack of interest of these countries in the aircraft offered by the Wright brothers. The British Admiralty was, however, showing considerable interest in airships because Germany had already built a number of Zeppelins, airships designed especially for military use. It, however, decided to train four officers, three from the Royal Navy and one from the Royal Marine, in flying Short biplanes at the Royal Aero Club in March 1911. Churchill, who was the First Lord of the Admiralty at that time, had realised the potential of naval aviation and arranged the acquisition of three Short S-27 aircraft and the establishment of a Royal Naval Air Station at Eastchurch in the same year.

In November 1911 Commander Oliver Schwann became the first Royal Navy pilot to effect a water-borne launch when he took off from the sea at Barrow-on-Furness in an Avro seaplane. In the same month

Lieutenant Longmore successfully landed on River Midway in a Short aircraft fitted with rubberised floatation airbags around its wheeled undercarriage. This was followed by Lieutenant Samson successfully taking off from a specially constructed deck on *Africa*, a battleship, in an S-27 biplane, fitted with floats, on January 12, 1912.

The Royal Flying Corps (RFC) with two wings - Naval and Military - came into being on April 13, 1912 with eight biplanes, five monoplanes, three seaplanes and non-rigid airship, and on May 9 the same year, Commander C.R. Swanson, Commander of the RFC's naval wing, took off in a Short S-27 aircraft from the deck of *Hibernia* with the ship steaming at 10.5 knots and, two months later, another naval pilot emulated his feat from the deck of the battleship, *London*, while she was steaming at her cruising speed.

In May 1913 an old cruiser, *Hermes* (a namesake of the former *Avatar* of India's second carrier), converted into a seaplane carrier, was commissioned. The ship was fitted with a trackway on her forecastle and equipped with three Short S-41 biplanes and trolleys on the short flying deck, for launching the aircraft. At the suggestion of Churchill, a Short aircraft with folding wings, known funnily enough as the 'Short's Folder', was soon developed and flown by Commander Swanson from the deck of the *Hermes*. The launching arrangement on the *Hermes* comprised small wheeled trucks supporting the seaplanes, which made the ship's upper deck resemble a catapult far more than a flight-deck.

The Royal Naval Air Service (RNAS) came into being on July 1, 1914 with its own rank structure comprising Wing Captain (Captain), Wing Commander (Commander), Squadron Commander (Lieutenant Commander), Flight Commander (Senior Lieutenant), Flight Lieutenant (Junior Lieutenant) and Flight Sub-Lieutenant (Sub-Lieutenant).

A tramp steamer had been acquired by the British Admiralty in 1913 while under construction, converted into an aircraft carrier with a 130-foot flying deck and commissioned in 1915 as *Ark Royal*, but her speed of 10 knots prevented her from being used as a carrier. Her role was, therefore, limited to that of a seaplane tender with the planes being hoisted on board by cranes whenever required.

Three cross-channel ferries, the *Empress*, *Engadine* and *Riviera*, were converted in August 1914 into seaplane carriers, each with a capacity of three seaplanes and a speed of 21 knots. Since these ferries lacked seagoing capability and their endurance was limited, an 18,000-ton passenger ship with a speed of 22-knots, *SS Campania*, was converted, in 1915, into a carrier with a 120-foot flight-deck (later extended to 250 feet) and carried ten seaplanes.

One feature of the *Campania* has been retained by nearly all aircraft

carriers since it was introduced in this ship - an elevator on the flight deck which helped in stowing aircraft, which would normally be positioned on the flight deck, in a hanger space below. The advantage was three-fold - the carrying capacity of the aircraft carrier was increased, more space was available on the flight-deck for conducting flying operations, and repair and maintenance of aircraft could be carried out in the enclosed hangar space.

Catapult launching of aircraft was also tried out in 1912, when in November, an experimental catapult built at Annapolis, Maryland, successfully launched a plane, piloted by T.G. Ellyson. In 1915, Commander H.C. Mustin of the US Navy became the first person to make a catapult flight from a ship when he was launched from the *North Carolina* in a Curtiss AB-2 flying boat. Two US cruisers, the *Seattle* and the *Huntington*, were fitted with catapults to launch twin-float R-6 torpedo planes.

In 1912 a Short biplane was used to drop 100-pound bombs on selected targets and 1.5-pounder guns were fitted on these aircraft for strafing ground targets. By 1914 Short biplanes had made a successful torpedo drop with a 14-inch 810-pound torpedo and had been equipped with wireless equipment for communication with ground stations and ships at sea. The three main roles assigned to naval aircraft at this time were fighter operations for home defence, spotter operations for reconnaissance and shipborne aircraft for operations at sea.

These seaplanes were by now being equipped with 50-pound bombs and torpedoes, which was an indication of naval planners being seized of the potential for offensive uses of ship-borne planes, and it was this future of supplying wings to the navy to carry bombs and torpedoes to targets hundreds of miles away, which eventually made the aircraft carrier one of the most potent weapon platforms in the course of the following decades.

The first aircraft for the French Navy, a British Maurice Farman seaplane, was acquired in September 1910 for training pilots, and in 1912 an old 6086-ton torpedo boat carrier, *Foudre*, was converted into a seaplane carrier, with two seaplanes which were hoisted on board after they took off from and landed back on the sea. She was later equipped with a launching platform, from which an aircraft successfully took off, on May 8, 1914.

Three Lieutenants of the Japanese Navy were sent to France and two to the USA for training in flying in 1912. Two Maurice Farman seaplanes from Britain and one Curtiss biplane from the USA were thereafter acquired for the Japanese Navy and in November 1912 Japanese naval aviators started flying their aircraft from a shore base. *Wakamiya Maru*, a 7,600-ton naval transport, was converted in 1913 into a seaplane tender with a carrying capacity of four seaplanes. By September 1914, the Wakamiya Maru had started operating against the Germans by successfully using her

seaplanes to bomb and sink a minelayer in Kiaochao Bay, off the Chinese coast.

In 1907 an officer of the Italian Navy, Lieutenant Mario Calderara, succeeded in flying a seaplane glider which was towed and launched by the destroyer *Lanciere*. Italian naval aviators received training in France and Calderara was the first to earn his flying licence in 1909. The first lot of seaplanes were acquired from Britain, France and the USA.

By the time the first World War started on August 04, 1914, The Royal Navy had 71 aircraft, Czarist Russia had 50, the Italian Navy had 30 and the US Navy 12. The role of a reconnaissance picket at sea had been transferred from the scout frigate and scout cruiser to the new long-range 'eye-in-the-sky' launched from ships of the fleet.

Carriers in World War I

The first World War saw fairly extensive use of ship-borne aircraft. These planes were used for air reconnaissance, carrying out attacks on ships, submarines, Zeppelins, shore bases and installations and for the protection of fleets from air attacks.

Three British carriers, the *Empress, Engadine* and *Riviera*, each with three seaplanes on board, and escorted by a screen of two light cruisers, 10 destroyers and 10 submarines, carried out an attack in December 1914 on the Zeppelins' sheds near the German North Sea base at Cuxhaven. Bad weather, however, prevented the planes from causing any serious damage to the German installations and poor visibility caused the loss of seven planes, though the crews of the planes, which had ditched, were picked up by ships and submarines. Though this attack was not much of a success, it was the first true naval air operation with the attack being launched from carriers at sea with screens of ships and submarines and with the over-the-horizon targets, well outside the range of the ship's guns or shore-based planes.

The British carrier fleet was soon enlarged with the conversion of three steamers, the *Ben-My-Chree, Manmax* and *Vindex*, into carriers but lost the *Hermes*, the first ship to have been converted into a carrier, in October 1914 when she was torpedoed by a U-boat (Undersee boot - under-sea boat, German submarine) in the English Channel.

In September 1914 the German 3,400-ton light cruiser *Konisberg* took refuge in the delta of the Rufigi river in Tanganyika. *Chatham*, which had been chasing the German ship from Zanzibar after the latter had sunk the British ship *Pegasus*, could not move up the Rufigi river because of her greater draught (depth of water drawn). In July 1915, two monitors - shallow-draught warships of heavy gunpower - and six cruisers were

requisitioned and these ships, assisted by two aircraft used as spotters, succeeded in immobilising the *Konisberg*.

During the Dardanelles campaign in 1915 the British carrier, *Ark Royal*, was despatched to the area to operate a number of aircraft under the command of Wing Commander Swanson which very effectively carried out gunnery spotting and bombing operations against the Turks, occasionally using 500-pound bombs. The *Ark Royal* was soon followed by the *Ben-My-Chree* with two out of her aircraft complement having been fitted with 810-pound 14-inch whitehead naval torpedoes slung between their floats. Wing Commander Edmonds, piloting one of these aircraft, attacked a 500-ton Turkish ship on August 12, 1915 with a torpedo at a range of 300 yards and a height of 15 feet. This first ever aerial torpedo attack was followed by torpedo attacks on August 17, by Edmonds and Lieutenant Dacre, sinking a large tug and a supply vessel.

In March 1916 seaplanes operating from the *Engadine* and *Vindex* carried out attacks on Zeppelin sheds on the German North Sea coast and caused some damage to the sheds.

It was during the Battle of Jutland on May 31, 1916 that for the first time naval aircraft communicated with ships of the fleet and while the use of the naval air arm could have led to the British Grand Fleet's decisive victory over the German High Seas Fleet, quirks of fate prevented such a triumph and the British Fleet suffered severe losses, though the German Fleet was eventually vanquished.

The *Campania*, a converted carrier with ten seaplanes, had been ordered to accompany Admiral Sir John Jellicoe's 151-ship Grand Fleet when the latter sailed out of Scapa Flow in Orkney Islands north of Scotland on May 30, 1916 but had failed to do so because she had not received the sailing signal! The other aircraft carrier, the *Engadine*, was with Vice Admiral Sir David Beatty's Fifth Battle Squadron which had sailed from Rosyth on the Firth of Forth, as a scouting force. They were to intercept Admiral Hipper's 101 - ship German High Seas Fleet which had sailed from the Norwegian Coast.

Since the Grand Fleet was without an aircraft carrier, the Fifth Battle Squadron decided to use its 'eyes-in-the-sky' as look-outs. On the afternoon of May 31, Vice Admiral Beatty's squadron sighted some smoke on the horizon and ordered the *Engadine* to launch her aircraft to investigate. Flight Lieutenant Rutland took off in a Short 181 seaplane and, despite poor visibility and a low cloud base, spotted the German Fleet within minutes. He kept the aircraft within 3,000 yards of the German ships for some time and faced heavy antiaircraft fire but continued to make reports on the wireless, on their composition, position, deployment, course and speed until his engine malfunctioned and he was forced to land on the sea. After

carrying out necessary repairs, when Rutland took off and returned to the *Engadine*, he found that due to a lapse in the communication channel, his reports hadn't reached the C-in-C and no action had been initiated to intercept the German ships. Adverse weather prevented any more flying and thus a golden opportunity was missed for launching an attack when the German Fleet was least prepared for it. When the battle between the Fleets did take place an hour later, a certain degree of the element of surprise and tactical advantage had been lost. By the time the battle was over, the British Fleet had lost 14 ships as against 11 of the German Fleet and 6,274 officers and men perished as against 2,545 of the German Fleet though it left the Grand Fleet in undisputed possession of the arena and the German High Seas Fleet had to be confined thereafter to the Heligoland Bight, for the rest of the war. The conclusion that one could draw from the way that this battle developed was: the losses suffered by the Grand Fleet would have been far less if, firstly, the *Campania* had sailed with the main fleet and her aircraft had given the necessary information to Lord Jellicoe well in time and, secondly, if the information transmitted by the *Engadine*'s aircraft on the sighting of the German Fleet had not failed to reach the Admiral.

In 1916 a new aircraft, the German Eindecker monoplane, was developed with its machine-gun synchronised to fire through the revolving propeller blades. It shot down a large number of aircraft of the Allied forces and the Royal Flying Corps. The Admiralty soon developed the Sopwith Pup armed with Vickers ·303-inch machine-guns firing through the revolving propeller blades which was supplemented by an observer in the rear seat armed with a ·303 Lewis gun. This aircraft was successful in effectively countering the German air offensive to a considerable extent.

In 1917, Rutland, the Grand Fleet's look-out- cum-spotter, got a Sopwith Pup into the air from the deck of the seaplane carrier, *Manxman* as also the light cruiser, *Yarmouth* with a run of less than 20 feet. Despite initial apprehensions about having to turn ships into wind in enemy-infested areas, all battle- cruisers were soon equipped with forward and aft platforms to carry two aircraft each, while the smaller cruisers were fitted with revolving platforms.

In the same year, the 22,500-ton 31-knot *Furious* replaced her forward turret with a flight-deck-cum-hangar of length 228 feet and width 50 feet on her forecastle and embarked three Short 184 seaplanes with folding wings and five Sopwith Pups with fixed wings. It was found that taking off from this ship could be done without much difficulty, but landing was hazardous because of turbulence caused by the superstructure and the funnel discharge. Wing Commander Dunning made a couple of safe landings on the deck, while the ship was under way on August 2, 1917, by approaching the deck at a relative speed of only three knots, cutting the

engine and then being hauled down with the help of rope toggles. On August 7 when Dunning made his third attempt to land, the aircraft stalled, rolled over the side and fell into the sea, killing him. The *Furious* was thereafter modified and fitted with a primitive form of arrester gear consisting of longitudinal arrester wires and transverse rope attached to sandbags, both of which were engaged by spring clip hooks on the axle of the aircraft.

The first flat-top, i.e., the first true aircraft carrier of the world with a flush flight-deck with no superstructure and vents discharging exhaust gases over the stern, *Argus*, was completed in 1918, and in October that year, history was made when Wing Commander Richard Bell Davis took off from its deck in a Sopwith 1.5 Strutter and landed back safely without even using the arrester gear. The *Furious* soon embarked a squadron of the first aircraft designed to carry torpedoes, the Sopwith Cuckoo.

About this time the Royal Navy carried out trials on another method of launching of aircraft. Lighters with decks of 30 feet length and 16 feet width were towed by destroyers at speeds of over 30 knots, and the aircraft took off from the lighters. In May 1918, Wing Commander Swanson safely took off from a towed lighter in a Sopwith Camel, and on July 31 the same year Lieutenant Culley shot down a Zeppelin, after taking off in a Sopwith Camel from a towed lighter.

Argus, the first true aircraft carrier to be built, was still in fighting trim when World War I ended on November 11, 1918. The others had either been lost, decommissioned or converted for use in different roles.

During the war the US Navy and Marine Corps had concentrated mainly on antisubmarine operations, using the Curtiss H12 and H16 Flying Boats, each one of which had been equipped with four machine-guns or two 230-pound bombs or depth charges. These aircraft operated from shore bases in Europe, attacked 25 U-boats and sank or severely damaged 12 of them. Actual operations of planes launched from US Navy ships during World War I were of little importance. As mentioned earlier, the US cruisers *Huntington* and *Seattle* were equipped with catapults, and carried planes for providing antisubmarine protection to convoys plying across the Pacific, but these never saw action. The main reason for the limited development of ship-launched aviation in the US Navy was the short duration of its involvement - only 19 months - as it had joined the fray only on April 6, 1917.

When the Royal Air Force came into being on April 1, 1918, over 3,000 aircraft of the Royal Naval Air Service were merged with the Royal Flying Corps to create an air wing independent of the Army and the Navy, and adopted the rank structure of the RNAS with certain minor modifications, with officers of the Fleet Air Arm reverting to the naval rank structure in 1924.

The Inter-War Years

In the Royal Navy, carrier operations practically came to a standstill after World War I, with most of its aircraft having been transferred to the Royal Air Force and the *Furious* having been decommissioned. The only aircraft carrier still in operation was *Argus* which had been fitted with an experimental arresting device. This device caused considerable damage to the aircraft' undercarriages when they landed and hence was later removed.

Courageous was fitted in 1931 with transverse wires, with friction brake-drums providing the arresting effort and an electrical system resetting the wires. The electrical system was soon replaced with a hydraulic system which proved to be more efficient and fail-safe. The retractable hook suspended below the axle of the aircraft's undercarriage was now shifted to the rear of the fuselage and this prevented the aircraft from tipping forward on being arrested and thus avoided damaging the propeller, as was the case earlier.

While the US Navy had been experimenting with catapults for launching aircraft as early as 1915 and had equipped a number of ships with catapults, it was tried out in Britain for the first time in 1917 when the steam hopper *Slinger* successfully launched a Fairey 9 seaplane from its forward deck with a catapult. It took the Royal Navy another eight years to introduce this launching system, when a Fairey IIID seaplane, piloted by Wing Commander Burling, was launched by a catapult from the deck of *Vindictive* in October 1925. Initially the catapults used a hydro-pneumatic mechanism which was later replaced with the more efficient steam-powered mechanism. The earlier version of the steam catapult, known as an accelerator, had been developed during the earlier years of the 1930s but was not considered very safe and was used only as a last resort, when the ship's speed and the prevailing wind could not produce a relative wind strong enough for the aircraft to take off on its own. Another innovation for the accelerator catapult launch was a strop, a collar of spliced wire, engaging the aircraft to a projection on the launcher, which fell off immediately after the aircraft was airborne.

On April 13, 1920, the second British flush- deck carrier, *Eagle*, with a flight deck measuring 625 feet in length and 96 feet in width and a speed of 24 knots, displacing 22,600 tons and operating 24 aircraft, was commissioned. Its superstructure, known in naval aviation parlance as an 'island' which houses the bridge, mast and funnels, was on the starboard side of the flight- deck, as is the convention even today, and it was equipped with longitudinal wires to arrest landing aircraft.

On February 6, 1922, the Naval Armament Limitation Treaty was

signed at Washington, stipulating the ratio of 5:5:3 regarding the total tonnage for navies maintained by the United States, Britain and Japan. So far as the aircraft carriers of the three major naval powers were concerned, the United States and Britain were permitted a maximum gross tonnage of 135,000 tons and the ceiling for Japan was 81,000 tons.

Britain's Fleet Air Arm continued to expand. Two battle cruisers, the *Courageous* and the *Glorious*, were converted into aircraft carriers with flight-decks of size 570 feet by 110 feet and a carrying capacity of 48 aircraft each, in 1928 and 1930 respectively. The first ship to have been designed and built as an aircraft carrier, the 27,000 ton *Ark Royal* with a flight-deck of length 720 feet and width 95 feet, a speed as high as 31.75 knots, and for the first time using a crash barrier to prevent landing aircraft from hitting and damaging other aircraft parked on the deck, was completed in 1938. Four aircraft carriers of the *Illustrious* class, each displacing 23,000 tons and a speed of 31 knots, were laid down during the period. Of these, the *Illustrious* and the *Formidable* were commissioned in 1940 and the *Victorious* and the *Indomitable* were commissioned in 1941. Each one of these carriers had a carrying capacity of 36 aircraft each but could carry a maximum of 60 aircraft, the additional 24 aircraft being parked on the flight- deck. These four carriers were soon followed by two more carriers, the *Implacable* and the *Indefatigable*, which were similar to the *Illustrious* class but had a speed of 32 knots and two hangar-decks which increased their aircraft carrier capacity to 72. Another light fleet carrier, the *Unicorn*, which also served as a supply and repair ship and carried 35 aircraft, was commissioned in 1943.

As regards aircraft for these carriers, the biplane fighter, *Hawker Nimrod*, was used for eight years from 1931 to 1939. The biplane fighter, *Gloster Sea Gladiator*, was introduced in 1939, the two-seater biplane, the *Hawker Osprey*, having already been introduced in 1932. The strike role during the war was, however, assigned to the torpedo-carrying biplane, *Fairey Swordfish*, and the two-seater monoplane dive bomber, the *Blackburn Skua*.

The first American aircraft carrier was the *Langley*, commissioned in 1922 with a flight-deck of length 534 feet, width 64 feet and a speed of 14 knots. This was followed by two large aircraft carriers, the *Saratoga* and the *Lexington*, each with a displacement of 33,000 tons, a speed of 33.5 knots and a 880-foot flight-deck, commissioned in 1927. In 1934 the 14,500-ton *Ranger* was commissioned, with a speed of 29 knots and an aircraft complement of 75. By 1938, two more 19,900-ton carriers, the *Yorktown* and the *Enterprise*, each with a speed of 30 knots and aircraft complement of 80 aircraft, had been added to the US Fleet.

The Naval Armament Limitation Treaty permitted one more carrier to the US Navy and the 19,000-ton *Wasp*, a 30-knot carrier with a capacity of 84

aircraft, was commissioned in 1940. She was soon followed, after the termination of the Treaty, by the *Hornet*, which was a modified version of the *Yorktown*.

The first monoplane to operate from US carriers was the BT-2 which was introduced in 1940. It carried a 1000-pound load of bombs and was embarked in the *Yorktown* and *Enterprise*. Soon the successful dive bomber, the *Douglas Dauntless*, was developed and used in the Battle of Midway. The *Vaught Vindicator*, a scout/dive-bomber monoplane equipped with folding wings, was used till 1942 and the *Douglas Devastator*, another monoplane carrying a 21-inch torpedo, saw service till after Midway. In 1938 the *Grumman F3F* fighter began operating from the US carriers and was replaced in 1940 by the *Grumman F4F-3*, better known as the *Wildcat*, which was armed with machine guns and bombs.

It was on board the *Langley* that the development of the 'batsman' technique for providing guidance to landing aircraft and the 'crash barrier' for the prevention of landing aircraft from colliding with other flight-deck aircraft and the acceleration of the frequency of landing took place in 1926. The 'batsman', known as the Landing Signals Officer in the US Navy, positioned himself on the port side of the flight-deck and used a special arm signal code to safely guide landing aircraft down to the flight-deck at an approach angle that would ensure the engagement of the arrester wires. He raised his arm to indicate that the approach was too high, kept it in a horizontal position to indicate a correct approach, lowered it if the aircraft was too low and signalled instructions to the pilot to switch off his engine when the aircraft was close enough the deck. This system was introduced in the Royal Navy in 1936, but was discontinued in all navies when mirror landing sights were introduced after World War II.

During flying operations in 1926, an aircraft had failed to engage the arrester wires on board the *Langley* and hit a number of aircraft on her deck, damaging 14 of them. The ship decided to rig thick manila hawsers across the deck during landing operations and effectively prevented such damage to aircraft. The manila hawsers were soon replaced by steel wire ropes which were hydraulically raised before landing an aircraft and lowered thereafter to enable the landed aircraft to be parked ahead of the barrier. The crash barriers ceased to be used as a regular safety measure in 1953, when the carriers began to use angled decks.

Japan, after flying some Sopwith Pups from the seaplane tender, *Wakamiya*, and from the battleship, *Yamashiro*, commissioned a flush-deck aircraft carrier in 1922, the *Hosho*, which displaced 7,470 tons and had a 550-foot flight-deck. Her speed was 25 knots and her aircraft complement was 21. In 1927 the 26,900-ton *Akagi* with a 632-foot flight-deck, a speed of 31 knots and 60 aircraft was commissioned, and in 1928, a battleship under

construction, the *Kaga*, was completed as a carrier with a displacement of 29,600 tons, length 783 feet and a speed of 27.5 knots.

In 1929, Japan built the 10,600-ton *Ryujo* which had a speed of 29 knots, length 591 feet and carried 36 aircraft. She then decided to disregard the restriction to tonnage imposed by the Naval Armament Limitation Treaty and went ahead to build the 18,800-ton *Soryu* in 1937, and the 21,150-ton *Hiryu* in 1939, both ships being capable of a maximum speed of 34 knots and operating with 60 aircraft each, operating from flight-decks 711 feet long and 85 feet wide, the *Hiryu* being the only aircraft carrier built with an island on the port side. Two more carriers, displacing 25,675 tons and operating 80 aircraft each and having a speed of 35 knots, the *Shokaku* and the *Zuikaku*, were commissioned in 1941.

As regards aircraft, Japan produced the first carrier-borne monoplane, the *Nakajima Type 97*, well before the commencement of World War II. This aircraft had an impressive range of 1,238 miles and could carry machine-guns and torpedoes or a bomb load of 1,760 pounds. But Japan's most successful aircraft was the *A6M Mitsubishi Zero Sen* which was developed in 1939 and achieved great success during World War II.

The only aircraft carrier that France built during the inter-war years was the *Bearn* which was built on the hull of a battleship and commissioned as a 21,800-ton carrier in 1927. She had a speed of 21.5 knots and operated 40 aircraft from a flight-deck 595 feet long.

The Australian light cruiser, *Brisbane*, operated a Sopwith Pup in 1917 for a few months and, seven years later, the *Geranium* had a *Fairey IIID* for a short period. A seaplane carrier, *Albatross*, was commissioned in 1920 but was transferred to Britain in 1938. Five Australian cruisers were thereafter equipped with catapult-launched reconnaissance planes which were effectively used during World War II.

Due to their land-oriented strategic thinking, the Soviet Union decided to build aircraft carriers only during the 1930s but Stalin's views against a third dimension in naval warfare put paid to the Russian Navy's hopes of acquiring the integral air element for its fleets, and thus all its operations during World War II were confined to the surface and sub-surface.

When the second global conflict reached its flash-point on September 01, 1939, the United States had five aircraft carriers with a total tonnage of 120,300 carrying 380 aircraft with two additional carriers totalling 39,000 tons and a carrying capacity of 141 aircraft under construction; Britain had seven carriers with a total tonnage of 138,225, carrying 202 aircraft, with six more carriers totalling 102,000 tons and a combined aircraft complement of 384 aircraft under construction; Japan had six aircraft carriers with a total tonnage of 125,970 carrying 395 aircraft with two additional carriers totalling 53,350 tons, with a combined carrying capacity of 172 aircraft

under construction, but Germany had no aircraft carriers.

World War II - Evolution of Carrier Strategy and Tactics

At the beginning of World War II, naval strategists had assigned two roles to aircraft carriers: as a fast striking force and as an escort force. These two functions being widely different, they were to be performed by different classes of carriers.The fast carriers were primarily offensive weapon platforms and were to be used for offensive as well as defensive operations, observation of enemy fleet and shipping movements, and strikes against 'beach-head targets'. Built to provide mobility and flexibility of operations, along with a strong air strike capability and heavy defensive armament, they were to take aerial control of large sea areas and to harass and destroy enemy forces which were likely to threaten friendly naval forces, coastal regions, amphibious operations or merchant shipping.

The mobility and tremendous striking power of a fast carrier strike force, comprising several task groups, each consisting of three to five carriers carrying fighter, dive bomber and torpedo bomber squadrons, and supported by several battleships, cruisers and destroyers, was demonstrated most effectively during World War II. In September 1944 the first air assault by the Allied forces on the Philippines included 730 carrier aircraft, the task force supporting the landing at Leyte in October the same year used 1,060 aircraft and the task force raiding the Japanese home islands in February 1945 used as many as 1,220 aircraft.

The escort carriers, which were slower and smaller platforms, carrying a few squadrons of fighters and torpedo bombers, when organised as a force, provided adequate air and antisubmarine defence for invasion convoys and beach-head areas, and aerial support for invasion troops until such time as conditions permitted the employment of land-based aircraft. These carriers, escorted by destroyers, provided aerial support to amphibious operations and also operated individually in escort duties and antisubmarine warfare.

Since the first step in winning control of a sea area is to take control of the air space above it, this task, it was thought, was best carried out by the carrier which, with its high mobility, permitted itself to be quickly placed in the area where control of the air space was desired, while its offensive power, reckoned in terms of its aircraft, i.e., its air strike capability, enabled it to take control of the air space, in the face of the most persistent and continued opposition.

As early as 1941, an example of the importance of air space control over a specified area was provided when the presence of the two carriers, *Victorious* and *Ark Royal*, enabled the British to launch sufficient aircraft to slow

the formidable German battleship, the *Bismarck*, to the point where battleships could close in for the kill. Later in the same year, Britain lost the *Prince of Wales* and the *Repulse* in the South China Sea in an engagement lasting only two hours, because of lack of adequate air space control. Another example of the importance of air space control was the inability of the British forces to sink three German ships, the *Gneisenau*, *Scharnhorst* and the *Prinz Eugen*, in the Straits of Dover, despite the availability of land-based aircraft of the Royal Air Force, because the Germans had already deployed a very large number of aircraft and had effectively maintained air space control over the area.

The tactical effectiveness of aircraft carriers is best exemplified by the shipping losses suffered by Japan during the War. Taking into account only vessels drawing 500 tons and above, the US forces, during the 44 months of their involvement in the War, sank a total of 2,728 ships with a tonnage of 9,736,068, and out of these as many as 520 ships with a tonnage of 2,101,477 were sunk by carrier aircraft themselves, and another 35 ships with a tonnage of 210,085 in combination with other aircraft and ships.

Immediately following the commencement of hostilities in the Atlantic theatre, *Courageous* was lost while hunting for U-boats along with the *Ark Royal* and the *Hermes* but within months aircraft catapulted from the *Ajax* spotted the German battleship *Graf Spee* in the South Atlantic and a concerted action by the *Ajax*, *Exeter* and *Achilles* (later *INS Delhi*) led to the scuttling of the *Graf Spee* outside Montivideo harbour in Uruguay. In April 1940, the German cruiser, *Konisberg*, was attacked and sunk, while she was berthed alongside at Bergen, Norway, by 16 *Skua* aircraft of the *Ark Royal*. In June 1940, *Glorious* was intercepted and sunk by the German battle cruisers *Gneisenau* and *Scharnhorst* because she had stowed all her aircraft in the hangar and, once the attack commenced, hoisting, marshalling and launching aircraft even for self-defence had become impossible.

In July 1940, aircraft from the *Ark Royal*, along with some surface units, attacked the French fleet, which had already capitulated to Germany, at Oran and destroyed or disabled most of the ships, including the only French aircraft carrier, the *Bearn*.

The two British carriers, the *Illustrious* and the *Eagle*, soon proceeded to the Mediterranean, and on November 11, 1940, torpedo and dive bombers launched by these carriers attacked six Italian battleships at Taranto, sinking one battleship, damaging two battleships, three cruisers and one destroyer and losing only two aircraft and four men. Only 20 Swordfish aircraft had accomplished in less than an hour, what the Grand Fleet had done at Jutland during World War I, at the loss of 6,000 men and 14 ships.

On March 28, 1941, aircraft from the carrier *Formidable* located and

shadowed the Italian Fleet in the Mediterranean and a torpedo strike virtually immobilised the battleship, *Vittorio Veneto*, reducing its speed to 8 knots, and crippled the cruiser *Pola*. This led to the sinking of three Italian heavy cruisers and two destroyers, reducing the Italian Navy to an insignificant force within the span of a day.

Having been detected by a Royal Naval aircraft on May 23, 1941, the German battleship *Bismarck* and the heavy cruiser *Prinz Eugen* sailed out of the Polish port of Gdynia and entered the North Atlantic, where they sank the battle cruiser, *Hood*, and damaged the battleship, the *Prince of Wales* but while the *Prinz Eugen* escaped, the *Bismarck* was hit and damaged and was slowed down from 30 knots to 28 knots. On the night of May 24/25, aircraft from the aircraft carriers *Victorious* and *Ark Royal* attacked the *Bismarck*, but because of foul weather the damage caused was minimal. On May 26, several aerial attacks were launched by Swordfish aircraft from the *Ark Royal*, immobilising the German battleship, and the coup de grace was soon delivered by the cruiser *Devonshire*. The sinking of the legendary battleship signified the end of the battleship era.

In November and December 1941, the Royal Navy suffered two major losses - the aircraft carrier *Ark Royal*, while ferrying RAF aircraft from Gibraltar to Malta, was torpedoed and sunk on November 14, and on December 21 the escort carrier *Audacity*, while escorting a convoy of merchantmen from Gibraltar to Britain, was torpedoed and sunk by U-Boats.

The spectacular Japanese carrier-borne attack on Pearl Harbour has now become a part of legend. On December 7, 1941, in a brilliantly planned and executed move, Japan caught the USA by complete surprise and virtually devastated the US naval units at Pearl Harbour. Six Japanese carriers, the *Akagi, Kaga, Hiryu, Soryu, Zuikaku* and *Shokaku*, carrying 132 *Zero Sen fighters*, 129 *Aichi* dive bombers and 143 *Kate* torpedo bombers, supported by two battleships, three cruisers, nine destroyers, three submarines and a few auxiliary craft, (some of which carried another 450 aircraft), attacked Pearl Harbour, which had eight battleships, eight cruisers, 29 destroyers, five submarines and 20 other combat vessels at anchor or alongside, at dawn on that Sunday. In less than two hours of death and destruction the raid was over, the savage assault leaving seven out of the eight battleships - the *US West Virginia, Arizona, California, Oklahoma, Nevada, Maryland, Tennessee* and *Pennsylvania* - either sunk or badly crippled and three cruisers and three destroyers severely damaged; 188 US aircraft out of a total of 394 destroyed, and another 159 damaged, 2403 Americans killed and 1178 wounded; the Japanese lost only one full-sized submarine, five midget submarines, 29 aircraft and 100 pilots. As is well-known, the attack on Pearl Harbour was a watershed in the course of operations during World

War II, drawing the US into the War and Japan herself to ultimate disaster.

On December 10, 1941 a task force designated Force Z, comprising the British 35,000-ton battleship *Prince of Wales* and the 32,000-ton battle-cruiser *Repulse* (the third capital ship, the aircraft carrier, *Indomitable*, was still to join the Force as she had run aground whilst working up in the West Indies), were patrolling off the east coast of Malaya, 200 miles north of Singapore, in defence of the trade routes in the Indian Ocean. The absence of air cover had prompted Admiral Sir Tom Philips, the Force Commander, to ask for air reconnaissance and a combat air patrol from the RAF base at Singapore, but this had been denied. At about 1100 hours on that day, Japanese Navy torpedo and dive bombers launched a fierce assault on these two ships sinking them in two hours. Admiral Philips and 840 officers and men lost their lives.

Within a week of the attack on Pearl Harbour, Japanese forces made a landing attempt on Wake Island but were repulsed. But the Japanese persisted and after a two-day three-element assault by ships, submarines, assault troops and aircraft from the *Hiryu* and *Soryu*, the island fell to the Japanese on December 23, 1941.

During the Battle of the Java Sea which led to the Japanese capture of Java Island in March 1942, strikes from the carriers *Soryu* and *Ryujo* demolished all resistance after a long-drawn-out battle, during which the US aircraft carrier *Langley* and a large number of Allied ships, including three cruisers, four destroyers, one oiler and 20 smaller ships were sunk.

On April 5 the same year, 125 aircraft from a powerful Japanese strike force comprising the six aircraft carriers, *Akagi*, *Shokaku*, *Zuikaku*, *Hiryu*, *Soryu* and *Ryujo*, four battleships, three cruisers and eight destroyers attacked Colombo and sank a few ships, besides shooting down 16 RAF aircraft against the loss of only seven Japanese aircraft, while the British Eastern Fleet consisting of the aircraft carriers *Formidable*, *Indomitable* and *Hermes*, five battleships, seven cruisers, 16 destroyers and several submarines, was fuelling at Maldives. During the attack on Sri Lanka, Japanese aircraft spotted two British cruisers 300 miles southwest of Colombo and sank them. This was followed by an attack on Trincomalee during which the British carrier *Hermes* and an Australian destroyer escorting her were sighted south of Trincomalee and were sunk, along with a British corvette and two oilers.

During the Battle of the Coral Sea, three Japanese carriers, the *Zuikaku*, *Shokaku* and *Shoho*, constituted the invasion force for Port Morseby in New Guinea on May 7, 1941. A task force comprising the two carriers, *Yorktown* and *Lexington*, five heavy cruisers and 13 destroyers opposed the Japanese landing and sank the *Shoho*. On the following day, a strike of 82 aircraft from these two carriers attacked the Japanese carrier force, which was 200 miles

away, and damaged the *Shokaku*, while a Japanese air strike of 69 aircraft set the *Yorktown* on fire and fatally damaged the *Lexington*, which was later sunk by a US destroyer. Though only one Japanese carrier had been sunk at the cost of a larger carrier, the first carrier, *Shokaku*, had been damaged, leading to the cancellation of the invasion of Port Morseby. For the first time in the history of naval warfare, a major naval battle had been fought with the two opposing forces not sighting each other even once.

The turning point in the war at sea, was the Battle of Midway, which resulted in the sinking of four Japanese carriers at the cost of one US carrier. The success was attributed to the breaking of the Japanese signal code by US crypto-analysts and the absence of radar on the Japanese ships. On June 3, 1942, aircraft from two Japanese carriers, the *Ryujo*, and *Junyo*, made a diversionary attack on the US bases in the Aleutian Islands and on June 4, an occupation force, comprising four Japanese carriers, *Akagi*, *Kaga*, *Hiryu* and *Soryu*, a large number of heavy surface ships and 16 transport vessels with 2,500 occupation troops, launched an attack on Midway, 1500 miles south of the Aleutians. Unknown to the Japanese force commander, two US task forces, the first comprising the carriers *Enterprise* and *Hornet*, five cruisers and nine destroyers and the second consisting of the carrier *Yorktown*, two cruisers and five destroyers, were assigned the task of defending Midway.

On June 4, the Japanese force launched a strike of 100 aircraft while still 230 miles from Midway, and caused severe damage to the US base, despite a large number of US fighters from Midway intercepting them. Soon a strike of 108 aircraft was launched by the two carriers *Enterprise* and *Hornet* but an alteration of course by the Japanese force, on the basis of an intelligence report, saved the Japanese carriers from the air strike. A large number of aircraft of this air strike were forced to ditch as they ran out of fuel, returning to their mother ships. A second strike from the US carriers *Enterprise* and *Yorktown* located the Japanese force but could not cause much damage. A few hours later on the same day, an air strike of 55 aircraft from the *Enterprise* and *Yorktown* caught the Japanese force by surprise and carried out a coordinated attack. As a result of this massive attack, the *Kaga* was set on fire and blew up before sinking, the *Akagi* was set ablaze and later scuttled by Japanese destroyers, and the *Soryu* had an explosion in the hangar, exploded and sank. The *Hiryu*, which had escaped the attack, launched a counter-attack on the *Yorktown*, with 24 aircraft, followed, a few hours later, by another strike with 16 aircraft, causing fatal damage to the US carrier. Meanwhile the *Enterprise* and *Hornet* launched a strike against the *Hiryu*, setting the Japanese carrier ablaze; it went down after the entire hulk had been reduced to a smouldering skeleton.

In the Battle of Midway, which was a decisive American victory, Japan

lost four carriers, one heavy cruiser, 253 aircraft and 2,300 men, while the US lost one carrier, one destroyer, 147 aircraft and 307 men. This defeat was Japan's first naval defeat since 1592, when the Koreans, in history's first ironclad ships, drove the Japanese fleet from Chinhae Bay. And with the defeat in the Battle of Midway, the Japanese initiative was wrested by the US who, to use the terms used by the Commander-in-Chief, US Fleet, moved forward from the 'defensive-offensive to the 'offensive-defensive'. Admiral C.W. Nimitz, Commander-in-Chief of the Pacific Fleet, summed it up thus, "Pearl Harbour has now been partially avenged.... Perhaps we will be forgiven if we claim that we are about midway to reducing Japanese sea power to impotence." How right he was!

August 1942 saw another carrier battle, this time in the East Solomons. In an attempt to dislodge Guadalcanal from the US forces, the Japanese deployed the carrier *Ryujo* to provide air cover to the troop carriers, with the *Shokaku* and *Zuikaku* providing distant air cover. On August 24, an air strike of 30 aircraft, launched by the *Saratoga*, attacked the *Ryujo*, scoring several hits, setting her ablaze, and later sinking her. The *Shokaku* and the *Zuikaku* launched an attack on the carriers *Enterprise* and *Wasp* and could cause only minor damage, but about a week later they were both torpedoed by Japanese submarines forcing the *Enterprise* to retire to Pearl Harbour and causing the *Wasp* to be abandoned and scuttled.

In October 1942 another attempt was made by the Japanese to take the portion of Guadalcanal under US occupation. For this operation they deployed four carriers, the *Shokaku*, *Suikaku*, *Junyo* and *Zuiho*, four battleships, 10 cruisers and 30 destroyers. The opposing American force had two carriers, the *Enterprises* and the *Hornet*, two battleships, nine cruisers, and 20 destroyers. During the indecisive battle that took place off Santa Cruz island on October 26 and 27, the *Hornet* was torpedoed by an air strike from the Junyo and had to be scuttled; and the *Enterprise* suffered some minor damage. Between January 27 and 30, 1943, another battle was fought between these two forces, off Rennel Island, in which the US forces scored a decisive victory and the Japanese finally abandoned Guadalcanal. During the battles for Guadalcanal, the US Navy lost two carriers, eight cruisers, 14 destroyers and 6,000 men, while the Japanese lost one carrier, two battleships, four cruisers, 11 destroyers, six submarines and 900 operational aircraft.

In order to pin Japan down to the sea areas contiguous to the Japanese islands, before enforcing her final surrender, the Allied strategy adopted was to launch a series of air strikes and amphibious assaults to occupy the Central Pacific islands which had now become Japanese bases. The operations for the capture of the islands began in November 1943, when the Japanese bases on Wake Island and Rabaul in New Britain Island were

subjected to heavy strafing and bombing, for which a concentration of six fleet carriers and five light fleet carriers with 700 aircraft, six battleships, six cruisers and 21 destroyers (the largest naval task force ever used during World War II), was deployed, causing severe damage and the destruction of a large number of aircraft from the *Shokaku, Zuikaku,* and *Zuiho* at Rabaul. On November 18, air strikes on the Gilbert Islands were launched from the carriers *Essex, Bunker Hill* and *Independence,* and on November 24, the Japanese forces surrendered, but not before sinking the escort carrier, the *Liscomb Bay,* and damaging another, the *Independence.* Between December 1943 and February 1944, the Japanese naval base at Kwajalein in the Marshall Archipelago fell to the Allied forces, followed by the Roi and Bambeer islands and the other Japanese pockets in the same group. Truk atoll, a powerful Japanese base in the Caroline Islands, was also annexed, soon after a strike by aircraft from the *Enterprise, Yorktown, Essex, Lexington, Intrepid* and several escort carriers. The US task force lost only 25 aircraft and the Intrepid was damaged but the Japanese lost several hundred aircraft, one cruiser, three destroyers and 200,000 tons of merchant shipping, besides a large number of merchant ships damaged.

About this time the British Eastern Fleet at Trincomalee decided to launch an offensive in the Indian Ocean, in conjunction with some US naval units. Accordingly, the British carrier, *Illustrious* and the US carrier, *Saratoga,* escorted by several ships, attacked Sabang on the northern tip of Sumatra with a combined strike of 90 aircraft on April 19, 1944 and caught the Japanese by complete surprise, destroying 24 Japanese aircraft and neutralising the Sourabaya Naval Base in Java.

War in the Pacific theatre continued unabated and the American forces continued to score a series of successes. In June 1944, they fought the greatest carrier battle of the Pacific War during the Battle of Marianas for the occupation of three major islands in the Mariana group - Saipan, Guam and Tinian. The American task force for this operation comprised seven large carriers and eight light fleet carriers with about 1,000 aircraft and a large number of support ships while the opposing Japanese First Mobile Fleet had nine aircraft carriers with 450 aircraft, five battleships, eight cruisers and 18 destroyers. On June 11, a number of air strikes launched by the Allied carriers destroyed 150 Japanese aircraft in Saipan and within four days the US marines occupied the island. On June 19 the Japanese Fleet launched a massive air strike on the US Fleet, the latter countering by launching 200 aircraft to intercept the strike. During the air battle that followed, (the biggest single air battle in history until that time and later referred to as 'The Marianas Turkey Shoot'), 300 US aircraft continued for several hours to thwart the Japanese aircraft from establishing air superiority and by the end of the day had shot down 243 Japanese aircraft at the cost of only 30 aircraft.

Earlier in the morning, an American air strike on Guam in the Marianas had been intercepted by Japanese aircraft from the Caroline Islands and in the ensuing battle a large number of Japanese aircraft had been destroyed. The US submarines, which were waiting for a suitable moment to launch an attack, struck. The US submarine, *Albacore* scored one torpedo hit on the Japanese carrier *Taiho* and the *Cavalla* hit the *Shokaku* with three torpedoes. Both carriers soon sank, followed the next day by the third carrier *Hiyo*, which was torpedoed by US aircraft after a fierce air battle, during which 24 Japanese aircraft were shot down at a cost of 20 US aircraft. Having lost three carriers and hundreds of aircraft, the Japanese fleet withdrew, bringing to an end the greatest carrier battle of the Pacific war.

The greatest naval battle in history involving 282 warships, 30 more than in the Battle of Jutland, were the battles for Leyte Gulf, fought from October 23 to 25, 1944. In an effort to capture Leyte in the Philippines, before clearing the archipelago and launching an attack from there on the Japanese islands, 17 carriers from the US Third Fleet carried out massive air strikes on Luzon, Formosa, Okinawa and some other islands on October 10 and destroyed 804 aircraft at the loss of only 48 US aircraft. This was soon followed by the US Sixth Army, led by General MacArthur, landing on Leyte island under air cover provided by 18 aircraft carriers.

In an attempt to dislodge the US foothold in Leyte, the Japanese decided to launch a massive attack with a force comprising four aircraft carriers with 116 aircraft, 9 battleships, 10 cruisers, 31 destroyers and a large number of support ships. The US force deployed in defence was the 7th fleet which also had a seizable force comprising as many as nine fleet carriers, six light fleet carriers and 18 escort carriers. In addition, there were six battleships and a large number of cruisers and destroyers supported by over 400 transport, cargo and landing ships. The air support was provided by 18 escort carriers with the main strike element, the 3rd Fleet, comprising nine fleet carriers, six light fleet carriers and a number of battleships, cruisers and destroyers.

The Leyte campaign began with the Battle of the Sibuyan Sea on October 23, 1944 when two US submarines sank two Japanese heavy cruisers and damaged a third, off Palwan Island. This was followed by the US carriers torpedoing two Japanese battleships and damaging a heavy cruiser. The Japanese carriers in the region retaliated and sank one US light fleet carrier with 46 aircraft and shot down 28 aircraft.

The Battle of the Sibuyan Sea was followed by the Battle of the Surigai Strait on October 24, when aircraft from two US carriers attacked a Japanese force which was trying to enter the Leyte Gulf via the Surigao Strait, and damaged a battleship and a destroyer. As night fell a US force comprising 39 motor torpedo boats, a squadron of destroyers, eight cruisers and six

battleships attacked the Japanese force, as the latter was entering the Surigao Strait. In this battle which saw the last confrontation between battleships, two Japanese battleships and two cruisers were sunk and one heavy cruiser and one destroyer were damaged. The US force lost a number of motor torpedo boats and one destroyer was damaged. Later, one more Japanese cruiser was sunk by the US carriers.

In the Battle of Samar fought on October 25, 1944, a Japanese force with four battleships and a number of smaller ships attacked a US force of five escort carriers and their escorts, with three other US carriers providing distant support. While three Japanese cruisers were damaged, two US destroyers were sunk and five badly damaged. This was followed by the sinking of the US escort carrier, with three escort carriers suffering damage. Further damage could have been caused to the US force, but for a tactical blunder on the part of the Japanese force commander, which allowed the US force a little breathing time, during which they regrouped themselves and closed in on the Japanese force. In desperation the Japanese started attacking the US carriers with *Kamikaze* aircraft, i.e., aircraft carrying heavy bomb loads, diving and crashing on the US ships, causing severe damage, but losing both aircraft and pilot in the process. One US carrier was sunk in this manner by eight *Kamikaze* aircraft.

The last phase of the Battle for the Leyte Gulf was the Battle of Cape Engano, the last carrier versus carrier battle in the Pacific. On October 25, 1944, a Japanese task force comprising four carriers, two battleships, three cruisers and eight destroyers approached Cape Engano with the intention of creating a diversion, so that the main Japanese force could attack US ships in the Leyte region. Since the Japanese forces air cover consisted of only 30 aircraft flown by inexperienced pilots, it suffered considerable casualties - three Japanese carriers, including the *Zuikaku* of Pearl Harbour fame, one cruiser and one destroyer were sunk; one carrier and two light cruisers were damaged and the rest of the Japanese force scattered. By the time this battle ended on October 26, 1944, the Japanese had lost four carriers, 22 other ships and 1,000 aircraft in the battles for the Leyte Gulf. The Japanese Navy had, for all practical purposes, been neutralised, and consequently had ceased to be a threat to the US Navy.

The last battle that the US Navy fought in the Pacific was against the forces of nature on December 18, 1944 when, within the course of a single day, a typhoon sank three destroyers and damaged four light fleet carriers and several other ships. One hundred and forty six aircraft were lost or severely damaged and over 800 sailors were drowned.

The Battle of the Atlantic and the Mediterranean

So far as containing the German forces and assuring an Allied victory in the Atlantic region was concerned, the Battle of the Atlantic assumed greater significance than in other theatres of the War, for an uninterrupted flow of food, munitions and other supplies from the USA was of vital importance to the Allied forces in Europe. The British losses were mounting rapidly - 432 ships with a total tonnage of two million had been lost in 1941, followed by another six million tons lost in 1942. The ASDIC, a device developed by the Anti-Submarine Detection and Investigation Committee, for detecting and hunting enemy submarines had not proved to be effective enough, and radar had just been invented, but because of its bulk and weight it was being used only on board ships. Soon aircraft began to be fitted with lighter and smaller radars, which considerably increased the detection range, with its much wider area of surveillance and with its ability to detect not only ships and surfaced submarines, but also snorting submarines, i.e., submerged submarines with only their snorts - air inlet pipes - projected above the sea surface. These aircraft covered a large area on both sides of the Atlantic but left a fairly wide gap in the mid-Atlantic, where the submarine continued to reign supreme.

The solution to this problem was sought by arming merchant ships with catapults (this class of ships was referred to by the acronym CAM - Catapult-Armed Merchantmen). It could launch aircraft at sea which, after carrying out surveillance at sea, the pilot either landed at an airfield, if within range, or bailed out at the end of the mission after abandoning the aircraft. These aircraft also provided adequate protection against German long-range bomber aircraft, which had been wreaking havoc on Allied shipping in the Atlantic, by either bombing the ships themselves or by guiding German submarines to these convoys. Between December 1940 and June 1942, four Royal Navy ships, each carrying one Sea Hurricane, were fitted with catapults and deployed. They shot down only one German aircraft but proved to be a fairly effective deterrent at sea. Between May 1941 and August 1943, 35 ships were assigned the CAM role and fitted with catapults, each ship carrying one Sea Hurricane; their effectiveness as convoy escorts led to the development of escort carriers, with the specific role of escorting convoys across the seas contiguous to Europe and the Atlantic Ocean.

In July 1941, the Royal Navy commissioned the first escort carrier, *Audacity*, with a 460-foot flight-deck with two arrester wires, a crash barrier and a complement of eight Martlet-II aircraft. Within her lifespan of only six months (she was sunk by a U-Boat in December 1941) the *Audacity* aircraft had shot down five German bombers, damaged four and sighted nine U-boats against the loss of only two aircraft.

Escort carriers soon began to be built on merchant ship hulls, the British built four during the War, while the USA built as many as 77 out of which they supplied 38 to Britain. Not only did these carriers escort convoys, provide air cover for shore bombardment and ferry aircraft and other material, they also very effectively carried out hunter-killer operations against German submarines and escorted military convoys to the USSR, sinking 24 U-Boats and shooting down 40 German aircraft in the process.

One of the major operations in the Mediterranean during the war was the supply mission of aircraft, fuel, ammunition and other stores to Malta, which was being subjected to heavy bombing by German and Italian aircraft until July 1942. A convoy of 14 ships loaded with supplies and escorted by two battleships, seven cruisers, 20 destroyers and four carriers, sailed early in August 1942 and entered the Mediterranean on August 10. A day later, 38 Spitfire aircraft from one of the carriers took off for Malta. Soon one of the carriers was torpedoed and sunk. The other ships of the Allied force continued to be attacked by German and Italian aircraft, U-boats and fast German motor boats known as E-boats (Enemy boats) causing considerable damage. Two cruisers were lost and two carriers which suffered damage had to withdraw. On August 13, only five ships of the convoy reached Malta but they succeeded in saving the island from falling into the hands of the Axis powers.

In November 1942, the Allied forces launched an assault on North Africa. A task force of 102 vessels, carrying 35,000 US troops and escorted by four US carriers, sailed for Casablanca and landed the troops on November 10, after neutralising one enemy carrier. British forces landed at Oran and Algiers, with three carriers and three escort carriers of the Royal Navy. During the landing operations, one carrier was sunk and another damaged by torpedoes fired by U-boats.

As 1944 came to an end, carriers continued in their role as the cutting edge of the Allied naval forces. On December 30, 13 US carriers put to sea in three groups, for carrying out attacks on Formosa, Okinawa and Luzon in the Philippines, as a prelude to launching landing operations at Luzon, later. The attack on Luzon proved expensive, as several US ships, including six escort carriers, were damaged in *Kamikaze* attacks.

The US forces also sought to establish a base at Iwo Jima, halfway between the Marianas and Tokyo, and launched a landing operation on February 19, 1945 after a month-long battle, in which they lost 5,500 men. One escort carrier was sunk, one damaged and several other ships were put out of action.

The largest amphibious operation in the Pacific theatre during World War II was the assault on Okinawa, which is halfway between Formosa

(now Taiwan) and Japan. It involved 318 combat ships, 1,139 amphibious and auxillary ships, a few hundred landing craft and 16 carriers. It was launched on March 18, 1945, and the landings began on April 1, after overcoming fierce Japanese resistance, including several *Kamikaze* attacks. Eight US fleet carriers and one escort carrier were damaged, and several other ships were immobilised, but the Japanese defence was eventually neutralised.

Four British armoured carriers took part in the assault on Okinawa and continued to operate till May 25. One noteworthy feature of British carrier operations was that the armoured flight-decks and armoured hangars of these carriers could withstand the impact of *Kamikaze* attacks, while similar attacks put US carriers out of action. Armouring the vital parts of British carriers had reduced their carrying capacity, but had considerably enhanced their invincibility.

The largest battleship in the world at that time was the Japanese *Yamato*, which had seen action in the Leyte Gulf operations. She sailed on April 6, 1945, to carry out an attack on the US forces, off Okinawa, and was escorted by one cruiser and six destroyers. A day later, she was sighted by US carrier aircraft and a massive attack was launched; she was soon hit with 10 torpedoes and five bombs, and sank. With the sinking of the Yamato the Japanese Navy, virtually became emasculated.

Strikes on the Japanese islands continued to be launched from US and British carriers, until Hiroshima and Nagasaki became the targets of US nuclear attacks, killing 150,000 people, and compelling Japan to surrender in August 1945. For six long years during World War II, aircraft carriers dominated all operations at sea, and it was evident that they would continue to do so for several decades, as the capital ships of all major navies of the world.

When the guns fell silent on August 14, 1945 the US Navy had 34 aircraft carriers and 78 escort carriers in commission or under construction. The Royal Navy had built up its carrier fleet from 7 in 1939, to 62 in 1945, which included 35 escort carriers transferred from the USA but by July 1946, the carrier wings of both navies had been considerably whittled down; the US Navy was left with only 23 carriers and the Royal Navy with only 16 carriers. At the end of the War, the only Axis 'Aircraft carrier nation', Japan, had nine carriers, besides a few escort carriers. Two of them were assigned the task of repatriating Japanese troops after the War and by 1946-47 all Japanese carriers, including the ones under construction, had been scrapped.

Post-World War II Developments in Aircraft Carriers

Four important developments took place in carrier operations within the

first decade of the cessation of hostilities in August 1945 - introduction of jet propulsion for naval aircraft, the angled deck, the steam catapult and the mirror landing sight.

Less than a year before the end of the War, a new era in naval aviation was ushered in when a Royal Navy Pilot, Lieutenant Commander E.M. Brown, made the first jet landing on an aircraft carrier at sea in his *Vampire* jet aircraft. The aircraft was successfully 'arrested' on the flight-deck of the Royal Navy carrier, *Ocean*, on December 3, 1945. And with that began a major evolution in the techniques of launching and recovering aircraft at sea.

So long as propeller-driven aircraft, with their slower speed, operated from aircraft carriers, the flight-deck used to be roughly divided into two distinct areas - the forward third being used for parking operational aircraft and launching them with catapults, and the remaining two-thirds for landing aircraft under the guidance of batsmen; the two areas being divided by a crash barrier which was erected during landing operations. But the advent of the jet age presented two problems - the much higher speed of jet aircraft and the sluggish throttle response of jet engines.

The crash barrier could stop the slower propeller-driven piston-engined aircraft, whenever they missed the arrester wires, without causing any damage to the aircraft, but it caused considerable damage to the much faster jet aircraft. It was Captain D.R.F. Campbell of the Royal Navy who devised a way out of this veritable impasse. He suggested the angling of the flight-deck by only eight to ten degrees to the port side of the carrier's centre line, and the discontinuation of the use of crash barriers, so that any aircraft that failed to engage the arrester wires, could open their throttle, take off once more and make another attempt to land, while the forward starboard side of the flight-deck could be used for parking and launching aircraft. With this modification the angled deck would enable the carrier to simultaneously launch and recover aircraft, thus reducing their 'turn-around' time and considerably improving the carriers' versatility and operational efficiency. Early in 1952, two carriers, one British and one American, had the angled layout painted on their decks and successfully conducted jet 'roller' (landing and taking off without arresting) operations at sea. The first carrier to be fitted with an angled deck, the *Antietam*, was equipped with a flight-deck angled at 8 degrees to the port, and was soon followed by *Centaur* of the Royal Navy. With the success of this new design, the angled deck became the permanent feature of aircraft carriers around the globe.

The launching speed of a propeller-driven aircraft was slow enough to be built up by a combination of wind speed, the speed of the carrier and the acceleration that the aircraft's engine could produce while moving

forward on the flight-deck with full throttle, but with the advent of the jet age, entailing higher take-off speed and sluggish engine response, that was no longer possible. A platform, therefore, had to be devised for launching the aircraft into the air, after building up the air speed required for the aircraft to be airborne, with the support of the ship's speed and the prevailing wind. Once again it was an officer of the Royal Navy, Commander C.C. Mitchell, who developed the steam catapult which, when fitted at the forward starboard end of the flight-deck, could accelerate the aircraft to the launching speed within a distance of about 100 feet. Soon the steam catapult was also to become standard equipment on aircraft carriers around the globe.

The fourth development that found universal adoption by all navies was the landing device, known as the mirror landing sight which, yet again, was the invention of an officer of the Royal Navy, Commander H.C.N. Goodhart. The propeller-driven piston-engined aircraft had a slower landing speed and, therefore, could approach the flight-deck at a steep descending angle, at a speed very close to its stalling speed, and when in position over the landing site, could cut the engine and touch down comfortably. But the jet aircraft, with its higher speed, had to make a much flatter and more precise approach and could cut the engine only after the aircraft was arrested. This rendered the landing of a jet aircraft on the flight-deck of a carrier, especially during night operations and in adverse weather conditions, considerably hazardous. The mirror landing sight came as a boon to the naval jet pilots of the 1950s. This device consisted of an oblong concave mirror fitted on the port side of the flight-deck which reflected a few white lights positioned on the ship's stern. On the side of the mirror were fitted some green datum lights. While approaching the flight-deck for landing, the pilot had to keep the white lights aligned with the green lights to ensure that he was on the right glide path and that the altitude of the aircraft was correct. The mirror angle was adjusted for different types of aircraft and it had an airspeed indicator which produced an audible note in the cockpit, to indicate the speed of the aircraft. In order to neutralise the effects of the carrier's roll and pitch, the mirror was stabilised.

Jet-propelled carrier aircraft were used in combat for the first time during the Korean War. On July 3, 1950, aircraft from two US carriers attacked the North Korean capital, Pyongyang, and destroyed 11 aircraft and several runways and fuel dumps. They also kept at bay, the North Korean aircraft, of Chinese and Russian origin, all of which were propeller-driven and hence much slower; thus, they encountered virtually no opposition in the air. A few days later, these carrier aircraft attacked and destroyed a number of North Korean refineries, airfields, railway tracks and industrial installations. Three more carriers soon joined the strike force

and continued to strafe and bomb vital installations. Prior to General MacArthur's amphibious assault on Inchon on September 15, 1950, aircraft from six US carriers escorting a 280-ship assault force carried out softening-up operations. The US troops continued to move northward, with the carrier force supplementing the US Air Force air support, and on October 19, US forces occupied Pyongyang. Carrier aircraft continued to pound Chinese forces across the Yalu river, and in November started bombing Chinese troops whose strength in the area had by now gone up to 250,000.

Soon, however, the US forces had to withdraw against stiff opposition from the overwhelming Chinese forces. In April 1951, in order to thwart the Chinese attack, the US forces decided to flood a large number of South Korean Rivers fed from the Howchon reservoir. This task was effectively carried out by Skyraider aircraft from a US carrier, as the 'dam busters' succeeded in bursting the reservoir dam and inundating a large area. Throughout the Korean War, which finally ended on July 27, 1953, aircraft carriers continued to play a significant role in neutralising North Korean aircraft, ships and shore targets.

During the Suez War in 1956, the British deployed five carriers with an aircraft strength of 166 fixed-wing aircraft and helicopters. On October 31, 1956, 40 aircraft from the carriers launched an attack on Egyptian MIG and IL-28 aircraft. On November 6, paratroopers were dropped by helicopters from a helicopter carrier, with air support provided by carrier aircraft, the first vertical assault in the history of naval aviation. With effective air cover provided by these aircraft, the British and French forces continued to advance rapidly but the operations were halted on November 6 at the insistence of the United Nations.

Vietnam too saw extensive use of carriers. When the French left the area early in the 1950s, the Americans moved in and brought with them a large number of helicopters on board two carriers. In August 1964, North Vietnamese motor torpedo boats attempted a torpedo attack on a US destroyer and in retaliation, four aircraft from a US carrier, strafed and damaged the motor torpedo boats. Soon massive operations were launched against North Vietnamese ships and naval bases by US carriers, and 25 motor torpedo boats were destroyed or put out of action and their naval bases damaged. Before long three more carriers joined the fray. In retaliation for a massive Viet Cong attack on US fuel dumps, airstrips and personnel, a number of aircraft from three US carriers bombed a large military base of North Vietnam. Within a few months three more US carriers joined in and continued operations till the end of 1965, when they were replaced by the nuclear-powered carrier *Enterprise*. By January 1966, the US carriers had flown a total of 238,000 sorties, nearly ten times the number of sorties flown during the Korean War. In June 1966, there was further escalation in

the War and US carriers continued to operate their Phantom fighters, shooting down MIG 21s with sidewinder missiles. The intensity of the War thereafter went down, especially after President Nixon withdrew nearly 500,000 US troops from the area by 1970. In November 1970 operations were again stepped up and two US carriers carried out strikes against North Vietnam. In 1972 another carrier launched operations in the area, staging attacks against Viet Cong aircraft in the Haiphong area and mining North Vietnamese harbours; it was soon joined by three more carriers. The war continued for another year and a peace treaty was signed finally in January 1973.

The Global 'Carrier Club'

Before World War II only four countries - Britain, France, Japan and the US - had acquired carriers for their navies. By the end of the War, Japan had ceased to be a member of the 'Carrier Club' but during the years following, several other countries realised the importance of what is known as 'integral air' at sea and have acquired air arms for their navies.

Out of the fourteen carriers that the Royal Navy had at the end of World War II, only eight - one fleet class, two light fleet class, four escort class and one maintenance carrier - were retained and the rest were scrapped. During the period from 1954 to 1955 three new 27,800-ton carriers joined the British fleet, besides the existing carriers. In 1957, the four escort carriers were scrapped and in 1960 and 1962, two carriers were converted into Commando carriers. On February 8, 1963 the first vertical take off and landing aircraft (VTOL), the *Hawker P-1127*, which was to later develop into the *Sea Harrier*, made a vertical landing on the *Ark Royal*, the first such landing on a carrier. And with that the concept of 'through-deck cruisers', the new nomenclature for aircraft carriers without catapults or arrester gears, and designed to operate antisubmarine helicopters and vertical and short take-off and landing aircraft, was formalised.

The US Navy scrapped most of the carriers of World War II vintage and started a massive programme of building nuclear-powered aircraft carriers, beginning with the 75,700-ton *Enterprise* which was commissioned in 1961. Conventional carriers of 70,000 tons displacement continued to be built and the US Navy continued to be the prime aircraft carrier nation of the world.

In 1945, France had only one aircraft carrier which was soon relegated to the status of a barracks ship. In 1945 and 1946 France acquired an escort carrier and a light fleet carrier from Britain, and in 1951 obtained two light fleet carriers on loan from the US Navy. The French built two 22,000-ton carriers in 1961 and 1963, and returned the American carriers to the US

Navy.

The Soviets had no carriers during World War II and were firm detractors of the carrier concept for many years thereafter, but by the 1960s they too started thinking in terms of adding the third dimension to their navy and began the construction of two 'large antisubmarine cruisers', as they were described by the Russian planners, which were a cross between missile cruisers and helicopter carriers. The first of these was commissioned in 1967 and the second in 1969.

The Canadian Navy acquired a carrier on loan from Britain in 1946 and this was soon replaced by another carrier in 1948. In 1952 a light fleet carrier was acquired from Britain and the carrier loaned earlier, returned. The new carrier was soon equipped with an angled deck and steam catapult and commissioned as a full-fledged modern carrier in 1957.

During World War II the Australian Navy operated catapult-launched aircraft from its cruisers. A British light fleet carrier was acquired in 1948 to be followed by another in 1955.

A British escort carrier was acquired on loan by the Netherlands in 1946 and operated till 1948 when she was replaced by another light fleet carrier. Between 1955 and 1958 she was equipped with an angled deck, steam catapult and mirror landing sight, and continued to operate till 1968, when she was transferred to Argentina. This carrier underwent extensive refit in the Netherlands and joined the Argentine Navy in 1969 as the sister ship of a light fleet carrier which had been obtained from Britain in 1958.

The first aircraft carrier nation in South America was Brazil which had acquired a British light fleet carrier in 1956. This carrier was earlier being operated by the Australian Navy and was commissioned into the Brazilian Navy in 1960, after extensive modernisation.

Spain's lone carrier, a light fleet carrier from the USA, was acquired in 1947 and was soon converted into an antisubmarine carrier.

Italy did not acquire any carrier during this period but in 1964 commissioned two cruisers which carried four helicopters each.

As is well-known, the first post-World War II aircraft carrier nation in Asia, India, acquired her first carrier, *Vikrant*, in 1961.

4

THE NAVY GROWS WINGS

Birth of the Fleet Air Arm

Until the time Britain ruled over this subcontinent, the British grand naval strategy dictated monopolistic maritime hegemony over the Indian Ocean, with its own bluewater navy operating from three *Royal Navy* bases in Asia, at Trincomalee in Sri Lanka, rated as one of the best natural harbours in the world, Singapore, the most strategically positioned port for the control of the Far Eastern waters, and at Bahrain in the Gulf, which would have a direct bearing on the stretch of the ocean area between India's west coast and the African east coast.

Since Britain was responsible for the maritime defence of India and all other British possessions in the east, the navies of the British-occupied territories in South Asia were assigned the responsibility of conducting coastal defence operations only. For this purpose the minuscule fleet that the combined navy of India and Pakistan - the *Royal Indian Navy* - was allowed to develop until the outbreak of World War II, comprised five sloops, one survey vessel, one patrol ship, one depot ship and a number of smaller craft. But by the time the War ended, the strength of this flotilla, mainly because of its involvemnt in various theatres of operation in Asia and beyond, had risen to that of an impressive fleet of seven sloops, four frigates, four corvettes, 14 minesweepers, 16 trawlers, two depot ships, 30 auxiliary vessels, 150 landing craft of various types, 200 harbour craft and several motor launches and harbour defence motor launches. However, this unwieldy *Royal Indian Navy* fleet was soon whittled down to a much

smaller flotilla, and by the time the subcontinent was partitioned on August 15, 1947, it had only six sloops, four frigates, one corvette, 16 minesweepers, one survey vessel, six trawlers, six motor mineweepers, one motor launch, eight harbour defence motor launches and a squadron of landing craft.

When the assets of the *Royal Indian Navy* were divided between India and Pakistan in 1947, as mentioned in the previous chapters, only about two-thirds of these ships and craft came to India. With a coastline extending to beyond 6,000 kilometres, it was then felt necessary, that the small Indian flotilla should be immediately expanded to a full-fledged navy. For this purpose, along with the other platforms for operating weapons at sea, an air wing or a fleet air arm was considered an essential attribute of the future navy for India, even at that time, because the effectiveness of an aircraft as a weapon system in naval warfare had been convincingly demonstrated by the British, Japanese and US navies during World War II.

Post-Independence Plan for Aircraft Carriers

Within six months of Independence a 10-year expansion plan for the Navy was drawn up at Naval Headquarters, based on the concept of two fleets for the Navy, one for the Bay of Bengal and the other for the Arabian Sea. The nucleus of each fleet was to be formed by a light fleet carrier which would be replaced by two fleet carriers, and these carriers were to be protected against enemy surface ships for which cruisers were considered essential. This expansion plan, prepared in 1948, was based on the concept of the Royal Navy undertaking the bluewater responsibilities and the 'dominion' navies ensuring the naval defence of their coasts, their fleets comprising ships of all types in use in other navies of the time, including aircraft carriers. It read:

> Lessons of the last war have proved abundantly the value of aircraft carriers. The hard fighting core of a balanced fleet consists no longer of battleships but aircraft carriers. Battle fleets have given place to a much more powerful fighting force - the carrier task force whose striking power is provided by aircraft carriers.
>
> Fleet carriers of the type envisaged are large and powerful vessels requiring much technical skill and experience for efficient running. It is, therefore, proposed that the Royal Indian Navy starts its naval aviation by the acquisition of two light fleet carriers which are smaller vessels with half the complement of aircraft, in the first instance. These two light fleet carriers would be given up when the

first two fleet carriers are acquired.

The peace complement of aircraft in each of these light fleet carriers is one fighter squadron and one strike squadron of 16 aircraft each. The peace complement of aircraft for a fleet carrier is four squadrons of 16 aircraft each. Two of these should be fighter squadrons and two strike squadrons, making a total of eight fighter and eight strike squadrons for the four carriers.

Aircraft will also be required at naval bases where ships are likely to be stationed and also at the site of the Gunnery and Navigation Schools (at Cochin) for training purposes. It is considered that two such units, one on each coast, will be required. The Fleet Requirement Unit for the training schools (on the west coast) should have 14 aircraft and the second Fleet Requirement Unit on the other coast need have only 10 aircraft, making a total of 24 aircraft.

Thus during the 10-year acquisition plan, the Navy proposed to acquire two light fleet carriers, which were to be later replaced by four fleet carriers and a total of 280 aircraft (16 squadrons of 16 aircraft each and two Fleet Requirement Units with 24 aircraft), out of which one light fleet carrier and 154 aircraft (32 fighter aircraft, 16 strike aircraft, 24 second-line aircraft and 82 training aircraft) were to be acquired during the first phase by 1954, the capital expenditure during the period being Rs 13.13 crore and the recurring expenditure Rs 8.69 crore. The second light fleet carrier was to be acquired in 1956, the four fleet carriers in 1958, 1960, 1962 and 1963 and another 134 aircraft between 1955 and 1963.

Shore Support

The Paper also proposed to set up naval air stations. It said:

A number of naval air stations will be required for basing the Fleet Aircraft Requirement Units, Transport Squadron, Air Sea Rescue Squadron, Communication Squadron and the First Line Squadron when not actually embarked on carriers, when these ships are undergoing refit. In addition to these, air stations will be required for basing training squadrons.

One air station will be required for the Operational Flying Training School. The College of Naval Air Warfare, with its several wings (Advanced Training Wing, School for Naval Air Gunners and School for Naval Observers), will need another air station. One airfield will be required to provide a base for the Communication Squadron.

The need for a Fleet Air Arm was accepted by the Defence Ministers' Committee (Navy) at its meeting held on October 26, 1949, and the proposal for its formation was passed by the Standing Committee for Parliament on November 13, 1950.

The acquisition of two light fleet carriers and four fleet carriers was, however, considered 'too expensive for present resources' by the Defence Ministers' Committee (Navy) and hence the requirement was soon reduced to two light fleet carriers, each carrying one fighter squadron of 16 aircraft, one strike squadron of 16 aircraft and two amphibious aircraft, with the shore support of 10 aircraft for basic flying training, 18 aircraft for operational training, 8 aircraft for observer training and 13 aircraft for the Fleet Aircraft Requirement Unit making up a total of 117 aircraft. The capital cost of aircraft carriers as well as the aircraft was thus reduced to Rs 5.55 crore. The two carriers are now proposed to be acquired in 1956 and 1959.

There was another reappraisal of the nation's finances at this stage leading to the imposition of extreme budgetary stringency which immediately affected the Navy's plan for acquiring an Air Arm. The Navy's expansion programme had consequently to be drastically slashed down and the proposed fleet strength reduced to a small carrier force, to be developed around only one small aircraft carrier.

Plans Approved for Two Carriers

The proposal received due support from the Governor General of India, Earl Mountbatten of Burma, and was approved by Shri Jawaharlal Nehru, the Prime Minister of India. It also received the blessings of the Nobel laureate, Professor P.M.S. Blackett, the British Defence Scientific Adviser, who visited this country at the invitation of the Government of India. He concurred with the plans for the expansion of India's navy on the lines recommended by the 10-year expansion plan, according to which it was proposed to acquire a light fleet carrier from Britain in 1955 to be followed, if funds could be made available, by a similar carrier in 1957. The services of an experienced officer from the Royal Navy's Fleet Air Arm, Captain H.C. Ranald, were loaned to the Indian Navy from the British Admiralty and a Directorate of Naval Aviation was set up at Naval Headquarters in 1948 with Ranald as the Navy's first Chief of Naval Aviation (CONA).

Infrastructure of Operational and Technical Personnel

Recalls Captain Balbir Law, one of the aviation pioneers and the first Commanding Officer of the fighter squadron.

Those were heady and exciting days and the decisions were implemented at a fair pace. A small team of Royal Navy Officers were loaned to the Indian Navy to create the infrastructure, ashore and afloat. This team led by Captain Ranald, began the task of recruitment and training of aircrew and technical personnel in 1948, to meet the planned requirement for the Indian Navy to acquire two light fleet carriers by 1957. It was decided to train quickly, a small nucleus, using the *Royal Navy's* training establishments in the UK and, thereafter, to feed the additional requirements through the existing facilities of the Indian Air Force. The overall aim was that the nucleus trained with the Fleet Air Arm would not only retain the personnel in specialised skills for maintaining and operating aircraft from carriers but also lay the foundations for building the Navy's own aviation training establishments in India.

Volunteers were asked for the fledgling aviation wing and in 1948, out of the officers who had volunteered, thirteen were selected and deputed to the Indian Air Force's flying training academy at Jodhpur for a four-week flying course on Tiger Moths. These were Lieutenant (later Commodore) G.M. Shea' Lieutenant (later Commander) J.N. Vats, Lieutenant (later Commander) B.S. Ranjit, Lieutenant (later Commander) A.S. Bathena, Lieutenant (later Commander) H.K. Mukherji, Lieutenant M.M. Bakshi, Lieutenant (later Captain) T. Chakraverti, Lieutenant (later Commander) K. Cockburn, Lieutenant (later Commander) R.S. Sokhi, Lieutenant (later Commander) P.N. Parasher, Lieutenant (later Commodore) P.C. Rajkhowa, Lieutenant (later Lieutenant Commander) G.C.D'Cruz and Lieutenant (later Captain) B.D. Law.

Out of these volunteers, ten officers qualified in the flying aptitude tests and were sent for basic flying training to the Royal Naval Air Station, Donibristle, in Scotland, in March 1949, three - Shea, Vats and Ranjit - having failed to make the grade. Out of these ten, seven qualified at Donibristle (Cockburn, Bathena, and Rajkhowa did not qualify) and were transferred to the Royal Air Force Station, Syerston, for the next phase of training, where five earned their 'wings' and two officers failed to qualify, Mukherji on Prentice and D'Cruz on Harvard aircraft. In August 1950 these five officers were sent to the Royal Naval Air Station, Lossiemouth for operational training (Bakshi, Chakraverti and Sokhi for antisubmarine operations and Law and Parashar in fighter operations) where, after two years' rigorous training, four officers - Lieutenant P.N. Parashar, Lieutenant B.D. Law, Lieutenant T. Chakraverti and Lieutenant R.S. Sokhi - qualified in 1952 and returned to India. The fifth, Lieutenant M.M. Bakshi, died tragically in a flying accident during his operational training.

During their training in England, two out of these four officers had completed the fighter course on Seafires (the naval version of Spitfires) and the other two had been trained in the strike role in Fireflies. Parashar and Law were then attached to the 781 Communication Squadron and Sokhi and Chakraverti to the 771 Fleet Requirement Squadron at Lee-on-Solent for consolidating their flying experience and for conversion to twin-engine and amphibian aircraft and a brief course on helicopters. They flew a wide variety of aircraft including the Anson, Oxford, Martinet, Firefly, the amphibian biplane Sea Otter, the twin-engined biplane Dominie and the front-line antisubmarine and fighter aircraft Seafury.

Y.N Singh, the Navy's First Aviator

Well before the partition of India, an Indian officer of the Royal Indian Navy, Lieutenant (later Commodore) Y.N. Singh, had been trained in flying in the UK and had become a qualified pilot in 1944, when he earned his wings at the Elementary Flying School, St Eugene, and served in the British 804 Squadron as a fighter pilot. In fact he was the first Indian ever to fly from the deck of an aircraft carrier at sea.

Besides these five officers, four other officers, Lieutenant (later Commander) N. Pavamana, Lieutenant (later Commander) Joginder Singh, Lieutenant (later Commander) C.R. Menon and Lieutenant (later Commodore) B.R. Acharya were soon selected for the Navy's air arm and received their basic training from the IAF and were awarded wings in 1953. Because of the absence of technical staff required for aircraft maintenance, two officers of the Engineering Branch of the Navy, Lieutenant (later Commander) P.V. George and Lieutenant Commander (later Rear Admiral) H.D. Kapadia, were sent to the UK for specialisation in air engineering. Two engineer officers of he Indian Air Force, Lieutenant (later Commander) M.S. Shrikhande and Lieutenant (later Commander) V.S.P. Mudaliar were transferred to the aviation wing of the Navy to strengthen its technical base.

The Navy at this time also required officers to serve as observers - officers who fly in naval aircraft and are assigned the tasks of reconnaissance, antisubmarine warfare, aerial photography, photo intelligence, tactical coordination, radar control, communication, air navigation, etc., and hence a batch of five officers - Lieutenant (later Vice Admiral) M.K. Roy, Lieutenant (later Commander) M.N. Gupta, Lieutenant (later Lieutenant Commander) J.V. Nazareth, Lieutenant (later Commander) V. Chakravarthy and Lieutenant C.P. Ramachandran - was sent to the UK for training in 1951.

The Birth Pangs

The Defence budget for 1949-50 had provided for adequate funds for the acquisition of carrier aircraft so that these aircraft could be used to impart adequate training to the naval pilots in preparation for the acquisition of the first aircraft carrier in 1955 from the UK but no naval aircraft could be spared at this time by the Royal Navy for transfer to India. Besides political pressures within the country, the war in Korea slowed down the pace of development of the Fleet Air Arm for the Indian Navy. This was because the aircraft and aircraft carriers which India had proposed to acquire were no longer available as they were fully committed to the Korean War. The pressures on the Indian borders also necessitated attaching greater priority for developing the other two Services and the resultant slackening of pace also meant a change in the role of the proposed Fleet Air Arm.

Whereas the original plans would have provided real teeth and considerable punch to the Service as a whole, the new role assigned to the Air Arm was the secondary task of providing the Fleet with aircraft to enable the surface ships to practice and develop their antiaircraft defence systems and, to a limited extent, for air-to-surface communication and reconnaissance. The change in the role implied a change in the type of aircraft required. The main role of the aircraft - cooperation with the Fleet at sea, reconnaissance and communication - dictated an aircraft which could fly singly over the sea with some degree of safety and ability to alight on the water, sufficient endurance, long-range communication and navigation facility, and the ability to carry a small load of equipment and additional personnel. The *Royal Navy* had operated two amphibian aircraft, Walrus and Sea Otter, for reconnaissance by catapulting them off most of its capital ships, but these had by now become too old for acquisition.

Naval Headquarters had in the meanwhile decided to recommend the acquisition of a non-carrier aircraft for pre-carrier acquisition training. The aircraft chosen was the *Sea Fury FB 11* and it was proposed to set up a shore-based strike squadron with 40 such non-carrier aircraft to be acquired by the end of 1950. However, this proposal too fell through as the Defence budget had to be severaly curtailed owing to stringent austerity measures adopted by the Government of India and naval aviation became one of the targets of these measures, reducing the number of aircraft carriers to be acquired, to only one, shelving the *Sea Fury* acquisition programme and severely truncating the projected requirement of other ships, craft, weapon systems and equipment. At one time the Government was even contemplating the withdrawal of all personnel training in aviation and

giving them the option to revert to general service or to consider a transfer to the Air Force, if acceptable to them. Ultimately, against very stiff opposition from the IAF, the Navy succeeded in obtaining Government approval for keeping naval aviation going, even though on a very restricted scale.

The Fleet Requirement Unit

Eventually, it was in June 1951, that the formation of a Fleet Requirement Unit for providing aircraft to be used for maritime reconnaissance, training of pilots and observers, evaluation and calibration of radar and communication equipment, support of the fleet in antisubmarine exercises and as air targets for antiaircraft gunnery practice and training in tracking, with a complement of one squadron commander, eight pilots, four observers, one air engineer officer, one air electrical officer and 31 sailors was finally approved by the Government of India.

The change in the role did not deter Naval Headquarters from going ahead with recruiting and training personnel in all the trades and professions of naval aviation to ensure that the new arm would be completely self-sufficient. A new and highly skilled cadre emerged; it comprised pilots, observers, engineers, electrical and radio specialists, armament and ordnance specialists, safety equipment and aircraft handlers, storesmen and medical officers specialising in aviation medicine. Some of these aviation personnel subspecialised to prepare for the day when the tide would turn and the navy would man its first aircraft carrier.

The Sealand

The first aircraft eventually selected, mainly because it was the only acceptable aircraft available at that time for acquisition for the Fleet requirement Unit, was the *Sealand Mark 1L* twin-engine amphibian aircraft, manufactured by Short Brothers at Belfast, North Ireland, and it was decided to acquire ten such aircraft in the first lot. This was a simple, slow and relatively very cheap aircraft which could carry two pilots, an observer, communication and direction-finding equipment, a chart table, a dome for taking navigational sights of the sun, moon or stars, and four passengers, it had an endurance of over five hours and had the luxury of a loo!

Whilst it may be difficult to justify the choice of this aircraft, it must be appreciated that the deterioration in the international situation leading to the Berlin blockade, and the requirements of the Korean War and war resources, appeared to have precluded the release of suitable combat

The Birth Pangs

The Defence budget for 1949-50 had provided for adequate funds for the acquisition of carrier aircraft so that these aircraft could be used to impart adequate training to the naval pilots in preparation for the acquisition of the first aircraft carrier in 1955 from the UK but no naval aircraft could be spared at this time by the Royal Navy for transfer to India. Besides political pressures within the country, the war in Korea slowed down the pace of development of the Fleet Air Arm for the Indian Navy. This was because the aircraft and aircraft carriers which India had proposed to acquire were no longer available as they were fully committed to the Korean War. The pressures on the Indian borders also necessitated attaching greater priority for developing the other two Services and the resultant slackening of pace also meant a change in the role of the proposed Fleet Air Arm.

Whereas the original plans would have provided real teeth and considerable punch to the Service as a whole, the new role assigned to the Air Arm was the secondary task of providing the Fleet with aircraft to enable the surface ships to practice and develop their antiaircraft defence systems and, to a limited extent, for air-to-surface communication and reconnaissance. The change in the role implied a change in the type of aircraft required. The main role of the aircraft - cooperation with the Fleet at sea, reconnaissance and communication - dictated an aircraft which could fly singly over the sea with some degree of safety and ability to alight on the water, sufficient endurance, long-range communication and navigation facility, and the ability to carry a small load of equipment and additional personnel. The *Royal Navy* had operated two amphibian aircraft, Walrus and Sea Otter, for reconnaissance by catapulting them off most of its capital ships, but these had by now become too old for acquisition.

Naval Headquarters had in the meanwhile decided to recommend the acquisition of a non-carrier aircraft for pre-carrier acquisition training. The aircraft chosen was the *Sea Fury FB 11* and it was proposed to set up a shore-based strike squadron with 40 such non-carrier aircraft to be acquired by the end of 1950. However, this proposal too fell through as the Defence budget had to be severaly curtailed owing to stringent austerity measures adopted by the Government of India and naval aviation became one of the targets of these measures, reducing the number of aircraft carriers to be acquired, to only one, shelving the *Sea Fury* acquisition programme and severely truncating the projected requirement of other ships, craft, weapon systems and equipment. At one time the Government was even contemplating the withdrawal of all personnel training in aviation and

giving them the option to revert to general service or to consider a transfer to the Air Force, if acceptable to them. Ultimately, against very stiff opposition from the IAF, the Navy succeeded in obtaining Government approval for keeping naval aviation going, even though on a very restricted scale.

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Whilst it may be difficult to justify the choice of this aircraft, it must be appreciated that the deterioration in the international situation leading to the Berlin blockade, and the requirements of the Korean War and war resources, appeared to have precluded the release of suitable combat

aircraft for the Indian Navy. According to Commander P.N. Parashar, one of the intrepid pioneering pilots of the Indian Navy, 'Cochin being surrounded by water and the need to find an aircraft which could fulfil multiple non-combat roles for the Fleet, aided by the personal flying experiences of Captain H.C. Ranald, must have influenced the choice of this aircraft.'

The first Sealand aircraft, numbered IN 101, was formally handed over to Shri P.V.R. Rao, Deputy High Commissioner at the Indian High Commission in London (Shri Rao was to later become the Defence Secretary), By Rear Admiral M.S. Slattery, Chairman, Short Brothers & Harland Ltd., at a colourful ceremony at Rochester, Kent on January 13, 1953. Later, between February 4 and October 23, 1953, all ten aircraft were ferried to Cochin by some of the Indian pilots trained in the UK and a British firm undertaking aircraft ferrying service. During one of these ferrying trips, Lieutenant P.N. Parashar and Lieutenant T. Chakraverti distinguished themselves by flying in formation from Lee-on-Solent in England to Malta in a single-seater Seafury aircraft in three hours and 11 minutes, setting a new speed record for the distance. This feat provided considerable laudatory publicity in the British and Maltese press and journals.

Naval Air Station

Meanwhile negotiations had been going on for some time for the transfer of the Cochin airfield to the Navy for providing a home to the Navy's aviation wing and setting up the Fleet Requirement Unit with all necessary facilities. It had been used to a limited extent during World War II as was its nearest neighbour - Sulur in Coimbatore. The vital task of developing the air station at Cochin, adjacent to the naval base, *Venduruthy*, was given to Commander George Douglas who had served in the Royal Navy's Fleet Air Arm with distinction, had been awarded the Distinguished Flying Cross for valour, was demobilised after World War II and permitted, by special dispensation, to join the Indian Navy. The first Indian pilot to land a Sealand aircraft on water was Lieutenant B.D. Law, who successfully touched down on the Ernakulam Channel at Cochin on April 9, 1953.

From the beginning, this new clan of aviators acquired a sense of identity and enthusiasm which surpassed all expectations. Every person, senior or junior, was full of vigour, competitiveness and comradeship, whether in achieving the number of flying hours or in the highest standards of aircraft maintenance, and this spirit asserted itself even more strongly on the sports grounds of the entire naval base. On May 11, 1953, the day the first Indian Naval Air Station, *Garuda* was commissioned, the

formation of four Sealand aircraft which took part in a fly-past was led by Lieutenant Commander P.N. Parashar, the other three pilots being Lieutenant Commander B.D. Law, Lieutenant Commander T. Chakraverti and Squadron Leader L.C. Datt of the IAF. Parashar recalls:

> After the flypast I landed and Admiral Sir Mark Pizey, who was the Chief of the Naval Staff at that time, boarded the aircraft and we carried out a water-landing in the Ernakulam channel and taxied up the slipway to the *Venduruthy* (the naval training base) parade ground. Admiral Pizey was not really sure about what he was in for and, I think, greatly relieved to be safely back on *terra firma*.

Ceremonial Fly-Past and Target-Towing

On October 10, 1953, the President, Dr Rajendra Prasad reviewed the Indian Fleet at Bombay when six Sealand aircraft took part in a fly-past over the Fleet and dipped their wings in salute to the Supreme Commander, and one Sealand aircraft, piloted by Lieutenant Commander Y.N. Singh with Lieutenant M.K. Roy as crew, successfully carried out a landing on water. On November 17, 1953 four Sealand aircraft took part in a flypast in honour of the First Sea Lord of the British Admiralty, Admiral Sir Rhoderik McGregor, at Cochin. These Sealand aircraft also provided a ceremonial antisubmarine patrol in April 1954 for Queen Elizabeth II of Britain, whose ship, *SS Gothic*, which also had the Duke of Edinourgh on board, was on passage from Aden to Colombo. Lieutenant P.N. Parashar was the leader of the flight which ceremonially escorted the yacht of the President of Yugoslavia, Marshal Tito, when it left Cochin harbour in December 1954 after a formal visit. The Fleet Requirement Unit was formally visited by the President of India, Dr Rajendra Prasad, in February 1956; by the British First Sea Lord, Admiral of the Fleet, Lord Louis Mountbatten of Burma and Lady Edwina Mountbatten in March 1956, and by His Imperial Majesty Haile Selassie, Emperor of Ethiopia, in October 1956. In August 1954, the unit began providing aircraft as aerial targets for ships of the Commonwealth Navies taking part in the annual Joint Exercises of Trincomalee (JET) along with Sunderland flying boats and Shackleton Maritime Reconnaissance aircraft of the Royal Navy operating from China Bay, near Trincomalee. Flying for the Commonwealth Navies continued for 11 years, for JET exercises continued to be held till 1957, when the frequency of the participation by the Indian Navy was reduced and eventually discontinued in 1965.

The Firefly

At this time the necessity of acquiring an aircraft capable of towing a drogue or sleeve target was felt and the Sealand aircraft was found to be considerably underpowered for withstanding the drag produced by such a towed target. Accordingly, two Firefly Mark I single-engine carrier-borne strike aircraft, which were being operated from the aircraft carriers of the Royal Navy and had been used during the Korean War, were fitted with target-towing equipment for towing drogue and sleeve targets and acquired for the Fleet Requirement Unit in February 1955. Three months later, three more Firefly Mark I aircraft were acquired. Between September and December 1958, another five Firefly Mark IV aircraft, fitted with 20-millimetre cannon and also capable of carrying bombs and rockets, were acquired, raising the Firefly strength to ten, and adding offensive punch to Indian naval aviation.

Reminisces Balbir Law,

> We remained shore-based and second line from the operational point of view but whether operating as a squadron or as a detachment, the flying operations provided each and every one of us invaluable experience and self-confidence. Maintenance, repair and overhaul facilities were developed to achieve remarkable standards.
>
> Above all, even these limited facilities ingrained in the minds of the Service as a whole, the importance of developing a Navy in which aircraft and helicopters would play a vital role. The Air Arm began to attract and draw intelligent, young and highly enthusiastic volunteers from the Executive and technical branches of the Service. We also recruited short-service officers from the universities and the two merged very successfully, and their high professional standards truly formed the backbone of the new branch and contributed greatly towards its future successes.

The Hindustan Trainer 2

Meanwhile, it had been decided to supplement the basic flying training imparted by the Indian Air Force, with flying training at Cochin, and hence three Hindustan Trainer 2 (HT2) aircraft had been acquired by the Fleet Requirement Unit from the Hindustan Aircraft Limited (HAL), Bangalore and ferried to Cochin by Lieutenant Commander B.D. Law and Lieutenant R.A.J. Anderson on October 7, 1956.

Air Squadrons

Since the Fleet Requirement Unit had by now acquired adequate aircraft to justify the setting up of a Naval Air Squadron, it was rechristened and commissioned as the Indian Naval Air Squadron 550 *(INAS 550)* with ten amphibian Sealand aircraft, ten Firefly target-towing aircraft and three HT2 trainer aircraft on June 17, 1959 and placed under the command of Lieutenant P.K.K. Menon.

Advent of Jet Aircraft - The Vampire

It was now decided to acquire some jet aircraft for *INAS 550* as the deal for acquiring an aircraft carrier had been gone through in 1957, the light fleet carrier *Hercules*, to be renamed and commissioned as *Vikrant*, had been purchased and it had been decided to provide India's first aircraft carrier with jet-powered fighter aircraft. Since the Cochin airfield was not long enough to operate jet aircraft, it was decided to acquire the IAF storage depot at Sulur near Coimbatore as it had a suitable runway which was not being used by the Air Force any longer. The Gunnery School at Cochin had a small establishment manned by a naval detachment at Coimbatore which provided all the facilities to personnel using the shooting range there, and therefore could provide all facilities to the air squadron. Soon three Vampire FB-52 aircraft were acquired from the Hindustan Aircraft Limited, Bangalore and a trainer Vampire T-55 aircraft was transferred to the Navy from the Indian Air Force. And with that a Naval Jet Flight came into being at Sulur on September 2, 1957 with Lieutenant Commander B.D. Law as its first Commanding Officer and with a complement of four officers and 56 sailors.

A few naval pilots were soon sent to the IAF Flying Instructors' School at Tambaram and the first naval pilot to qualify as a flying instructor was Lieutenant B.R. Acharya followed by Lieutenant (later Vice Admiral) S.C. Chopra, Lieutenant (later Commander) R.S. Grewal and Lieutenant (later Commander) K.K. Punchhi, all of them topping in their courses.

In 1960 the nomenclature of the Naval Jet Flight at Sulur was changed to *Indian Naval Air Squadron 550 'A' Flight* and that of the Fleet Requirement Unit at Cochin to *Indian Naval Air Squadron 550 'B' Flight*, with the task of training pilots for the two squadrons of fighter and antisubmarine aircraft for the *Vikrant*, assigned to the former. In March 1961 a further change was implemented with the *INAS 550 'A'* Flight and the Naval detachment at Sulur merging to become the Naval Contingent,

Coimbatore and the *INAS 550 'B'* Flight at Cochin reverting to *INAS 550*. Within six months, i.e., on September 5, 1961, the Naval Contingent, Coimbatore was commissioned as a full-fledged naval base, *Hansa*, with Commander T. Chakraverti as its first Commanding Officer; and the squadron of aircraft at Coimbatore was commissioned as *INAS 551* on September 1 the same year, with Lieutenant R.S. Grewal as its first Commanding Officer.

With the increase in the requirement of personnel to occupy aviation billets on board the *Vikrant* as well as the shore aviation establishments and with the growing necessity of phasing out the obsolescent Sealand aircraft, *INAS 550*, which originally was the Fleet Requirement Unit, was wound up on March 1, 1962 and a Station Flight, *Garuda* was formed with two Sealand aircraft. *INAS 550* was reformed and started using the new Alizes of the 310 Squadron and the Seahawks of the 300 Squadron for providing flying practice to its pilots.

The Soviet MI-4 Helicopter

It was in 1964, that five naval pilots, Lieutenant (later Vice Admiral) H. Johnson, Lieutenant (later Commodore) M.P. Wadhawan, Lieutenant (later Commodore) V. Ravindranath, Lieutenant (later Commander) S.R. Debgupta and Lieutenant (late Commander) P. Jha, started flying a Soviet-gifted MI-4 helicopter for the Thumba rocket-launching range. This helicopter was assigned the task of carrying out surveillance of the sea areas off Thumba in Kerala, prior to the launching of rockets.

Dove, HT2 and Kiran

During the year 1965, two Dove aircraft, three Hindustan Trainer 2 aircraft and one Kiran, a jet trainer aircraft built by the Hindustan Aircraft Limited, Bangalore, were acquired for the *INAS 550*.

The officers who commanded the Fleet Requirement Unit (FRU) from 1950 to 1959, and their dates of assuming command were Lieutenant Commander Y.N. Singh (March 11, 1953), Lieutenant R.S. Sokhi (January 3, 1954), Lieutenant Commander T. Chakraverti (February 5, 1954), Lieutenant M.K. Roy (Februay 1, 1955), Lieutenant M.N. Gupta (February 2, 1957), Lieutenant Joginder Singh (September 17, 1957) and Lieutenant N. Pavamana (February 3, 1958); and the Commanding Officers of *INAS 550* from 1959 to 1965 were Lieutenant P.K.K. Menon (June 18, 1959), Lieutenant (later Commodore) J.C. Puri (November 18, 1959), Lieutenant (later Rear Admiral) A. Ghosh (December 1, 1960), Lieutenant R.S. Grewal (January 16, 1961), Lieutenant V. Ravindranath (September 12, 1961), Lieutenant (later Commander) Arun Rao (November 1, 1962), Lieutenant

(later Captain) R.D. Dhir (April 9, 1964) and Lieutenant V. Ravindranath (April 10, 1965).

Rear Admiral H.D. Kapadia

The person who had the longest association with naval aviation and made a significant contribution to the development of material support and maintenance facilities was Captain (later Rear Admiral) H.D. Kapadia, a specialist in Air Engineering. To quote Commander P.N. Parashar, this officer, in his various appointments in the UK and as Director of Air Maintenance and Repair at Naval Headquarters: `played a very important part in all planning stages of naval aviation. In fact, out of all the "backroom boys", Homi Kapadia made the maximum contribution to the creation and expansion of naval aviation.'

In June 1964 *INAS 551* was shifted to *Hansa* at Dabolim, Goa and the jet flight and ancillary aviation units at Combatore were wound up.

Aircraft for the Vikrant - The Seahawk

As regards fighter, reconnaissance, antisubmarine and rescue aircraft for the *Vikrant*, the primary requirement for the aircraft to be chosen for the carrierborne fighter squadron of the Navy was an appropriate level of sophistication, reliability, versatility and ease of maintenance, in a Service that was still learning to operate aircraft at sea. Taking all these vital aspects into account, the Indian Navy chose the British Seahawk jet aircraft, designated as a fighter ground attack carrierborne aircraft and manufactured by Messrs. Hawker Siddley, which had been in operation in the Royal Navy since 1953 and which was the cutting edge of the British naval task force during the 1956 Suez operations, when it operated six squadrons of this aircraft from carriers along with the French forces. Powered by a Rolls Royce Nene engine, the Seahawk had thus already proved itself and was already in operation with two other navies - the Dutch and the German.

In 1959, an order was placed for 24 Seahawk FGA Mark VI aircraft to be mainly used as fighter-bombers and the first aircraft was handed over to the Indian Navy on January 22, 1960. Soon three more Seahawks were received and a four-aircraft Seahawk Flight was established at the Royal Naval Air Station, Lossiemouth for training Indian pilots. The Commanding Officer-designate of the squadron, Lieutenant Commander Balbir Law, and the Senior Pilot-designate, Lieutenant Commander B.R. Acharya, soon converted to Seahawks and the Air Weapon Instructor-designate, Lieutenant R.N. Ghosh, was deputed to the Gunnery School at *Excellent*, Whale

Island, in January 1960 for specialisation. By July 1960 eight Seahawks had been positioned at the Royal Naval Air Station, Brawdy, Wales and on July 7, 1960, after an intensive work-up, the squadron of Seahawks designated *Indian Naval Air Squadron 300* was commissioned at Brawdy by Shrimati Vijaya Lakshmi Pandit, the Indian High Commissioner in the United Kingdom, with the Squadron's crest depicting a white tiger of Rewa leaping out of the sea in a 'rampant posture' leading to the Squadron being assigned the sobriquet White Tigers in later years. By the time the Squadron embarked on the *Vikrant* on August 4, 1961, its strength had risen to twelve.

While 27 Seahawks were acquired initially, the fleet of fighters was later augmented by the acquisition of reconditioned Seahawks from the Royal Navy and West German Navy.

The Alize

As regards fixed-wing antisubmarine aircraft for the carrier, the British aircraft manufacturers were prepared to supply the Gannet ASW (antisubmarine warfare), the Gannet ASW 3 AEW (air early warning), the Sea Otter and the Sea Mew, all of which failed to pass muster. The Gannet was considered unsuitable for a fledgling Fleet Air Arm because of the maintenance problems of its 'double-Mamba' engine, contra-rotating propellers and unreliable starting mechanism. The Sea Mew too had serious maintenance problems. The Sea Otter had by now become obsolescent.

Vice Admiral V.E.C. Barboza, who retired as the Flag Officer Commanding-in-Chief of the Western Naval Command in 1981, was present at a meeting where the offer of the Sea Otter was being considered. He recalls:

> The Sea Otter had been privately offered for our Fleet Air Arm and Naval Headquarters had asked the Admiralty for an opinion on the aircraft. One morning Commodore H. Drew, the Chief of Staff (there was no Vice-Chief at Naval Headquarters at that time) read out the Admiralty's reply which advised against its purchase. Captain H.C. Ranald, the Chief of Naval Aviation, who was pro-Sea Otter, mounted a vociferous but unconvincing attack on the Admiralty's remarks. When his outburst subsided, the Chief of Staff disposed of his protest with a chuckle saying, `Well, the Admiralty Otter know best!'

The choice finally fell on the Breguet Alize 1050, manufactured by the Dassault Breguet Aviation, France, which had been in operation with the French Navy since May 1959. This aircraft had a crew of three - one pilot, one observer and one radar plotter - and was fitted with one Rolls Royce

Dart 21 turboprop engine and had already proved itself for its endurance, reliability and performance.

The Indian Navy placed an order for 12 Alize 1050 aircraft and delivery commenced in 1961 at Aeronavale at Hyeres, France, where the Commanding Officer-designate, Lieutenant Commander M.K. Roy, the Senior Pilot-designate, Lieutenant R.A.J. Anderson, and other members of the crew were trained to operate the aircraft from land bases and from the flight-decks of the French aircraft carriers *Clemenceau* and *Arromanches.* It was on March 21, 1961, that the Indian Ambassador in France, Nawab Ali Yavar Jang, commissioned the squadron of Alizes designated the *Indian Naval Air Squadron 310,* at Hyeres. The crest of this squadron depicted a majestic king cobra representing a hamadryad that would protect its mother, the carrier. The first Indian Alize pilot to land on a carrier was Lieutenant Anderson who landed on the flightdeck of the *Arromanches* in the Mediterranean and was catapulted off the carrier on the Squadron's commissioning day, a feat witnessed by the Indian Ambassador and senior French Naval Officers soon after the commissioning ceremony. The *310 Squadron* continued its work-up for another two months, before embarking on the *Vikrant* off Toulon, France on May 23, 1961.

In August 1961, two more Alizes were acquired for the Indian Navy, raising the strength of the Fleet of this antisubmarine aircraft to fourteen.

The Alizes proved to be a highly reliable aircraft and adequately versatile, to be able to operate in diverse modes such as carrier-based or shore-based antisubmarine warfare, antiship warfare, maritime reconnaissance and short-take-off-and-landing (STOL) operations off the flight-deck in case of catapult failure, so long as the relative wind over the deck exceeded 30 knots. There were occasions when this mode of launching aircraft had to be resorted to. For instance, the *Vikrant* was off Bombay some time in 1962, when she was required to desembark her Seahawk and Alize squadrons, but her catapult had developed mechanical snags and hence they could not be launched from the flight-deck. As Commander P.N. Parashar recapitulates:

> It was possible for the Seahawks to be towed from Ballard Pier to Santa Cruz with their wings folded. But the Alizes were too wide and, with their wings folded, too high to pass under various bridges. It was generally believed that the Alizes could not carry out a free take-off from the deck of the *Vikrant*. Lieutenant Commander Jagdish Puri was then the Senior Pilot of the *310 Alize Squadron* and Lieutenant Commander Arindam Ghosh, the flight-deck officer. Between the two of them, they marked out the deck. After detailed calculations, 'we agreed that with the average wind strengths, the ship doing the

maximum speed and the tanks containing just enough fuel to reach Santa Cruz airport, it should be possible to execute a free take-off. It would otherwise mean the locking up of the Alizes on board for almost eight months, till the catapult was rectified for the summer exercises in 1963. I assured Captain Mahindroo, *Vikrant's* Commanding Officer, that it was an acceptable risk, that I would attempt it myself and that if I were successful the others would follow. God was with me and I successfully got airborne well before reaching the end of the flight-deck. Thereafter the entire squadron was successfully disembarked, fuelled at Santa Cruz and flown to Cochin.

When quizzed on the merits of the Seahawk and the Alize vis-a-vis similar aircraft in operation in other navies of the world at that time, Admiral Sir John Treacher, who was the *Vikrant's* Work-Up Officer after her commissioning, said:

I could not fault the choice of aircraft. The Seahawk was an obvious natural for any service wishing to establish an Air Arm. It had the performance required to do the job, it was small enough to be manageable and forgiving enough for the essential confidence to be built up rapidly. The Alize was obviously the right size, with perhaps the most reliable turboprop engine the world has ever seen and although its ASW (antisubmarine warfare) capability was relatively modest, it was, again, the right aircraft at the time.

The Alouette III (Chetak)

An important component of carrier operations is a helicopter which can be used for various purposes such as search-and-rescue operations when a plane-guard ship is not available, reconnaissance, antisubmarine warfare, and antiship operations using torpedoes and short-range missiles. With the finalisation of the acquisition of the *Vikrant*, the requirement of helicopters for the Fleet Air Arm was projected to the French naval authorities and, after the conversion of Lieutenant Commander P.K.K. Menon to helicopter-flying at IAF Station, Palam, two pilots, Lieutenant M.P. Wadhawan and Lieutenant (later Commander) A.S. Dhillon were deputed to base Ecole at La Beurgedu-lac in France, in January 1961, for conversion to Alouette II, Bell G2 and Bell G3 helicopters, these helicopters having been found to be superior to the British Dragonfly helicopters which had been offered by the Admiralty. The Alouette II was more reliable than the Dragonfly, was cheaper and had been fitted with gas turbine engines which would obviate the necessity of storing petrol on board, as

was required for the Dragonfly.

Two Alouette II helicopters were obtained on loan from the French Navy after the Indian pilots had been trained in search-and-rescue operations and embarked on the *Vikrant* for plane-guard duties off Malta during the carrier's work-up. On expiry of the contract period of three months, the helicopters were returned to the French Navy.

A Sikorsky S-55 helicopter was obtained on loan from the Indian Air Force in 1962 and embarked on the *Vikrant* with its IAF crew but soon Lieutenants Menon and Wadhawan converted to Sikorsky S-55 helicopters and before long another Sikorsky S-55 helicopter joined the Vikrant, both being operated by Naval pilots. One of those helicopters was lost in 1964 when it sank in the Ernakulam channel in Cochin and the other returned to the IAF in the same year.

Meanwhile, it had been decided to acquire the latest version of the Alouette helicopter, the Aloutte III, from Sud Aviation, France and the first two helicopters arrived in mid-1964 in crates. These were assembled by the Navy's air engineers with the assistance of a French technician at Cochin and embarked on the *Vikrant* in July 1964.

It was the Alouette III helicopter which was later converted to its new *avatar*, Chetak, the Medium-range Antisubmarine Torpedo Carrying Helicopter (MATCH). This helicopter was equipped with antisubmarine weapons comprising two depth-charges or two antisubmarine torpedoes or a mix of the two and was indigenously manufactured by the Hindustan Aircraft limited, Bangalore for operating off the deck of carriers as well as smaller ships such as tankers, frigates, destroyers and even survey ships. Equipped with folding blades, this helicopter was powered by a 8,700-shaft-horse-power turbine and had an endurance of 2.5 hours, with a maximum speed of 113 knots. It had a crew of three - pilot, copilot and an aircrew in rescue operations at sea.

The three - aircraft air element chosen for the *Vikrant* - the Seahawk fighter-bomber, the Alize antisubmarine aircraft and the Alouette helicopter - had to operate in all the roles of carrier-borne aircraft such as fighter defence of the fleet and merchant shipping, maritime reconnaissance and anti-ship strike, antisubmarine defence and a variety of miscellanous tasks such as search and rescue, minelaying, ground attack, support of ground forces, aerial photography and transfer of stores and personnel.

A fresh batch of 22 refurbished seahawk FGA Mark IV and Mark VI aircraft were acquired from the Royal Navy during the early 1960s. The Fireflies and HT-2 trainer aircraft were paid off in 1964 and the few obsolescent Sealand amphibian aircraft, disposed of in 1965.

Air Stations for the Fleet Air Arm

Following the fall of Singapore and the Japanese assault on Sri Lanka in 1942, several Royal Naval Air Stations and Royal Air Force airfields were set up in India for providing training and maintenance support to British aircraft carriers operating in the Eastern waters. At Cochin, the Royal Air Force had set up an Air Ministry Experimental Station on Willingdon Island, in 1941 which was followed by a maintenance unit, an operations room and an advanced Flying Boat base.

Nearly eleven years before the commissioning of *Garuda* at Cochin, a Royal Naval Aircraft Repair Yard, *HMS Garuda*, had been commissioned at Peelamedu, Coimbatore on October 1, 1942, and was in operation for over three years. *HMS Vairi*, commissioned at Sulur, Coimbatore on February 1, 1945, was a depot establishment for 500 aircraft and operated Hurricane IIC and other aircraft from its airfield from November 1943 until the end of the War.

On July 1, 1944 *HMS Valluru* was commissioned at Tambaram, Madras which had the dual function of an aircraft repair yard and a frontline air station, operating aircraft of a Fleet Requirement Unit until March 1945.

In 1943, the Royal Navy established the Royal Naval Air Station at Cochin which had an Aircraft Erection Depot for asembling carrier aircraft, transported by sea for use in the naval theatres of war in the east, at the rate of 130 aircraft per month. This section was commissioned as *HMS Kalugu on* February 1, 1945, which was later decomissioned on August 1, 1946.

Consequent on the acquisition of Sealand aircraft for the Fleet requirement Unit in January 1953, the requirement of setting up a Naval Air Station with an airfield and other facilities for operating and maintaining aircraft, was projected to the Government. The choice fell on Cochin for the already existing naval base at this place, *Venduruthy*, which had already become the premier training establishment of the Navy, was contiguous to the airfield used by the Director General of Civil Aviation to operate the domestic air service. In fact, the airfield and the various facilities had already been taken over by the Navy on January 1, 1953 and commissioned as *Venduruthy II*, an adjunct of the main training establishment. The first Sealand aircraft touched down at the newly acquired airfield at Cochin, on February 4, 1953.

It was on May 11, 1953, that *Venduruthy II* was recommissioned as the Indian Naval Air Station, *Garuda*, with a squadron of four Sealand aircraft and with Commander George Douglas as the first Commanding Officer. The commissioning ceremony was performed by the then Minister for Defence Organisation, Shri Mahavir Tyagi who unveiled the crest, depicting the legendary partly-human bird, Garuda, immotalised in the

epic *Ramayana*, as a formation of four Sealand aircraft, led by Lieutenant P.N. Parashar, flew past dipping their wings in salute.

Speaking on the occasion, Vice Admiral (later Admiral Sir Mark Pizey, Chief of the Naval Staff, said: 'This is one of the most important, if not the most important day, that the Indian Navy has had because it marks the beginning of naval aviation. It is a day we have all been waiting for and planning for a long time.'

A message received on the occasion from the President of India, Dr Rajendra Prasad, read: 'The commissioning of *Garuda* today marks an important epoch in the history of our Navy. On this auspicious occasion I send you my hearty greetings and express the hope that this naval air station will play an important part in the development of the Indian Navy.'

Over the years, *Garuda* expanded its facilities and though the new establishment's initial *raison d'etre* was the provision of suitable operational facilities to the Fleet Requirement Unit, it soon established various other facilities that are provided in a naval air station such as training of pilots, observers and technical and non-technical personnel for operating and maintaining shore-based as well as carrier-based aircraft.

The first such facility to be established was the School for Aircraft Handling and Fire-Fighting, later renamed the School for Naval Airmen (SFNA), which was set up on August 17, 1956, with Lieutenant Commander B.S. Ranjit as its first Officer-in-Charge, for training non-technical personnel in such disciplines as airmanships, aircraft-handling, fire-fighting, specialised transport, air photo, air traffic control, safety equipment and aircraft recognition.

On June 3, 1957, the Naval Air Technical School (NATS) was set up with Lieutenant Commander V.V. Narayan as its first Officer-in-Charge for the training of all naval aviation technical personnel as well as the technical training of pilots, observers and flight engineers.

The Observer School was established in March 1960, with Lieutenant H.C. Bhandari as its first Officer-in-Charge for indigenising the training of Observers who had hitherto been trained in the UK.

Until 1956, maintenance of all naval aircraft had been entrusted to the Hindustan Aircraft Limited (HAL), Bangalore, but in July 1956, a HAL repair unit was set up in Cochin. It was, however, felt that the Navy itself should be able to undertake the maintenance of all naval aircraft and hence a Naval Aircraft Repair Organisation (NARO) was established at Cochin in February 1960 with Lieutenant Commander V.S.P. Mudaliar as its first Superintendent. This organisation was also entrusted with the testing and tuning of all new systems and equipment.

In November 1960, was established the Naval Aircraft Inspection Service with Lieutenant J. Stephen as its first Chief Inspection Officer for

ensuring an effective quality control of all equipment fitted in naval aircraft.

While *Hansa*, at Sulur, Coimbatore, continued to function as the mother establishment of all jet aircraft, its location was not considered satisfactory. The Navy had been seeking to transfer this air station to a suitable site on India's eastern or western seaboard but none of the existing ports met the requirements of a naval air station. The fortuitous liberation of Goa in 1961 presented a golden opportunity to Naval planners as Dabolim in Goa, situated halfway between Cochin and Bombay, has a fully developed airfield which had been used by the Portuguese for several decades. This airfield was soon handed over to the Navy to set up its second naval air station, the existing 4,500-foot runway extended to 8,000 feet and other facilities created. On June 18, 1964 Hansa and *INAS 551* were transfered from Sulur, Coimbatore, to Dabolim, to be followed by the stationing of *INAS 300* at this air station in September 1964, after its disembarkation from *Vikrant*.

In order to ensure the availability of Alouette helicopters at Bombay for operations from ships and for search-and-rescue purposes, a small unit for the maintenance of helicopters was set up at *Kunjali* in the same year.

India's First Aircraft Carrier

In 1943, the hulls of six aircraft carriers of the Majestic light fleet class were laid down in British yards and launched during the years 1944 and 1945. The carriers were expected to be commissioned for the Royal Navy for operations during World War II but the cessation of hostilities in 1945 led to the stoppage of work on their construction. However, only one out of the six carriers, the *Leviathan*, was never completed and was finally broken up in 1968 but the other five were eventually completed and operated by three navies. The *Hercules* was acquired by the Government of India and commissioned as *Vikrant* in 1961, the *Magnificent* was completed and acquired by the Royal Canadian Navy in 1948 (and disposed of in 1965), the *Terrible* was completed in 1949 and transferred to the Royal Australian Navy in 1949 as *Sydney*, the *Majestic* was completed in 1955 and transferred to the Royal Australian Navy as *Melbourne;* and the *Powerful* was completed in 1957 and acquired by the Royal Canadian Navy as *Bonaventure.*

To quote Balbir Law:

> Naval Headquarters had continued to press for acquisition of an aircraft carrier and serious negotiations had begun with the Admiralty. In 1956, a new Chief of Naval Aviation was appointed - Captain R.H.P. Carver, RN. The Air Arm owes much to this CONA

during whose term of office all the detailed planning for acquiring and manning the aircraft carrier was undertaken. He was an officer with a distinguished war record and quickly moulded his team in New Delhi with determination, skill and affection, to move forward. Even socially, the Air Branch became more conspicuous in the military and Government circles. The Carvers did much to build new bridges between the Air Branch, the Air Force and the Army.

A new training programme was launched to prepare for the manning of the carrier and her operational squadrons. A small Naval flying unit was established at Sulur, Coimbatore, to refamiliarises aircrew and maintenance personnel with operating jet aircraft (Vampires). I still recall, with great pleasure, starting this small unit with a total complement of three officers, besides the Commanding Officer, and about sixty men. We had one empty hangar and four empty wartime barracks at Coimbatore - the two separated by a distance of almost fifteen miles, and for which we were provided one three-ton truck and a jeep, to start with. The lack of essential facilities and comforts bound us together, made us improvise, and every one found the challenge of achieving the assigned tasks exhilarating. We ferried in our own Vampires, and made do with 'furniture' from empty crates and within days the flying task began. We established friendly ties with the local Air Force and the Army contingents. Almost all the officers and men, who were at Coimbatore during the early stages, later rejoined me to form the 300 Seahawk Fighter Squadron.

Naval Headquarters was also concerned about providing adequate shore facilities for the new carrier and her operational aircraft. The airfield at Cochin was too small with no room for suitable expansion. Furthermore, it was surrounded by rapidly developing commercial centres which demanded expansion of the commercial ports and ancillary facilities. Alternative sites and disused airfields, along the coast but within easy reach of the sea, were being looked at.

At about this time, Captain Carver's period of secondment to the Indian Navy came to its end and the Admiralty deputed another distinguished officer who remained at Naval Headquarters until after the new carrier had arrived in India. The appointment of CONA had also been upgraded to the rank of Commodore. The new CONA, Commodore (later Rear Admiral) D.W. Kirke, had already acquired a reputation in his own service as a 'go-getter' and had earlier helped in the development of the Australian Naval Air Arm. He was a man with a strong personality, boundless energy and a strong sense of humour and could be at ease with anyone from the peon to the Minister. He

knew that unless detailed target dates were established, it would not be possible to man and commission the carrier within a predictable period of time. The overall plan existed but its implementation required quick and responsible decisions. It was a critical phase in which charm, tact and bluntness were needed to achieve the immediate objective. Commodore Kirke felt very comfortable in his new driving seat within a couple of days of his arrival at Naval Headquarters and soon went into action. As a couple, the Kirkes were very affectionate and sincere and, within a remarkably short time, became an important part of the small, busy social circle of New Delhi.

The CONA and his staff faced a complex organisational task involving three countries. Selection of all the different categories of personnel, their training schedules at different establishments and manufacturers of ships, aircraft and equipment, the delivery, acceptance and the positioning of aircraft at different air stations, work-up of squadrons ashore, the trials and commissioning of the carrier, and, finally, the work-up of the ship and her squadrons, was a mammoth task to complete from a distance of 4,000 miles. It required skilful planning, co-ordination and leadership. It was all brilliantly executed by Commodore Kirke who later became the Flag Officer Flying Training in the Royal Navy as a Rear Admiral.

At this stage it was also clear that in the absence of an alternative site having been found, the existing facilities at Cochin and Sulur would have to be improved to receive the frontline squadrons. Support facilities for the Alize's were established, and more importantly, repair and overhaul facilities were extended to include the Seahawks. A small extension and the strengthening of the runways was undertaken, and provision made for the storage of weapons and ordnance, i.e., bombs, rockets, etc. Much credit is owed to two 'salt-horse' (non-specialist) Captains of *Garuda* during this period, Captain N.S. Tyabji and Captain (later Commodore) K.K. Sanjana. The former took command of the air station at the critical point when there was a sudden burst of activity on all fronts, training (aircrews and technical personnel), development of the airfield and planning for the future development. His boundless enthusiasm and tenacity got him thoroughly involved with the Air Branch and most young members of the branch were influenced by his qualities of leadership. I am reminded of an accident in which the aircraft, a Firefly had caught fire and the pilot had received severe burns to his face, hands and back. The young officer was in a critical condition and in intensive care. After two or three days, when barely able to whisper through bandages, he asked Captain Tyabji to sit beside him and promise that

if he was, in due course, found to be medically fit, he would be permitted to continue to fly. Long before the accident, the Captain had already assessed the character and potential of this bright, handsome young officer, and their determination matched each other's. He kept his promise and Sub-Lieutenant Arindam Ghosh, after months of skin-grafting, joined the frontline antisubmarine 310 Alize squadron. Ghosh regrettably died, when a Rear Admiral, in 1985.

Towards the end of 1959 and early in 1960, our aircrew and maintenance personnel began to assemble at naval air stations in the UK and France and commenced operational flying training on their newly acquired aircraft. Most of the aircrew had no previous experience of operational flying. It was an enormous task to make each individual pilot fully proficient in the skills of using his aircraft as a weapon system, and also to mould the squadron and crews to fulfil the varying roles of naval air warfare. The latter is most important, as naval aircraft do not operate in isolation but are part of a naval task force of which the carrier is a mobile air base. The limitations of size and, therefore, the number of aircraft that can be carried also dictate that aircrews and their aircraft perform a multiplicity of roles.

The frontline squadrons made excellent progress and achieved high standards in all aspects of air training and work-up ashore. They received all the support from the officers and men of their British and French parent stations who in turn drew much credit from the achievement of the Indian Naval Air Squadrons. The stations involved were *Lossiemouth* and *Brawdy* and French Naval Air Station *Hyeres, Toulon.'*

The Vikrant - Commissioning and Work-up

The keel of the *Hercules,* which was acquired by the Government of India in 1957, had been laid down at High Walker, Newcastle-upon-Tyne on October 14, 1943. The construction work was undertaken by the renowned shipbuilding concern Vickers-Armstrong and the hull was launched on September 22, 1945 by Lady Cripps, wife of the British Chancellor of the Exchequer, Sir Stafford Cripps and the ship was formally named *Hercules.* Further construction was, however, stopped in 1946 because World War II had ended in 1945 and the hull was mothballed. But when it was acquired for the Indian Navy in 1957, the hull was towed to Belfast and its refit was entrusted to another renowned shipbuilding concern, Harland and Wolff at Belfast, Northern Ireland. On completion of refit the ship was commissioned as *Vikrant* on March 4, 1961.

During the period from 1957 to 1961, extensive reconstruction and modernisation of the hull and equipment was undertaken and the ship virtually emerged as a new ship. The ship was fitted with state-of-the-art innovations in carrier design such as an angled deck, a mirror landing sight and a steam catapult. The carrier was also tropicalised, additional accommmodation provided for the Flag Officer of the Fleet and his staff and certain areas partially airconditioned, the latest electrical and electronic equipment installed and modern weapons and weapon control systems fitted.

During the early 1950s the Government had continued to be hesitant to commit itself to the creation of a full-fledged Fleet Air Arm by acquiring an aircraft carrier. Sir Gopalaswami Ayyangar, the then Defence Minister, had stated in 1952 that no specific time-frame had been set for acquiring a carrier and Shri K.N. Katju the incumbent of the portfolio after Sir Ayyangar, had stated in the *Lok Sabha* in April 1955 that the decision on the carrier was yet to be taken. The Defence Committee of the Cabinet finally approved the proposal at its meeting on April 30, 1956 (the author then serving in the Military Wing of the Cabinet Secretariat, recorded this historic decision of the Defence Committee of the Cabinet presided by Prime Minister Jawaharlal Nehru), and in 1957 a group of officers and technical staff numbering about 150 arrived at Belfast to supervise the modernisation and completion of the carrier. The flow of officers and sailors continued and early in 1961 larger batches started arriving and by February almost the entire ship's company had arrived. The ship officially became a unit of the Indian Navy when she was informally commissioned at 1000 hours on February 16, 1961 with the Commanding Officer-designate, Captain (later Rear Admiral) P.S. Mahindroo, reading out the commissioning warrant at a simple ceremony at Mustergrave Channel, Belfast. This was done to enable the large complement of officrs and sailors, who were staying ashore, to move on board.

The officers and sailors earmarked for the *Vikrant* had been staying ashore in Belfast for a long time and had endeared themselves to the local residents. The Chairman of the Bangor branch of the local Royal Navy Association, Commander T.R. Eames, expressing his appreciation of the high standard of behaviour maintained by the Indians, said:

> During the three years that the ship was undergoing modernisation, Captain Mahindroo's men had behaved in a most exemplary manner which reflected great credit on the Indian Navy, the ship and the country. Many homes would indeed miss their cheerful and courteous presence.' Added the *Belfast Telegraph on* February 17, 1961: 'Yesterday the crew accommodation (on board the *Hercules*) became available and early in the morning more than 800

bluejackets of the Indian Navy, carrying heavy kitbags, began streaming on board and settling into their new quarters. More than 400 of them said farewell to landladies in Belfast and Bangor with whom they have been staying for several months while the carrier was still in the hands of the civilian workers. The remaining 400 arrived in drafts during the past few days and were accommodated temporarily at the Royal Navy Reserve headquarters in Belfast, *HMS Caroline'*.

Commenting on her stay in Ulster while her husband, an officer of the *Vikrant*, was busy supervising the carrier's completion, an Indian wife said,

Even if Ulster people are not so well versed in foreign news, they have made the greatest impression on us by their warm welcome, and their uninhibited friendliness. Due to this friendliness, I have seen and done things which I should besitate to do in India; for example, going out unreservedly to see mills, factories and hospitals.

The outstanding quality of the people is their helpfulness. I shall never forget the time when, soon after my arrival, I had to change buses in town. I was led by a kindly soul from Castle Junction to the back of the City Hall, and put on the correct bus. I shall return to India with very pleasant memories of the Ulster and Belfast people.

On February 20, 1961 Commodore R.L.H. Marsh of the Royal Navy accepted the ship from Harland and Wolff and informally handed it over to Captain Mahindroo at the ship's berth at Musgrave Channel. On March 4, 1961, Shrimati Viyaja Lakshmi Pandit, the then High Commissioner for India in the UK, renamed her *Vikrant* and formally accepted the ship on behalf of the Government of India from Mr Orr-Ewing, the Civil Lord of the Admiralty, while a formation of Seahawk aircraft flew past dipping their wings in salute to the ship. Present at the ceremony were the 1100 officers and men of the ship, the fourth Sea Land, representatives of Canada, Australia, the USA and Pakistan, the Lord Mayor of Belfast, the General Officer Commanding-in-Chief of Northern Ireland and a large number of Civilian and Service dignitaries.

In its report on the carrier's commissioning ceremony, the *Belfast Telegraph* said:

A hymn composed in 3,000 B.C. to *Aditi*, the Indian God of Eternity, figured in the commissioning ceremony of the Indian Navy's aircraft

carrier *Vikrant*. The four verses of the hymn were recited by the resplendent figure of Captain P.S. Mahindroo. He spoke in Sanskrit, the language in which the hymn was originally written.

The ceremony formally commissioning the ship was a mixture of east and west. The drill and marching of a guard of honour and the playing of the ship's small band was of a standard which could not have been bettered by the Royal Navy. But the commands were given in both English and Indian (sic).

The ceremony took place in the giant aircraft hangar of the carrier which is one of the most modern of her kind in the world today. Watching were the officers and men who will man the *Vikrant* and hundreds of guests, including members of the Indian community in Northern Ireland and wives of the crew in colourful saris.

Mr Ian Orr-Ewing, the Civil Lord of the Admiralty, said that the *Vikrant* was the first modern capital ship of the Indian Navy. He had seen the 300 squadron which would operate from the ship and had been greatly impressed with its discipline and operational qualities.

Stating that Mrs Pandit, and the *Vikrant* had much in common, Mr Orr-Ewing said they were both dedicated to duty; they were living examples of commonwealth unity; they both made a powerful contribution to the preservation of peace throughout the free world and they both had calm and dignity.

In accepting the ship on behalf of the Indian Government, Mrs Pandit said that the commissioning ceremony represented a major milestone in the naval history of India. Their maritime history went back into the distant past and it was true to say that much of India's new naval traditions, discipline and training methods owed a great deal to the close association they had with the Royal Navy. India's defence policy was based on the principles of peaceful coexistence and they were proud of the growing strength of their naval air arm which was making a valuable contribution to the country's defence.

She read the message from the Indian Minister of Defence, Mr Krishna Menon, in which he described the ceremony as a step forward in the development of the Indian Navy. He wished the ship a creditable tour of duty in the service and defence of their country and said a hearty welcome would await the *Vikrant* when she arrived in Indian waters.

Mrs Pandit added that the Commonwealth could only be kept together by the little people of every country getting to know and understand each other, and not at the top or at meetings of great people. As these little links forged they would have more effect than everything these meetings achieved. The High Commissioner

mentioned that two local girls would shortly be marrying members of the crew of the *Vikrant*, and she stressed the importance of people of different countries being able to understand each other and knowing their weaknesses and strength. Mrs Pandit said that this was vital in the cause of world peace .

On the following day, March 5, 1961, the *Vikrant* left Belfast and proceeded to Portsmouth and then to Portland for sea trials with Captain P.S. Mahindroo in command, Commander Y.N. Singh as Commander (Air), Commander (later Rear Admiral) Gautam Singh as the Executive Officer and Lieutenant Commander B.D. Law as Lieutenant Commander (Flying). For about a month, the *Vikrant* conducted the trials of all her flight-deck and other shipboard equipment and returned to Belfast for rectification of defects and the final testing and tuning of all equipment. A momentous event that occured on May 18, 1961 was the landing and arresting of the first jet aircraft, a Seahawk, on board the carrier by Lieutenant Commander R.H. Tahiliani, who later rose to the rank of Admiral as the Chief of the Naval Staff. The first deck-landing of an Alize antisubmarine aircraft took place on May 23, 1961.

By June 1961 the *Vikrant* had been readied for proceeding to India and towards the end of the month the carrier sailed from Belfast and embarked the aircraft of her jet fighter squadron, the Seahawks comprising the new 300 Squadron, in the English Channel on August 4, 1961 after a few day's work-up off Portsmouth.

During the carrier's brief stay at Portsmouth Admiral Mountbatten came on board to enquire about the performance of the ship's radar which was not providing a 360-degree coverage of aircraft flying around the ship, particularly those behind the stern. He soon took it up with the manufacturers of the radar system and the defect was removed before the carrier proceeded to Plymouth for gun trials and returned to Portsmouth.

Meanwhile the carrier had sailed for Toulon in France where she had embarked the aircraft of her antisubmarine and reconnaissance aircraft, the Alizés comprising the 310 Squadron, on May 23, 1961. Also embarked on the same day were two Alouette II helicopters for the *Vikrant's* 321 Flight loaned from the French Navy for search-and-rescue duties at sea and for carrying out 'plane-guard' tasks, i.e., standing by to rescue the crew of ditched aircraft during flying operations. She then sailed for Malta for an intensive six-week work up during which *Rajput* joined her to carry out plane-guard duties as the helicopters on board the carrier could not operate at night.

Two other carriers of the Majestic class, the Australian *Melbourne* and the Canadian *Bonaventure*, had been worked up at Malta by a British carrier work-up specialist team, but the Indian authorities had decided to work up

the *Vikrant* under the strict vigil and guidance of only one officer from the Royal Navy's Fleet Air Arm, Commander (later Admiral) John Treacher. It goes to the credit of this capable officer that the work-up went off smoothly without a single accident and the 1000th accident-free deck-landing was made in October 1961. Recalls Captain Balbir Law who was described by Admiral Treacher as a 'natural pilot':

> Everything so far had gone well, in fact, extremely well, and it was crucial that the most important phase, the working up of the ship together with her squadrons, should proceed with equal ease.

The Guru

It had been decided that a very small team led by an experienced naval aviator should guide the work-up and submit an independent report on the standards achieved at the end of the period. Treacher, who led this team, had recently completed his tenure as Commander (Air) of the Fleet Carrier, *Victorious*. His own very high standards of professional ability, tact and qualities of leadership, inspired everyone. The entire ship's company rose to meet the challenge and demands of a very intensive period of training for the next three months. Treacher's total commitment to the task and close involvement with every aspect of the work-up brought him in close contact with practically the entire ship's company. Most of the sailors and, in particular, those of the Supply and Secretariat (logistic support) Branch found it easier to call him Commander 'Teacher'. Towards the end of the Work-up, when most people had smiles of achievement on their faces, they affectionately called him Commander 'Guru'. He eventually became a full Admiral and C-in-C Fleet and held other NATO commands.

The task of working up the carrier began with the initial deck-landing qualifications of the frontline squadrons off the South Coast of England, then off Toulon, France and finally off Malta. This was a most exciting period and could well be described as the point were Indian Naval Aviation came of age. Operational work-up involves moulding the ship, aircraft and crews to undertake all operations, offensive and defensive, by day and by night, with live weapons, conducted with efficiency and in as short a time as possible. Everyone displayed the same spirit of enthusiasm and confidence as during those early days at Cochin, and the work-up was a total success.

The Commanding Officer received kudos from the C-in-C, Mediterranean Fleet and a number of other senior naval observers and was congratulated on the carrier's excellent performance which was particularly noteworthy because Captain Mahindroo was not an aviator himself but had imbibed all the fine points of flying safety and carrier operations during his short attachment to the Royal Navy's aviation establishments and carriers. Recalls Mahindroo:

> During the work-up we had to make sure that all pilots were adequately trained in night-flying at Malta because once we left Malta we would not have these facilities at sea or in India. Our plane-guard ship, the *Rajput*, had a number of breakdowns and hence could not always accompany us. So I had to decide whether I could fly aircraft at night without plane-guard which was a very difficult task indeed and I knew that if I did so and if anything went wrong, I would have to take the responsibility. I also knew that the Royal Naval authorities at Malta would also not approve of it. So I took Commander Treacher and the pilots into confidence and demonstrated to them that I could pick up a ditched pilot as fast as a plane-guard ship would by throwing a lifebouy overboard and picking it up within a few minutes. They were quite satisfied and on a few occasions I carried out night-flying operations without a plane-guard ship. We had decided that if an aircraft did ditch, I would divert all my airborne aircraft to the nearest airfield and pick up the ditched pilot myself but fortunately no such thing happened.

The *Vikrant* sailed from Malta on October 6, 1961 proceeded to Toulon to return the two helicopters borrowed from the French Navy and then set course for India and reached Bombay on November 3, 1961 after calling at Alexandria, Port Said and Aden and after disembarking the 300 Squadron and the 310 Squadron at sea off Bombay, these squadrons proceeding respectively to Sulur and Cochin.

Vikrant's Homecoming

A day before her arrival, the carrier had been joined by *Beas* and had proceeded towards Bombay with two escorts, the *Rajput* and the *Beas*, and as she entered the home waters on November 3, she was given a rousing reception by the flagship, *Mysore*, with aircraft of the Indian Air Force taking part in a flying welcome to the carrier. The carrier majestically sailed into Bombay harbour and secured alongside at Ballard Pier at 1702 hours on that momentous day and received a tumultuous welcome. A

large number of senior dignitaries including the Prime Minister of India, Pandit Jawaharlal Nehru, and the Chief of the Naval Staff, Admiral R.D. Katari, were present at Ballard Pier to welcome her home.

Rear Admiral P.S. Mahindroo reminisces on watershed in India's naval history and records his impressions of his stay in England prior to the carrier's commissioning and of her work-up and shake-down cruise thus:

> Everyone on board was full of pride on the commissioning day. Pride not merely due to the fact that they formed the complement of the largest ship of the Navy, but also because they were entrusted with the task of making India's first aircraft carrier a first class fighting unit. Today, thirty years later, probably very little is remembered of the efforts put in by the advance party of the Indian Navy who, with the help of the Admiralty Overseeing Team, supervised the refit and modernisation of the *Vikrant*. Hundreds of workers of Harland and Wolff shipyard also worked hard for three years to make the ship operational.
>
> Naval Headquarters, in consultation with the Admiralty, had decided which machinery and equipment on board the *Hercules* were to be changed and which were to be overhauled and refitted. After obtaining Naval Headquarters' approval on major work to be carried out, the shipyard began modernising the ship. At first our officers and the Overseeing Team members would meet the manager of the shipyard at a conference once a month to check the progress. Towards the end, this was changed to once a week.
>
> During March 1960, I had been called by the Naval Chief, Admial R.D. Katari, and given the good news that I had been selected to command the Indian Navy's first aircraft carrier. He had asked me how I felt. I had replied that it was a rare honour and I could not ask for anything better. From then onwards, I had tried to learn everything about aircraft carriers as I was completely ignorant of carrier operations. I had previously been in command of *Delhi* but, as I learnt, carrier operations were quite different from operating conventional surface ships.
>
> In June that year my wife and I sailed for England and reached Belfast in early July. By then there were on board around 15 officers and 50 sailors supervising the modernisation of the ship. As Belfast had no regular naval base they had found private accommodation in hotels, boarding houses and private houses. Luckily, Indians were popular with the locals, thanks to the exemplary behaviour of our sailors and when more officers and sailors arrived from India, we were able to find accommodation for them too without much diffi-

culty.

Refresher courses at various Royal Naval establishments were held for officers and sailors to familiarise them with the various types of equipment fitted in the ship. I too went through a number of courses and spent five days on board the Royal Navy carrier, *Ark Royal*, to watch flying operations and other drills. Training of pilots at Brawdy and Hyeres was going on satisfactorily. I visited both these squadrons before commissioning and met the pilots and crews. They were all 'rarin to go'. I was assured that they would embark as soon as the carrier was ready to receive them.

Towards the end of 1960 the Indian Chief of the Naval Staff came to England. He visited Belfast and saw the carrier under refit and was fully satisfied with the progress. There was, however, one point that had been worrying him. The first Sea Lord had suggested to Admiral Katari that as the Indian Navy had no previous experience of carrier operations it might be a good idea if a Royal Navy Captain trained us during the work-up and until our arrival in India and that I could understudy the Royal Navy Captain and take over the ship after its arrival. Admiral Katari asked for my reaction. I told him that if, as the Chief of the Naval Staff, he did not have faith in my ability to fulfil the task entrusted to me, then I should be sent home. But we could not have two captains on the ship. The Naval Chief assured me that he had full confidence in our officers and men and was certain that we would fulfil the task entrusted to us.

The carrier was to be commissioned as *Hercules* on February 16, 1961, when the ship's company of about 50 officers and 800 sailors would start living on board. The responsibility of looking after the ship would then be taken over from the shipbuilding yard by our officers and sailors. At this stage, the highest priority was given to living accommodation, mess-decks, galleys, pantries etc. Harbour trials of machinery and equipment were also carried out. The ship then went out to sea on a couple of occasions to test her machinery but the main sea trials were to be held after the commissioning. Thereafter trials and acceptance of flight-deck machinery, gunnery equipment, radar system, flying control systems, etc., were to be held at Portsmouth and Plymouth.

A batch of about 400 sailors was due to arrive from India two or three days before the commissioning. It was impossible to find accommodation for such a large number in hotels and guest houses. *Caroline*, the headquarters of the Royal Naval Reserve at Belfast, came to our rescue. With the kind courtesy of the Commanding Officer we managed to accommodate this large number of sailors

in the twin decks of that ship

On the morning of February 16, I was piped on board and after inspecting a guard of honour, addressed the ship's company. I impressed on everyone that all of us were new to this type of ship. We had been given a prestigous assignment. It was a great honour for us to man the first carrier of the Indian Navy. Very hard work lay ahead of us. I expected that we would all live up to the expectation of our country and return with an efficient fighting ship.

After the commissioning the momentum of the work on board increased. Both the civilian workers of the Yard and the ship's company got busy in getting the ship ready for the final take-over and eventual departure from Belfast. Our first priority now was preparing for the naming ceremony to be held on March 4, 1961. Even though the ship was thronged by Yard workers, she had to be got ready to receive important dignitaries and other guests.

After the *Hercules* had been renamed the *Vikrant* on March 4, sea trials and work continued at Belfast until the carrier was ready to sail for Portsmouth towards the end of June. By this time, some officers and men had been away from home for more than three years. A few had even got married to Irish beauties. More than 700 well-wishers were on the jetty to give the *Vikrant* a splendid send-off on the day of departure. We could see waving scarves for a long time.

On arrival at Portsmouth and after an exchange of normal courtesy calls, we got down to the main task of testing the equipment. We were assisted by experts of the Royal Navy, manufacturers of the various equipment, RN Dockyards and experts from various RN specialist schools. This phase was gone through with a lot of care as it was known that after completion of trials and acceptance of equipment, the responsibility for the machinery would rest entirely on officers and men of the carrier.

Our pilots had now completed their training. They had flown from airfields but had no experience of landing and taking off from a narrow and restricted deck of a moving ship. in this training we were assisted by a very exerienced and able officer of the Royal Naval Fleet Air Arm, Commander J. Treacher. He helped ensure that all flight-deck machinery and equipment were tested to provide 100 per cent efficiency and safety. He also supervised the procedures adopted for flying control and flight-deck operations. He stayed with us during our work-up at Malta until we finally sailed for India.

After the acceptance of the equipment, the *Vikrant* went out to sea and worked up off the Isle of Wight. This gave us the feel of the ship. Any defects that came to light and were beyond the capacity of the

ship's company were rectified by the Royal Naval Dockyard. During this month pilots also got their initial practice of `rolling' (touching down and taking off) on the deck and eventually landing and taking off from the ship.

It was during the six weeks at Malta that the ship worked up to her operational efficiency to enable her to launch and recover our aircraft. The work up at Malta was indeed an experience. The ship spent normally five days at sea and returned to harbour for replenishment on week-ends.

The tempo of flying training during the work-up period could be gauged from the fact that the *Vikrant* completed 1000th deck-landings by the end of September 1961, berely six weeks after her arrival at Malta. A 'well-done' message was received from Naval Headquarters, New Delhi.

Malta offered excellent facilities for training our pilots in night-flying. Again Plane-guard was a problem. But a friendly approach to the local Royal Air Force enabled us to get their sea-rescue launch for three to four hours every night, and we managed to qualify some of our senior pilots in night-flying.

I was fully satisfied with the work-up of the ship. We had achieved a high degree of efficiency. Drills in flying control, on the flight-deck, aircraft direction room and operations room were perfected. There was complete coordination and understanding between the bridge and the engine room. I congratulated the ship's company on their achievement. I thanked Commander Treacher for his valuable assistance and guidance that had helped us achieve this high standard.

On October 6, 1961 we sailed from Malta. Eight Seahawks flew over Malta to bid farewell to our hosts for two months. On our return journey to India we paid courtesy calls at Alexandria, Port Said and Aden. Flying practice was carried out throughout the passage.

Vikrant entered home waters on the morning of November 3, 1961. Demonstrations of rocket firing, strafing and bombing were carried out by twelve Seahawks and four Alizes. These demonstrations were witnessed by dignitaries embarked on the *Mysore*. These aircraft also flew over Worli, Dadar, Byculla and the Gateway of India. Jet aircraft and maritime reconnaissance Liberators took part in a flying welcome accorded by the Indian Air Force. In the afternoon we berthed at Ballard Pier.

Nehru Visits Vikrant

In the evening the Prime Minister accompanied by Admiral Katari,

arrived on board and welcomed the latest addition to the Indian Fleet. At a reception Pandit Nehru described the acquisition as a significant event and received the vessel with these words, 'I welcome the *Vikrant* on behalf of India and wish you success and victory that is implied in her name'. While addressing the ship's company, he told them that they should be proud to serve on the carrier. He had learnt that they had been throughly trained and he expressed the hope that they would serve the country well. The Prime Minister then went on a tour of the ship. It was indeed a proud day for officers and men of the *Vikrant*.

The Fly-Boys

Vice Admiral V.A. Kamath, who retired as the Vice Chief of the Naval Staff in 1977, commanded the *Vikrant* three years after her commissioning and was impressed by the 'go-getting dash of our fly-boys'. He recalls:

> It was in *Vikrant* that I had my first proper exposure to naval aviators. These so called 'flying types' were in many respects a breed apart. I say 'were' deliberately because since those days thay have become more widely distributed in the service and, having imbibed the wider naval culture, have become less of a breed apart. More than anyone else in the Navy at that time, I think each of them felt personally responsible for proving the efficacy of carrier aviation. They justifiably felt that the carrier must revolve round the air department, but in the process tended to be somewhat impatient of other problems. It was, if anything, a fault in the right direction and said much for their dedication to carrier flying. I could also personally sympathise with them for I remembered how, as a young gunnery officer of our first cruiser, *Delhi*, I was firm in my attitude that the entire ship existed to support my department. I am told that because of such attitudes, gunnery officers were called by different names behind their backs but I can assure naval aviators that this was not so in their case. Probably this has something to do with numbers. Whereas there are at the most two gunnery officers in an entire ship, a carrier has many aviators!

Reminiscing recently on the Indian Navy's Aviation Wing, Vice Admiral M.P. Awati, who retired as the Flag Officer Commanding-in-Chief of the Western Naval Command in 1983, says:

> The Short Sealand aircraft were not short on anything except perhaps their range! The prefix 'Short' refers to Short Brothers, the pioneer

aircraft designers in England! I have had the exhilarating experience of being flown under the Mattanchery railway bridge in Cochin by one of the intrepid amphibian pilots of those early days, Lieutenant 'Tiger' Joginder Singh. Singh, who later attended the naval staff course with me in 1959, was indeed a pioneer. The Air Arm was an instant success. It attracted to its fold some very fine, young officers, among them a fast balding Sub-Lieutenant, Ram Tahiliani, who thirty years later was fated to lead the navy into the sophisticated jump-jet age. The Sealands were quickly replaced by Fireflies which were ferry-flown from England by our own pilots led by Lieutenant B.D. Law who later led the 300 fighter squadron on its formation in the *Vikrant* in 1961. There were two Laws in the navy like everywhere else, the younger brother being in the Supply and Secretariat Branch! The Fireflies formed the Fleet Requirement Unit in 1955 and did sterling service in helping to improve the antiaircraft readiness of the Fleet. These early fliers and their maintainers formed the core of the Navy's first afloat air squadrons in 1961 when the *Vikrant* was commissioned. It was a most auspicious beginning which, grafted, as it was, on a good, staunch and sturdy trunk, bore early fruit. There is no doubt in my mind at this distance in time that the naval air arm has been a success story from the beginning. I must narrate to you a story, probably apocryphal, about an intrepid fighter pilot of those days and his flying machine. The story is about Lieutenant Yashwant Bhide who was then with the 300 Squadron. During an exercise his Seahawk got into trouble off Bombay and he had to eject before the aircraft crashed. He spent a whole day and part of the night in the water and was eventually rescued by a fisherman and brought ashore at Versova. Hastening to reassure his parents then living in Bombay - his father had retired from the ICS and was the Chairman of the Bank or an Insurance Company I believe - he called from a public telephone and told his father who had come to the phone that he was all right but that the aircraft was a total write-off. His father is reported to have said, 'Your mother and I are happy to have you back; but tell me, was the plane insured or do I have to pay for it?'

The Aviation Pioneers

This account of the evolution of aviation in the Indian Navy would be incomplete without recording the contribution that was made soon towards its development and unqualified success by some of our aviation pioneers - Commodore Y.N. Singh, Commodore George Douglas, Admiral Sir John Treacher, Admiral R.H. Tahiliani, Captain R.H.P. Carver

and Commodore David Kirke.

Commodore Y.N. Singh, the pioneer aviator of the Indian Navy, who retired from service in 1969 as a Commodore, was in his twenty first year when he was commissioned in the Royal Indian Navy on May 1, 1943 as an Acting Sub-Lieutenant. He had already completed his training as a direct entry Cadet and Midshipman at Dartmouth and had served on board a Royal Navy cruiser, the *Enterprise*. Even before he was commissioned, he had applied for becoming an aviator but his application was turned down as the RIN authorities did not at that time contemplate setting up an aviation wing. His knowledge of naval aviation was thus restricted to the short air course undertaken as a part of the Sub-Lieutenants' courses conducted at Lee-on-Solent.

The opportunity to become a naval aviator presented itself to Y.N. Singh under interesting circumstances. He was serving in a Royal Navy destroyer which was sunk by German bombers off the coast of North Africa, an action in which he played an effective part for which he was promptly awarded the Oak Leaf. On repatriation to the UK in October 1943, Singh was Mentioned in Despatches and selected by the British Admiralty for flying training at St. Eugene in Quebec, Canada, because 'England was chock-a-block with operational commitments', along with a batch of officers from the Royal Navy and the South African Navy, and later shifted to Kingston on Lake Ontario where he flew Harvards. He then returned to Yeovilton in Somerset, England where he qualified in flying Wildcats and Hellcats as an operational pilot. On January 16, 1944 he became a Lieutenant and was posted to the British Eastern Fleet based at Trincomalee for operational flying. The air station from where flying training sorties were launched was Patlam (later renamed Ratnamala) near Colombo and the aircraft Singh flew from the air station and the Royal Navy aircraft carrier *Ameer* were Hellcats. The *Ameer* was an escort carrier with a squadron of Hellcats operating off Trincomalee where Singh had his baptism of fire and was thus the first Indian to have become a naval aviator and to have taken off from and landed on an aircraft carrier, that too in actual battle conditions. In 1945 an armada of ships of the Eastern Fleet set off from Trincomalee for an invasion of occupied Burma and Singh was about to be bloodied in war when, while the ships of the Fleet were sailing across the waters east of the Andaman and Nicobar Islands, the bomb fell on Nagasaki in Japan. The fleet stopped its onward move and began circling around off the Andamans when there were several *Kamikaze* attacks on British ships by Japanese aircraft and one of the cruisers escorting the strike force was severely damaged. Singh was involved in a dogfight with one of these aircraft while flying a Hellcat but came out of it unscathed.

Singh had been sent by the Admiralty for flying training, not with

the intention of initiating the creation of a Fleet Requirement Unit for the Indian Navy or for the acquisition of an aircraft carrier. His flying conversion was considered to be the first step towards developing an inter-service organisation for conducting combined operations against the Japanese in the Bay of Bengal for it was considered that a qualified naval pilot from the Royal Indian Navy would be ideally suited in an advisory capacity at the Combined Headquarters in this theatre. But by the time his services were available for this purpose, peace had descended on South-East Asia.

Unfortunately for Singh, the Naval Headquarters in India came to know of his flying training only after he had returned to India, when the authorities realised the full administrative implications of this specialisation without their approval. The officer was thereafter pressured for a considerable period, even after the War was over, for contributing towards the cost of his flying training, which had been duly debited to the Royal Indian Navy account by the Admiralty!

After Independence, Singh worked at Naval Headquarters and assisted in compiling the requirements of the aviation wing for the first plans papers for independent India's Navy under Commodore Martin St. L.Nott, Commander (later Admiral) A.K. Chatterji and Lieutenant Commander (later Vice Admiral) N. Krishnan with Wing Commander (later Air Chief Marshal) P.C. Lal as the technical adviser. As mentioned earlier, at this time, the Government had accepted in principle the acquisition of as many as six aircraft carriers for the Indian Navy for which a Fleet Requirement Unit had been sanctioned.

During this period, Singh continued to fly at Palam and Amritsar but the aircraft he flew were Spitfires, MKS 8, 9, and 14 of the Indian Air Force. He was soon sent back to Yeovilton in England for a refresher course in flying, followed by an instrument flying course. He then underwent a helicopter conversion course at Gosport and became the first Indian to qualify as a helicopter pilot, years before the Indian Air Force deputed its first batch of pilots for helicopter training. He soon added another first to his credit by becoming the first Indian to qualify in flying an amphibious aircraft when he flew a Sea Otter at Lee-on-Solent.

Another important assignment for Singh was his appointment to the newly commissioned naval air station, *Garuda*, as its first Commander (Air) and the Commanding Officer of the Fleet Requirement Unit. He led the formation of Sealand aircraft which flew past Bombay harbour on October 10, 1953 when President Rajendra Prasad reviewed the Indian Fleet, the first such review after Independence. He then landed his aircraft on water between rows of ships formed up for the Review, taxied his Sealand to the flagship, *Delhi*, and was presented to the President and

Prime Minister Jawaharlal Nehru. While taking off, Singh had a few anxious moments caused by a harbour craft crossing his path but he managed to take off after taking suitable action.

Singh later served as the Commanding Officer of *Garuda* and supervised the construction of the air traffic control tower and setting up the School for Naval Airmen, the Naval Air Repair Organisation, the Photographic Unit and the Safety Equipment Section.

Before the commissioning of the *Vikrant*, Singh, who was the seniormost officer in the Navy's Aviation Branch and was now the carrier's Commander (Air)-designate, was sent to England for an attachment to *Albion* for six weeks to study the functions of a carrier's Commander (Air). On completion of this attachment he joined the work-up team of the *Vikrant* and supervised the completion of the ship and the installation of all aviation facilities including the flight deck, the hangar, the maintenance workshops and landing and launching equipment. It was Commander Singh who, along with Commander John Treacher, ensured an accident-free training schedule.

Y.N. Singh's name will find a pride of place in the annals of the Navy for having been the Service's first aviator, the first carrier pilot, the first carrier pilot to undergo the baptism of fire in actual action conditions and the first Indian helicopter pilot.

Warming up to the reminiscences of his career in the Navy, especially in the Aviation Branch, in December 1987, when he was in his 66th year, Commodore Singh, whose photographic memory has not allowed even the minutest details to be erased, recalled with pride:

> I remember that my views were quite clearly laid down before the Naval Staff that aviation was an integral part of the Navy and the aviation officers were an integral part of the Executive Branch. Another thing that I felt very strongly about was maritime reconnaissance which should be under the command and control of the Navy. I am glad that both these have since come about.

Admiral Sir John Treacher, who retired as the Vice-Chief of the Naval Staff of the Royal Navy, feels that Commodore Singh adequately fulfilled the expectations as Commander (Air). He says:

> Commander Y.N. Singh who was Commander (Air), had one of the most difficult appointments. Without previous carrier experience, his job was to lead his group of bright young airmen into an unknown and very testing environment. He had to accept that much of what would normally have been his responsibility was carried out by the head of

the work-up team but, as the programme developed, he gradually took over and by the end was able to play his full part.

Y.N. Singh now heads the Communist Party (apparatus) in his home area in Bihar!

The credit for establishing an effective Air Arm for the Navy and developing a viable infrastructure for the Arm goes to Commodore George Douglas who was destined to be the guiding angel and moving spirit of the Indian Navy's Aviation Branch during its formative years and was the seniormost officer in this elite cadre. Born of a British father and an Indian mother, he had begun his career as an officer in the British merchant marine in 1930 and had soon qualified as an Extra Master Marine which entitles a merchant navy officer to command a wide variety of ships. When hostilities broke out in 1939 he offered to serve in the Royal Navy and qualified as a pilot in the British Fleet Air Arm as a Royal Naval Reserve (RNR) officer in 1941. During the rest of the war, Douglas served in a number of appointments, ashore and afloat, and undertook a number of hazardous flying missions. He was soon promoted to the rank of Lieutenant Commander and commanded a torpedo bomber wing of the Royal Air Force's Coastal Command, operating against German ships and aircraft. The citation for the award of the Distinguished Flying Cross, with which he was decorated on July 6, 1943, reads:

> This officer has taken part in a large number of offensive patrols and has displayed great skill and tenacity. One night in February 1943, he participated in an attack on nine enemy motor boats. Although his aircraft was damaged by intense antiaircraft fire from the vessels, Lieutenant Commander Douglas pressed home his attack and destroyed two of them. One night in 1943, when his squadron attacked 12 'R' boats, four of which were destroyed and three more damaged, Lieutenant Commander Douglas displayed leadership and great determination. By his outstanding efficiency and fearless example, this officer had contributed materially to the fine fighting qualities of the squadron he commands.

After the War ended, Douglas was granted a regular commission in the Royal Navy in the rank of Lieutenant Commander but in October 1947 he obtained his release and joined the Government of India as a Nautical Surveyor. It was at this time that the Indian Navy was going through the process of setting up an aviation wing and in 1949 was looking around for an officer with Fleet Air Arm experience and sought to utilise his services for this purpose. Even though acceptance of this offer meant some loss of

emoluments for him, Lieutenant Commander Douglas accepted the assignment and was commissioned on November 20, 1949 in the rank of Commander. He was immediately deputed for an attachment to the Royal Navy for equipping himself with adequate knowledge of the functions of the Admiralty Air Staff Divisions and air departments, the stores organisation, production and modification problems of aircraft, air engine and air equipment, the planning and layout of naval air stations and air establishments, the equipment requirements for aircraft carriers and airfields, spares provisioning, wastage rates, statistics and costing of air plans.

In 1957 Douglas was deputed to the Royal Navy for a Seahawk and Vampire jet introductory course and Fairy MK VII and Gannet Conversion Course at Lossiemouth and Eglinton. His 'Record of Flying Training' in the Royal Navy states, 'His keenness and enthusiasm set a fine example to the other students on course, many of whom are less than half his age.' The citation for the Vishisht Seva Medal Class II (equivalent to the Ati Vishisht Seva Medal) awarded to him in 1966 states:

> From the very start of Naval Aviation in the Indian Navy in 1949, Commodore Douglas has been the driving force behind the evolution of a combatant Air Arm for the Navy. The development of aviation in the Indian Navy and the position it has attained are largely due to the initiative, hard work and leadership of Commodore Douglas. He has voluntarily undertaken several dangerous flying missions in order to set an example to young pilots and, despite physical disabilities (he was severelly wounded during World War II), he is still in the forefront in flying skill.

Until 1966, by which time he had risen to the rank of Commodore, Douglas continued to serve the Indian Navy in various capacities, most of which pertained to aviation; as the Director of Air Equipment at Naval Headquarters, the first commander of *Garuda*, Director of Naval Air Staff and the highest aviation appointment, Chief of Naval Aviation, for a record period of over four years.

In 1957 Douglas played an important role in the acquisition and indigenous manufacture of the French Alouette III helicopter and the selection of the Alize aircraft for the *Vikrant*. Reminisces the ace aviator:

> The choosing of a helicopter common to all the three services had a humorous angle. While serving as the Director of the Air Staff Division, I was sent for by the Naval Chief and directed to report to the Defence Minister, Mr Krishna Menon. The Defence Minister stated that I was to liaise with the Army and the Air Force and

recommend a helicopter common to all. On visiting the Air Chief, Air Marshal Subroto Mukherjee, I was informed that the Army requirement would be paramount to an operational role. I then called on the Army Chief, General K.S. Thimayya. In brief he stated that the Army wanted a helicopter capable of lifting 15 fully armed soldiers to an area of seven to twelve thousand feet altitude, i.e., a forward area in either Assam, Kashmir or Ladakh. On inquiring what mode of transport was at present being used, he said, 'Mules'. In quick time, using pencil and paper and taking into account the distance/trekking factor and equipment, food, etc., required for 15 soldiers fully armed, I worked out that one helicopter, in the course of three months or more, would do the work of 150 mules. Timmy laughed, called up the Air Chief and said, 'I have Douglas here and he tells me that he has your approval to select a helicopter to meet an Army operational requiremnt. He further has proved conclusively that one helicopter is worth 150 Army mules plus accoutrements.' Timmy then handed me the telephone. The Air Chief asked what helicopter I was recommending. I said the Alouette II, a French machine. I also stated that the French had a successor helicopter, Alouettee III, which would be the helicopter that I would recommended for final purchase and of course it would have to be assembled initially at the Hindustan Aircraft Limited, Bangalore and to gradually give way to the Indian-manufactured one. The Air Chief then stated that he would have the Air Staff study my figures, and also that, prior to getting final government approval, bids would be indicated to other interested Government, viz., the USSR, the USA, the British and the French, and to have their representative helicopters evaluated in India under operational conditions in Assam, Kashmir and sea level monsoon situations.

It is common knowledge that the Alouette III was later acquired for all three Services and is still operating in its new indigenised *avatar*, Chetak.

As regards the selection of the antisubmarine aircraft for the *Vikrant*, Douglas says:

> The selection of a general purpose antisubmarine aircraft in the Naval Headquarters Carrier Paper showed the Seahawk as the fighter aircraft and the Gannet in the antisubmarine, reconnaissance and bomber role.
>
> In 1957 I was sent for flying attachments to the Royal Navy and the Admiralty. While in Britain I flew all current Royal Navy aircraft. I found that the Gannet, while having twin-engine capabil-

ity, had severe maintenance problems. I also found that the French Navy had ordered the Alize aircraft which had a Rolls Royce Dart engine to fulfil the same role as the Gannet.

On return to India and on taking up the appointment of the Director of the Air Staff Division, I forwarded my report on my attachment and recommended that the Indian Navy do not buy the British Gannet but, after evaluation by sending a Navy team to France if found superior, that the Indian Navy purchase the Alize. The then Chief of Naval Aviation, Captain Rodney Carver, appreciated that my recommendation went contrary to the Naval Headquarters Carrier Paper. He took me along to see the Naval Chief, Admiral Katari, who then indicated that the Defence Minister was very averse to a French acquisition primarily because of adverse experience with the French which, as High Commissioner in London, he had with tank purchases. It was agreed that a Navy evaluation team would make the final recommendation as to the purchase: Gannet *Vis-a-vis* Alize. The rest is all history.

A distinguished sailor, aviator and pioneer, Commodore George Douglas, who is now in his mid-seventies and settled in Victoria, Canada, recalls with much nostalgia:

> The mellowing years give rational perspective to a Navy in transition, expanding to meet its future defence and fighting responsibilities, integrated to a high morale in its officers and men'.

Another outstanding pioneer aviator, Admiral R.H. Tahiliani, who retired as the Chief of the Naval Staff in 1987, has many firsts to his credit. After qualifying in his basic courses as a Cadet and Midshipman at *Britannia*, *Devonshire* and *Mauritius*, Tahiliani was commissioned on September 01, 1950. He completed his Sub-Lieutenant's course in June 1952 and soon returend to India but within a year was sent to the Air Force Academy at Begumpet for basic flying training and then to Hakimpet for jet training in Vampires, just as the Sealand aircraft were being inducted into the Indian Navy - in fact Tahiliani was the first naval pilot to fly a jet aircraft. He then flew Sealand aircraft for the Fleet Requirement Unit at Cochin for about a year. Led by the legendary Douglas, Tahiliani and the other intrepid pilots of the FRU used the Sealand for carrying out dummy attacks on ships of the Fleet in order to give them adequate experience in detecting and tracking aircraft targets and practising anti-aircraft shoots. On one occasion his aircraft touched water during a dive and suffered damages, but he got away with a letter of displeasure.

In 1957 Tahiliani was sent to the Indian Air Force Station at Tambaram for the flying instructor's course and was posted to the Air Force College at Jodhpur and then to the Jet Training Wing at Hakimpet as an instructor after qualifying as an Instrument Rating Examiner, the first Indian naval pilot to do so. He was soon to proceed to Sulur to set up the Naval Jet Flight in 1959, assisted by Lieutenant R.N. Ghosh as the senior pilot and the late Lieutenant S.G. Vichare as the Engineer Officer, a daunting task accomplished well within the targeted time-frame.

The next feather in Tahiliani's cap was the Test Pilot's Course, once again a first in the Indian Navy, for which Tahiliani was deputed to France in 1960 following which he was the logical choice for the appointment of the Senior Pilot of the Seahawk Squadron in January 1961 and embarkation in the *Vikrant*. It was on May 18, 1961 that he became the first Indian pilot to land a jet aircraft on an aircraft carrier by landing a Seahawk on the *Vikrant*, followed by Lieutenant Ghosh. Recalls Tahiliani:

> The honour of being the first Naval pilot to land on board the *Vikrant* would normally have gone to the Commanding Officer of the Squadron, Lieutenant Commander (later Commodore) B.R. Acharya, but luckily for me our Chief of Naval Aviation was visiting *Brawdy* that day and so the CO could not go and the Senior Pilot went off instead. It was one of these lucky things and I still remember, though it is not quite proper for me to say so, when I was taxiing back after returning to *Brawdy*, I thought of the world's first astronaut, Yuri Gagarin.

During the work-up that followed, Tahiliani had a hair-raising experience. During a training flight:

> A somewhat inexperienced marshaller got me lost, they did not know on the scope (radar screen) where I was. I was flying at night and they were trying to bring me back but from my mental D.R. ('dead reckoning' - estimated position) I know that they were going to take me to an entirely wrong sector where eventually I would have to pull the blind and jump into the water. But there was no way I could tell them. Happily for me I could see the lights of a particular island and then I knew for sure that I was not where the ship thought I was. And so I told them where I actually was and they soon reorientated themselves on the radar, saying, 'Okay, we have now got you', and they brought me in for landing. But for the lucky sighting of the island,

I might have been swimming it the Mediterranean that night.

Treacher, however feels it was all in the day's work:

It may sound rather dull, but flying discipline was excellent throughout and we had nothing which could really be classified as a near miss in actual flight-deck operations. It is, perhaps, worth mentioning, however, that during the night work-up the performance of the CCA (Carrier Control Approach) was such that a number of pilots felt dangerous situations had been allowed to develop. Tahiliani was one of those and his particular incident related to the Flying Controller losing him and, without giving him any positive recovery instructions, allowed him to drift slowly down towards the sea.

Happily there were no disasters which are often the setting for bravery, but there were plenty of personal achievements and records set. Indeed, the flying we did in those pioneering operations was both a personal achievement for those taking part and a record for the Indian Navy. They may not have been spectacular in comparative terms with those who had been in naval aviation for thirty or more years, but they were indeed spectacular in the context of this first work-up.

Tahiliani recalls how Treacher encouraged him and expressed his appreciation of his performance as a flier:

Treacher was always trying, naturally, to get us to do things faster because, in an aircraft carrier, the quicker you get off and the quicker you land, not just one pilot but the whole lot, the quicker the ship can turn away from the wind so that she can proceed on her mission. Besides, a ship is most vulnerable to a submarine threat when she is on a steady course. So that is one of the things which you try and do on an aircraft carrier, i.e., do everything in double-quick time. One particular day I must have been lucky to catch, in all my four landings, the target wire for a Seahawk, the third wire. Treacher paid me a tremendous compliment when he came to the crewroom and said, 'Ram, you are absolutely okay. Boy, you are hooking and taxiing out of the wires like a Royal Navy Squadron Commander!'

Tahiliani, who took over as the senior Pilot of the Seahawk Squadron in May 1961 and the other pilots of the Squadron were, unfortunately, witness to an unsavoury incident while the *Vikrant* was on her way to

Bombay, anticipating a tumultuous reception from the home port and had decided to launch all her aircraft before entering harbour for a formal flypast over Bombay harbour in honour of the Prime Minister. But there was suddenly a development that took everyone aback. Tahiliani vividly rememebrs that nail-biting episode:

> We had moments of anxiety on our way back when a couple of disgruntled sailors, for reasons not known, went and stuck pins into some of the electrical wiring in some of the Seahawk aircraft, something that hadn't happened before and hopefully never happens again. We were due in Bombay on the morning of November 3, 1961 and before moving in, we had planned to fly all the operational aircraft we had. Twelve Seahawks and six Alizes were going to take part in the flypast over Bombay and we were determined that all aircraft would get airborne and not a single one should be left behind in an unserviceable state. Fortunately for us, the faults were soon located and rectified by Lieutenant (later Vice Admiral) B.G. Mudholkar, the Squadron Electrical Officer, who did a magnificent job. In order to make sure that these disgruntled guys did not get another opportunity to spike the aircraft and render them unserviceable, we mounted officer sentries around the clock in the hangars and on the flight-deck for the last three days and only those sailors who had to work on the aircraft were specifically checked and allowed to approach them. And happily for us, on the appointed day, all 18 aircraft took part in the flypast, only two reserve aircraft having been left behind as no pilots were available to fly them.

Tahiliani soon took over the command of the Seahawk Squadron and for two years commanded the Squadron. Thereafter, after a brief sojoum ashore, he was appointed the Lieutenant Commander (Flying) on board the *Vikrant* in October 1963; he became the Fleet Aviation Officer in August 1964 and found himself on board the *Mysore* during the 1965 operations, the *Vikrant* having been docked for her annual refit. During these operations: 'We fired a few shells, some of them with precision and some in the wrong direction and fired a few depth charges and other antisubmarine weapons off Bombay. I do believe that the (Pak submarine) *Ghazi* was damaged in that action.'

Looking back on the association of Royal Navy officers with the Indian Navy during the formative stage of the Fleet Air Arm and the contribution made by these officers towards its development, he says:

> When you are starting a new organisation, you have to have some

people who have had the experience and not merely knowledge based on others' experience. It just makes the process of acquiring skills that much faster. I cannot, for example, think of the *Vikrant* having had her work-up without the help of John Treacher who even at that time impressed us so much. He was only a Commander but I remember saying to myself that this officer would one day become the First Sea Lord. He almost did - he retired as the Royal Navy's Vice-Chief of the Naval Staff in the rank of Admiral. We had to have this type of gentlemen in the beginning to hold our hands and show us how to operate aircraft from carriers. When we are trying to learn to operate aircraft from shipborne platforms, the complexities of trying to do so efficiently are many and there are many problem areas which are not discernible even to an aviator. It thus helps to get some expert guidance to steer you forward the right way in a short enough time and then you take off and are on your own.

To work up the carrier we had only three officers from the Royal Navy. We had John Treacher as Commander (Work-up), we had a Lieutenant Commander who was the Direction Officer and we had a Lieutenant Commander who was the Operations Officer - all associated with the flying part of operating a carrier.

Commenting on the delay of 14 years after Independence in acquiring our first carrier, Tahiliani is of the opinion that after the transfer of power, Britain had arrogated to herself the responsibility of maintaining a bluewater navy with each Commonwealth member's responsibilities reduced to coastal defence which precluded naval aviation. Thus, though free India's Navy's first C-in-C, Admiral Parry, fully supported by Mountbatten, had sought as early as in 1947-48, to establish two fleets for the Royal Indian Navy to be developed around two light fleet carriers, one to be acquired in 1955 and the other two years later, his proposal didn't find favour with the Government. It was fortuitous for us, Tahiliani feels, that Mountbatten eventually succeeded in convincing Nehru of the importance of acquiring a carrier for the Indian Navy and it was finally sanctioned.

Reminiscing on the additions and alterations carried out on board the carrier before her commissioning, Tahiliani records:

> I was the Flag Lieutenant to Admiral Sir Stephen Carlill (the Chief of the Naval Staff) in 1956 when a discussion took place on the catapult for the *Vikrant*. The ship had been designed around a 110-foot catapult which put a limitation on the size of the aircraft that could be operated from the carrier. The Indian Navy at that time felt that

that we should insist on the catapult being redesigned so that at a future date we could operate aircraft heavier than the Seahawk such as the French Etendard. During the discussion, the Admiral looked at me and said, 'What does the young aviator think? I said, 'Sir, I think if we are going to insist on learnig to walk before we run, we might end up by only walking. We might not be able to run at all. What is so difficult in flying aircraft? We can fly Seahawks now, tomorrow we can fly faster aircraft. My personal view is that we should insist on their redesigning the catapult.' I do not know what happened thereafter but I was later told that the Admiralty had no spare capacity in its design department for the task and we had to accept the 110-foot catapult and to satisfy ourselves with flying only the Seahawk. Treacher, however, feels otherwise:

To have fitted a larger catapult would have been unrealistic in its day. The Royal Navy was going through agonies in considering what aircraft would replace the Vixen and the Scimitar and would eventually follow them with a generation of the Phantom and Buccaneer before ultimately arriving at the Harrier and Sea King. It would be very easy to congratulate the Indian Navy on having the foresight to have cut out the intermediate stages!

Recalling his French experience, Tahiliani says:

The French at this time were developing the Etendard-4 for their aircraft carrier and wanted to offer the aircraft to the Indian Navy and the Australian Navy but its entry speed into the arrester wires and launching speed were beyond the capacity of the Indian and Australian carriers and so they started a project to develop the 4-B version which was the long-wing derivative of the Etendard-4. They produced a glossy brochure and tried to convince you that they had reached the levels of co-efficient where it could operate from the Vikrant. At the end of my test pilot's course I was sent down to go and do the evaluation of this 4-B aircraft in Istres, South of France. I was able to demonstrate to the French that they had not reached those levels of co-efficient. If the French had continued their programme, they would perhaps have been able to do it and we might have been able to replace the Seahawk with Etendard 4-B but the manufacturers started selling Mirage III aircraft to Switzerland and Australia and lost interest in the Etendard project. And so we had to continue with the Seahawk, which had no night capability because it had no radar, stretching its life beyond anything anybody

else could have done'.

Admiral Sir John Treacher takes a journey down memory lane and recalls:

The 300 Squadron, the White Tigers of Rewa, were the more lively of the two squadrons as is perhaps only to be expected from fighter pilots.

Both Acharya and Tahiliani were experienced, capable and strong personalities. Flying operations when first encountered by ships' officers, create demands to which they are not accustomed. there is an urgency not otherwise required in peacetime and it comes from being responsible for aircraft with limited fuel reserves. Radar for instance must work - not just for a shoot or an exercise - but all the time and at a peak performance.

Speed to create the necessary wind speed over the deck means all boilers connected all the time, plus extra steam for the catapults. And a host of other services which may once have been highly desirable now become essential.

To all their demands the ship responded splendidly, Commander Edward (the carrier's Engineer Officer) provided all the steam required and seldom made smoke although he had to be shown the effect from Flyco (Flying Control Room) once to realise just how important it was. The Electrical Department were remarkably efficient and Commander (later Rar Admiral) Krishan Dev and his Supply Department kept the air stores available as well as everything else.

Commander Gautam Singh, the ship's Executive Officer, presided over the Wardroom (the Officers' mess) and handled both the unaccustomed large number and high-spirited behaviour of the air-crew with great understanding and appropriate firmness.

As the Operations Officer, Lieutenant Commander (later Commander) M.N. Gupta was a voluble, efficient and much-liked member of the Air Department but many of his colleagues felt he was a great loss to Parliament!

The Direction Officers rose well to the challenge and I particularly remember Lieutenant (later Commodore) V.P. Duggal who was not only of the best fighter directors but as Wardroom wine caterer, he fulfilled a very important task with great efficiency. He also played a major part in rebuilding confidence in Carrier Controlled Approach (CCA) after pilots complained of dangerous situations being allowed to develop during practices. These practices were essential daylight

preliminaries to night flying and failure of the officer in charge to train and control his team effectively resulted in a total loss of confidence by the air crew. Fortunately the Captain did not flinch from the firm action required and after removing the culprit, the team was able to restore faith in their capability in time to begin night operations.

It is very unusual to face the task of night-qualifying an entire Air Group; this can only happen at a birth of a completely new Naval Air Arm drawn exclusively from within the Service. Judging when pilots are ready for the transition to night-flying calls for a close knowledge of their particular aptitude as well as their psychological attitude. No two pilots are the same in their reaction to this challenge.

With no 'old hands' available, these had to be created by qualifying the commanding officers and senior pilots with one or two carefully selected juniors in an 'early' batch. Basic condition of weather (little ship movement, some wind, preferably a moon and essentially no 'soup bowl' visibility problems), proximity to a diversionary airfield and availability of a plane-guard were necessary all the time.

Although the ship was working up off Malta and all the usual Royal Navy support services could be called upon, and particularly the facilities of Royal Naval Air Station, Halfar, they did not extend to providing a plane guard for night flying for which an Indian destroyer, *Rajput*, had been sailed from Bombay. Unfortunately due to serviceability problems she never became available to *Vikrant* and other measures had to be taken.

In consultation with Service Authorities in Malta, the RAF put a sea rescue launch at our disposal and, after careful briefing about their role and the manoeuvring required to take-up and remain in station during flying operations, they provided this absolutely essential service throughout night-flying. A pilot from one of the squadrons was on board the launch at all times to provide the knowledge of cockpit escape procedures had a rescue become necessary. They all appeared to enjoy this temporary duty. Without the willing RAF response, this final and crowning part of the flying work-up would have been impossible.

Night qualification for both squadrons went remarkably well with no more than the average number of 'bolters' and shore diversions for fuel. All pilots had to be handled differently and I remember one Lieutenant Santosh Gupta who made beautiful approaches only to flare just before touch-down and hence float over the wires to 'bolt' several times. Finally I took the microphone from the

Lieutenant Commander (flying) and said to him, 'If you don't get on next time I will send you ashore and you will never come back to the ship'. He caught the target wire on his next approach. He is now a senior officer (Rear Admiral) still serving and he recalls the occasion with some amusement.

In the knowledge that after leaving the *Victorious* - where I had been Commander (Air) for two years - I would be the leader of the UK work-up team in the *Vikrant*, I arranged with Commander (Air) at RNAS Brawdy for him to lead the three most experienced pilots in the Indian Seahawk Squadron out to the ship for some deck-landing experience. They duly arrived in the circuit from Brawdy, where the squadron were in the last few months of work-up ashore, and made four deck-landings and four catapult shots each from the *Victorious* before returning home. I was very much aware of the critically important part that these three officers would play in the Air Group and the value of this deck-landing experience in advance of the other pilots. It was to pay a big dividend.

The three officers were Lieutenant Commander Balbir Law, Commanding Officer of the 300 Squadron and Lieutenant Commander B.R. Acharya, Senior Pilot of the Squadron and Lieutenant R.H. Tahiliani. On embarkation on May 1961, Law became Lieutenant Commander (Flying), Acharya took command of the Squadron and Tahiliani became the Senior Pilot.

It was difficult to compare the standard of performance of the Indian pilots to those of other Air Arms because of the unique situation which obtained. The Indian pilots, although they had different levels of flying experience, all suffered from a lack of carrier operational experience. It was particularly difficult to built this fundamental experience and to avoid any set-backs such as would have been created by a major accident. Confidence has to be carefully nurtured and this inevitably meant that the pace at which our operations were conducted took rather longer to speed up. As the pressure was applied all aircrew reacted very well and by the end of the work-up, they were performing as well as their contemporaries in any other service.

I was particularly impressed by the quality of the sailors throughout the ship. I had walked through a large number of mess decks during my service time when off-duty sailors were relaxing. It was absolutely unique to find a large proportion of the sailors in *Vikrant* not only reading newspapers, but reading the *Times* or the *Telegraph*! Perhaps I should not have been surprised at the ability of the Indian Armed Forces to attract such obviously well-educated

recruits.

Captain Mahindroo was an experienced seaman and fine leader who grasped the complexities of carrier operations with speed and understanding. The mysteries of the flying programme and constant manoeuvring required to maintain the ship's Mean Line of Advance (MLA) and meet launch and landing were things with which he soon became very familiar. I well remember going to the compass platform in the early stages of the work-up to remind him that when the flying programme showed a launch at 0700 that meant the green flag for the first aircraft - and hence the ship steering a steady course into wind with the required wind speed over the deck - had to drop at that instant. He looked thoughtfully at me for a moment and said, 'Yes'.

Two or three days later when the flight-deck crew were not as sharp as they might have been, he was quick to come into Flyco to tell me that when the ship was into the wind and with the right wind speed over the deck, he expected the first aircraft to launch precisely on time. His tone was very firm but his eyes showed how much he was enjoying the situation. He continued to be a tower of strength throughout the work-up and handled problems associated with the C.C.A. (Carrier Control Approach) and lack of a plane-guard, to which I refer later, with great determination.

A bright and resilient personality who was a natural pilot, Balbir Law had to make the very difficult transition to the extremely demanding task of Lieutenant Commander (Flying). This in itself would have been enough for most men but, as the natural choice for the next Commander (Air), I was determined that he should be fully night-qualified and to that end it was necessary to build up his day deck-landing first. The only time he could be spared for this was at the end of the day's flying and so I put him on the programme for three or four catapult shots and arrests about twice a week. That he completed 40 day deck-landings and went on to complete night qualification says all that is needed about his outstanding ability.

He achieved all this with one minor lapse when he 'bolted' and his reaction time at the end of a tiring day was longer than it should have been. Power came on too late to avoid a sink over the (deck's) angle, his hook caught the edge of the safety net and the Seahawk appeared almost to stop in mid-air before shaking herself free and climbing away.

If there is one seaman officer who is more closely involved in flight-deck operations than any other it is the navigator. The Indian Navy was fortunate to have an officer of the quality of Lieutenant

Commander (later Admiral and Chief of the Naval Staff) Oscar Stanley Dawson and indeed wise to appoint him to this crucial position. It is the responsibility of the Navigation Officer to resolve the conflicts of the safety of the ship, the maintenance of her Mean Line of Advance, the requests of the Air Department for launches and recoveries and often also special wind directions for engine runs, etc., the stationing of escorts and so on, on behalf of the Captain. Dawson carried out all these demanding tasks with great efficiency, determination and tact. He quickly appreciated the need to have a very close understanding and working relationship with Flyco and made full use of the ease with which potential conflicts of interest could be resolved by personal contact. Despite modern-day electronic communications the close physical proximity of Flyco to the Compass Platform provides the best and most immediate answer. I personally found Dawson a wonderful person to work with and the success of the *Vikrant* work-up owed much to his personal dedication.

Commodore David Kirke (later Rear Admiral) was the Chief of Naval Aviation from February 1959 to April 1962, the period that saw the culmination of the naval aviation programme with the arrival of the *Vikrant*, a programme that had been carefully moulded by his predecessor, Captain Rodney Carver, to ensure that naval aviation became a viable, efficient and cohesive entity. Two major tasks undertaken by Kirke were the selection of a suitable antisubmarine aircraft and to find and develop a major airfield as the main naval air station. The antisubmarine aircraft that had been provisionally selected was the Gannet which he himself had rejected in his previous appointment, when it was offered to the Royal Navy, because of its limitations in performance and operational availability and so he decided to do likewise for the Indian Navy. He opted for the French Breguet Alize 1050 with a Rolls Royce Dart engine and against stiff opposition from the British aircraft industry lobby, succeeded in obtaining the acceptance of the Government of India for the latter.

The other important task was the selection of a site for a permanent naval air station for which some facilities had been developed in Cochin and Sulur but no disused World War II airfield with a tactically optimal location could be found until the liberation of Goa when its civil airfield, which was ideally located for the purpose, was handed over to the Navy for its first permanent air station, *Hansa*, with an adjacent deep-water harbour, ranges and other facilities vital to a Fleet Air Arm. It was Commodore Kirke who successfully obtained Government approval for the transfer of the Goa airfield to the Navy.

Kirke sums up his stay in India with these words,

> All I had to do was to make the occasional important decision and encourage those like Balbir (Law) and the operational elements to mould themselves into the superb team that they did. I also enjoyed sweeping away red tape in the UK and taking on Whitehall, British aircraft companies and the like who could have, through their blinkered greed, given us a hard time and got us off on the wrong foot. After my three years in Delhi there was no point in my applying for a job in British Aviation when I retired! It had a long memory of what I demanded for the Indian Navy at their/its expense and considerable embarrassment.

Within a few weeks of her arrival in India, the *Vikrant* had the honour of participating in free India's second naval operation, the liberation of Goa, which was launched on December 17, 1961. The role assigned to the carrier was to lead a task force for blockading Goa during the operation from a position 150 miles North-West of the Portuguese enclave and effectively seal all the possible escape routes for Portuguese troopships to East Africa or Pakistan.

Receding Horizon

Over three decades have elapsed since the advent of aviation into the Indian Navy. V/STOL aircraft are now fast replacing catapult-launched aircraft, a number of aircraft squadrons, aviation shore establishments and maintenance facilities have been commissioned and a second carrier, *Viraat (ex-Hermes)*, has joined the Fleet and thus ship-borne aircraft continue to be organic to our Fleets operating at sea. Crystal-gazing on this 'long arm of the navy', a naval strategist feels that small and less expensive aircraft carriers for air defence and strike against ships at sea and for carrying antisubmarine helicopters and V/STOL aircraft would continue to be in vogue in the foreseeable future. As regards India's Navy, he says:

> As the Indian Navy grows, so will its air arm. The percentage of manpower and resources likely to be utilised in this long arm of the Navy is likely to increase, because of the changing pattern of warfare at sea. Naval aircraft will continue to be used in our environment for many, many years, till India reaches a stage in technology when satellites will carry out all surveillance, and a combination of missile and electronic warfare can meet all threats. Whether aircraft will operate at all at sea (in the distant future) is difficult to foretell. That

it will undergo much change and increase in sophistication is, however, beyond doubt. And that it will continue to be one of the most vital elements of warfare at sea in the present century is also a certainty.

5

RUN SILENT RUN DEEP

The Evolution of the Submarine

The submarine came into its own during World War I, its devastating lethality and near-invincibility reinforced during and after World War II, and its nuclear propulsion and teeth giving it virtually limitless range and calamitous destructive power during the post-World War II years. However, it made a fairly late entry into India's naval fleet, possibly because the submarine was earlier considered an 'offensive' weapon platform and hence could not have a place in the arsenal of a country that had pledged to abide by the principles of peace.

Since the capability to operate in the third element - the subsurface - has now been added to the Indian Navy's repertoire, it is essential that the evolution of the submarine from its tentative conceptual state in the 16th century to its present day status of being the prime dealer of destruction at sea, as well as the significant role it played in shaping the ends of the two World Wars, be studied in detail before apprising oneself of the process of establishment of the submarine arm in the Indian Navy. This chapter provides a brief resumé of such developments around the globe.

While addressing the men of the Royal Navy's Submarine Service during World War II, Winston Churchil had said; 'Of all the branches of men in the Forces, there is none that shows more devotion and faces greater perils than the submariner . . . great deeds are done in the air and on the land, nevertheless nothing surpasses your exploits.' Indeed, nothing can transcend the *tour de force* that the submarine has displayed and the impact

of the revolutionary changes in the concept, both strategic and tactical, of the war at sea brought about by its invention. Besides, its use for operations against a wide variety of targets during the last century have been far greater than that of the supersession of the oared galley by the sailing galleon, the sailing ship of the line by the steam ironclad, the battleship by the carrier-borne and shore-based maritime aircraft, and the diesel-electric propulsion systems of submarines, by the nuclear power plant.

Adoption of new techniques, technology, strategy or tactics, weaponry and weapon platforms generally require a fairly long lead time because their potential and advantages over the existing techniques, tactics, etc, have to be convincingly established before they are introduced in any Service. Oared galleys continued to be constructed for England's Navy for several years after the defeat of the Spanish Armada; even thirty years after the first battleship had been fitted with engines, steam ironclads continued to be equipped with sails, and when World War II was coming to an end in 1945, the British Admiralty was still working on a new design for a 16-inch gun turret. For similar reasons, despite the developments in submarine technology in Europe and America concurrently with those in Great Britain, the Royal Navy woke up to the danger posed by submarines only after the outbreak of World War I when the armoured cruisers, *Cressy*, *Hoque* and *Aboukir*, were sunk by one small German U-boat as a result of which the Grand Fleet's method of cruising the sea had to be drastically altered. In fact, until the time they learnt their lessons the hard way, the British had been doing their best to discourage the development of submarines because they still believed that they, with their huge surface navy, had nothing to gain and much to lose by their development. As a result of the adoption of this attitude, the design of the first submarine for the Royal Navy had to be purchased from America for construction in Britain and, what is even more surprising, this class of submarines were built not to supplement the British war effort but only to enable the British designers to find an antidote to them! It is significant to note that until October 1, 1901, when the Royal Navy's Submarine Service came into being with the launching of *Submarine No. 1* (120 tons), the popular view in Britain, which has a seafaring history spanning several millennia, was that submarines were 'underhand, unfair and damned un-English'.

This is of course not surprising as there is no profession so wedded to tradition as the military. During World War I the machine gun had been scorned as the 'much-overrated weapon'; the tank was thought of as a 'toy'; Marshal Joffre had refused to have a telephone installed in his office; poision gas was reluctantly adopted by the British after its use by the Germans was classified as a mere 'accessory'; the trench mortar was projected twice by the British War Office and was finally accepted after a

cabinet minister secured the funds for it from an Indian maharaja; British subalterns got their swords sharpened before crossing to France; and as late as 1918 'Pershing had cluttered up his supply lines with mountains of fodder for useless horses, still dreaming of Custer and Sheridan and the glint of Virginia moonlight on the shining saddles of Stuart's cavalry.'

Early History

There are occasional references in ancient history to the attempts made by man to seek stealth and surprise by operating from submerged or semi-submerged vessels during wars at sea. The very early protagonists of the submarine were not so much inspired by the desire to descend below the surface of the sea to explore the depths of the sea as to devise a method of rendering a warship invisible to the enemy so that it could carry out surreptitious attacks and escape at will.

The earliest reference to attempts made at waging underwater warfare is found in the writings of Aristotle who recorded that Alexander the Great used diving bells to enable his men to descend below the surface of the sea during the siege of Tyre in 332 B.C. He also ordered his divers to impede or destroy the defensive barriers (still in use and known as boom defences) the city was likely to build to prevent the movement of submerged vessels. In fact, according to legend, Alexander himself 'made a descent into the sea in a device which kept its occupants dry and admitted light.'

However it is believed that nearly a century earlier than Alexander's experiments, the Athenians had used divers to clear the entrance to the Syracuse harbour during its siege from 415 to 413 B.C.

Over the following two millennia the potential and the tactical advantages of operating below the surface of the sea continued to be appreciated by many mlitary thinkers and several attempts were made during this period to develop an underwater platform that could be used against enemy shipping and war vessels far more effectively than surface ships, both for offensive and defensive operations. In the 16th century, during the Renaissance, Leonardo da Vinci, is said to have designed a vessel which could dive, remain submerged for some time and surface unaided and could surreptitiously plant bombs or mines on enemy vessels, but the design of this submarine was kept secret because da Vinci he felt that man would misuse it. 'He knew a method of remaining a long time underwater, but he refused to tell of it because of the "evil nature of man.'

The Submersible Takes Shape

Experiments in diving and moving underwater continued but the first

recorded mention of a submarine design conforming to the basic principles of submersion is found in the writings of a British naval officer, William Bourne, who published a detailed design of a 'boate that may go under the water' in 1578. The vessel was a completely enclosed boat which could be submerged by reducing its volume by contracting the sides through the use of hand vices, which could bring the boat back to the surface by increasing the volume. This vessel could also move underwater by using watertight oars. This realistic design, provided for both submersibility and propulsion underwater but was never built.

Twenty-seven years later, in 1605, using a design similar to Boume's, Magnus Pegelius constructed a submersible boat but due to the viscosity and adhesive properties of underwater mud the craft never surfaced after diving.

In 1620, a Dutch physician, Cornelius van Drebel, built a submarine and successfully conducted trials in the Thames river, making the craft cruise repeatedly on the surface, dive, manoeuvre underwater and then surface for several hours at a stretch. He later built two more craft, embodying the same principles, but larger in size. Van Drebel's craft had an outer hull made of greased leather stretched over a wooden framework. Propulsion was provided, both on the surface and while submerged, by oars which extended through the sides and which were sealed and rendered watertight with tight-fitting leather flaps which allowed free transverse movement while anchoring the oars to the hull. The underwater endurance of the submarine crew was sought to be enchanced by using compressed oxygen to 'restore to the troubled air such portion of vital parts as would make it again, for a good while, fit for respiration.' After repeated trials in the Thames river had established the capabilities of the new 'boate' in travelling on the surface and manoeuvring underwater at depths of 12 to 15 feet, King James I is reported to have taken a trip in one of the larger models to demonstrate its safety. But despite the conclusive proof of the designers having evolved a powerful two-dimension weapon platform, the novel features of the submarine failed to arouse the interest of the British Navy.

The wars in the 17th century in Europe, however, led to a proliferation of submarine designs some of which were the work of men from professions other than those associated with the navy or seafaring; in fact some of the designers were men of peace, i.e., priests and monks! One such designer was Oliver Cromwell's brother-in-law, John Wilkins, Bishop of London. His device for jettisoning gash through an underwater lock while remaining submerged led to the development of underwater lavatories in the latter-day submarines which obviated the need for the submarine to surface repeatedly. He also wrote on future naval develop-

ments and centuries later many of his predictions turned out to be true, such as his prediction of journeys by submarines under the Polar ice-cap, an idea which was dismissed as science fantasy in the 17th century.

By the middle of the 17th century, many naval architects had conceptualized and experimented with possible submersible weapon platforms. In 1653, a Frenchman, de Son, designed and built a 72-foot submarine 'that doeth undertake in one day to sink 100 ships' but his submarine never sailed, as its prime mover, a clockwork device, was not powerful enough to propel it on the surface or underwater.

The earlier decades of the 18th century saw numerous 'underwater boats' built, the British designers alone having patented no fewer than fourteen types by 1727. The concept of using a ballast tank for submerging and diving was first visualised by an inventor who described his design in the *Gentleman's Magazine* in 1747. The hull of his craft was equipped with a bank of goatskins which would be filled with water to make the vessel submerge and a 'twisting rod' would be used to force the water out of the goatskins which would provide positive buoyancy and bring the vessel back to the surface. This craft, however, was never built. At this time the mechanical and physical principles involved in diving and surfacing were yet to be fully understood and hence many of the ideas put forward turned out to be impractical, fanciful or, in some cases, even grotesque. Besides the lack of understanding of the principles, the general impression at this time was that it would be impossible to navigate a craft underwater and even if it became possible, its tactical advantages in naval warfare would be minimal.

The First Submarine, Bushnell's Turtle

However, developments of a submersible craft with weapon delivery capability received a shot in the arm in 1776 when the first submarine that could dive, surface, cruise - both on the surface and underwater - and plant explosives on enemy vessels while remaining submerged, made a dramatic appearance during the American War of Independence. David Bushnell, an American farmer's son, had developed the technique of exploding gunpowder underwater and had followed it up with the invention of the first one-man submersible that was to be used as a weapon platform, the *Turtle*. Shaped like a wooden beer-barrel, it was powered by a hand-operated screw propeller which could move it at a speed of three knots. It could stay submerged for 30 minutes during which it had to approach its target underwater, plant an explosive on its hull and get away.

It was on September 6, 1776, 29 years before the Battle of Trafalgar, that Ezra Lee, a seargent in the American Revolutionary Army and the first sub-

mariner to launch an underwater operation against enemy vessels, undertook to scuttle *Eagle*, the Flagship of the Britih Fleet which was blockading New York Harbour, by planting a powerful explosive on its hull. He set off on his historic mission all by himself on board the *Turtle* and, operating the handle of the screw-propeller hard for several hours, reached the *Eagle* and dived. The *Turtle* then got under the hull of the Flagship and Lee tried to bore a screw device into the *Eagle's* hull for securing the explosive device to it. Later, a pre-set clockwork mechanism would trigger the explosive device. Unfortunately for Lee, the wooden hull of the Flagship had a sheathing of copper for reinforcement and prevention of the formation of any marine growth. Despite repeated attempts, Lee failed to penetrate the hull. He persisted with his efforts to plant the device, but soon the effects of carbon dioxide poisoning overwhelmed him. He then withdrew, surfaced and set course for shore but was spotted and pursued by a British patrol-boat. Lee jettisoned the explosive cargo and it went off, almost blowing the patrol-boat out of the water.

The Commander of the British Fleet soon realised that his Flagship had had a narrow escape and ordered the blockading ships of his fleet to withdraw to the outer harbour, where they were comparatively safer, but the effectiveness of the blockade was considerably reduced. Thus while the first sub-surface attack in the history of submarines had proved to be abortive, it brought home one lesson which holds good even today - that the mere presence of a submarine lurking below the surface can upset the plans of a tactical commander over a large area far more than the sinking of a ship. In other words, the fear of the unknown and the element of surprise are a greater deterrent at sea than an actual attack. Submarine warfare thus became a reality, even though the first ever submarine attack had failed to cause any physical damage.

Fulton's Nautilus

Robert Fulton, the American inventor who was the first to propel a boat by steam in 1803, and the first to build a steam warship, the *Fulton*, in 1815, is better remembered for having constructed a three-man submarine boat, the *Nautilus*, in 1795. Incorporating nearly all the main features of a modern submarine and shaped like one, the *Nautilus*, which was built of steel and shaped like an elongated oval, was powered by sails on the surface and by a hand-driven screw-propeller under water. Since the periscope was yet to be invented, a primitive form of a conning tower, equipped with a water-tight port hole was provided and was used for observation and manoeuvring the craft underwater. It was also equipped with ballast tanks for diving and surfacing, as modern submarines are, and had a submerged

endurance of three hours for four men to breathe and two candles to burn! Like the *Turtle*, it had a device which could attach explosives to the hull of a ship while remaining underwater. During its trials at Brest, the *Nautilus* had also proved its capabilities by sinking an old schooner.

Since the war was over, the American naval authorities showed little interest in Fulton's submarine design, compelling him to build the *Nautilus* at Paris. He offered it to the authorities to deploy it off the French coast against British warships but it failed to sink or damage any ship.

Disappointed, Fulton then approached the British authorities and demonstrated the capability of his submarine craft by sinking a ship in 1804. The Prime Minister, William Pitt, was so impressed by the submarine's performance that he asked the Admiralty to acquire the craft. His request was, however, dismissed by the First Sea Lord (then Earl St. Vincent) with the rather intemperate remark, 'Pitt was the greatest fool that ever existed to encourage a mode of war which those who command the sea do not want and, if successful, will deprive them of it.'

For about 60 years after the disappearance of the *Nautilus*, inventors continued to test various designs of small, hand-propelled submersibles with a crew of six to eight men. None of these was, however, an improvement on Fulton's craft, and hence no progress towards further development of submersibles was discernible. However, during the American Civil War the next nautical milestone in submarine development was recorded, with the sinking of a warship by a submarine, when a Federal corvette, the *Housatonic*, which was blockading Charleston harbour, was scuttled by the Confederate submersible *David* (according to the Encylopaedia Britannica, the name of the submersible was *Hanley*) in 1864. An explosive pack, suspended ahead of the bow of the *David* from a bowsprit, accomplished the feat when the submersible rammed the corvette. However, when the *Housatonic* was salvaged, the mangled wreck of the *David* was found sandwiched between the corvette's hull and the seabed. Because of the submersible's proximity to the *Housatonic*, the explosive had proved to be as much of a danger to the attacker as to its target. The *Housatonic* thus had the dubious honour of being the first surface vessel to be sunk by a submarine (and the first surface vessel to have crushed a submarine in an unintended *Kamikaze* attack).

Progress in submarine development continued to be bedevilled by the absence of a suitable propulsion device to enable the submarine to operate underwater for long periods, and an explosive which, rather than being planted, could be launched or fired by the submarine from a safe distance.

Steam and Electric Propulsion

Steam engines, though bulky and messy, were tried for some time for the propulsion of submersibles and in 1880, George Garret, an English clergyman, built a submarine which was propelled by two propellers driven by steam from a coal-fired boiler, which featured a retractable smokestack for ventilation. About this time, a Swedish gun designer, Nordenfelt, also constructed a submarine powered by steam. This submarine was capable of submerging to a depth of 50 feet, had an underwater endurance of 20 miles and was the first submersible to be fitted with a practical torpedo tube. The novelty of the new weapon-launching device appealed to the Turks and Russians who acquired some of these craft but, because of their limitations, could not achieve anything worthwhile.

Experiments with the still new form of energy, electricity, had in the mean time proved successful, and storage batteries with several hours of endurance had been developed for the propulsion of submarines with electric motors. In 1886 two Englishmen, Campbell and Ash, developed an all-electric submarine which was powered by two 50-horse-power motors operated from a 100-cell storage battery. It was capable of maintaining a surface speed of six knots but the storage capacity of its battery being very low, its effective range was limited to only 80 miles.

The endurance of the storage battery for submarines was considerably improved by a Frenchman, Claude Gombat who, between 1888 and 1890, built some small battery-powered submarines which were acquired and used by the French Navy for about 10 years. These submarines were about 160 feet long, had a maximum speed of 13.5 knots and an effective range of 200 miles.

The 'Holland Type' Submarine - Ballast Tanks and Hydroplanes

Meanwhile John P. Holland of New Jersey, an ex-Irish school teacher who had migrated to the USA and who was to virtually become the creator of the Royal Navy's submarine service, had launched his first submersible in 1875. In 1882 he constructed the *Fenian Ram* which was tested on the Hudson river, and which was propelled by gasoline engines on the surface and electric motors underwater. These submersibles had several features which had to be discarded later, but some of Holland's innovations, perfected during the following years, have been incorporated in the latter-day submarine design. Of these, the most important are the use of ballast tanks for submerging and surfacing, and horizontal rudders or hydroplanes for manoeuvring the craft in the vertical plane for depth control.

For some years Holland and Nordenfelt were vying with each other for

an order from the United States Government for building a submarine and it finally went to the former in 1895. The vessel that was designed, the *Plunger*, was to be powered by a coal-fired steam engine on the surface, and battery-operated twin motors under water. Numerous designing defects came to light during construction and the craft was eventually abandoned. A new model, Holland's ninth, was built in his shipyard and delivered to the United States Government in 1900 and was used as the basic design for all the submarines that were built subsequently. This submarine, which was launched in 1897 and which was tested for three years before delivery, was named the *Holland*.

A contemporary of Holland, Max Lanbeuf of France, also built a submarine, *Narval*, which was similar in construction to Holland's submarines and it was also powered by a coal-fired steam engine but, instead of tanks, it used the space enclosed in its double hull for ballast.

Internal Combustion Engine

The submarines of Holland and Lanbeuf were the prototypes for submarines built for several decades thereafter and they had almost all the essential features of modern day conventional submarine - ballast tanks, internal combustion engines for surface propulsion at nine knots and for charging batteries whilst on the surface and electric motors for underwater propulsion at seven knots; its effective operational range was an impressive 1,000 miles. However, the internal combustion engines used at that time were gasoline engines which were a fire hazard because they gave off highly noxious and inflammable gasoline fumes, and, later were replaced by diesel engines developed by the German engineer, Rudolph Diesel, during the last decade of the 19th century.

Another submarine designer, Simon Lake, had built a submarine, the *Argonaut Junior*, in 1894 which was primarily meant for use in such peacetime operations as the exploration and exploitation of the living and mineral wealth below the surface of the sea and under the seabed, and for commercial salvage operations. The submersible was made of two layers of yellow pine with a sheet of canvas between them to render it impervious to water. This submarine could move about on the seabed and had an air-lock device which permitted its crew, using diving helmets, to emerge from the submarine and explore the surroundings.

In 1897, Lake built his second submarine, the *Argonaut*, which was powered by a 30-horse-power gasoline engine, had a 36-foot cigar-shaped hull and could submerge to the bed of a river or the bottom of a lake and move along the bed on three wheels which could be retracted and housed in the keel when the submersible was navigated. A year later, i.e., in November 1898, the *Argonaut* had the honour of being the first submarine

to cross the Atlantic when she sailed from Norfolk and, despite heavy storms encountered on the way, reached New York.

Another submarine, the *Protector*, was built by Lake in 1906 and sold to Russia. After it was tested and accepted in Russia, he built several more submersibles for the Russian Government.

The French Submarine - The Gustav Zede

Claude Gombat, a Frenchman, built some small but effective submarines between 1888 and 1890. One of these, the *Gustav Zede*, which was in service with the French Navy for over ten years, had a hull 160 feet long, was powered by storage batteries and had a range of 200 miles at a cruising speed of six knots and a maximum speed of 13.5 knots.

In 1901, this submarine, while taking part in exercises, staged a mock attack on the French Mediterranean Fleet after travelling 160 miles under her own power. While remaining totally undetected, the submarine hit the battleship *Charles Martel*, the pride of the French Navy, with a dummy torpedo. The successful 'sinking' of a fully protected battleship by a tiny submarine which could approach its target, deliver a lethal blow and escape without being detected, was a watershed in the history of submarines and was an object lesson to the naval planners of all major countries, in the changes that were going to be wrought into the future shape of sea power.

By the end of the 19th century, only six navies in the world had acquired a total of 10 submarines and eleven more were being built. Leading the submarine-owning countries was France, which had a total of 14, built or building, followed way behind by the United States which had only two, one of these two being of the Holland-type which was at that time reckoned to be the best design in the world. The other countries which had acquired submarines were Italy, Portugal, Spain and Turkey which had one craft each. Britain, which had one of the mightiest navies at that time, was yet to acquire one because of active and continued discouragement from the British Admiralty.

The 1901 success of the French submarine, *Gustav Zede*, however, came as a rude shock and an eye-opener to the mandarins of the Admiralty, and so it overruled the policy of the First Sea Lord, Earl St. Vincent, and promptly ordered five submarines of the Holland type of the US Navy - not for using them against enemy warships or for coastal defence, but for intensive research into antisubmarine measures! The first submarine built for the Royal Navy, *Submarine No. 1* (with only one torpedo tube) was thus launched on October 2, 1901 and the submarine service of the Royal Navy was born.

Submarines for the British Navy - Acute Submarine-Phobia

The policy of active discouragement against submarine development had prevailed in the British Admiralty for about a century. Hence there had been practically no research in submarine development in England during the 19th century. As a consequence the design for the first submarine for the Royal Navy had to be acquired from the USA. In trying to perpetuate this bias, even as this submarine was being commissioned, the Admiralty had decided to curtail the formalities associated with the commissioning of the new vessel to the minimum. To quote an official notice reproduced in the journal *Naval* and *Military Record* of October 3, 1901, the day after the launching: 'It is understood that no ceremony will take place at the forthcoming launch of the first British submarine at Barrow-in-Furness. The Admiralty regard these boats as wholly in the nature of an experiment and, like all other experiments conducted from time to time, this one will be carried out with all privacy.'

Despite the official stance against the development of the underwater craft, shipbuilders in Britain had actually started building submarines as early as in 1885 - full sixteen years before the construction of the first submarine for the Royal Navy. In that year work had commenced on the construction of an experimental submarine at the Barrow-in-Furness shipyard. This submarine, which had a 100-foot hull, had been built in sections by 1886, sold to the Turkish Government, shipped out to that country, and assembled there for the Turkish Navy. Soon, another submarine, 123 feet long, was built at Barrow and sold to the Imperial Russian Navy. It is interesting to note that 'underhand, unfair and un-English' warfare wasn't acceptable to Britain but others could indulge in it so long as it yielded lucre for her!

After building five Holland-type submarines, Britain built the first A-class submarine (with one torpedo tube) in 1902, B-class (with two torpedo tubes) in 1905, C-class (with two torpedo tubes) in 1906, D-class (with three torpedo tubes, one tube being in the stern, and a 12-pounder gun) in 1908, and E-class (with five torpedo tubes, and one six-pounder or four-inch gun) in 1913. The B-class was the first to be fitted with surface weapons, and the D-class was the first to be equipped with a diesal engine and stern torpedo tube - all earlier classes having used gasoline engines for propulsion, and being fitted with forward torpedo tubes.

The submarine-phobia and surface-vessel mania of the British Admiralty, even after submarines had begun to the built for the Royal Navy, is evident from what Captain Hugh Oliphant, who was the Commanding

Officer of *Dolphin*, the Royal Navy's submarine training establishment, and Captain, First Submarine Squadron some years ago, said about the prevailing ambience at that time: 'One serving British Admiral was at that moment publicly demanding that submarine crews (captured) in war should be treated as pirates and hung; the Director of Naval Construction was warning non-expendable senior officers "never to go below water", and the Engineer-in-Chief considered that the running of a petrol engine in a confined space was so dangerous that the first submarine moorings in Portsmouth were among the remote quarantine and powder hulks.' The first submarine 'depot ship' and training school was thus given the not inappropriate name of *Hazard*!

By now, even in the Royal Navy, some of the senior officers had realised the potential of the submarine and were quite vociferous in demanding a change in the naval policy. In 1904, Admiral Lord Jacky Fisher wrote prophetically:

> It is astounding to me, perfectly astounding, how the very best amongst us absolutely fail to realise the vast impending revolution in naval warfare and naval strategy that the submarine will accomplish!'
>
> Here, just to take a simple instance, with the battleship *Empress of India*, engaged in manoeuvres and knowing the proximity of submarines, so self-confident of safety and so oblivious of the possibilities of modern warfare . . . and suddenly they see a Whitehead torpedo miss her stern by a few feet!
>
> And how fired? From a submarine of the 'pre-Adamite' period; small, slow, badly fitted, with no periscope at all.
>
> . . . . I have not disguised my opinion in season and out of season as to the essential, imperative, immediate, vital pressing, urgent (I can't think of any more adjectives) necessity for more submarines at once, at the very least 25 in addition to those now ordered and building and 100 more as soon as practical, or we shall be caught with our breeches down. . . .

The turn of the century was thus a watershed in the history of submarines, for the fundamental principles of the construction and operation of submersibles had taken concrete shape and been demonstrated to the world by this time. It continues to be valid even today. Internal combustion engines, both gasoline and diesel, had proved to be the most efficient and practical power plants; electric propulsion, as an alternative or in tandem with diesel or gasoline

engines, had proved a success; the invention of the periscope had increased the feasibility of underwater navigation and improved the potential of the submarine for surveillance and for carrying out attacks while remaining submerged; and the torpedo, the primary weapon of the submarine, had been perfected and had proved its deadly capability. The manually propelled and operated one-man submersibles had been replaced by the larger and more versatile, long-range and long-endurance submarine. These would soon become a major component of naval strategy, both for offence and defence. A new chapter had begun in the history of naval warfare.

Special Features of Submarines Developed

Some of the features peculiar to these submarines were the all-welded hull, the periscope, the schnorkel or the snort, the diesel-electric propulsion system and the revolutionary weapon - the torpedo.

Below the superstructure deck was the hull which had to withstand the tremendous pressure of seawater while submerged, and to maintain its watertight integrity under varying pressure conditions. The shape of the vessel had evolved from Bushnell's spherical *Turtle* to the cylindrical Holland genre over a period of 125 years, the latter being constructed on the basis of the fabrication of a series of watertight containers by means of watertight joints. In the double-hull type of submarines, the pressure hull was inside the outer hull and between these hulls were the water and fuel oil tanks.

The space between the non-watertight superstructure deck and the pressure hull was used as locker space for stowing anchor gear, lines, ammunition for the submarine guns, boats and other equipment that did not get damaged by immersion in water. Extending upwards through the superstructure amidships was a watertight tower known as the conning tower, the top of which was the bridge from where the vessel was controlled when on the surface. But when submerged, it was controlled from the conning tower or from a compartment directly below it, known as the control room. For making observations while totally submerged, periscopes extending above the bridge were operated from the conning tower.

Evolution of the Torpedo

The submarine is essentially a torpedo vessel, launching its torpedoes while surfaced or submerged, and hence it has basically evolved over the years as a torpedo-launching platform, though today its weapon outfit includes missiles. The torpedo too has been developed into a highly

complicated underwater projectile with a heavy explosive charge. It is detonated by an exploding mechanism when in contact with, or in proximity to, the hulls of target vessels. Today, high-power engines drive it at high speed and sophisticated instruments control its course. Torpedoes are fired by, or launched by, surface vessels, aircraft or submarines. Its capability of being launched, approaching the target and striking with little or no warning makes it particularly useful to submarines, which can frequently carry out an attack and escape without being detected.

The word torpedo is derived from the word Torpedinidae, the family name for the fish called electric rays. These fish and electric eels, have been referred to as torpedoes. The term torpedo was first applied to an explosive device around 1800 and, in its various experimental forms, this name was used for the next 65 years or so for a type of floating mine.

The first to use an explosive device of this category was David Bushnell in 1776. His was a simple type of floating mine with a clockwork mechanism which was designed to be secured to the bottom of an enemy vessel with the help of a screw driven into the latter's hull, and to go off after the pre-set interval. As described earlier, no damage was caused to the target, the British warship *Eagle*, as the submersible, *Turtle* failed to secure the explosive device to the ship's hull.

Robert Fulton, the American genius whose talents had been recognised not at home but in France and England, used 'a catamaran torpedo' developed by him in an attack on the French Fleet at Boulogne on October 2, 1804. Twelve of these devices were turned loose against the French ships, creating great excitement but causing no damage as they exploded short of their intended targets.

During the American Civil War, various kinds of torpedoes were used by the Union and Confederate forces. Some of these were simple beer kegs filled with gunpowder whose use was responsible for the well-known outburst from Admiral David Farragut, 'Damn the torpedoes ... Go ahead!' At the other extreme were the gigantic electric torpedoes carrying over 90 kilogrammes of explosives each, one of which was used to blow the Federal gunboat *Commodore Jones* to smithereens.

It was an English engineer, Robert Whitehead, who, in 1868, perfected the first practical self-propelled torpedo, the forerunner of the modern torpedo. The Whitehead torpedo used all the basic principles that are used even today, such as hydrostatic depth control lateral control, and an engine which powered two contra-rotating propellers; the source of power for the 'cold-running' torpedo was compressed air contained in a metal flask which produced a speed of seven knots over a range of 700 yards. During the last decade of the 19th century, the US Navy used this torpedo, its speed increased to 27 knots though its range had been extended only by 300

yards.

The first 'hot-running' version, the Bliss-Levitt torpedo, was designed by an American, E.W. Bliss, in 1904 and featured a combustion chamber burning alcohol, preheated from the flask in which the pressure was increased. The combination of higher pressure and preheating increased the range to 4,000 yards.

Meanwhile, the introduction of torpedoes had radically changed naval warfare. In 1877, a superior Turkish naval formation was forced to keep clear of the Russians off Odessa because the latter had equipped its ships with torpedoes. With their rapidly increasing speed, range and hitting power, torpedoes soon became a serious threat to capital ships, i.e., the larger ships of the fleet in later years. Since the torpedoes caused the greatest damage when they hit their targets underwater and since it was impractical to make extensive use of armour for the protection of the 'soft underbellies' of these ships, naval designers modified their hulls by providing double or triple bottoms and highly compartmentalised hulls. An excellent example of this is provided by the hull design of the German battleship *Bismarck* which, despite being repeatedly hit by torpedoes from destroyers and aircraft during a lengthy engagement in World War II in May 1941, remained afloat because of her excellent watertight integrity produced by her multi-bottom and multi-compartment design.

About the time of the Spanish-American War, the torpedo-boat came into being and was used to great effect against heavier ships. As a defence against these boats, larger torpedo-boat destroyers were developed, the latter finally evolving into the destroyer whose principal weapon for many years was the torpedo it had originally been designed to counter.

During this period all torpedoes were designed for underwater launching and until 1922 even battleships used torpedoes. A torpedo for being launched above the surface was first developed in 1910; it incorporated a horizontal type turbine instead of the earlier vertical type, had a 'hot-running' engine, a speed of 35 knots and a range of 2,000 yards. Later there was some improvement in torpedo operation but torpedo design virtually remained unchanged until the end of World War I.

During World War I, Germany sank 1,381 Allied merchant ships by using torpedoes alone, and during World War II, German naval designers developed the acoustic torpedo which virtually brought the Allies to the brink of defeat. It played havoc with Allied shipping during the Battle of the Atlantic but the downslide was stopped in the nick of time by developing a device that provided fairly effective defence against the acoustic aspect of these torpedoes.

After the target had been identified and its direction and range established, the acoustic torpedo was launched in the general direction of

the target. After traversing some distance, the acoustic device of the torpedo would pick up the noice made by the target's propellers and would then 'home' on to the source of the noise. This torpedo posed the greatest danger to large convoys as it could be launched in the general direction of the target without having to solve what is known as the fire control problem and leave the rest to the torpedo itself. Another advantage of the acoustic torpedo was that it did not require high speed to intercept its target; so long as its speed was higher than that of the target, it homed on to it though it had to run for a little longer period. This led to the development of the torpedo which could zigzag, popularly referred to as the Wobbly Willie, or follow a spiral track, as did the Curley Charlie, during its course until it picked up the target and homed on to it.

The acoustic torpedo played havoc with Allied shipping during the Battle of the Atlantic. The only defence against this torpedo, was a noisemaker which was developed during the war. Being louder than the target's propellers the noisemaker diverted the torpedoes to erratic tracks until they lost contact or ran down after exhausting their fuel.

Most of the torpedoes used until the 1950s came in two sizes - those fired by submarines and destroyers were 21-inches in diameter and 21 feet long and those fired by torpedo planes and, during the later part of World War II, by patrol-torpedo boats (P.T. boats) were 22.5 inches in diameter and 13.5 feet in length. The cylindrical steel flask containing compressed air at a pressure of 3,000 pounds per square inch was fastened to a pointed nose-piece containing several kilogrammes of explosives. An exploder mechanism, which was set to detonate when it came into contact with any object, was inserted in the warhead before the torpedo was fired.

During actual operation, in order to prevent discovery by the enemy of an unsuccessful attempt, live torpedoes were designed to sink at the end of their run if they did not explode. Japanese torpedoes were, however, designed to explode at the end of their run if they failed to hit a target. A few years earlier, German torpedoes were designed to remain afloat at the end of the run so that they could be used as mines, i.e., there could be some chance of the torpedo being struck by another ship.

The electric torpedo, which was powered by batteries and was cheaper and easier to produce, was slower than the steam torpedo and of less range, but did not produce any air bubbles and hence did not produce any wake. While the steam torpedo had a speed of 45 knots and a range of 4,500 yards which increased to 15,000 yards if the speed was reduced to 30 knots, the electric torpedo had a range of 4,000 yards at 30 knots.

Until the early 1950s the mobile platforms used for launching torpedoes included destroyers, submarines, patrol-boats and aircraft. Destroyers and P.T. boats launched torpedoes by ejecting them from tubes

mounted on their decks with a charge of powder, the latter also carrying aircraft torpedoes which were merely dropped over the side. These torpedoes were used by the P.T. boats to launch attacks on all types of vessels including battleships.

Torpedoes were launched by submarines from tubes fitted in their bows and sterns with a charge of compressed air. Cruisers were initially fitted with torpedo tubes but discontinued using them after 1936; battleships never used them mainly because their gun range far exceeded the torpedo range and at torpedo range they presented very large targets to the enemy vessels.

The greatest torpedo threat during World War II came from the torpedo planes because the attack could come from a number of directions at once and the warning was very short because of the high speed of the planes. Because of this advantage and better cost effectiveness of torpedo planes over destroyers, World War II saw increasing employment of aerial torpedo attacks.

During World War II submarine warfare was almost exclusively fought with torpedoes; and the effectiveness of the torpedo against surface vessels can be gauged from the fact that out of a total of 10,583,755 tons of Japanese naval and merchant shipping sunk by the Allied forces during World War II, 5,320, 094 tons, i.e., over 50 per cent was accounted for by torpedoes fired from United States' submarines alone.

Other Important Features

As is well-known, the eye of the submarine is the periscope which was invented and developed solely for the purpose of providing a means to view the surface or sky without detection by surface vessels or aircraft. The earlier designers of submarines didn't provide for any viewing device for submarines when they were in a submerged or semi-submerged state, as a result of which they had to grope their way blindly after diving. But the need for a suitable viewing device was soon realised and in 1854 a Frenchman, E.M. Marie-Davy, designed a submarine sight tube containing two mirrors, one above the other, held at the angle of 45 degree and facing in opposite directions. These did provide some degree of sight to the submerged vessels but were rather limited in performance and were hence substituted in 1872 with prisms. The credit for inventing the original periscope goes to Thomas H. Doughty, who developed the basic form during the American Civil War.

The first American submarine to use an internal combustion engine was fitted with 45 horse-power, two-cylinder, four-stroke gasoline engines while the British preferred gasoline engines fitted with 12 or 16 cylinders.

The inherent hazards of these engines were soon realised, for stowage was a constant problem and handling of fuel was extremely dangerous. Also, internal explosions were frequent and many of the engines gave off considerable carbon monoxide fumes, creating a menace to personnel.

M.A.N. (Maschinenfabrik Augsberg-Nwinberg A.G.) of Germany had developed a four-stroke diesel engine, capable of producing 1,000 horse power but all these engines developed structural weaknesses in the crankcase. Until 1930 the engines used in most submarines of all the larger naval powers with the exception of Great Britain were four-stroke diesels.

With the development, however, of fleet type submarines, the need for more powerful engines became apparent and eventually a 16-cylinder single-acting engine was developed as well as a 9-cylinder double-acting engine. The fact that submarines are both surface and sub-surface vessels places definite restrictions on size, hull design and shape. The total weight of the submarine is also a factor having considerable bearing on underwater operations. In the first engine-powered submarine, the engines were mechanically connected directly to the propeller shafting. It, however, became apparent after testing various types and designs, that the diesel-electric drive was the best. In this type, the engines were connected only to the generators, which in turn supplied power to the main motors driving the propeller shafting. Another function of the generators was charging the storage batteries.

Today's fleet type submarines are generally powered by four main propulsion diesel engines, each capable of driving a generator producing around 2,000 horse-power which in turn drives a slow-speed motor or charges a bank of batteries. An auxiliary engine is also available for driving the generators.

As is known, the conventional submarine does not use the diesels or generators while submerged, and power for the motors is supplied by two sets of storage batteries, which are charged by the auxiliary and main generators during surface operations. The two main storage batteries consist of two groups of over 100 cells each, each one of these cells weighing several quintals.

During the latter part of World War II, the Germans adopted a radical change in submarine design known as the 'schnorkel' - an invention made by the Dutch in 1936 for replenishing air supply of the crew of their submarines. The spelling was simplified by the Americans to 'snorkel' and further abbreviated by the British to 'snort'. The Germans were forced to develop the new device because of the rapid strides already made in the development of improved sonar (underwater sound-aided detecting and ranging equipment) and radar, used by the Allied aircraft and surface vessels against German vessels.

The schnorkel was originally a breathing tube which was raised while the submarine was at periscope depth. When it was raised in position, air for the crew was obtained from the surface. In 1944 the Germans equipped their submarines with double-tube schnorkels, one for letting in air for the submarine's diesel engines and crew and the other as an exhaust for diesel fumes, carbon dioxide and other pollutants. The intake tube projected by a foot or so above the sea surface while the exhaust gases were discharged into the sea. This considerably reduced the visible portion of the submarines and also consumption of electric power, since the submarine could cruise almost totally submerged on its engines and conserve its battery power for attacks and evasive measures.

The schnorkel had only one drawback. While by itself it was too small to be spotted from a distance or from the air it left a distinct wake which could be visually picked up from an antisubmarine ship or aircraft in calm weather. It could also be detected by the radar fitted on ships or aircraft. Darkness or fog could not provide any camouflage any more.

The United States Navy developed an improved schnorkel and also the 'guppy' submarine at the end of World War II. The guppy (greater underwater propulsion power) had the same type of hull as that used for the fleet submarine of World War II fame, was 306 feet long and displaced about 1,800 tons. The only change in the hull was in the superstructure which was radically changed by reducing the surface and streamlining every protruding object. The life lines and all guns were removed, the bitts (posts) to which ropes were secured were made retractable and the periscope shears (supports) enclosed in a streamlined metal fairing. All topside armament and equipment were either removed or made retractable and streamlined. The speed of the new 'guppy' was considerably greater than that of the fleet-type craft, and nearly twice that of the old-style submarines. Great changes were brought about in submarine construction by the lessons of World War II. Torpedoes came to be fired by hydraulic pressure instead of compressed air as was done previously, eliminating any chance of tell-tale air bubbles escaping to the surface and betraying the submarine's presence.

Hulls also underwent a major change - they were given greater strength for deeper diving that enabled the submarine to dive to greater depths than was previously possible. Hydraulic mechanisms (oil) were employed extensively throughout the ship for quiet, efficient operation. Radar and sonar equipment increased in importance as it increased in efficiency. Torpedoes no longer had to be fired with sharpshooting accuracy; fire-control equipment and homing torpedoes (the torpedo that seeks its target) eliminated much of the guesswork and chance in firing torpedoes. Engines, electric motors and generators were made more compact.

The exploitation of atomic power soon became a practical reality to be used for the first time in a submarine propulsion plant. Nuclear power was specified to generate steam within the hulls of the US submarines *Nautilus* and *Seawolf*.

A radical change was brought about with the introduction of nuclear power but its application to ships was conventional in that steam and turbines had been used in ships, but unconventional in that it was the first time that US, submarines had used steam since the very first unsuccessful submarine in 1895, and that this was the first time nuclear energy was used to drive steam-turbine generators which in turn drove the propulsion motors and shaft to which the screws were fixed. This means of propulsion along with greater speed also gave the submarine an advantage of almost unlimited cruising range and submerged endurance, a limit probably restricted only by the endurance of its crew and its storage capacity.

The Emergence of the Submarine During World War I

When the First World War broke out in 1914, not many people were convinced of the threat posed by submarines to surface ships until the British cruisers *Cressy*, *Hogue* and *Aboukir* were torpedoed by the German U-boat *U-9* off the Belgian coast with a loss of 1,200 lives. This made it clear that the submarine was going to become a potent weapon in future naval warfare and, what was of immediate significance, that many British harbours lay well within the operational range of German submarines. At the recognised war base for the Grand Fleet in the Orkney Isles at Scapa Flow, boom defences for British harbours were practically non-existent. On September 1, 1914, a false alarm of an enemy submarine in the Flow caused this anchorage to be abandoned by the fleet in favour of Loch Ewe on the west coast of Scotland until submarine defences could be hurriedly improved and the Loch rendered safe for navigation.

British submarines were than employed on patrol off the Heligoland bight and the narrow waters round the coast on the look-out for enemy men-of-war. Soon U-boats were busy attacking the troop transports going to France. To meet this attack the Dover patrol, consisting of destroyers and small craft backed up with extensive mine-fields, was deployed and proved to be quite successful in keeping the U-boats at bay.

As the War progressed, the range and efficiency of the submarine increased rapidly and British boats were employed effectively in waters such as the Baltic and Marmara, which were denied to British and Allied shipping by mine-fields.

The U-boat achieved considerable success up to the end of 1914 but it had little effect on the naval situation. However the sinking of six merchant ships on January 30, 1915, gave an indication of what was to

come. On February 2, in reply to the British declaration of blockade of the enemy coasts, Germany published a notice warning all peaceful shipping against approaching the coasts of Britain, followed by a memorandum on February 4 proclaiming that after February 18, the waters around Great Britain would be considered a military area, that every hostile merchant ship found there would be sunk without regard to safety of passengers or crew and that even neutral ships would be in danger. This was promulgated and enforced despite the illegality of this measure being pointed out by the USA.

The state insurance scheme in Great Britain prevented panic as regards antisubmarine measures adopted and the Order in Council of March 11, known at that time as the Retaliatory Order, was issued. Merchant ships were advised on the precautions to take, the best procedure to adopt when attacked and on the use of wireless telegraphy. Minefields were laid to protect shipping routes in the North Sea, the auxiliary patrol was strengthened and various navigational measures were adopted. In spite of all precautions, however, losses continued and the range of attack increased. Many victims were claimed by the German mine-laying submarines, which laid their mines near the approaches to harbours close to navigational light vessels and bouys; these mines claimed victims of all nationalities on the British East and South Coast routes. After April 10, the bigger U-boats operated only in the North Sea and Western approaches where their worst victim was Scandinavian shipping. In May 1915, the *Falaba* and *Lusitania*, two passenger ships, were sunk, with heavy loss of life. It caused widespread indignations and following US protests, the German government issued instructions to its U-boats to spare large passenger ships. A further American protest on the occasion of the sinking of the White Star liner *Arabic* called forth fresh instructions from Germany, and the first U-boat submarine campaign in British waters ended in September 1915. By June 1915 U-boats had entered the Mediterranean and, working from Austrian Adriatic ports, became a serious threat to the Dardanelles and Salonika expeditionary forces, prowling the sea areas.

During the months of transition from 1915 to 1916, the Germans increased the U-boat fleet and decided to sink defensively-armed merchant ships without warning, though passenger ships were still to be spared. The sinking of the *Sussex* crowded with passengers brought further strong protests from the US President and again Germany gave way. The Allied blockade affected US commercial interests so adversely that feelings against England grew bitter and tension between the US and Germany diminished. Encouraged by this, Germany decided to renew its war on commerce, and now Scandinavian shipping became its main target. The

sinkings rose so fast that Admiral Sir John (later Earl) Jellicoe took the unusual step of writing to the British Prime Minister directly, calling his attention to the fact that the loss of shipping alone might soon force the Allies to seek peace. He was in consequence appointed First Sea Lord so that he could devote himself to finding the answer to this problem. Tension between the US and Germany again increased because of the depredations of a U-boat off Nantucket. During December 1916, 167 Allied and neutral ships were sunk and in January 1917, the loss rose to 180. Germany resumed unrestricted warfare and, on February 1, 1917, it declared the areas enclosing Britain, France and the Mediterranean to be war zones, adding later the Portuguese Atlantic isles and Archangel. It decided to destroy vessels of any nationality or character found in the war zones without consideration for their passengers, crew or mission.

Despite all possible antisubmarine measures, the Allied losses continued to mount rapidly and it appeared that the U-boats would win the war. They were being built faster than they were being destroyed and it was clear that the existing methods of dealing with them were inadequate. On April 19, 1917, the worst day of the worst month for Great Britain, 11 merchantmen and 8 fishing vessels were sunk. One out of every four vessels that left the British isles that month never returned. This unrestricted war on commerce brought the United States into the fray and by the end of the year, it sent 37 destroyers to assist the surface forces of the Allies.

Meanwhile, a new form of defence against U-boats became imperative and the convoy system, which had been used in the old French wars, was resorted to. This method, first employed on the short voyages to France, and Scandinavia, and later on other routes proved to be quite successful and by November, the shipping losses were reduced to less than half of what they had been in May. However, scientists and inventors continued to work on a suitable antisubmarine device and the first success came with the invention of the hydrophone. On April 23, 1916, the trawler *Cherio* located the German submarine *U.C.3* with a hydrophone, sinking it, with depth charges within minutes of detecting and locating it.

As the end of 1917 approached, it became increasingly clear that the submarine attack on commerce had been countered. The U-boats failed to check either the movement of British troops to France or of US troops to Europe, and by October 1918, the building of new ships had overtaken the sinkings. Shore-based aircraft and dirigible balloons were used effectively for spotting U-boats and for some time the latter found the Straits of Dover too dangerous for use; soon they had to abandon the Flanders bases and as the Allies advanced, the Germans had to destroy the U-boats. At the Armistice, 138 U-boats that had surrendered were brought

to Harwich. While the war was over and Germany had accepted defeat, it had clearly established the fact that the submarine was decidedly the deadliest weapon platform at sea.

The tremendous success of German submarines during World War I is apparent from the devastatingly high number of naval vessels and merchant ships sunk by them, though they themselves had to pay heavily for their remarkable achievements. The number of Allied merchant ships sunk rose alarmingly from 568 in 1914-15 to 1,098 in 1916 and then to 2,639 in 1917 but fell to 1,103 during the first ten months of 1918 mainly due to the introduction of the convoy system, deployment of submarine chasers and the introduction of underwater listening devices for the detection of submerged submarines. The German U-boats also sank 10 battleships, 18 cruisers, 13 destroyers, 13 submarines and 40 naval vessels of other types. Although the U-boat losses suffered by the Germans also steadily rose from 24 in 1914-15 to 25 in 1916, 66 in 1917 and 68 in 1918 in the final analysis, the Germans lost only 183 U-boats during the entire War but accounted for 5,408 merchant ships and 94 naval vessels.

At the end of World War I, the British realised that the Allied victory was a 'very close-run thing' and their greatly superior battle fleet on which sea power had depended for several centuries, had not been able to do much to counter the threat from below the surface. The submarine had not been able to defeat a battle fleet but by adopting the tactic of attacking commerce directly, it had become a potentially war-winning weapon. Secondly, the British had found the submarine of great value because it could operate in areas where ships could not go such as in the Baltic and the Sea of Marmara beyond the Dardanelles. Thirdly, submarines had also proved useful for reconnaissance and by the end of the war, the Grand Fleet itself included fast steam submarines of the K class. And finally, the submarine had shown itself to be quite effective against its own kind and British submarines had sunk 18 U-boats.

Despite this realisation, the British decided to press internationally for the abolition of the submarine. In 1922, the British efforts to do so at the Washington Naval Limitation Conference were opposed by all the other countries and did not even secure agreement to limit submarine numbers. The Conference could only come to the decision that the remaining U-boats should be destroyed and that the Treaty of Versailles should ensure that there were no U-boats in the post-war German Navy.

At the London Naval Conferene of 1930, the British once again made a bid to abolish the submarine and failed. But they did succeed in getting an assurance that they would never be used for commerce raiding.

Submarine Development during the Inter-War Years

Although the British felt that submarines were 'underhand, unfair and damned un-English', Britain continued to build submarines after the war. Between 1918 and 1920, four super submarines of the M class of 1650 tons each (M1 to M4) were built. These had 12-inch guns for bombardment for inland. But these submarines were oddities - besides massive guns, one had protruding funnels and one was equipped with an aircraft and hangar! There was the K class submarine with protruding funnels, In 1925 a new type of submarine, called the X-1 class, with four 5.2-inch guns in twin turrets and six forward torpedo tubes, and displacing 3,050 tons was built. During the inter-war years, the development of the ASDIC gave the British something they had never had before, and though its range was short it could make depth charge attacks on U-boats much more accurately.

The submarine continued to develop into a potent weapon platform with her greatest asset being concealment: the ability to move unseen and undetected in the depths of the ocean. The accent at that time was on using its submersible capacity mainly to transit secretly underwater and improve the efficiency of its weapon system for use whilst afloat.

Other nations continued to build larger submarines. In 1934 the French built the *Surcouf* of 2,880 tons mounting 8-inch guns, and during the late 1920s the Americans built the *Narwhal* and *Nautilus* of 2,730 tons and the slightly bigger *Argonaut*, each equipped with two six-inch guns.

The intervening years between the two Wars did not see much change in the essential features and capabilities of submarines. Most of the ocean-going submarines were between two and three hundred feet in length and their diesel-electric power plants could propel them at average speeds of 20 knots on the surface and ten knots while submerged. For underwater propulsion, endurance at 10 knots was less than an hour while at three knots it rose remarkably to two days.

The Submarine's Devastating Role During World War II

During the opening stages of World War II in 1939, conditions at Scapa Flow bore an unfortunate resemblance to the conditions in 1914. In 1914 there were no nets, only a few old guns; in 1939 there was only a single line of antisubmarine nets, a few blockships (ships used to block channels, etc.) and eight anti-aircraft guns. On both occasions the fleet had to evacuate the base temporarily and move to Loch Ewe, a great disadvantage entailing many extra hours of avoidable steaming to the focal points for deployment in the North Sea and to the Shetland-Norway passage.

A false alarm of a submarine in the Flow had been the cause of the 1914

evacuation; the 1939 one was occasioned by the sinking of *Royal Oak* by a German submarine and the bombing of *Iron Duke* which soon followed.

By August 1939, Germany had 60 U-boats ready for action as against her planned strength of 300. The British fleet and coastal command was prepared, but conditions were less favourable to Great Britain in some important respects than they were in 1914. At the very beginning Eire had declared its neutrality and Britain was deprived of three valuable bases - Queenstown, Berehaven and Lough Swilly. It was also obvious that Italy was going to join Germany, and after the fall of France and Norway the entire coast of Europe from the North Cape to the Spanish frontier was hostile. This entailed Britain's abandonment of the South western approaches to the English Channel because of the threat from the air, a much longer sea passage round the North of Ireland and heavy additional convoy commitments for the North Sea and Scotland.

Between the two Wars there had been little change in the size and shape of the German U-boats but they had improved in speed and were able to remain submerged for longer periods without surfacing, this capability improving further in 1944 when they were equipped with the schnorkel. They could dive far deeper than before, which had not at first been realised by the British, and they were armed with electric torpedoes which had no tell-tale discharge bubbles and left no track. Great progress had been made by both sides in improving aviation and the means of communication, and the institution of the British Coastal Command for close and active co-operation with the Fleet was to pay rich dividends. The bomber command also played an important part, both at sea and in land warfare.

The British submarines and the aircraft of the coastal command were assigned the important duty of carrying out the close blockade of Germany's coasts and harbours - a task which was England's traditional weapon against continental enemies in all its European wars. This proved an arduous, perilous and most monotonous duty, which extended over a constantly increasing area as Germany continued to expand the area under its domination.

From the very outset, unrestricted warfare was waged by Germany and the British convoy system was in operation from the middle of September 1939 as far as the supply of escort vessels would permit. At the beginning the U-boat attack was concentrated on the focal areas and was countered by surface patrols assisted by spotting aircraft from aircraft carriers, but after the sinking of *Courageous*, this practice was abandoned. The British occupation of Iceland and the Faeroe Islands in 1940 forestalled their capture by Germany and provided new bases for escort and air operations.

Great Britain had by now invented the ASDIC (the submarine detection device developed by the Allied Submarine Devices Investigation Committee), the modern version of it being called sonar, a great improvement on the hydrophone as, besides detection, it gave the direction of the U-boat accurately. Radar had been invented but was not fitted in the Atlantic escort vessels till 1941 and HF/DF (high-frequency direction-finding apparatus) was introduced in 1942.

President Roosevelt and Prime Minister Winston Churchill had, in order to counter a possible combined German-Japanese attack, agreed on Plan Rainbow prepared by their Chiefs of Staff for joint action, if necessary, as early as 1940. Under this plan, the defeat of Germany was regarded as the first objective and that of Japan as the second. Consequent on the Japanese attack on Pearl Harbour on December 7, 1941, a combined Chiefs of Staff Committee was formed with headquarters in Washington. Great Britain undertook the responsibility for the East Atlantic, Mediterranean and Indian Oceans, and the US with the assistance of Australia and, New Zealand undertook that for the West Atlantic and the Pacific.

At the beginning of World War II, as in 1914, Great Britain was very short of escort vessels, but immediate steps were taken to mass-produce the necessary small craft. The German tactic was to attack convoys at periscope depth with torpedoes by day, or single ships with gunfire by night. Magnetic mines were also laid in large quantities, causing many casualties, until the discovery of the simple antidote of degaussing ships, i.e., demagnetising the hulls with encircling current-carrying conductors.

Around the middle of 1940, Germany withdrew its U-boats for use in the Norwegian campaign, thus affording temporary relief to the convoys, but the overrunning of France and Norway by Germany provided the latter with a number of new bases. Britain had to abandon the use of the south-western approaches, and the German occupation of Norway brought the focal point of British commerce much closer to the operating range of the U-boats and thus rendered their tasks much easier.

In March 1941 there was a noticeable change in U-boat tactics. Because of their superior speed, they found they could attack on the surface at night. But Britain was fitting radar in the escort vessels and in that very month it made its first kill. However fear of invasion necessitated diversion of convoy escorts to other tasks and this caused the toll of shipping losses to rise considerably, especially as the production of U-boats exceeded sinkings. However, Britain increased the Coastal Command, and new aircraft of greater range enabled the air patrols in focal areas to drive the enemy into the open ocean. Germany also produced a better aircraft, the Focke-Wulf, but, because of the lack of co-operation between its navy and air force,

the results were less satisfactory. Though they were attacking as far west as longitude 40 degree, Great Britain now had new air bases in Iceland and Newfoundland and could provide escorts for food and *material* convoys.

In order to maintain the pressure, Germany had to devise some new tactics. The new tactic that was devised was to attack a convoy with a number of U-boats over a short period of time so that if some boats were discovered and counter attacked by the escorts, other U-boats could get closer to the convoy and attack it unmolested. In other words, they shadowed the convoy and, with their superior speed, were able to concentrate on it and swamp the escorts. These pack attacks during 1941-1943 were made at night. To deal with them, the escorts were provided with what were known as escort carriers, i.e., small aircraft carriers whose planes could search out the surrounding waters by daylight. Escort teams were given intensive training and instructions and they were kept together in units as far as possible; but the sinkings, instead of decreasing, continued to increase.

Despite Plan Rainbow, the US was unprepared for submarine warfare when Pearl Harbour was attacked. It also had no convoy organisation and lacked escort and aircraft. In January 1942 Germany had 20 U-boats operating in the US coastal waters, causing very heavy losses. But by May the US had coastal convoys in operation and in consequence the hunting ground for the U-boats shifted to the Caribbean area.

For some time the coastal convoys had an easier task but the Russian and Malta convoys suffered severely. The Russian convoy route had to be closed for a time, but not before an alternative supply route had been completed by rail through Iran. After the fall of France, with the exception of Spain, both sides of the Mediterranean from Gibraltar to Egypt and Turkey were in the hands of the Axis powers. Convoys from Malta to Alexandria had to pass through the narrow waters between Sicily and Tunis, 'Bomb Alley' as it was called, where they were exposed to intensive attack from submarines and aircraft. Since May 1940 the Mediterranean had been closed as the supply route to the East as a result of which British shipping, not only for India but also for the Far East, had to be sent round the Cape of Good Hope, which added 12,000 miles to the route and weeks of extra steaming.

Only at great hazard did the Allied convoys find it possible to get through to Malta. Nevertheless, the Allied submarines based at Malta played a decisive role in the North African campaign, preying on the Axis convoys supplying the North African armies. Up to the time of the advance of the 8th Army from El Alamein, they and the air and surface craft based on Malta together sank 300,000 tons of German shipping. The vital part Malta played in the Mediterranean operations was realised by

Germany, and an intensive attack in March 1942 was intended to neutralise the island but vital convoys got through and, in spite of heavy losses, they and the 'magic carpet' kept the island supplied. The magic carpet was a submarine ferry service which transported large quantities of essential gasoline and stores of all kinds from Egypt. The German forces could have overrun Egypt but for the heavy losses of men and supplies caused by the forces operating from Malta.

The whole of the East Coast of North America was now Allied territory but there was a large area of the North Atlantic which could not be patrolled by the coastal forces acting from Britain, Iceland and North America. This area, known as the 'gap' or 'black pit', had to be crossed by the convoys. When Germany decided that it was advisable to avoid the coastal forces on both sides of the Atlantic, U-boat attack, organised and controlled from its Headquarters in France, was concentrated in this area. The plan was to employ packs of up to 25 U-boats and send them independently to take up positions about 12 to 20 miles apart on a pre-arranged patrol line in the gap. No convoy could pass through this patrol line without being seen, provided the line was complete. This virtual blockade was sustained by 'milch cow' U-boats, as they were called, which kept the pack supplied with the munitions of war, stores and fuel.

A sharp lookout on the surface was kept by the U-boats until a convoy was sighted. With one sighting the convoy immediately dived and later noted its size, course and speed through its periscope. No torpedo was fired, but when the convoy was out of sight the U-boat surfaced and reported the sighting by wireless telegraphy to hedquarters in France. Headquarters picked up this report and repeated it back to the pack for information, together with instructions as to closing and making contact. It was the duty of the boat which sighted the convoy to maintain contact and report the convoy's movements. When a sufficient number of U-boat had been collected, headquarters would order the attack. The U-boats would then get into position, surface after dark and launch an attack on the convoy.

The pack attack, the new tactic adopted, was devastating at times and the crisis of the Battle of the Atlantic was reached during the foul weather in the early part of 1942. The general situation corresponded closely to the 1917 crisis. That crisis had been met by the adoption of the convoy system, but in 1942 there was no new method to be tried. The only solution was more and more coastal command aircraft of longer range to reduce the size of the black pit, more and more escort vessels, more intensive training of the escort groups and more research in the technique of surface and sub-surface surveillance.

Though the crucial month was March 1942, the German efforts began

to slacken by April. In May the wolf pack suffered three severe defeats and no further attack developed until September when the Germans tried their new acoustic homing torpedo. These torpedoes inflicted severe damage on the escorts but did not overwhelm them. The convoy was unharmed and the pack suffered considerable loss. This was the turning point of the Battle of the Atlantic for the Germans found their losses too heavy and withdrew their U-boats for installing better equipment and more effective weapons.

There had not been a single sinking in the North Atlantic for a number of months in early 1943. Teamwork had beaten back the wolf-pack attack. As soon as it was certain that the packs had been cleared from that area, Britain turned to the task of sealing off the Bay of Biscay, to prevent their assembling in the North Atlantic again. The support groups and the majority of the Eastern strength of coastal command were switched over to present a strong barrier against the ingress of the U-boats from the Bay. The acquisition of a new air base in the Azores in 1943 greatly assisted in this, as the Allies thereby obtained full air cover right across the Atlantic. The offensive was now in the hands of the allis, but this 'flooding of the Bay' was not easy. Coastal command was principally concerned close inshore while the surface forces operated farther out, but the U-boats were now provided with strong anti-aircraft armament and, acting in groups of four to provide mutual support, provided tough opposition to avoid attacks.

The U-boats were able to counter the 'flooding of the Bay' temporarily in 1944 because of the invention of the schnorkel, which enabled them to remain constantly submerged and rendered them almost impossible to detect by radar. The ASDIC had once more to be depended on. Convoy battles flared up again, but the U-boats sustained heavy losses and in March they were withdrawn in order to prepare for the next major offensive, the Allied invasion.

There had meanwhile been a new development - a human torpedo had been invented in Italy which could be navigated by a crew of two men seated astride its hull and by means of which they could secure explosive charges under the bottom of a ship at anchor. Several of these craft were ready in August 1941 and, despite the neutrality of Spain, Italy arranged a depot ship off Algeciras from which these craft could attack ships at anchor off Gibraltar. These intrepid men succeeded in launching a new form of warfare by successfully damaging 14 merchant ships within a short span of time.

For its capital ships Germany had also prepared almost inaccessible bases many miles up the Norwegian fiords. In recesses protected from submarines by patrols, mine-fields and lines of antisubmarine and antitorpedo nets, berths had been prepared under overhanging cliffs surrounded by high mountains, which rendered the ships immune from bombing

attacks by aircraft. In three such berths, the *Tirpitz*, *Scharnhorst* and *Lutzow* lay secure and able to slip out when required. In order to deal with them, Great Britain devised, with the utmost secrecy, a midget submarine able to pass under nets and lay powerful explosive charges under the bottom of a ship at anchor. Special crews were trained to man these craft and it was intended to make an attack on the ships early in 1943 with a force of six boats, but the boats and crews could not be got ready in time and the operation was postponed until the autumn. The period September 20-25 was considerd favourable as regards duration of darkness and moonlight, and September 20 was selected as D-day. A photographic unit in Murmansk had already procured full details of German dispositions and net defences.

The six boats set out on September 11, 1943, each in tow of a submarine, three to attack the *Tirpitz*, two for the *Scharnhorst* and one for the *Lutzow*. It was a tow of about 1,200 miles at eight to ten knots' speed, with frequent stops for ventilation, etc., and occupied ten days. Bad weather was encountered and several tow ropes were broken. One boat was lost and one had to be scuttled, but the remaining four arrived duly at the rendezvous and the tows were cast off. Because of defects, one of the submarines had to abandon the attack. It was the only one that returned, but it brought back valuable information. Of the remaining three which carried out their attack on the *Tirpitz*, one was sunk by gunfire or depth charges before it got inside the nets; the other two, after hair-raising experiences, placed their charges under the ship and with great difficulty managed to get back outside the nets before the explosions. They were sunk by gunfire when they came to the surface, but their charges exploded under the *Tirpitz* and damaged it so severely that it was unable to take any further part in the War. The crew of four of one boat was rescued and made prisoner, as were the captain and the second in command of the other. The achievements were great enough though losses had been heavy.

The great Allied landings in Europe and Africa were not affected by the U-boats due to the absolute secrecy maintained by the Allies as to time and place selected, the dissemination of misleading information and the strong antisubmarine patrols protecting the convoys. Before the Normandy landing, Germany's concentration of U-boats in the channel ports was neutralised by the combined Anglo-American forces with an effective air and naval offensive.

The Battle of the Atlantic was won by the Allies by a narrow margin. This was mainly due to their success in keeping just ahead of Germany in scientific research and invention, perfect co-operation between the air and surface forces as a result of combined training, their long-range shore-based aircraft which Admiral Karl Doenitz acknowledged to be the most

deadly threat to the U-boats, the intensive training of convoy escorts, and the dogged determination of the merchant navy and the escorting forces to defy all threats from U-boats.

While the crippling Pearl Harbour raid in December 1941 placed the US naval forces on the defensive, a vigorous and determined offensive campaign against Japan was immediately commenced by US submarines. The effectiveness of this underwater war is indicated in the final compilation of Japanese naval and merchant marine losses, which shows that US submarines accounted for more than half the tonnage destroyed. The nature of operations in the Pacific made the submarine a valuable weapon, both strategically and tactically. While the European conflict was a ground and air war with naval support, the war against Japan was primarily a naval war, with ground and air support.

The United States naval strategy was from the very beginning based on two important factors in the Japanese economy - the empire was dependent on wartime operations and Japanese shipyards were not able to turn out sufficient shipping to bring in such raw materials from South East Asia and other regions and at the same time carry combat supplies to its increasingly numerous and distant points of naval and military operations across the Pacific. Accordingly, US submarines concentrated their attention on sinking ships so as to stop seaborne movement of Japanese supplies and reduce its merchant marine.

Pearl Habour was the principal US submarine base in the Pacific and the submarine fleet there was fortunately undamaged in the Japanese raid. With the Asiatic fleet, based in the Philippine Islands, was a smaller force of submarines. During the Japanese advance through the Dutch East Indies and the Southwest Pacific islands, submarines from both the Asiatic fleet (reorganised early in 1942 as the 7th fleet and based at the Australian ports of Brisbane and Fremantle) and the Pacific fleet spread across the entire theatre of operations, taking an early toll of Japanese shipping. After Guam was retaken in August 1944, the Pacific fleet submarines operated out of that base for the rest of the War.

US submarines offered support to Allied forces in the South-West Pacific area, delaying the Japanese advance wherever possible and interrupting their lines of communication. Operating far beyond the effective range of surface or aerial support, they carried their determined attacks deep into Japanese home waters. The very knowledge of their presence in areas under exclusive Japanese domination had the effect of slowing up Japan's operations, while their persistent attacks on sea lanes brought a rising score of shipping losses which not only reduced the Japanese merchant marine but also interrupted the supply of raw materials to their industry and badly needed supplies to their combat forces.

Submarines of the US Navy accounted for 580, 390 tons of Japanese shipping during the first year of the war by sinking 134 naval and merchant ships. In the second year, 1943, the score went up to 284 sinkings for a total of 1,341,968 tons. By this time the US submarine building programme was in full swing and in 1944 US submarines sent to the bottom an armada of 492 ships with a total of 2,387,780 tons. This figure does not include merchant ships of less than 1,000 tons, hundreds of which - smaller vessels such as junks, schooners and barges - were destroyed by gunfire from surfaced submarines. And with the toll of sinkings mounting, the supply lines to the Japanese ships and shore bases became increasingly difficult to sustain.

The US submarines had so depleted the Japanese fleets by 1945 that they managed to sink only 133 ships for a total of 469,872 tons before the war ended. Japanese shipping was hard hit and what was left was confined chiefly to Asiatic coastal waters and the protected reaches of the Japan Sea. At the time of the Okinawa landings, US submarines had completely stopped Japanese sea traffic to the East Indies and Indo-China and in the next month they commenced hunting down the last remnants of Japanese sea power in the Sea of Japan and adjoining sea areas.

In the Pacific theatre, the submarine war was mainly directed against supply ships (tankers, cargo ships, transports, etc.) but the US submarines went after bigger game whenever possible and sank a total of 189 combat vessels, including one battleship, four carriers, four escort carriers, three heavy cruisers, nine light cruisers and 23 submarines. The operations in the Pacific also made it clear that while a submarine is always a hunter, the tactical situation frequently made the submarine the object of a determined hunt. Forty-six US submarines were lost in such attacks but they never accepted the role of the hunted. They continued to be ever on the offensive and, in addition to the ships previously mentioned, they succeeded in sinking 43 Japanese destroyers, the principal sub-hunters, as well as 60 other escort vessels also employed in antisubmarine warfare. Japanese forces were often hardpressed for sufficient escort craft to ensure adequate protection to their own shipping as a result of this offensive.

While US submarines were patrolling various strategic areas in their hunt for Japanese shipping, others were employed in operations more closely connected with the usual concept of naval warfare. In the Battle of Midway in June 1942, submarines assigned to Task Force 17 served as scouts to report the advance of the Japanese fleets, and the *Nautilus* and *Argonaut* landed marine raiders in the Gilbert Islands at Makin.

Submarines in the North Pacific operated with Task Force 8 in repelling Japanese reinforcements for their Aleutian garrisons in the summer of 1942; the *Grunion* and S-27 were lost in the Battle of the Philippine Sea in June 1944 which was partly a result of the fact that

submarines shadowing the Japanese fleet were able to give Admiral Raymond A. Spruance advance warning of this thrust into the central Philippine area. In this battle, the *Albacore* and the *Cavalla* sank the Japanese carriers *Taiho* and *Shokaku* as a result of which, for the rest of the war, the US navy had terminated the effective use of Japanese carrier aviation.

The Battle for Leyte Gulf in October 1944 saw US submarines succeeding in surprising the heavy first diversion attack force of the Japanese fleet; the *Dace* sank the heavy cruiser *Maya* and the *Darter* sank another, *Atago*, while a third of the six cruisers assigned to that force was badly damaged. The *Darter* was grounded during this engagement and destroyed by US forces later.

The tasks assigned to US submarines during the war included reconnaissance, rescue, supply and lifeguard missions. Submarine reconnaissance could be made in waters where other vessels dared not go. Submarine rescue was effective for the same reason; the final stage of General Douglas MacArthur's escape from the Philippine Islands before the fall of Corregidor was made by submarine. A valuable cargo of gold was likewise removed from the Philippines shortly before the Japanese invasion of the islands.

Submarines were used to supply Allied forces in the Philippines and Netherlands Indies, both before and after the Japanese occupation. Vital medical supplies were taken into Corregidor by submarines before the fall of that fortress, and various guerrilla forces in the islands were supplied with arms and other munitions of war.

Rescue operations at sea by submarines commenced on a minor scale, with the occasional chance rescue of the survivors of a ditched plane. As both air corps and navy carrier strikes against the Japanese increased in strength, the problem of rescuing personnel of planes downed in enemy territory became increasingly important and submarine rescue vessels were included in the plans for such attacks. In one such assignment, during a raid on Truk, the *Tang* picked up 22 airmen. In all, more than 500 aviators were thus saved from perishing at sea or being captured by the Japanese.

Submarines were also used for mine-laying, charting dangerous or little-known waters and even raids on Japanese soil. Volunteers from the *Barb* once paddled ashore in rubber boats to blow up a Japanese train, and this submarine, as well as others, created havoc and destruction along Japanese coastlines by gun and rocket bombardment of ports and installations including factories and refineries.

During the Pacific campaign, the antisubmarine phase commenced on December 10, 1941, when navy carrier planes sank the first Japanese submarine of the war and, incidentally, the first naval vessel lost by the

Japanese to any power. Approximately 120 more Japanese submarines were to be sunk by US naval ships and aircraft during the War and on August 14, 1945, a US submarine got the last Japanese submarine and last major Japanese naval vessel to be sunk.

Destroyers and their new World War II offspring, the destroyer escorts, were the principal participants in the role of submarine sinkers. With *SONAR* and depth charges, later augmented by hedgehogs (much smaller but powerful explosive charges dropped in greater numbers than was possible with depth charges), these craft constantly improved their technique of hunting and sinking submarines and were mostly responsible for the score of 63 submarines sunk by US surface ships.

The hedgehogs' main advantage was that, unless they actually hit a submarine, they did not explode, whereas the depth charges went off at a predetermined depth and the resulting underwater disturbance hampered further tracking of the target if a hit had not been scored.

The principal submarine killers, i.e., the destroyers and escorts, usually hunted in groups, with one or more ships tracking the submarine by *SONAR* while another followed a course plotted to intersect the submarine's track, at which point an attack was made. In such operations, the destroyer escort *England* was credited with sinking six submarines within a period of two weeks. US submarines were also successful in tracking undersea craft with sonar and sinking them with torpedoes. A total of 23 submarines went to the bottom as a result of attack by US underwater craft; the *Batfish* was credited with sinking three submarines within a four-day span.

Submarines usually operated alone and most attacks on them came when submerged and hence a submarine's sinking generally resulted in the loss of the entire crew. The *Darter*, *S-39*, *S-36* and *S-27* were stranded and all on board saved; the *Sealion* was bombed but later destroyed by her own crew with a loss of only five men; the badly damaged *Perch* had to be abandoned by her crew, who were captured and imprisoned. In varying numbers, survivors of the *Grenadier*, *Sculpin*, *Tang*, *Tullibee* and *S-44* were also taken prisoner by the Japanese. The *Tang* was destroyed by one of her own torpedoes which boomeranged. In the total of 52 submarines lost by the US in wartime operations, 374 officers and 3,131 men died.

No account of submarine warfare in the Pacific could be complete without reference to the part played by British and Dutch East Indies submarines; about 15 of the latter alone participated in the hopeless but heroic campaign against superior Japanese forces in the early months of the war, with heavy losses. Dutch submarines were credited with the first submarine kills of both Japanese naval and merchant vessels. In the south-west Pacific area, approximately 60 Japanese vessels were sunk by

Allied submarines.

During World War II, the number of Allied merchant ships sunk by the U-boats rose from 95 during the last five months of 1939 to 822 in 1940, 1411 in 1941, 1570 in 1942 and then declined to 597 in 1943, 205 in 1944 and 97 during the first five months of 1945. The naval vessels lost during the period were two battleships, five aircraft carriers, five cruisers, 34 destroyers, three submarines, 37 frigates, sloops and corvettes and 21 vessels of other types. Germany lost nine U-boats in 1939, 22 in 1940, 35 in 1941, 86 in 1942, 237 in 1943, 241 in 1944 and 153 in 1945. Thus the Germans lost a total of 783 U-boats, an alarmingly high number but sank 4,797 Allied merchant ships and 107 naval vessels.

Further Ascendancy of the Submarine

Just as had happened during the First World War, the U-boats had once again come very close to winning the Second World War but were only narrowly defeated by two factors - installation of radars in May 1943 in ships and aircraft for the first time for surveillance at sea and the spurt in American shipbuilding activities.

In the Pacific theatre, the American submarine campaign against Japanese commerce had been extremely effective; it had defeated the Japanese convoy system and, aided by aircraft, had brought her commerce to a standstill. This was probably the most important single factor in the victory over Japan and at least equal in importance to the great aircraft carrier and amphibious advance across the Pacific.

The American submarines had also sunk approximately one-third of the warships of the Japanese Navy and although they were only second in effectiveness to carrier and shore-based aircraft, their role had far greater significance than the American battle fleet's. The British experience with their submarines during World War II was similar, especially in areas where surface forces were unable to operate because of enemy air power, notably in the Mediterranean.

Thus the submarine ended World War II with a greatly enhanced reputation and proved itself to be more important than a battle fleet and second only to the aircraft carrier as a warship. One aspect of its capabilities that stood out was that it was able to operate in the face of first-line enemy air power and so was now without doubt a weapon of the stronger as well as the weaker sea power.

Secondly, although it had been eventually defeated in the Atlantic as a commerce raider, the submarine confirmed that it was still a potentially war-winning weapon. Not only had it been victorious in the Pacific but the antisubmarine measures which had defeated it in the Atlantic only

countered it as a submersible torpedo and it was realised that most of them would be ineffective against a true submarine which operated submerged all the time.

To quote Vice Admiral Sir Arthur Hezlet who commanded six British submarines during World War II and was Flag Officer Submarines of the Royal Navy and later Flag Officer Scotland and Northern Island:

'The new German types of submarine of greatly improved submerged performance being produced at the end of the War therefore meant that the U-boat campaign against commerce had really only been held and not defeated.'

If the Germans had been able to build the schnorkel-fitted, high-speed underwater craft which they had perfected by 1944 and on which even today's conventional submarines are largely based, a couple of years earlier, and in large enough numbers, they could have won the war at sea during World War II.

The submarine came into the limelight during the earlier years of this century and gained considerable notoriety by wreaking havoc upon Allied merchant and naval shipping during World War I. Germany again demonstrated the lethal power of submarines and their supremacy over surface forces during World War II when, the depredations of the U-boat against merchant ships carrying Allied personnel and munitions of war in the Atlantic almost brought the Allies to their knees.

A careful assessment of the versatility of this underwater craft can be judged from the following aspects of its capabilities. A submarine can operate submerged in waters which is under the control of a hostile naval power, it can mine entrances to enemy harbours, passages, straits and waterways, it can attack shipping entering or leaving enemy ports, it can sink enemy naval or merchant vessels while remaining submerged at a place of its own choice irrespective of the sphere of influence on the surface. It cannot be identified unless it is captured, which is most unlikely, or destroyed when the items in the flotsam caused by its debris are picked up by the attackers. Detecting and taking effective countermeasures against a lurking submarine in a sea area, large or small, even by a predominantly superior surface fleet is extremely difficult even today despite all the technological and tactical advances made.

Another sphere of a submarine's dominance is that of the detection and destruction of submerged enemy submarines, especially those hiding below the thermal layer - a layer of water at varying depths from the sea surface in tropical waters where the interface between the layer and the water above reflects the sound pulses emitted by ships' sonar sets and these layers are, therefore, a safe haven for a submarine hiding from an attacking surface fleet. This happens because the temperature gradient, i.e.,

the fall in the temperature of sea water with increasing depth reverses at the interface and the temperature starts rising. In oceanographic parlance, this phenomenon is known as 'temperature inversion' and is quite common in the tropical and subtropical regions. Since the sound pulses emitted by the ASDIC sets or the latter-day sonar sets cannot penetrate the thermal layers and undergoes total reflection, it is only a submarine which can dive below the interface, locate the enemy submarines lurking in the thermal layer and destroy them.

The submarine, however, has a few drawbacks compared to a surface ship. Firstly, the submarine has to essentially remain submerged in the tactical area to conceal herself and hence cannot have as detailed or as wide a view of its surroundings as would be available from the deck of a ship. Secondly, by itself, it is not as effective as a visible deterrent as surface ships for such tasks as blockading harbours, straits or waterways - though it could supplement a surface task force in that role especially when the enemy is also operating submarines in a defensive role or has air superiority over the area. Thirdly, for the same reason, i.e., for not being a sufficiently effective visible deterrent, it is not very effective for what is known as gunboat diplomacy - flexing of naval muscles to overawe an inferior naval power into submission.

These drawbacks notwithstanding and despite the overwhelming superiority of today's 'nukes' - submarines with nuclear propulsion and nuclear weapons which virtually have unlimited endurance, extreme lethality and a hitting range of tens of thousand miles, the conventional submarine, which will continue to fulfil the tactical missions for many decades, is here to stay.

Admiral S.N. Kohli, formerly the Chief of the Naval Staff, wrote in 1978:

> Interestingly, the advent of the nuclear submarine has itself given a fresh lease of life to modern conventional submarines, for various reasons. One is the fantastic cost of nuclear submarines; it is believed that each of the *Trident* class will cost approximately Rs 1,000 crores. Another is the relative noisiness of the nuclear submarine as its vast bulk is driven at high speeds by powerful steam turbines. Modern sensors fitted in ships and aircraft make underwater noise detectable at considerable distance.
>
> The conventional submarine is regarded as a good weapon not only to attack nuclear submarines within its endurance zone but also to attack and destroy other conventional submarines. Because of its relatively slower speed and motor-driven propulsion, it is comparatively silent. Further, it has benefited from the same advances in

qualities of steel, sensors, and weapons that have made the nuclear submarine a formidable foe. Yet another virtue rediscovered in the conventionals is their compact small size, which make them extremely difficult to locate and attack. Thus, the conventional submarine has acquired a new status in the antisubmarine role, particularly when used in combination with other antisubmarine forces such as surface ships, helicopters, and fixed wing aircraft.

6

THE NAVY ACQUIRES THE THIRD DIMENSION

Birth of the Submarine Arm

The story of the evolution of the Indian Navy's submarine arm from its embryonic stage to its coming of age as the sword arm of the Silent Service, is the story of the determined efforts made by the naval planners against all odds, spreading over several decades, to make the authorities realise that a submarine arm was and is one of the most essential components of any modern navy and finally succeeding, despite several canards and red herrings from different directions, in the early 1960s.

One of the later planners was Commodore B.K. Dang, who was the first senior officer from the Indian Navy to formally familiarise himself with all operational and training aspects of submarines. He was also directly involved in planning the various phases of the development of the new arm - assessment of requirements in the context of India's needs, training of personnel, performance levels, weapons and equipment outfit, spares, establishment of logistic facilities, bases for maintenance support and operational training and the deployment of submarines in war and peace.

Antisubmarine Training during World War II

During the early 1940s, though the Royal Indian Navy had no submarines, it had to perforce conduct courses in torpedo warfare and antisubmarine operations for the growing number of ships that were being fitted with

ASDIC sets, but their training was conducted without any target submarines to practise on. There was thus no expertise in the RIN in the operational or maintenance aspects of submarines and RIN personnel, whenever planning antisubmarine operations, had to rely on information made available by the Royal Navy.

As recorded by Commander A. Brian Goord, a Royal Naval Reserve officer (later RIN) who had done his long antisubmarine course at *Osprey*, the first RIN officer to qualify in Anti-Submarine Warfare (A/S) during World War II was Lieutenant Commander Joe Jefford, then serving as the Commander of the Yard at the Naval Dockyard at Bombay and supervising the embryo A/S school in a small building in the same Dockyard. Jefford later rose to the rank of Vice Admiral and became Pakistan's first Naval Chief in August 1947.

Commander Goord had himself been recognised for having developed a target, which came to be known as the Goord Target, which was used to simulate a submerged submarine for training in antisubmarine operations.

Training in antisubmarine operations (A/S) continued during the remaining years of the War but the main problem confronted by the training staff, Goord recalls, was that:

> There was no practice target, other than passing merchant ships, which were often detected miles away owing to the freak temperature layers in the Arabian Sea and were hence of not much use for carrying out dummy attacks. It was, therefore, decided to use a submarine target simulator bearing the name of Johnson, after its inventor. This was a small electric torpedo which ejected a stream of bubbles which gave off an echo. The snag was that it had a habit of getting lost - permanently. It occurred to me that we had a perfectly good method of blowing bubbles, using the diving pump and hoses. All that was needed was to devise an 'otter' which would run at a suitable depth and spread a curtain of fine bubbles on which to 'ping'. Thus was born the 'Goldfish', which, towed behind the motor cutter, with the crew toiling at the pump, provided an excellent target which lacked only doppler effect in realism.
>
> The 'Goldfish' was used extensively by the Royal and Dominion Navies, as well as our own, and brought forth a complimentary letter from Their Lordships and a small financial reward. It was later improved and simplified by Martin Nott (Commodore M.H. St. L.Nott, the first Chief of Staff of the RIN after Independence), who used a small power compressor (or air bottle) instead of the diving pump.

. . . We moved to the new A/S School in November (1940). This was in Castle Barracks (Bombay). An Attack Teacher (training equipment for antisubmarine warfare) arrived from Britain, was installed and demonstrated to V.I.P.s, including H.R.H. the Duke of Gloucester and, more importantly, was brought into constant use. Courses for officers and ratings were stepped up and a Reserve Officers' Long Course passed out, to provide instructors and Port A/S officers for the future. One of the officers on this course was Lieutenant (later Admiral, Chief of the Naval Staff) Ramdas Katari, then an RINVR officer.

Excellent though the Attack Teacher was, it could not take the place of practical exercises at sea. These we carried out in various small vessels, using even smaller ones as targets. In some ways this was more realistic than using the 'Goldfish', but every attack had to be aborted before running down the target vessel. The conflict of purpose in carrying out an effective attack and avoidance of actually hitting the target was hair-raising but, somehow, a major accident never occurred.

'. . . In early 1942, I managed to shed the Bombay responsibility and, with Commander Kendall, RN drew up plans for a combined RN and RIN Anti-Submarine School (*Machhlimar*) at Versova (a Bombay suburb).' *Machhlimar* started functioning in March 1943 and continued training officers and ratings during the remaining period of the War.

Submarine Requirements After Independence

While the importance of acquiring a submarine for the Royal Indian Navy - both for offensive operational training and for conducting exercises in antisubmarine warfare - had been fully appreciated, the question of acquiring submarines or developing a submarine arm was never taken up, for the threat perceptions of the Navy's erstwhile foreign masters did not warrant the inclusion of such a potent weapon platform.

With the advent of Independence in August 1947, however, free India's fledgling Navy started looking afresh at its national maritime needs, distinct from the basically secondary supportive role assigned to it until then by the British Royal Navy. That role had undoubtedly enlarged the size of the Indian Navy considerably during World War II, but chiefly in such roles as escorts of merchant shipping, patrolling of coastal areas and the addition of amphibious craft for the recapture of South-East Asian territories from the Japanese.

By this time it had been established that submarines had the initiative

against the very much larger resources of ships and aircraft required for antisubmarine defence of shipping and through the two World Wars it had been clearly proved that the cost-benefit went decisively to the submarine. In fact, under Karl Doenitz, the German submarine Admiral, the impact of the devastation caused by the German submarines in World War II was brought to a point of such effectiveness that it was virtually determining the course of the war in the Atlantic till the end of 1942. As Doenitz said:

> While ships and aircraft exercised control of the surface of sea areas, it was the submarines operating below the surface that neutralised this control.

This saying continued to be uppermost in the minds of the Indian naval planners during the years of the Navy's post-war development for the establishment of the submarine arm.

As mentioned earlier, during World War II the ships and craft of the Royal Indian Navy - frigates, corvettes, sloops, minesweepers and patrol boats - had all been fitted with SONAR equipment, antisubmarine mortars and depth charges but there was no submarine with which to train. Hence, live training in antisubmarine warfare could only be imparted in fits and starts whenever a British or Australian submarine visited India or when the Indian Naval Squadron or Flotilla took part in the annual Joint Exercises (JET).

Between 1939 and 1945 a large number of Indian officers and sailors in the RIN had served on board the RIN convoy escorts and ships to which antisubmarine roles had been assigned in theatres of operations around the globe. These RIN personnel had not only been impressed by the efficacy of the new two-element weapon platform - the submarine - as the most effective weapon delivery device but some of them had also specialised in the discipline of Torpedo (T) and Antisubmarine Warfare (A/S). A few of these T or A/S specialists held senior positions in the Service and were adequately qualified in terms of expertise and experience to advise their senior officers on the acquisition of submarines for independent India's navy. They all felt that the Navy would be far more effective and it would be in its best interests if a submarine arm were to be added to the smallest wing, though seniormost at that time, of the country's Defence forces. Some of the operational staff officers at Naval Headquarters had put up proposals to the then Commander-in-Chief of the RIN, who was later redesignated as the Chief of the Naval Staff, and his Chief of Staff, to initiate the development of a submarine wing of the Indian Navy and as early as 1948, the assessed requirement of the Indian Navy was no less than 16 submarines.

The First Proposal

Within a fortnight of the historic transfer of power and the resultant partition of the Royal Indian Navy into two navies for India and Pakistan on August 15, 1947, Naval Headquarters put up a proposal to the Government for the acquisition of four submarines for the Indian Navy. The proposal, which was prepared by Commodore M.H. St. L.Nott, a former regular British RIN officer who was the Chief of Staff at Naval Headquarters at that time as an officer of a new cadre designated as the RN (Special List), stated:

> So long as India remains within the British Commonwealth of Nations, her task will be very much lightened by the assistance she will receive from the Royal and other Dominion Navies. But even in these circumstances, she will be expected and indeed she will wish to contribute to the general Naval Defence of the Commonwealth in accordance with her status as the principal sovereign state in the Indian Ocean.
>
> The immediate task before us, therefore, is to build up, in the shortest time, a *balanced* naval task force, officered and manned by Indians, which is capable of exerting, when the need arises, a definite influence in Eastern waters. The minimum force which would be likely to achieve this object would be two light fleet carriers, three cruisers, eight destroyers, *four submarines* and such smaller ships as are necessary as tenders to training establishments and for auxiliary purposes.' At that time the estimated cost of a submarine was £500,000 (Rs 6,666,000).
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> A year later the requirements of the navy were reassessed and the number of submarines required was raised to 16, to be acquired from 1952 onwards at the rate of two per year. In justification of the enhanced requirement proposed, Naval Headquarters stated, 'The submarine is a powerful naval weapon which can be used both offensively and defensively. As a weapon of offence, submarines can attack enemy warships but they are more frequently employed for attack on enemy merchant shipping and military convoys thus straining the enemy's seaborne trade and supplies. Defensively they would form a serious threat to any enemy attempting to operate in our seas. Furthermore, submarines are necessary for antisubmarine training of personnel in destroyers and other light craft. They are economical compared with the result they may achieve.

Later, the number of submarines required was reduced to four which was the requirement projected earlier. These submarines were now to be acquired in a phased programme, two in 1957 and two in 1958, as 'manning of submarines will require highly skilled and trained personnel which, particularly with the development of naval aviation, will not be available in the earlier years.'

The proposal also included the setting up of a submarine training facility as, 'with the introduction of submarines in the Royal Indian Navy, it will be necessary to build a school specially for the instruction of officers and ratings (sailors) in the art of submarine warfare. No site for this school has as yet been decided but it will have to be sited on the coast at one of the major naval bases'.

At this time, the two seniormost appointments in the Navy and some other senior appointments were held by officers of the RN who were on deputation to the Indian Navy (in fact it was nearly eleven years after Independence, i.e., in April 1958 that the navy was headed by an Indian officer for the first time). The senior British naval officers who were on deputation to our Navy and who were at the helm of affairs during the late 1940s and early 1950s were, however, of the view that submarines were far too sophisticated vessels with equally sophisticated weapon systems for Indian naval personnel to operate, and that it was a little too early for independent India's navy to venture into the field of submarines, torpedoes and mines. They also felt that submarines were yet to be rendered failsafe and were likely to cause accidents leading to loss of life if handled by persons without adequate experience which, they felt, Indian naval personnel lacked; and if this happened, it would not only demoralise naval personnel but would also impair the Navy's image and standing in the estimation of the Government of India and the general public.

At that time the Royal Australian Navy and the Royal Canadian Navy were of about the same size as the pre-Independence Royal Indian Navy and were yet to acquire a submarine arm. They, however, had obtained a few submarines from the Royal Navy on loan which, while carrying a few officer and sailor trainees of the host country's navy, were basically manned and operated by Royal Naval personnel. The British Naval Chief of the Indian Navy felt that India could at best follow the example of Australia and Canada before a regular submarine arm was set up.

Since, however, India had by now become independent, the proposal to acquire submarines operated by foreigners didn't find favour with the Indian authorities and so had to be shelved. It was felt that the British wanted the Indian Navy to continue to be confined to the coastal defence role while the Royal Navy could continue to be assigned the

bluewater responsibilities in the Indian Ocean, the defence of India's 6,000-km coastline, and the task of assisting the Royal Navy in perpetuating its big-brother role in the region.

Other Navies Go Ahead

While the proposal to develop the submarine arm remained in cold storage in this country, rapid strides were made in the rest of the world in propulsion technology, weapon systems, sensors, the submarine's operating radius, torpedo range and homing capabilities, other anti-ship weapons, detection range, navigational equipment, diving capabilities and certain other aspects of submarine operations, but most markedly in underwater speed and endurance. The era of the 'true submarine', operating only below the surface, was dawning.

The proposal was revived when the first Indian Naval Chief, Admiral R.D. Katari took over in April 1958. By now it had once again been appreciated that the Indian navy needed submarines not only for the offensive role of attacking enemy vessels at sea, defending the vast coastal waters washing the shores of our peninsula and operating as escorts to our fleets and capital ships, but also to provide adequate practice to our shipboard personnel in conducting antisubmarine operations. Nearly all ships of the Fleet had by now been fitted with SONARs and these ships and maritime aircraft needed to take part in antisubmarine exercises frequently in order to hone their skills. For this purpose it was most essential that ships of the Fleet have adequate and frequent opportunities in the South East Asian tropical operating conditions to exercise with our own live underwater targets, i.e., submarines. These exercises would be independent of the annual joint exercises (JET), held with ships of the Commonwealth nations after the South-West monsoon which only provided limited opportunities with limited scope for creating real-life conditions that prevail during the circadian, seasonal or annual cycle; besides these exercises, the only other opportunity to participate in antisubmarine exercises that came the Navy's way was when submarines of Commonwealth navies called at Indian ports during goodwill visits or while transiting the waters contiguous to our shores. Obviously, this was quite unsatisfactory and the level of the Naval personnel's training in antisubmarine operations continued to be low though it was felt that it could not be allowed to continue to be so.

Budget Constraints

Besides this limitation, it was generally felt that the budgetary allocation

made annually to the Navy, compared to the allocations made to the other two Services, was most inadequate, however, despite the lack of adequate appreciation of the importance of sea power, especially in the Indian peninsular context, a paper proposing the acquisition of three submarines for the Navy which would not only be deployed for operations in the seas around the subcontinent but would also be available as live targets for antisubmarine training of naval personnel, was put up to the Government by Naval Headquarters in 1959. This failed to elicit a positive response and despite protracted discussions wherein the advantages of acquiring the new weapon platform were repeatedly stressed, the Navy could not make any headway for several years.

It was also stressed that every modern navy operated submarines, that it would take several years to train submarine personnel and hence, pending the availability of funds and the official approval for acquiring submarines, Indian naval personnel opting for the submarine arm could be trained abroad and could man submarines when they were acquired so as to minimise the lead time required to make them operational.

Meanwhile frigates, sloops and corvettes of the Fleet continued to carry out antisubmarine exercises but the need for a submarine for use as a live target was being increasingly felt during the 1950s and the inefficacy of occasional submarine training while exercising once or twice a year with foreign submarines continued to be highlighted in the reports submitted to the Government. Further, while the acquisition of the frigates *Talwar* and *Trishul* of Type 12, *Brahamaputra*, *Beas* and *Betwa* of Type 41 and *Khukri*, *Kirpan* and *Kuthar* of Type 14 during the 1950s had actually been planned around their antisubmarine capability, the requirement of submarines for their sea training was still to be accepted by the Government. The ships of Type 12 were remarkably versatile with surface armament, air defence as well as antisubmarine capability, combined in a hull of very successful design with long endurance and efficient fuel consumption. The ships of Type 41 had mainly been designed for antiaircraft and surface operations and hence had a lower level of underwater capability though they had good endurance; in the event these ships did not perform very well mainly because of problems posed by their machinery which were of a design the navy was yet to become familiar with. The ships of Type 14 were slightly smaller frigates with only antisubmarine capability. These were in their own right fairly effective antisubmarine ships but could only serve as adjuncts to a bigger force with the other important capabilities and, in the absence of a submarine to practise with, their value for the Indian Fleet was greatly lowered.

Need for Submarines Stressed

The proposal to establish a submarine arm continued to be in a state of limbo, ostensibly owing to lack of finances, but it suddenly acquired urgency with the arrival of the new frigates with antisubmarine capability, mainly because it had been reported in 1958 that a neighbouring country was considering the acquisition of submarines for its navy. In a proposal on the subject submitted during that year, Naval Headquarters stated that there was an urgent need for augmenting the facilities available in the Navy for the antisubmarine training of surface ships with live submarine targets and unless this could be achieved, the efficiency of the Navy in antisubmarine warfare would, of necessity, remain low. It added that the acquisition of modern ships fitted with the latest antisubmarine equipment did not by itself constitute an efficient antisubmarine force for, among other things, it required a high degree of sustained and continuous training with live submarines under realistic conditions.

Stressing the importance of the operational role of submarines, the proposal stated:

> A submarine is an integral part of a balanced maritime force . . . In a local or global war in which India may be forced to take part, submarines can be employed to great advantage in achieving control over the waters which affect the defence of the country. They can be employed in patrols off enemy-controlled waters, and in strike against hostile surface ships on the high seas and in harbours. A submarine arm is one of the most effective means of blockading the enemy's seaborne trade. It can also operate its submarines in co-operation with the surface fleet as radar pickets and aircraft control ships for providing valuable early information. The technique of employing submarines for hunting enemy submarines is being developed and from recent knowledge gained from other countries, is likely to assume an indispensable role in any future war. In addition to all these, the very fact that we possess submarines, will impose a considerable submarine effort on the enemy and thus indirectly curtail his offensive power.
>
> The major maritime powers of the world are expending a considerable effort on the build-up of their submarine arm and upon research in submarine design and performance and also the weapons she can carry. The latest improvements in submarines have been in the sphere of aquabatics, i.e., the shape and form of a submarine, and the means of propulsion including nuclear propulsion. These improvements have given a new capacity to submarines to remain, to all intents, permanently submerged and to proceed at very high speeds when submerged. These, taken together with improvements

with their weapons, will have the effect of making submarines a most potent weapon. Recent trends in naval warfare clearly indicate that the operational importance of submarines will continue to increase.

. . . in order to develop a fully integrated maritime force, the Indian Navy should make an early start in establishing a submarine arm of its own. The important thing is to acquire the technique of operating submarines as early as possible and for that purpose a start with conventional or old submarines will provide an adequate answer.

The Projected Requirements

It was proposed to start with a flotilla of at least four submarines, each of approximately 1,000 tons displacement and a crew of 50. Technical logistic support in terms of docking facilities, battery and periscope repairs and maintenance and submarine refitting would be provided by the Naval Dockyard at Bombay. The other facilities required would be a shore base or a depot ship with machine shops, torpedo preparation shops, electrical workshop amd spare gear storage, a fully-equipped training establishment for both operational and technical training, facilities for 'degaussing' and 'wiping' (removing induced and permanent magnetism) and a salvage organisation complete with salvage tugs, diving gear, divers and resuscitation equipment.

It was also proposed to requisition the services of foreign submarine experts in an advisory capacity for the planning and establishment of the submarine arm, as the Indian Navy at that time did not have officers with adequate submarine experience. These experts would gradually be replaced by Indian officers as and when they acquired sufficient experience.

The capital outlay in the establishment of the submarine branch with four new submarines at that time was estimated at Rs 16 crore with a recurring cost of maintenance of Rs 2 crore.

By November 1960, the Indian Navy had acquired two cruisers and an aircraft carrier was on the way. Besides these, there were eight new frigates fitted with sophisticated submarine detecting devices and antisubmarine weapons lethal enough to achieve a kill. The six destroyers of the Fleet had also been fitted with antisubmarine equipment and one of their principal roles was the detection and destruction of submarines. Since submarines used diverse tactics to get into a favourable position to fire torpedoes and to avoid detection by antisubmarine ships and these tactics involved change of depth, speed and courage or the use of decoy devices or a combination of two or more of these, it was realised that only officers with submarine experience, born of service in submarines, would know

what tactics a submarine was likely to adopt under a given set of circumstances. Since the training imparted at the Navy's Torpedo and Antisubmarine School and Tactical School at Cochin was based on theoretical knowledge, practical knowledge acquired through service in submarines was considered of utmost importance.

For this purpose, the Navy now proposed the establishment of a submarine-trained cadre of 38 officers and 65 sailors to be trained over a period of four years. The first batch of four officers and 12 sailors being proposed to be trained at the Royal Navy's submarine school in 1961 for a period of one year.

Submarine Still A Vessel 'Non Grata'

Since, however, the impression that a submarine was only an 'offensive' weapon platform and, the feeling persisted at the highest level that its acquisition would run counter to our national policy of non-violence and non-interference in the affairs of other countries, Government approval even for training submarine personnel abroad continued to elude the Navy. It is believed that even Pandit Jawaharlal Nehru, the then Prime Minister of India, and some other national leaders were of the view that a submarine only had an offensive role and hence should not be acquired for India which was wedded to peace and had no ambition outside her national territorial limits and the sea area of her responsibility. This attitude was perhaps analogous to Britain's dismissal of submarine warfare as 'underhand, unfair and un-English' and the French branding it as 'a dishonest form of warfare' around the turn of the century.

It is interesting to note that even K.M. Panikkar, the distinguished historian-diplomat, had appreciated the importance of the submarine, especially its impact on naval strategy and its edge over larger surface vessels. Writing as early as in 1945 on the significance of India's position in the Indian Ocean, he said that the 19th century concept of the untenability of effectively holding a regional sea against a superior fleet did not hold good any more. He felt that an inferior navy with lighter craft, supported by submarines and aircraft suitably deployed, could now ensure the safety of considerable stretches of sea and there was thus no reason why an efficient and well-balanced Indian Navy should not be able to secure control of the Bay of Bengal and the vital stretches of the Arabian Sea, whenever required.

Training of Submarine Personnel Approved

Eventually, in 1962, i.e., 15 years after Independence, approval was

obtained for the training of one Captain and eight junior officers in submarine operations, technology, maintenance and tactics at the Royal Navy's submarine training school, *Dolphin*, at Gosport off Portsmouth, England. The senior officer of the group, the Captain, was to undergo a condensed course but was in addition to acquire the necessary expertise in the organisation of a submarine arm, setting up the necessary infrastructure and logistic support, development of the maintenance facilities in the base and the dockyard, the operational set-up, the tactical doctrines adopted by submarine arms and fleets operating with or against submarines, development of training facilities, including simulators and escape towers, and submarine rescue operations. The other officers were to be trained in submarine operations and maintenance for manning the submarines that would be acquired in later years.

Strangely enough, the Government continued to impress on Naval Headquarters that it had only agreed to allow naval personnel to undergo submarine training in order to enable them to improve the Indian Navy's antisubmarine capabilities and it did not in any way commit the Government to acquire submarines for the Navy at any time.

Training with the Royal Navy

The first batch of five officers comprised Captain (later Commodore) B.K. Dang, who was to later establish the nucleus of the Submarine Arm, Lieutenant Commander K.S. Subramanian and Lieutenants M.N. Vasudeva, R.J. Millan and A. Auditto, all of the Executive Branch, who had been carefully selected from a large number of intrepid volunteers who had decided to venture into the new element below the surface of the sea. These officers sailed for the UK in February 1962 for training at *Dolphin*; Captain Dang for a special, condensed, acquaintance course of six months' duration, and the others for one year's training in submarines. They were to study the infrastructure organisation, operational know-how and maintenance and back-up facilities required for setting up the Submarine Arm of the Navy.

Having faced certain problems during the establishment of the Fleet Air Arm for the Indian Navy, Naval Headquarters was also wary of similar problems cropping up while acquiring submarines from Britain. But since the Royal Navy had offered to impart submarine training to Indian naval personnel, it was decided to depute a suitable senior naval officer to the UK to acquire the necessary organisational expertise. Hence the choice of Captain B.K. Dang for the task as it was felt at Naval Headqurters that with the up-to-date experience gained by him as the first Commanding Officer of the British-built *Talwar* during intensive antisubmarine exercises

held with British ships and submarines after her commissioning in the UK, he had been equipped with the necessary expertise to sift and imbibe the maximum possible quantum of information during his attachment and crash course in submarine operation and technology. It had by that time been decided that the overall planning, initial training of personnel in foreign countries, acquisition of ships and maintenance expertise and equipment, assessment of qualitative and quantitative requirements in regard to the establishment of the submarine arm, operational and training establishments and exercises, installation of an escape training tower, etc., was to be entrusted to and programmed by Indian Naval personnel and no foreign expertise would be sought for the purpose.

Captain Dang had joined the Navy in March 1943 as a Lieutenant in the Royal Indian Navy Volunteer Reserve (RINVR). An ex-Dufferin officer, he specialised in the Torpedo Anti-Submarine (TAS) discipline at *Machhlimar* in Versova, Bombay in the same year. Completion of the course in 1944 had exposed him to the major antisubmarine commitments of the Royal Indian Navy in our waters - the defence of our fleet and merchant shipping against underwater predators - though the Service was considered to be only an adjunct to the Royal Navy at that time.

The criteria for the selection of the first batch of officers for submarine training were extremely rigid. Besides being in medical category S_1A_1, (i.e., in top physical condition for service ashore and at sea) the officers were required to possess the other faculties most essential in a submariner - ability to firstly, live within extremely confined spaces with, occasionally, an environment with a high carbon dioxide content. Secondly, withstand extended periods of submersion and absence of daylight and natural orientation. Thirdly, withstand long spells of loneliness and, fourthly, amenability to hot-bunking, i.e., time-sharing of bunks peculiar to submarines because of constraints of living spaces. All these officers sailed through these tests with flying colours.

Submarine training at the *Dolphin* for inductees mainly comprised three months' theoretical and formal training followed by a long spell of nine months at sea on board submarines based at Gosport. Along with the officers from India, there were trainees from the Royal Navy, Canadian Navy, Australian Navy, Norwegian Navy and Pakistan Navy. It goes to the credit of the British Admiralty that there was no discrimination so far as the foreign trainees were concerned, and they were allowed access to all sensitive areas and classified documents and by the time they passed out, they had acquired as much expertise as their Royal Naval course-mates.

The Indian Naval sailors who were deputed to the *Dolphin* for submarine training performed equally well. Rear Admiral M.N. Vasudeva, who was in the first batch of trainees from India and who was the first officer

of the Indian Navy's Submarine Arm to rise to flag rank, reminisces,

> Besides officer trainees, we had several senior sailors from different navies in our group. I remember one of them, M. Singh, who was an Engine-Room Artificer in our Navy. Though he was undergoing training and had seen submarines for the first time in his life when he came to *Dolphin*, he was in great demand in very submarine even before he had completed his training. Whenever the submarines or submarine equipment ashore had problems, they sought his assistance and he went and solved them. Our capabilities were thus soon known to the British and so we were respected and trusted and assigned tasks that were more complex and called for higher expertise than those assigned by the Royal Navy to even their own submarine personnel in their own submarines. . . .

The second batch of four officers, Lieutenant Commander (later Captain) M.N.R. Samant and Lieutenants V.S. Shekhawat (later Vice Admiral), S.K. Singh (later Commander) and P.K. Ramanathan (later Commander), out of whom the first two were from the Executive Branch and the other two from the Engineering Branch, proceeded to the UK in July 1963. The third batch of officers consisted of Lieutenant S. Nagrani (later Commander) and J.M.S. Sodhi (later Rear Admiral) of the Executive Branch and Lieutenant (later Commodore) Inderjit Singh of the Electrical Branch and the fourth batch had Lieutenants L. Talwar (later Commander) and K.R. Menon (later Rear Admiral) of the Executive Branch and Lieutenant (later Commodore) D.N. Thukral and Sub-Lieutenant (later Lieutenant Commander) of the special Duties List S.L. Batla of the Electrical Branch. By 1965, 15 officers and 20 sailors had completed submarine training in the UK and returned to India.

In April 1962 Captain Dang joined the *Dolphin*, the submarine training school and base of the First Submarine Squadron and the headquarters of the Flag Officer, Submarines of the Royal Navy. It was an unusual experience for him, rubbing shoulders with young Lieutenants as well as senior submarine officers of the British and NATO navies and starting his training from the grass-roots level. He underwent a curtailed Lieutenant's course including escape from a 100-foot escape tower - an experience considered most essential, physically and psychologically, for a submariner to get over any initial hesitations which he has because of the claustrophobic effect of being shut down in a small vessel under the sea with no access to sunlight or fresh air. It also provided the necessary confidence to motivate others into joining the submarine arm.

A month of basic submarine acquaintance was followed by a month

of squadron staff duty, study of the squadron system, with occasional sea-going spells, and base maintenance facilities for the weapons and equipment. He underwent training on board the old submarines of the A and T classes which were in British fleet service during World War II and had been GUPPYED (equipped with Greater Underwater Propulsive Power) since. The A class had good endurance but were rather played out in their machinery status. He also took part in tactical training in the Propoise class submarines and their improved version, the Oberon class; he went to sea on board both these modern types, participating in a week-long tactical exercise off Northern Ireland, and witnessed an exercise in tactical evolution of detection between aircraft and snorting submarines which did not surface at all.

He then visited some of the British shipyards, such as Samuel White and Camel Lairds, to familiarise himself with the various problems faced by them in the construction of submarine hulls, their maintenance and docking, maintenance of their main machinery, auxiliaries, batteries, torpedoes, detection equipment, sonars, radars, fire control systems and other equipment.

This was followed by a month of tactical exercises with a squadron of the Oberon and Porpoise classes of submarines in an operational role in the Northern waters off Faslane. Thereafter he returned to the *Dolphin* and studied the organisation of the Flag Officer, Submarines including the interaction with the material division of ship construction and other Admiralty departments at Bath concerned with the major problems of construction, refit and maintenance.

Criteria for Submarines for the IN

This exposure helped in crystallising the more important aspects of setting up a submarine arm in his mind and collecting material for the first detailed assessment of requirements. In the paper he prepared on his return to India, he proposed that the Submarine Arm of the Indian Navy should be started with a minimum of three submarines, though four had been a customary division of a squadron of naval ships, because 'one of anything is nothing, two may be meaningful and three is a basic organisational unit' which, in the case of submarines, was particularly apt. One submarine could then be in major maintenance at any one time, one in transit and one in the assumed patrol area at one week's passage time or 1,500 miles from base, two weeks on patrol and one week's return accounting for the submarines' six weeks normal operating cycle, sufficient to reach any area across the Bay of Bengal or the Arabian Sea.

The second requirement was that the submarines for our navy had

to have a sufficiently wide radius of operation and what the Indian Navy needed were patrol submarines capable of long reach and considerable endurance. It is the basic geographical position of the Indian peninsula at the top of the Indian Ocean with its two arms, the Bay of Bengal and the Arabian Sea each ending with extremely narrow waterways in the Malacca straits to the East and the Bab-el-Mandeb and the Straits of Hormuz to the West, which were the deciding factors as regards the minimum endurance of our submarines.

The third very important and vital requirement was that the design of the submarine must be rugged and should incorporate high safety factors, adequate safety margin in its buoyancy characteristic, a fail-safe quality in its machinery, duplication of critical equipment such as gyros, valves, etc., mainly because the Indian Navy was setting up an arm with an inherent hazardous quality of service and any disaster or tragedy in the earlier stages of such a venture would probably mean the avoidable abandonment of such an important enterprise.

And, finally, the fourth requirement, an obvious one, was that the submarines that were going to be acquired, whether new or old, must be within the economic repair life of the hull. Warships generally have an economic repair hull life of about 20 years for smaller vessels such as destroyers and submarines and 30 years for the capital ships, i.e., aircraft carriers and cruisers. And so if a submarine was over 20 years old or was approaching this age, it would be very uneconomical even if the price tag attached to it was low enough. The two disadvantages of a new submarine would be the time taken to build it and the higher price tag but the advantages would outweigh the disadvantages. One was, of course, prepared to accept a submarine already built, but it had to be one that had a reasonably long economic repair life left.

Besides these important factors, another aspect of considerable importance was the methodology to be adopted for training the crew, both immediately and in continuity for the submarine arm to be formed. It was realised at this stage that the establishment of hull training facilities in India would mean considerable investment in equipment and would lengthen the lead time for acquisition further. What was visualised, therefore, was the use of the submarines themselves as floating classrooms for which they should have sufficient space to carry not only their crews but also a training class of about 50 per cent to 100 per cent of the crew strength. This was an important requirement as submarines have extremely cramped accommodation and the hot-bunking system which entails provision of bunks for only two-thirds of the strength of the crew. Some larger submarines, such as the old American Fleet class boats, the British A, Porpoise and Oberon classes and the Soviet F class had, however, the

necessary space for carrying additional personnel for on-the-job training.

Types of Submarines Considered

Though the American Fleet class boats had two to three years less remaining hull life than the British boats, they were known to be in better condition and had very rugged hulls and machinery which would have possibly added five years to the economic life after a refit. The 450-ton German-built Baltic class submarines were far too small for our purpose. The French Daphne class had a new design but was rather small and its endurance was limited to about 1,000 nautical miles which did not fulfil our purpose. There were also Italian boats and some Dutch boats as well, but their basic characteristics were not compatible.

Meanwhile, if it was not the papers, proposals, monographs, presentations and pleadings of the Naval Headquarters, it was the Chinese incursion into the Indian territory in 1962 during which some Chinese submarines were reported to have been operating in the Bay of Bengal challenging the 'might' of the Indian Navy that tilted the balance in favour of the submarine's acquisition. The Navy lost no time to once again put up a proposal in November 1962 highlighting the areas of our weaknesses at sea, and the possible loss of face if the Chinese submarines had chosen to display their prowess either by attacking our naval and merchant ships, or by blocking the approaches to our harbours with mines. This paper proposed the acquisition of three submarines with an operational radius of 1,500 nautical miles - one on patrol, one undergoing maintenance and resting the crew and one on transit to or from the patrol area.

In May 1963, another detailed proposal justifying the formation of a submarine arm in the Indian Navy was put up to the Government. It was once again reiterated that the advent of the modern submarine had already revolutionised the trends of maritime warfare, that submarines were now capable of operating deep inside an opponent's area of maritime control without the support of air or surface forces, and that the technological advances made had enabled modern submarines to operate without being detected and with vastly increased endurance, giving it a striking capability matched by no other naval craft. It further pointed out that despite the great strides made in improving the capabilities and sophistication of antisubmarine detection equipment as also in the lethality of weapons used to seek and destroy submarines while still submerged, the fact had been established that the submarine had an edge over the antisubmarine forces and that a dangerous situation could be created at sea by submarines of even a weaker hostile maritime power. The appearance of a true submarine had already shaken the major naval powers of the

world out of their static orbit of conventional weapons, conventional propulsion and conventional weapon platforms, and it was now an accepted fact that submarines had become prime weapons of offence as well as defence.

In addition, another important aspect highlighted was that an environmental factor that had not received adequate recognition in the past was that the relatively shallow depths and other conditions prevailing in the waters contiguous to our shores enhanced a submarine's covert qualities and subverted any efforts made even by a modern and well-equipped fleet to neutralise it. The hydrographic structure of the Indian Ocean - thermal conditions, temperature and density gradients and relatively shallow depths of water - attenuated the low-frequency sonar emissions of even advanced antisubmarine ships and aircraft thus defeating submarine hunting and killing operations far more effectively than in any other sea area and would increase the survival potential and effectiveness of the Indian Navy's submarines well beyond the usual estimates made by naval planners and strategists.

Another argument put forward was that India had already established some control of the surface and the air with her relatively austere fleet and the recent acquisition of the aircraft carrier, *Vikrant*, but complete command of the surface would only be possible if it could operate below the surface as well. For local air and sub-surface superiority, however modest, coupled with India's peninsular position at the focal point of the Indian Ocean and her easy access to the Ocean's choke points would enable our Navy to deny the surface in the contiguous sea areas to an extra-regional flotilla, even if it is moderately superior in weapon capabilities and endurance.

It was also stressed that at that point of time, newly established maritime states, even around the Indian Ocean such as Indonesia, had accorded adequate importance to the establishment of a submarine arm and hence, if the Indian Navy was to grow into a balanced naval force, the establishment of a submarine arm would be an inescapable necessity. It was stated that as early as 1948, the Defence Committee of the Cabinet had accepted the proposal in principle but, due to various factors the sub-surface wing was yet to come into being.

It was also pointed out that 'killer' submarines were acknowledged as the best weapons in antisubmarine warfare. These submarines were employed as barriers in the submarine transit areas and since they could now communicate with patrol aircraft, they were in the best position to destroy enemy submarines. Since the Indian Navy had large ocean tracts to guard and these were dominated by narrow and restricted focal areas of entrance such as the Malacca Straits, Gulf of Aden, etc., the killer submarine would

be most effective in such areas.

Submarines could also be used for offensive mine-laying. While the offensive capability of the surface forces against naval forces of the enemy would be dependent on chance encounters at sea, submarines would have the capability of mining enemy harbours and thus deterring the enemy from aggressive intentions. Besides, the possession of submarines would act as a deterrent to any hostile action around our island territories in the Bay of Bengal and the Arabian sea.

The proposal also highlighted the need for setting up suitable repair and refit facilities and an operational base for submarines in a fully protected harbour. For this purpose, Marmagao was considered most suitable because it met all the requirements and was close enough to the Torpedo and Antisubmarine School at Cochin.

The types of submarines which might be available at that time for acquisition for the Indian Navy were the British A, T and Porpoise/ Oberon classes, the American Fleet class, the Russian W and Z classes and the French Narval class, all of which were conventional submarines. Some of the more important aspects of their vital statistics and capabilities and limitations are given in Table 6.1.

Table 6.1. Capabilities and Limitations of the Conventional Submarines available to the Indian Navy

Class	Britain			USA	USSR		France
	A	T	Porpoise/ Oberon	Fleet	W	Z	Narval
Displacement (Tons)							
Surface	1385	1321	2030	1816	1030	1900	1640
Submerged	1620	1570	2410	2425	1180	2200	1910
Dimensions (Feet)							
Length	282	273	295	312	240	290	256
Beam	22	26	26	27	22	26	24
Drought	17	15	18	17	15	19	18
Weapons							
Mines	20	16	24	24	14	20	14
Torpedo Tubes	6 to 8 x21"	6x21"	8x21"	10x21"	6x 21"	8x 21"	8x21"
Speed (kts)	19	11	15	20	17	20	18
Fuel (Tons)/ Endurance (Miles)	159 T	132 T	14,000 M	300 T	16,000 M	26,000 M	15,000 M
Complement (Officers and sailors)	5+55	6+59	6+65	85	60	70	7+51
Year Built	1943-1946	1942-1945	1957-1962	-	1945-1962	1951-1960	1955-1960
Silent Speed (kts)	2 to 4	3 to 6	6 to 12	2 to 8	Very poor	Not known	Not known

Suitability for Tropical Conditions	Moderate	Poor	Moderate	Very good	Poor	Not known	Mode-rate
Remarks	Designed for the Pacific in World War II	Designed for the Atlantic	Post-World War II Design for the Atlantic	Design for the Pacific	Acquired by China, UAR & Indonesia	-	Impro-ved version of German xxi class

The total expenditure on a squadron of four new submarines, a submarine base, and a submarine service of about 30 officers and 400 sailors was estimated at Rs 30 crore; and if the submarines, were second-hand with four to six years' remaining life, the total outlay would be in the region of Rs 8 to 9 crore and in this case, from out of the existing old boats, the American Fleet class boats were considered most suitable for Indian conditions.

Submarine Acquisition Approved

The Government finally acquiesced, and the recommendations of Naval Headquarters were accepted - a nautical milestone in the history of the Navy. But the type of submarines to be acquired had not yet been decided upon and what was available was a mixed bag with varying operational range, diving, speed and manoeuvrability characteristics, weapon systems, sensors and balance of operational life. There were the British A and T classes which were already 20 years old, had developed metallic rheumatism and arthritis and were on the verge of being consigned to the breaker's yard; there was the modern British Porpoise class which displaced about 2,400 tons and which was later modified and built as the Oberon class from 1965, the latter passing muster; there was the American Fleet class of 2,400 tons which had several sub-classes and had already been in service for 16 to 18 years but, because of its rugged construction and modernisation, had about five years' operational life left, and could fill the gap while negotiations were initiated for the acquisition of more modern newly built submarines; and there was the German Baltic class of about 350 tons, which had originally been built for the Norwegian Navy but was considered too small in size and its limitations precluded its consideration for acquisition.

Negotiations with British Authorities Fail

After a careful scrutiny of all parameters, including the financial commitments and foreign exchange availability, the British Porpoise class submarine was considered to be ideally suited for acquisition for the Navy, and

negotiations began. The British, however, were not prepared to part with a Porpoise class submarine but offered to build an Oberon class submarine for our Navy and, since the Oberon would take some time to be available, they also offered an A class submarine for use until the former was ready. But this class was far too close to superannuation for our purposes and hence was not accepted.

Meanwhile the Government agreed to buy a new Oberon class submarine from the UK if it was specially built for the Indian Navy to suit Indian conditions, and if deferred credit terms for Rs 5 crores were made available by the UK (Rs 3 crore for the submarine and Rs 2 crore for the spares), but the British Government were not willing to offer any such credit. Our Government was also not prepared to spare the funds for the purpose and thus the proposal was virtually aborted.

Lord Louis Mountbatten wrote in 1965,

> I have a specially soft spot in my heart for the Indian Navy, having done so very much for it from the time I was the Supreme Allied Commander and had most of the (Royal Indian) Navy serving under me from 1943 to 1946 until I was Viceroy and the Governor General, when I took a great personal part in the division and reconstitution of the Navy.
>
> Ever since then I have been instrumental in getting almost all the requirements of the Indian Navy by the British Government, including the two cruisers, the aircraft carrier, the destroyers, the organisation for building the frigates at Bombay, etc.
>
> I had even managed to get more favourable terms for the construction of a British submarine but alas it all took so long that this particular transaction fell through.

Lord Mountbatten later said that the British denial of deferred credit amounting to only Rs 5 crore virtually brought to an end the flow of British ships and equipment to India, and acquisition of naval hardware from other sources snowballed soon.

The British had also offered the use of an old A class submarine from the Royal Australian Navy on temporary loan, to be used only for antisubmarine training; but for obvious reasons this offer was promptly rejected.

The 'watershed' decision to acquire the F class submarines from the Soviet Union was preceded by interesting exchanges between the Chief of the Naval Staff, Admiral B.S. Soman, and the British First Sea Lord, Admiral Sir David Luce.

With the developments following the 1962 Chinese incursion into India and the consequent reassessment of our requirement of ships, aircraft

and submarines, and the need for the defence of the Andaman and Nicobar islands on which we had no presence of any military significance, it was decided to acquire a sizeable package from Britain to refurbish and strengthen the existing Fleet and to primarily establish a naval presence in our Eastern waters. After the preliminary exchange of letters, both official between the Government of India to the Admiralty, and demi-official between Admiral Soman and Sir David Luce, all that Britain offered to the Indian Navy consisted of two or three Battle class destroyers which were with the Royal Australian Navy and already 30 years old, one or two T class submarines which were also with the Australian Navy and 20 years old, and some Seacat missiles, whose capabilities and lethality was limited, and associated low-level equipment. Such an offer was made presumably because of the hang-over of having been the mightiest maritime country in the world for centuries, and the instinctive desire to supply lower-level ships and equipment to 'dominion' navies.

Another possible reason was that Britain did not look upon the Chinese attack the way India did. As the then British Naval Attache at New Delhi, Captain F.W. Watson, said to the Director of Naval Plans at Naval Headquarters, Captain Dang, the Chinese had never thought of demolishing India and had not even attacked India - what had actually happened was that the continued provocative statements made by our leaders and some erratic action at the frontier positions on the disputed McMahon Line as well as in Ladakh had made them react with a view to, as he put it, keep Indians on their toes! The Indian Naval authorities were, therefore, advised not to take the Chinese attack too seriously and to radically curtail their shopping list for the Navy!

Thus the demi-official letter from Admiral Soman to Sir David Luce, which once and for all detached the Indian Navy from the Royal Navy's apron strings, read

'Thank you for your letter and the offer of assistance which you have made. I must, however, state clearly that this level of response does not meet the urgency or size of the requirements as we see it in the situation after the Chinese attack of 1962. We see our requirements clearly as more urgent and much more for modern ships and equipment in sufficient quantity. I must, therefore, point out that should you not be able to do any more than this, something must give way somewhere soon.

That 'something' obviously was the traditional bond between the British Admiralty and India's Navy for the supply of British ships, equipment and technology, and the latter's virtually total dependence on the British sources of supply.

The later proposal of 1963 which was a long-term naval development plan based primarily on the rapidly changing scenario after the 1962

Chinese incursion, envisaged the major change resulting from British insularity - that of looking elsewhere for naval hardware.

Delegations to the USSR

In May 1964, an Inter-Service Defence Delegation headed by the then Defence Minister, Shri Y.B. Chavan, and with the Deputy Chief of the Naval Staff, Commodore (later Admiral and Chief of the Naval Staff) S.M. Nanda, as the senior Service representative, visited the USA for the main purpose of acquiring two or three Fleet class submarines and a few destroyers - the requirements having been based on the threat from the Chinese Navy in the Bay of Bengal, as perceived at that time. The US Government's assessment of the Chinese naval threat was also different from India's and they did not consider it necessary for India's Navy to acquire any naval hardware from them, though they had supplied some weapons and equipment to our Army and Air Force. On the contrary, they advised the delegation to go back to its traditional suppliers of ships and equipment, the British Government.

It was in a scenario like this that it was decided to approach the Soviet Union for the supply of submarines. The Soviet Union had earlier supplied some W class submarines to the United Arab Republic and Indonesia. It was, however, reported that these boats were not operating effectively, and the submarine bases had been over-staffed by Soviet personnel at the senior levels in Alexandria. In Indonesia the situation was even worse and only one out of every five submarines was operational. But the F class submarine of 2,300 tons being offered by the Russians to India now was found to be similar in specifications to the more modern British Propoise/ Oberon class and the older American Fleet class and hence it was decided to make a bid for three submarines of the F class.

The acquisition of naval vessels and weapon systems from a source other than the UK for the first time in the history of the Indian Navy was a watershed in its development from a fledgling marine wing to a major naval force. It was, however, also going to pose some new problems to the Navy. Until this time all ships and craft had been acquired from the UK, all spares ashore or afloat were of British origin and there was adequate flexibility of commonality in the use of these spares in different types of ships. The maintenance facilities and dockyard personnel had, over the years, been attuned to only British ships and equipment, the personnel were familiar with the Royal Navy's philosophy and routine for operation and maintenance, and the language in which all operational and technical publications were printed and training conducted - English - was a language Indian naval personnel were well-versed in.

These problems were certainly daunting but since the Soviet offer was the best, the Navy decided to go in for the F class submarine, notwithstanding the problems it would have to face in order to resctucture its operational and maintenance doctrines, the logistic support philosophy and the language barrier. Accordingly, another inter-Service defence delegation, headed by Shri Y.B. Chavan, and, among others, with Rear Admiral S.M. Nanda, who was still the Deputy Chief, Captain B.K. Dang, Director of Weapon, Policy & Tactics and Captain (later Rear Admiral) C.L. Bhandari, the technical member, visited the Soviet Union in August-September 1964. General J.N. Chaudhuri, the then Chief of the Army Staff, and Lieutenant Colonel G.S. Sandhu were also in this delegation for the first time.

The Inter-Service Defence Delegation, headed by Shri Y.B. Chavan, received a very warm welcome at Moscow. This was the first time that a naval team was included in the delegation - only the Indian Air Force having had earlier dealings with the Russians for procuring MIG aircraft.

The naval team's primary concern was the acquisition of naval equipment centring around the requirement for submarines. At the first meeting with the State Committee for Foreign Economic Relations in Moscow, the naval members were shown the drawings and specifications of the equipment offered to the Indian Navy by the Soviet Government. The General Engineering Division of the Committee was handling the deal, and arranged visits to Leningrad and Sevastopol where the ships were shown with demonstrations, and detailed discussions took place. The naval team was then taken by hydroplane off Leningrad harbour where they boarded an F class submarine. A quick 'walk-round' of the submarine covering its entire length from stem to stern followed while the team observed the lay-out of torpedo tubes, reload arrangements, accommodation standards and the provision for increasing the bunk strength, the machinery design, fire control system, battery compartments and other equipment fitted on board. A new feature of the submarine was that it had three shafts, the outer two being used either for propulsion at high speed or charging the batteries and the inner one, which was bigger, was used for slow, silent long-distance cruising.

The 'walk-round' was followed by the submarine diving to a depth of 50 feet for a few minutes, and a verbal briefing on various other aspects of the submarine's capabilities. Though the operational standards of the submarine had yet to be assessed, three-screw-propulsion seemed rather cumbersome, arrangements for spare parts support had not been examined, sophisticated electronic equipment was minimal, and the quality

of electrical-cum-mechanical torpedoes had not been established. The naval team nevertheless felt that the submarine was generally suitable for operation in Indian waters. Besides, it had a rugged structure, and material of high quality had been used for its construction. It would fill the bill.

When the naval team later visited Sevastopol, they were shown several types of ships that the Soviet Government was prepared to supply to India. These ships included a submarine 'mother' ship of the Don class, which was described as such because she had been designed to provide accommodation for stand-by submarine crews, logistic and other support, and repair and maintenance facilities at sea. The acquisition of a ship of this type was considered worthwhile because the Russian philosophy of submarine operations was dependent upon mobile floating logistic support since they perforce operated at that distances on the high seas for long periods without touching shore bases. Some minor limitations were later revealed, but by and large it was felt that a ship of this type was an essential requirement for the submarine arm.

Some of the other long-term requirements related to the submarine arm, such as a submarine rescue vessel and support ships of other types, were not gone into at this stage, but the shore support requirements were studied in great detail for the development of a submarine base on the East Coast.

The Russians offered to build three F class submarines for the Indian Navy, with the delivery to commence two to three years hence at intervals of one year.

When the delegation returned from the USSR it saw two developments. The First Sea Lord of the British Royal Navy, Admiral Sir David Luce, had written to Admiral Soman saying that he was sending a special team of officers comprising an Admiral, a Captain and a civilian technician from the Admiralty, to point out the changes that British co-operation with the Indian Navy would undergo if India went ahead with the acquisition of naval hardware from the Soviet Union. Most of these changes were related to the question of security, and the First Sea Lord stated that if India went to the Soviet Union for naval equipment, the security of British equipment in the Indian Navy would be jeopardised and the British Government would thereafter have to curtail release of classified information and equipment to the Indian Navy.

The reply was a polite acknowledgement pointing out that India was protecting her security interests, but she hoped to continue to maintain good relations with Britain in keeping with the tradition of friendship and co-operation between the Royal Navy and the Indian Navy.

In the event, the Government refused to spare any finances for the Navy because the budgetary allocation for acquisitions from abroad had

in the Indian Ocean, rising tensions in the Gulf, the growing strategic importance of this Ocean, and the immense potential of the living and mineral resources off the tropical belt and continental shelf in this ocean, future wars, even if limited, were most likely to be fought in this region, and the success of our Navy, if it was embroiled in war with another nation, would largely be decided by the superiority, both in numbers and sophistication, of its underwater weapon platforms. The nation had by now become aware of the viability of a strong submarine force as a vital element of our maritime force and the most effective deterrent to any intrusion into our waters. This was in keeping with the assertion of Prime Minister Jawaharlal Nehru that 'to be secure on land, we must be supreme at sea' and Shivaji's naval doctrine, 'Jalaim Jasya, Valaim Tasya' (he who rules the sea is all-powerful).

Pliny (77 A.D.), Ptolemy (140 A.D.), Fa-Hien (415 A.D.), Hiuen-Tsang (646 A.D.), Marco Polo (1208 A.D.), Ibn Batutah (1377 A.D.), Abdur Razzaq (1442 A.D.), Nicolo Conti (1444 A.D.), Varthema (1503-1508 A.D.) and Thomas Bowrey (1670 A.D.), have corroborated the available evidence of these ships being able to sail virtually as fast as the wind and their ability to ride the sea well and to withstand heavy seas during cyclones.

These ships displayed the motifs of their owners or monarchs on the sides of their sterns or on the transoms, their high prows and sterns enabling them to carry their anchors well clear of the water-line, ensuring better visibility and preventing shipping of sea water in rough weather. Ships of this type were built all over the peninsula, especially at Kozhikode, Cochin, Kaveripattinam, Masulipatnam, Calcutta and other major inland ports and intrepots and were in use during the reign of the Mauryas, Andhras, Pallavas, Chalukyas, Kalingas, Palas, Cholas, Cheras and the Pandyas. These ships were larger than contemporary European vessels but not as large as ships built in the Far East as they were required to be used for trading purposes with ports in the Persian gulf and the Red Sea and had to often pick up their merchandise from India's minor ports and estuaries.

Considerable improvement took place during this period in ship design and lay-out and techniques of seamanship and navigation. Directional control, originally achieved with steering oars, was made more effective with side rudders and helms secured to the transom operated with the help of adequately sized tillers. Multitiered wooden planks fitted athwartship improved the hull's transverse strength and provided additional decks and compartments for accommodation and stowage of merchandise. Improved technology was developed for preventing leakage and damage to the hull structure.

In the 11th century, the advent of the Muslim period, which held sway for nearly 700 years, saw the gradual supersession of the sailing vessels of the earlier centuries. The Arabs set up shipbuilding yards on the Indian coast and the yards at Surat; on the Malabar coast and the Maldive Island and earned considerable recognition for the high quality of vessels built by them. The Mughals had fleets of ships for their Imperial *Nowwara* (flotilla) and merchant fleet built at Dhaka, Hooghly, Balasore, Jessore, Lahore, Srinagar and many other sea and river ports.

The arrival of the Portuguese in 1498 ushered in the era of gunships and fireships leading to some changes in ship design. The Zamorin of Kozhikode was the first to effectively emulate the Portuguese example and soon some of the native rulers followed suit. The Portuguess built ships at Goa, Bassein and Daman and the local shipbuilders, who fabricated teak ships with bolts and nails and not ropes as was the practice earlier, adopted some of the better features of Portuguese shipbuilding technology. The Malabar coast

retained for a long time but gradually the two systems of propulsion exchanged roles and the man-of-war, instead of being a sailing ship with an auxiliary engine, became a steamship with auxiliary sail. The opening of the Suez Canal in 1869 also dealt a heavy blow to sailing ships since, besides shortening the route to the East, the Canal reduced the distance between coaling stations and so allowed the steamers to reduce the size of their coal-holds and thus increase their cargo capacity.

'Composite' construction, i.e., the combined use of wood and iron soon made way for all iron and then steel construction and screw-propellers began replacing paddle-wheels around the globe. In 1853 the Peninsular and Oriental (P&O) Line built the iron-hull screw steamer *Himalaya*, the biggest vessel of her type in the world at that time, with a gross tonnage of 3,438, dimensions of 340 feet in length, 46.2 feet in width and 34.9 feet in depth of hold and her engine capable of giving her a sustained speed of 13.9 knots. The first twin-screw steamer, the 400-ton *Flora*, was built on the Thames in 1862.

Turbine engines, as opposed to steam engines using reciprocating machinery, run by the impact of high-pressure steam on wheels, as invented by Sir Charles Parsons, were used at sea for the first time when an experimental ship, *Turbinia*, was fitted with turbine engines with a shaft horse power of 2,000 in 1894. It was interesting to note that during a review of the Royal Naval Fleet at Cowes in the same year the ship caused a great sensation by dashing out among the assembled ships at what was then the astounding speed of 34.5 knots.

In 1903 the first ship to be built with an internal combustion engine which exploded a charge with a hot incandescent bulb or an electric spark, the Caspian steamer *Wandal*, was completed. The engine drove a generator which in turn ran a motor coupled to the screw-propeller. Rudolf Diesel had taken out a patent in 1892 for an engine in which the charge was exploded by raising its temperature by sudden compression and thus was born the diesel engine. One of the earliest ships to be fitted with diesel engines was the motor ships *Selandia* which was completed in 1911 and ran until 1942. Diesel-electric propulsion wherein the screw-propeller is driven by a motor energised by a generator which in turn is driven by a bank of diesel engines was soon accepted as the most effective mode of propulsion ships. The German navy was one of the first to adopt it in a submarine salvage vessel *Vulcan* in 1907.

The development of ships from the earlier decades of this century to the end of the 1980s, graduation into nuclear and other modes of propulsion, evolution of various types of surface vessels, submarines, surface-effect ships, hydrofoil ships, etc., are of too recent vintage to merit repetition here.

the caravel, a small lateen-rigged vessel with three masts, equipped with a battering ram, a wide transom on which the aftercastle was based and the planking was so attached to the hull frame as to give a flat finish to the surface (caravel-building). Then came the galleon with a much longer hull with the ram lengthened to a long beak and a square-ended forecastle in place of the tringular forecastle of the earlier type. The frigate soon followed as a small member of the galley family as a small fast vessel with the length further increased and with the top hamper - necessary but cumbersome equipment on board - considerably reduced.

By the second half of the 17th century it had been realised that ships armed solely on the broadside should fight in line-ahead formation in a pre-arranged order and that was the origin of the term 'ship of the line' or 'line-of-battle ship', the latter being later abbreviated to 'battle-ship'.

It was at the beginning of the 18th century that the steering wheel made its appearance and brought about an extremely important change. From the middle of the 16th century to the end of the 17th, the tiller which operated the ship's rudder had been worked by the 'whipstaff', a vertical lever passing through a pivot in the deck to move the tiller laterally, and thus was a device that was far less efficient than the wheel, first introduced in 1705, with its ropes leading to the end of the tiller.

By the middle of the 18th century the number of guns fitted on board started rising rapidly. The frigates built during 1750s and 1760s had 28, 32 or 36 guns, but the number soon grew to 56 and more until the *Victory*, built in 1765, bristled with 100 guns.

The 19th century saw the introduction of the clipper, a ship with an increased length and raking bow and masts, which was capable of greater speeds and was largely employed in transoceanic trade. The American clipper *Lightning* of 1854 is believed to have made the best day's run ever recorded by a sailing ship, 436 miles, but the two ships that consistently made the fastest passages across the Atlantic in all conditions were the two British tea clippers, the *Thermopylae* and *Cutty Sark* of 1868.

This period saw the beginning of the use of iron to strengthen the keel and the mainframe which obviated the 'sagging' of heavily-loaded long mainframes and enabled the yards to build larger ships leading to the use of wooden planking on iron frames. Another significant change was the replacement of hemp with wire for standard rigging.

Paddle steamers had made their first appearance in the British fleet in 1822 and with the adoption of the crew-propeller in the 1840s, it became possible to combine steam propulsion with the complete broadside armament of the sailing ships. By 1850 construction of purely sailing ships had been discontinued and all ships began to be equipped with steam propulsion to supplement or alternate propulsion by sail. Masts and sails were

had spawned a wide variety of ships of various sizes and shapes for centuries and a contemporary of the Portuguese-type ships was the *Batil* which was equipped with two masts with its hull being 50 to 60 feet long, 16 to 18 feet wide and 8 to 10 feet deep. The Portuguese built several ships at Goa and Daman using local technicians and artisans using indigenous material but adopting a combination of the best features of Indian, Arab and Portuguese shipbuilding technology. In many ways these ships resembled the *San Gabriel*, Vasco da Gama's flagship, which had brought him to Kozhikode from Mozambique in Africa.

There is also enough evidence to establish the fact that the technology of building ships especially designed for war at sea existed in this peninsula from well before the advent of the Europeans and that some of these ships were equipped with catapults and incendiary throwers. As far back as 1377 A.D. the ruler of Honavar on the Konkan coast carried out a massive naval operation by attacking a small port in Goa with a fleet of 52 war vessels. A notable feature of this assault was the use of two landing craft, probably the first time in India's maritime and naval history, which beached themselves on their sterns and as the stern doors were opened, cavalry soldiers charged forward on horseback to launch a blistering attack on the port's defences in support of the infantry which had already jumped ashore and gone into action.

Another type of ship with long endurance was the *Baghalah* which roamed the seas around India, especially the Arabian Sea, from before the invasion of India by Alexander the Great to the end of the 19th century - one of the oldest and most successful ship designs that existed for over two millennia. These ships had a broad beam of about 25 feet, a length of 74 feet, a depth of 11.5 feet, drew about 150 tons and had a long life. One of the *Baghalah*-type ships, the *Daria Daulat*, was built by the British at Bombay in 1750 with two guns mounted on her stern and was in commission till 1837 - a period of 87 years!

The 17th century saw the revival of shipbuilding in the Maratha shipbuilding yards at Vijaynagar, Suvarnadurg and Kolaba and a large number of two highly seaworthy and versatile classes of vessels, the *Ghurab* and the *Gallivat*, were built. These vessels were seaworthy, sturdy and versatile in their operational abilities and hence were also used by the Mughals for battles against the Marathas and the British.

Soon after the arrival of the British squadron of ships at Surat on September 5, 1612, several British factors arrived there and set up factories and a shipyard for repairing and building ships for the British, Moghuls and Sidis. The first British ship to be 'careened' (turned to its side for cleaning, caulking and repairs) at Surat was the *Primrose*. As stated in a letter written to the Surat Council in 1626, the ships had to be sheathed by 'country car-

penters, she being only a new ship only spoiled with the worme, soe that to make her fitt for any service she must be new plancked from the keels upwards (sic).'

Several ships, especially brigantines, were thereafter built and repaired at Surat for well over a hundred years. These ships were known for their durability, strength, seaworthiness and their imperviousness to sea-water-borne worms that attack timber and bore holes in it. The shipbuilders at Surat mainly comprised Parsis who proved to be not only capable ship designers, builders and gunsmiths but excellent shipwrights as well.

Because of its strategic position, considerably wide range of tides, proximity to a large anchorage naturally protected from the sea and an adequate number of landing places and shore sites for the repair, construction and launching of ships and craft and construction of cranes for handling stores and equipment, safety of egress and ingress into the anchorage by day and night and suitability for defence against sea-borne attacks, the advantage of building a dockyard at Bombay Island with the attendant benefits of a fine natural harbour, were soon recognised by the British.

Development of Maintenance Facilities, Expansion and Modernisation of Naval Dockyard Bombay

A skeletal dockyard was initially set up at Bombay in 1693-94 but was equipped with minimal facilities followed in 1735 with the construction of marine storehouses, quarters, officers, carpenter's sheds and a smithy. In 1736 the first of the famous line of Wadia master-builders to come to Bombay from Surat, a young Parsi foreman-carpenter named Lowji Nusserwanji, was brought to Bombay with his team of ten skilled carpenters, five of them from his own family, and a number of technicians and was entrusted with the modernisation of the existing dockyard.

Around the turn of the 17th/18th century the shipbuilding industry in England was faced with an acute shortage of oak timber as the oak forests in South England had been severely depleted by the extensive felling of oak trees for maintaining the impregnability of the English Fleet by constructing more and more warships of all sizes. And hence, despite bitter opposition from British shipbuilders and workmen, it was decided to develop the existing facilities at Bombay into a fully equipped dockyard for the construction as well as refitting of ships and craft using local technicians and workmen and the indigenous Malabar teak which by this time had proved itself as excellent shipbuilding timber.

The first major dry-dock for the Bombay Dockyard was the Upper Old Bombay Dock - 209 feet long, 47 feet broad and 15 feet deep. This Dock was built in 1750 at a cost of Rs 12,000 followed soon by the Middle Old Bombay

tions of Indian-built ships and ocean voyages. It is also recorded that during Alexander the Great's invasion of India in the 4th century B.C., boats and ships - some of them 30-oared - were built for his navy in Punjab.

Towards the end of the Gupta era in the 5th century A.D., ship-building techniques had reached a high level of sophistication which has been documented in detail by King Bhoja Narapati in his *Yukti Kalpataru*. According to another contemporary document, *Vriksha-Ayurveda*, our ancient shipbuilders had acquired thorough knowledge of shipbuilding materials and the properties and types of timber used for building ships; for instance, soft and light timber which would be joined to any other type was known as the Brahmin class, light and hard timber which could not be joined to the other types was the Kshatriya class, soft and heavy timber was the Vaishya class and the hard and heavy timber was the Shudra class. The mixed class with a blend of these properties was known as the Dwijati class. Bhoja's treatise also warns shipbuilders against the use of iron as it would expose ships to the influence of submarine magnetic rocks. Instead it recommends securing the ships' planks to each other with ropes which provided the necessary resilience to the buffeting caused by rough seas, caulking, i.e., stuffing the joints with oakum to render them waterproof, applying a paste of quicklime and oil on the planks to protect them from seawater and double-planking to improve the buoyancy and safety of the hull. Besides, the *Yukti Kalpataru* mentions ships and boats of various types with single, double, triple or quadruple masts, multiple sails, oars and rudders with the superstructure on the prows, *Agramandira*, or in the middle, *Madhyamandira*, or covering the entire deck, *Sarvamandira*.

Evidence from our ancient literature indicates the fact that by about 200 B.C. the size of ships built in India had increased considerably, a number of bulkheads were used to strengthen the hull which was built with Malabar teak which had proved itself as far superior to oak seaworthiness, impermeability to water and resistance to marine organisms. The discovery of the 'trade winds' or the monsoon air current blowing across the Indian Ocean by Hippalus in 45 A.D. ushered in the era of sailing ships and signified the gradual obsolescence of the multi-oared galleys though the oars were retained for use in no or low wind conditions and for manoeuvring the ships inside harbours. The earliest sails seen in our waters were lateen or triangular sails on long yards at an angle of 45 degree to the mast and were made of thick cloth or light canvas. These were later replaced by square and rectangular sails, the ships carrying a large number of these sails in square-rig configuration and were built with more than one deck.

A very large number of travellers and writers who have adorned history's hall of fame such as Herodotus of the pre-Mauryan era (5th century B.C.), Megasthenes and Strabo of the Mauryan era (321-184 B.C.),

up to no good'. To quote Rear Admiral Vasudeva,

He came and saw me when I was going through the service documents of sailors who had volunteered to join the Submarine Arm and were to serve with me after induction and training in the *Khanderi*. I told him that he had been almost congenitally breaking the rules, had no respect for the law and had had several spells in the Navy's detention quarters for fairly serious offences. He said, 'Sir, if you select me, I promise you I will never let you down. Please disregard my service documents and my past. If you select me, one day you will be proud of me'. So I decided to give him a chance and selected him as one of the reserves for my submarine.

Johnson sailed through his submarine training courses at Vladivostok in the USSR and soon became an important cog in the administrative and maintenance machinery in the *Khanderi's* engine room. While we were in Russia, I noticed that young Johnson had a roving eye but as soon as he came on board he meant business and was efficiency personified. When we sailed out of Riga on our way home and were crossing the Bay of Biscay, our submarine started rolling alarmingly. We could not dive in the channel and there was great risk of fire as the ship continued to roll as much as 55 degrees from the vertical on either side. Nearly all members of the ship's company (crew) were sick and were bringing up everything that they had eaten, but throughout our passage through the storm, the only person available in the engine room, ever on his toes and taking full charge, was Johnson, Engine Room Mechanic First Class.

When we were rounding the South Cape (of Africa), we went through a terrible storm when we couldn't even see *Amba*, which was only a nautical mile away, because of the mountainous waves. The upper lid had to be closed and the officer of the watch had to be chained to a fixed structure because every time the crest of an oncoming wave broke over the conning tower, even the head of the officer was under water for a few moments, and the waves nearly tore the exposed fixtures off the hull. Almost everyone was sick again. This went on for three and a half days which seemed like ages but Johnson never gave up. Whenever I spoke to the engine room and asked who was on duty, the reply was always the same, 'Your loyal Johnny, Sir'. Such is the stuff the Indian Navy's submariners are made of - persons who can rise to great heights when the chips are down.

By the middle of the 1960s it had become abundantly clear to the Indian authorities that in the scenario of continuing super power build-up

been utilised by the Army and the Air force. Thus the Navy 'got nothing more than a bit of window-shopping' out of the Inter-Service Defence Delegation's 1964 visit to the USSR. However, in the exercise of assessing our requirements, it did help in formulating the basis, subsequently further matured by detailed study at Naval Headquarters, for the acquisition programme that was adopted in 1965.

Shri Y.B. Chavan led another Inter-Service Defence Delegation - this time to the UK - towards the end of 1964. The Delegation made another attempt to seek deferred credit for building an Oberon class submarine in the UK but was once again unsuccessful in its bid. The project virtually reached an impasse as the Government of India too continued to be unwilling to make budgetary provision for the submarine.

Soviet Offer of F Class submarines Accepted

From the Soviet point of view, India's navy needed to be strengthened, particularly because of the Chinese incursion into our territory in 1962 and later, and also because Chinese criticism of the Soviet policy in Soviet East Asia and the Indian Ocean was changing the politico-military scenario and altering the geopolitical compulsions in the region. Hence another Inter-Service Defence Delegation headed by Shri G.L. Sheth, Additional Secretary, with a Naval team comprising the Deputy Chief of the Naval Staff, Rear Admiral (later Admiral and Chief of the Naval Staff) S.N. Kohli, and Captain (later Commodore) B.K. Dang, Director of Weapon Policy and Tactics at Naval Headquarters, Captain (later Rear Admiral) C.L. Bhandari, Captain (later Rear Admiral) K.R. Ramnath and Shri Paramanandan, Director of Naval Design, visited Moscow in August 1965. The Soviet Union readily agreed to not only supply three (later to be increased to four) F class submarines with the first to be delivered by the end of 1967, five Petya class patrol vessels, two small landing ships and four patrol craft, but also offered deferred credits for Rupee payment spread over a period of 10 years at a low interest rate of 2 per cent per annum. The price of each submarine was at that time estimated at Rs 2.5 crore. The Soviets also offered to train two submarine crews at their naval base in Vladivostock.

An interesting feature of the negotiations with the USSR was that they did not have any fixed prices for what they offered - they could readily bring them down to suit their overall strategic needs and purposes. For example, while the British asked for Rs 5 crore for the Oberon class submarine including the outfit of spares, the Russians offered the F class for only Rs 2.5 crore each. The surface vessels offered by them were cheaper than any other source in the world.

As Commodore Dang reminisces, the price of the Petya class, which

the Navy was planning to acquire, had been considerably reduced after some hard bargaining by Shri Sheth, leader of the Delegation, during a meeting with the State Committee for Foreign Economic Relations at Moscow which was headed by General Sedorovich. When Shri Sheth asked for some further reduction, the General threw his head back in anguish and exclaimed, 'Oh God! You want it cheaper than that?' To which Mr Sheth replied, 'General, I thought there was no God in the Soviet Union'. The General had a sense of humour and since he was fully empowered to adopt a price to suit Soviet national requirements, he promptly reduced the price further.

The New Environment

Until this time, as already stated, the Indian Navy had been in close contact with the Royal Navy and everything in the Indian Navy was of British origin. The acquisition of submarines from the Soviet Union posed several challenges to the pioneers of the Submarine Arm, not the least of which was the fact that sophisticated and exacting training was conducted in a new language using a new script. These pioneers who had been carefully selected, however, faced the challenges creditably and imbibed all the finer aspects of the art of submarining despite the hostile weather conditions prevailing in their training environment both in the North Pacific and Baltic regions, in raging blizzards, ice-bound waters and sub-zero temperatures which sometimes went down to 35 degree C below the freezing point.

Added to the inimical environment were the arduous and uncomfortable living conditions on board a submarine which was totally different from what average human beings, especially those from tropical regions, are accustomed to - claustrophobic living spaces, hot-bunking, strict rationing of water, absence of cooked meals, inhalation of air containing hazardous pollutants and a high level of carbon dioxide, total ban on smoking especially while submerged, lack of recreational and other amenities, confinement in an enclosed space for hours, days or weeks together at sea with no communication with the outside world one is familiar with. The high risks associated with submarining demands a high level of dedication and motivation which our submarine pioneers displayed in ample measure and, with inspired leadership and a cheerful approach to adversity, overcame many a seemingly insurmountable problem.

First Submarine Squadron Commissioned

Twenty years after the proposal for acquiring submarines had been

trunks, canoes of bark and skin with an internal framework, canoes and boats formed from planks stitched together, vessels with planking nailed together and with a framework inserted and vessels built by attaching planks to a prefabricated framework.

The ships and galleys built by the Greeks, however, laid the foundation for the evolution of large ships for high-sea navigation and bluewater operations for Greek vessels were built using a technology entirely different from that of Egypt, having keel, stem, sternpost and internal framing with the planks attached edge to edge or overlapping downwards respectively, similar to the carvel and clinker building techniques of modern times.

Very little is known today of the ships of the Cretans who dominated sea power in the eastern Mediterranean about 1500 B.C. or of the Phoenicians who took their place but it is known that both nations had begun to differentiate between the fighting vessel and the merchantman and between the rowing galley and the sailing ship, the more striking developments being the arrangement of oars in two banks at different levels and the fitting of a ram bow in galleys intended for use in war for ramming and damaging enemy ships, though some believe that the ram was an Egyptian invention.

At the time of the siege of Troy the galley, an oar-propelled fighting vessel, was generally a 50-oar boat with a single row of 25 oars on each side. Since the length of the galley could not be increased because of the strains of 'sagging' caused to the hull, some other method of generating greater propulsive power had to be found and this was done by arranging the oars in two staggered rows in galleys appropriately called biremes (bi - two, *remes* - oar, 700 B.C.). The number of rows of oars was later further increased in triremes which had as many as three rows of oars and the many-banked galleys (500 B.C.).

Well before the beginning of the Christian era the sail had appeared on the scene, initially being suspended from the mainmast rigged for the purpose and soon evolving into its multisail configuration. The steering gear, consisting of a large paddle-shaped rudder to begin with, was inherited from Egypt and was initially fitted on the ship's side, then moved to the starboard quarter and finally to the stern.

The invention of gunpowder during the 14th century brought about further changes in ship design and soon after the middle of the century there began a process which caused the sailing man-of-war to become more and more distinct from the merchantman.

Over the centuries the number of masts and consequently the number of sails increased and by the end of the 15th century the largest ship had as many as four masts and eight sails. The 16th century saw the appearance of

7

REINFORCING THE CAISSON

Evolution of Ships: Development of Bombay Dockyard

'Naval architecture is an Egyptian art and the main lines of the history of shipbuilding for the whole world were laid down in Egypt toward the end of the 4th millennium B.C.', averred Elliot Smith in 1917 in his *Ships as Evidence*. His claim was buttressed by the fact that the earliest knowledge of boats, small craft and ships came from Egypt where, as far back as 4,000 B.C., boats and other small craft were already far advanced from the primitive form which they had in all probability been derived - rafts in the form of bundles of reeds tied together with ropes made of hemp or other natural fibres and steered by oars or punt-poles.

For a few millennia rafts were used in all parts of the globe and as seagoing craft in modern or comparatively recent times they are best known in the form of the catamarans (Kattumaram, tied wood, in Tamil) of India and balsas (*balsa* is Spanish for the word 'raft') of South America. Wishing to test the theory with regard to the populating of Oceania millennia ago, a party of Norwegian scientists led by Thor Heyerdahl built a raft similar to the ones used in South America in the ancient days and sailed from Peru to the islands east of Tahiti a little over three decades ago in a voyage lasting over three and a half months known as the Kon-Tiki expedition.

The other vehicles on which man conveyed himself and his goods by water and some of which were still in use were dug-outs or hollowed tree

submitted, the Indian Navy finally entered the submarine era when the submarine arm formally came into being with the commissioning of *Kalvari* (the name of a species of grey shark), commanded by Commander K.S. Subramanian, at Riga in the Soviet Union on December 8, 1967 which, after a brief period of training with the Soviet Navy, arrived in India on July 16, 1968. The three other submarines, *Khanderi* (the name of a wide snouted sawfish) commanded by Commander M.N. Vasudeva, *Karanj* (the name of a species of whale-shark) commanded by Commander M.N.R. Samant, and *Kursura* (the name of a log-snouted shark) commanded by Commander A. Auditto, were commissioned respectively on December 6, 1968, September 4, 1969 and December 8, 1969. The submarine depot ship, appropriately named *INS Amba* and commanded by Captain (later Vice Admiral and Vice-Chief of the Naval Staff) M.R. Schunker, was commissioned on December 28, 1968. The Directorate of Submarine Arm at Naval Headquarters came into being on January 6, 1966 with Captain Dang as its first Director.

These four submarines formed the first submarine squadron of the Indian navy - designated the 8th Submarine Squadron - and transformed the Service into a three-dimensional wing of our Defence forces. At this time Pakistan, Indonesia and Japan were the only other Asian countries that possessed submarines.

Some of our senior submariners feel that the British Oberon class submarine was in some respects superior to the Russian F class, the more important aspects of its superiority being, firstly, that while the former was an improved and updated design, the latter was basically a design produced by a German submarine designer immediately after World War II and secondly, the latter's basic role was carrying out attacks on mercantile shipping rather than attacking submarines. The F class, however, had more positive buoyancy than the Oberon class which, for a fledgling submarine arm, was an important safety factor to be taken into account. They also feel that if the British had decided to give us deferred credit for the Oberon class submarines, which they think did not happen because the Labour Party had lost the elections in Britain and the Conservatives were in power, our Submarine Arm would have come into being in 1963, which it actually did five years later - a period within which the Navy could have inducted a second squadron of submarines.

An excellent example of the camaraderie and fellow-feeling amongst submariners and their unflinching loyalty to the Arm is evident from the example of Johnson, an Engine Room Mechanic who had volunteered for joining the Submarine Arm and was very keen on becoming a submariner despite his 'track record' which disqualified him outright. He had twice been to detention quarters, he had spent some time in naval cells and was

Ships of the Indian Peninsula

As ragards the Indian peninsula, ships are known to have been built in this subcontinent ever since the dawn of civilisation over five millennia ago. The earliest evidence of the existence of ships and boats is a rectangular seal unearthed at Mohenjodaro in the Indus Valley dating back to at least 3,000 B.C. The sharply upturned prow and stern of the vessel portrayed on the seal are distinctive features also found in the representations of boats peculiar to other ancient civilisations such as the early Minoan seals, the pre-dynastic pottery of Egypt and the cylinder seals of Sumer which directly suggest the existence of intimate maritime intercourse between the Indus Valley and these countries at that time.

While Mohenjodaro had developed on a site on the right bank of the Indus, some 250 miles from its mouth, its twin city, Harappa, had come into being at a site on the left bank of the Ravi, now in Pakistan. Around 2,000 B.C. i.e., about a millennium after the advent of the high-prow vessels, some Harappans sailed in ships and boats down the Indus to the sea and then coasted south to Kathiawar to settle down there and widen the extent of Harappan culture. During this period Kachchh was an island as the Rann surrounding it was deeper and still navigable. A dry-dock pertaining to this period and measuring 710 feet in length, 124 and 116 feet in width at the two ends and 11 feet in depth built around 2,350 B.C. has recently been excavated at Lothal in Gujarat. The dock is equipped with a gate and appears to have been used as a wet basin and a boat pen. The dock also had provision for regulating the inflow and outflow of water at high and low tides by using suitably designed spill channels and for refloating ships by using sliding gates and an arrangement for operating watertight caissons.

It was during the Vedic period from 2,000 B.C. to 600 B.C. that references were made in contemporary literature to the description of boats and ships, construction of river craft and seagoing vessels, nautical terms and ocean voyages. The remarkable work of Kautilya, the *Arthashastra*, which was compiled during the period from 321 B.C. to 300 B.C. refers to the existence of a naval department run by a *Navadhyaksha* (superintendent of ships), navigation of the lakes, rivers and oceans, providing shelter to tempest-tossed ships in harbours and construction and repairs to ships in Maurya India. During the pre-Mauryan era, as recorded in Pali literature, especially the Rajavalliya, there was considerable maritime activity such as the banishment of Prince Vijaya of Bengal by king Simhavahu to Simhala (Sri Lanka) and his voyage with his 700 followers on board his flagship. Another document of this period, the *Mahawanso*, describes the 12-day passage of Vijaya's bride in a very large ship carrying 18 officers of state, 75 menials, a number of slaves and 700 other women. The *Jatakas* have descrip-

Dock - 183 feet long, 51 feet broad and 20 feet deep - completed in 1762. A third dry-dock, the Lower Old Bombay Dock - 256 feet long, 51 feet broad and 20 feet deep - was completed in 1765. These docks proved to be a highly valuable acquisition to the Dockyard and attracted shipping from various parts of the continent to seek repairs. For docking purposes Bombay's considerable rise and fall of tide was found especially suitable.

It was in 1807 that the construction of the Upper Duncan Dock - 286 feet long, 63 feet broad and 23 feet deep - was completed. Within a year thereafter the construction of the first ship built at Bombay for the Royal Navy, the 74-gun *Minden* was commissioned. She was also the first ship to be constructed to the Upper Duncan Dock. As regards the high quality of construction of ships built at the Bombay Dockyard, it would suffice to quote from a letter the first commanding officer of the *Minden* wrote to the builder, 'The report made by the Surveyors of the Navy will note one fault; for they were not only satisfied but much gratified by the inspection. I have heard many of the officers declare that no ship so highly furnished ... has been launched from any of His Majesty's Dockyards or from any other yard in England during the last fifty years'.

Ships continued to be built at the dockyard, earlier for the Royal Indian Marine and later for the Royal Indian Navy, until the fourth decade of the 20th century with the dry-docks being modified for the purpose from time to time. During its entire history the Dockyard distinguished itself by not only building ships better than any built in Europe but also excelled in providing maintenance facilities to a wide variety of ships and craft from a number of countries.

A description of the Bombay Dockyard in 1775 says:

> Here is a dockyard, large and well contrived with all kinds of naval stores deposited in proper warehouses, together with great quantities of timber and planks for repairing and building ships, and forges for making of anchors as well as every kind of smaller smith's work. It boasts such a dry-dock as, perhaps, is not to be seen in any part of Europe, either for size or convenient situation. It has three divisions and three pairs of strong gates, as to be capable of receiving and repairing three ships of the line at the same or at separate times; as the outermost ship can warp out, and another be admitted in her place every springtide without any interruption of the work doing to the second or innermost ships; or both outermost and the second ship can go out, and two others be received in their places without hindrance to the workmen employed on the third or innermost ship. Near the dock is a convenient place to grace several ships at once, which is done as well and with as great expedition, as in any dock in England. Near the

dockyard is a rope-walk which, for length, situation and convenience equals any in England, that in the King's Yard, at Portsmouth, only excepted, and like that, it has a covering to shelter the workmen from the inclemency of the weather in all seasons.

Here are made cables and all sorts of lesser cordage, both for the Royal Navy, the Company's Marine, and the merchant ships, which trade to these ports of India. Besides cordage made of hemp, cables, hawsers, and all kinds of smaller ropes, are made of the external fibres of the coconut, which they have in such abundance in India, as to make a great article of trade among the natives of this place, and those along the coast between Bombay and Cape Comorin. The yarn made of the fibres is mostly manufactured in the towns and villages on, or near, the sea-coast of Malabar; many vessels belonging to the natives are laden entirely with this yarn which they always find a quick sale for at Bombay and Surat let the quantity be ever so great, as it is the only cordage made use of amongst the small trading vessels of the country; large ships use much of it made into cables, hawsers, and smaller ropes; it is called Kyah.

Ships built at Bombay are not only as strong, but as handsome, and are as well finished as ships built at any part of Europe; the timber and plank of which they are built, so far exceeds any in Europe for durability, that it is usual for ships to last fifty or sixty years, as a proof of which I am informed that the ship called the *Bombay* grab, of twenty four guns (the second in size belonging to the Company's Marine) has been built more than sixty years, and is now a good and strong ship. This timber and plank are peculiar to India only; what grows to the south, on the coast of Malabar, is, however, very good, and great quantities of it are brought to Bombay; it is called teak and will last in a hot climate longer than any wood whatever.

Seven generations of Wadia Master-builders constructed 352 large and small ship-of-the-line, coastal vessels and harbour craft during the course of the 18th and 19th centuries and a high standard of workmanship, often assessed as superior to that of English shipbuilders, was maintained throughout. The durability of Malabar teak, the imperviousness of the Indian caulking mix, the superior technique of planking, keel and hull construction and the higher standard of craftmanship and skill of Indian technicians earned the admiration of even the most experienced shipbuilders of Europe.

The 74-gun 1809-ton, *Cornwallis*, the first Bombay-built ship to be acquired by the Royal Navy from the then Indian Navy, was launched in 1813, fired the first broadside and took part in the Anglo-American war in 1826, participated in the Baltic campaign against Russia after conversion to steam

in 1855, provided an extension to the jetty at Sheerness in England and was finally scrapped in 1895, full 82 years after her commissioning. Her hulk near the jetty has survived to this day.

A large number of ships were built in the Bombay Dockyard for the East India Company, for the Royal Navy and for some local rulers. Some of the outstanding ships built on Bombay were:

Malabar: 74 guns, 1715 tons, built by Jamshedjee Bomanjee, launched in 1818.

Ganges: 84 guns, 2289 tons, built by Jamshedjee Bomanjee, launched in 1821.

Asia: 84 guns, 2286 tons, built by Nowrojee Jamshedjee launched in 1824.

Rose-water was used in 1811 for naming the *Shahallum* as to have done so with wine would have been against the principles of the Imam of Muscat for whom she was built. Of the *Asia*, which was Admiral Cordington's flagship at the Battle of Navarino, Admiral Sir Pultney Malcome wrote, 'Tell my old friend Nowrojee what a glorious part the *Asia* sustained in the Battle of Navarino and how proud I am of his success as a builder.' Earlier, the first Lieutenant 'Second command' of the *Salsette*, a frigate had written to Jamshedjee Nowrojee, 'Your professional abilities were the happy means of preserving us from what appeared to the human eye to be unavoidable destruction; that ship, with five other small vessels-of-war and twelve valuable merchantmen under convoy, being beset by the ice in the Baltic Sea in the winter of 1808-1809, she alone escaped shipwreck.'

Perhaps as remarkable as the career of any other ship was that of the *Swallow* built by Maneckjee Nowrojee in 1777.

> 'She was first employed as a Company's packet;' wrote a chronicler and made several trips between India and England; was then taken into the Bombay Marine, and, after a short time, returned to the packet service in which she continued for many years. About the year 1800, the *Swallow* not being required as a packet, was sold to the Danes, fitted in London, and went to Copenhagen, whence she is supposed to have proceeded to the West Indies; but, while there, was seized by a British man-of war-for a breach of treaty and condemned as a prize. She was cut out from her anchorage by a sloop-of-war after a severe action, in which the British ship lost a number of her crew. She was then purchased into the King's service, became the 'silly' sloop-of-war and was latterly commanded by Captain Sheriff; after serving some time in the West Indies, she was, on her passage home, dismasted, and received other damage in a violent gale of wind. On her return to England she was sold out of the King's service and bought by some merchants in

London; made three voyages to Bombay, her parent port, as a free trader, and was lost on the James Mary shoal in the Hooghly, on the 16th June, 1823.

It was estimated by the Controller of the Dockyard in 1834 that an 84 gun ship could be built at Bombay at a cost of over £20,000 less than in England and said that 'it is universally admitted that a Bombay teak-built ship is 50 per cent superior to vessels built in England.'

It was on board the Bombay Dockyard-built Royal Navy ship, *Minden*, the first ship-of-the-line built of teak outside the UK to the order of the Admiralty, while she was shelling the town of Charleston, West Virginia during the Anglo-American War that the American national anthem, the Star-Spangled Banner, is said to have been composed by Francis Key. Another Bombay-built ship, *Asia*, was the flagship of the British Naval Fleet at the sea battle of Navarino in 1827. The *Punjab*, later renamed the *Tweed*, once made the London-to-Melbourne passage in a record time of 83 days of sailing which remains unbeaten to this day.

Trincomalee, which was renamed Her Majesty's Training Ship *Foudroyant* after she was decommissioned from the Royal Navy, was launched at Bombay as far back as 1817 but is still afloat at Portsmouth Harbour and is serving as a training vessel - the oldest naval ship afloat and in active service in the world. Writes Charles Allen in an article on the evolution of shipbuilding in India:

> Anchored in the roadsteads of the British Navy's dockyard at Portsmouth, a battered, ancient hulk swings with the tide. Compared with Nelson's flagship, *Victory*, gleaming with spit and polish and fresh paint in her dry-dock close by, she seems a pathetic sight, with her masts cut short and her gun-ports battened down. Yet the history of Her Majesty's Training Ship *Foudroyant* is just as remarkable in its own way as that of its more famous sister-ship-of-the-line not, because of the men who sailed in her but for those who built her.
>
> *Victory* and *Foudroyant* are the last survivors of the days when Britain's Navy really did rule the seas, but *Foudroyant* has the distinction of being the oldest vessel in the world that is still afloat and in active service, which these days is serving as training ship for youngsters who come aboard for a few days to learn what it was like to live and work in an old man-o'-war. One reason why she has remained afloat for well over a century and a half is that unlike the *Victory* made from the 'Hearts of Oak' that English seamen were so proud of, the *Foudroyant* is built of Malabar teak, cut from the forest of Western India. *Foudroyant*, in fact, is not a British ship at all but an Indian one, built for the Royal Navy in Naval Dockyard, Bombay in 1817.

The shipwrights who designed and constructed the *Foudroyant* along with fifteen other sailing ships for the Royal Navy and a great many more for the Indian Navy - were all members of an extraordinary family who for nearly who hundred years dominated the dockyard of Bombay, and helped to turn what was a quiet backwater into the busiest seaport in Asia.

In 1839 a steam sloop of 705 tons and 230 horse-power, armed with 5 guns, was launched at Bombay, followed in 1840 by a steam frigate of 946 tons and 220 horse-power, armed with six 8-inch guns, and in 1842 another steam frigate came from the hands of the Parsi builders of the Dockyard Ships which were built in Bombay and the engines supplied from Britain. Lowe, the naval historian says of them, 'These steamers and sailing ships constructed at Bombay were the most serviceable of any in the possession of the Company, and such as were not lost by the accident of the sea, were in perfect condition at the time of the abolition of the Service, while those steamers built or purchased in England were generally signal failures.'

In 1863, when the Indian Navy was abolished out of its 20 war vessels, all but three had been built in Bombay and ten of them were steam-powered frigates, sloops or gunboats. The most powerful were the *Punjab* of 1800 tons and 700 horse-power, and the *Assaye* of the same tonnage and 650 horse-power.

Nowrojee Jamshedjee Wadia, who was the head of the firm under whose superintendence so many of the ships of the Indian Navy had been constructed, died on November 2, 1860 at the age of 85. As a mark of respect to him, Commodore Wellesly closed the Dockyard on the day of his death and the flags of the vessels in harbour were half-masted. With his passing, began to pass too the glory of Bombay as a shipbuilding centre. Also, iron ships would soon take the place of wooden ones and it was to be sometime before India could again become a great shipbuilding country. The last ship built by the Wadias was the *Navigator*, which was launched in 1881.

At the time of the Industrial Revolution there had been significant change in the technology of ship construction with the introduction of iron in place of wood and steam propulsion in place of sails. Since the British shipbuilders had refused to transfer this technology to the Indians and since industrialisation in India had lagged way behind the European nations, it had signalled the beginning of the virtual extinction of the shipbuilding industry in India. Though the Bombay Dockyard had succeeded in building its first steamship, the *Hugh Lindsay*, as early as 1830, it had failed to sustain the effort of updating the technology of building ironclads and thus was relegated to the status of a maintenance and repair yard.

The two World Wars, especially the Second, were watersheds in the evolution of the Bombay Dockyard and from 1914 to 1918 and later from 1939 to 1945 it carried out major refits to a large number of ships and craft that were either severely damaged during operations at sea or needed urgent maintenance. In fact, every campaign during the last two centuries and more, from China to Ethiopia, from Egypt to the Cape of Good Hope, received material support in a large measure from this Dockyard but the importance given to it during World War II was never exceeded in the past. With Hong Kong and Singapore lost to the Japanese, it became the only dockyard available to the Allies east of Suez in the northern hemisphere and had to consequently handle a wide variety of ships and craft involved in the operations in all theatres of war from the Coral Sea to the Mediterranean.

When World War II broke out in September 1939 the Dockyard was lacking both men and equipment for the immense tasks of the conflict, but it eventually rose to the occasion and by the time Hitler marched into Poland, it had started working 'at full belt' to make the RIN ships and requisitioned vessels ready for war. Within the first 10 days of the commencement of the War, 17 vessels were got ready with many, many more to follow during the course of the next six years.

During these six years the strength of workers in the Bombay Dockyard increased ten times, its productive area was increased by fifty per cent, a hundred and seventy thousand square feet of covered area was constructed, five acres of non-productive buildings were demolished to make room for new stores and workshops, the number of ships handled at a time increased from two or three to thirty, the dry-docks were extended to take in larger vessels, berths were deepened to accommodate larger fleet units, the number of trades was considerably increased from tailors to tinsmiths and from optical experts to millwrights and refits were cut to a third or a quarter of the time they took before the commencement of the War, thus rendering the dockyard comparable to the Chatham Dockyard.

The tasks handled by the Dockyard included repairing a destroyer with seventy feet of its stem missing, refitting a frigate requiring a new stem, conversion of four P&O liners into armed merchant cruisers, fitting out passenger ships as troop transport, hospital ships and mule ships, converting coastal craft into local naval defence vessels, refitting whaling ships as minesweepers and installing guns and weapon control systems on a large number of 'defensively armed merchant ships.'

The first major action-damage repairs were carried out on the cruiser *Cape Town* after she had been torpedoed off Massawa; in January 1942 the destroyer *Kimberley*, whose stem was blown off by a German submarine in the Mediterranean, was towed to Bombay where the Dockyard built a new stem on her and realigned the nine-ton main gear wheel; another Royal

Navy ship, the *Isis*, was brought to Bombay after she had been extensively damaged, refitted and sent to Singapore where she suffered fresh damage during a Japanese bombing raid and was once again brought to Bombay for major refit before she sailed out for operations in the eastern theatre yet again.

These six years saw the Engineering Department trebling its capacity, the Gun mounting Depot coming into being, a massive naval stores complex being set up, a number of workshops catering to diverse maintenance disciplines beginning to function and a large number of vessels being made battleworthy within the shortest possible time. To quote Captain W.R. Shewring of the RIN, 'In six years of concentrated effort, the historic Naval Dockyard at Bombay has made a distinguished contribution to Victory, worthily maintaining its 200 years tradition.'

There was a brief lull thereafter in the activities of the Dockyard which were confined to refitting of ships but construction of ships had been permanently discontinued. By the time of Independence, however, three major shipyards had been set up in the country - Hindustan Shipyard, Vishakhapatnam, Garden Reach Workshops, Calcutta and Mazagon Dock, Bombay and some privately owned yards had started building fishing trawlers, barges, powered boats and small craft but construction of warships was yet to be revived.

The first major task assigned to the Bombay Dockyard after Independence was rendering a third of the undivided fleet and associated assets of the British Royal Indian Navy earmarked for transfer to Pakistan seaworthy and capable of making the passage to Pakistan's major naval bases on its western and eastern sea-fronts, Karachi and Chittagong. All officers and ratings of the undivided RIN opting for Pakistan had to be transferred to these ships which were refitted, fuelled, victualled and stored and their operational efficiency maximised before their departure for Pakistan as Karachi and Chittagong were equipped with only minor repair facilities at that time. A third of the machinery and equipment allotted to the Pakistan Navy was also shipped to Pakistan. The personnel of the Dockyard rose to the occasion and the ships that would constitute the Pak fleet on August 15, 1947 - two sloops including the undivided RIN's flagship, *Godavari*, two frigates, four mainsweepers, two trawlers, two motor minesweepers and four harbour defence motor launches - sixteen vessels in all - were got ready and sailed out of Bombay Harbour by August 15, 1947. These ships thereafter struck the RIN ensign and the Union Jack and hoisted the Royal Pak Naval ensign and the Pakistani national flag at sea and set course for the Pakistani ports.

Following the departure of the Pakistani fleet and its personnel, the Indian naval authorities undertook the task of restructuring the organisa-

tion of the Dockyard for meeting the requirements of Independent India's navy but it was soon embroiled into a state of hectic activity for preparing the Indian Navy's fleet for its first naval operation after Independence - bottling up the coastal waters of the state of Junagadh in Kathiawar which had illegally acceded to Pakistan. Three sloops, three minesweepers, three landing ships and one motor launch were refitted and made operational at short notice for the operation against the belligerent Nawab of Junagadh and his rebel force in October, 1947. The tasks of landing the Army on the Kathiawar Coast, sanitizing the area off the recalcitrant 'native state' and occupying its shore areas, which were of considerable tactical importance, was successfully carried out.

In order to revamp the Dockyard's organisational tree, which had clung to the archaic Royal Naval dockyard structure for several decades, and to optimise its material efficiency, a special committee had been set up immediately after Independence and had recommended the adoption of the principles of the industrial system of management for the purpose. This would in turn facilitate the introduction of the latest scientific techniques of controlling refitting and maintenance operations and at the same time carefully preparing a phased plan for the expansion of the Dockyard to meet its future technological requirements. It was emphasised that with the introducion of the industrial system of management it would be possible to plan the Dockyard's activities in detail, ensure better coordination and progress at managerial and workshop levels, improve economy and progress and ensure effective control in the handling of material, labour and equipment.

The recommendations of the committee were accepted and, within a year of Independence, a new organisation based on managerial concepts came into being with the Dockyard being headed by a Captain Superintendent under whom was placed an Industrial Manager heading five technical departments: Engineering, Electrical, Construction, Maintenance and Gun-Mounting. A newly set up Planning Section was charged with planning and sequencing the docking of ships and repairs on a scientific basis, effecting greater economy in the utilisation of materials and manpower and improving and co-ordinating the operations of all technical and non-technical services. A number of cranes and cradles with hoisting gear imported from the UK were installed at suitable locations to facilitate the handling of heavy equipment. A large quantity of stores and spares worth a few crore rupees, which had been lying unused in the various departments of the Dockyard since the end of World War II, was withdrawn and placed under the Dockyard's stores officer and an efficient centralised system of spares storage, retrieval and issue was introduced with the creation of a Spare Parts Distribution Centre. A beginning was also made in indigenising the supply

of stores and spares.

With the acquisition of the Navy's first cruiser, *Delhi*, in 1948, one of the dry-docks of the Dockyard, the Duncan Dock, had to undergo a minor modification to accommodate the 555-foot hull of this 'David' who had slain 'Goliath' in the Battle of the River Plate and a number of tugs and ferry craft had to be requisitioned to manoeuvre the cruiser through the caisson into the Duncan Dock, an operation undertaken by the Dockyard staff for the first time.

With the acquisition of the three R class destroyers, *Rajput*, *Rana*, and *Ranjit*, in 1949, one store ship, *Dharini*, in 1952, the three Hunt class destroyers, *Godavari*, *Gomati* and *Ganga*, in 1953, one Tanker, *Shakti*, in 1954 and six minesweepers, *Bassein*, *Bimlipatnam*, *Kakinada Cannanore*, *Karwar* and *Cuddalore*, in 1956, the maintenance facilities had to be considerably extended and modernised to cope with the post-World War II generation of propulsion machinery, weapons and weapon control systems, electromagnetic and underwater sensors, data transmission systems and damage control techniques.

When the first atomic reactor, Apsara, was being set up at Trombay during the early 1950s, the Atomic Research Centre was faced with a major engineering task which had not so far been undertaken in this country that of fashioning a very large base-plate weighing a few tons for the fuel element rods of the reactor with great accuracy at short notice as Prime Minister Jawaharlal Nehru was to inaugurate the reactor within a few weeks. The Dockyard technicians accepted the challenge, worked round the clock and completed the task within a few days and the plate fabricated met all the requirements of structural strength, composition and 'tolerance', i.e., permissible variation in weight and dimension. Another instance of the high level of the Dockyard's expertise was that two ships, *Cauvery*, and *Konkan*, which underwent extended major refit at the Dockyard, exceeded the speeds attained by them during the builders' sea trials over 15 years earlier in England and that the propellers of *Delhi*, which had suffered damage during operations, were changed by the Dockyard within the record time of six hours.

In order to improve industrial relations and channelise the specialist skills of the workers, a Works Committee was formed with the Industrial Manager as the Chairman and the heads of various departments and representatives of the workers union as members. The first task undertaken by the Committee was the classification of workers into different trades and skills and the reorganisation of the hierarchical structure of the departments and shops on the basis of the latest managerial concepts.

As regards training Dockyard workers in their numerous professions, a Mechanics' Institute had been set up as early as 1848 to train workers in

steam propulsion of ships, which had just been introduced, but most of the workers had to be trained on an 'on-the-job' basis as no separate organisation for the composite training of workers in the various skills existed. And hence, in order to improve their performance, the lowest educational qualification for apprentices was raised to matriculation soon after Independence and a Dockyard Apprentice School set up within the Dockyard's premises in 1949 with 77 general apprentices who branched into various trades and professions after their basic training. Over the years this school has not only provided the necessary skilled manpower to the Dockyard but has also turned out a large number of professional tradesmen to meet the requirements of the industrial establishments.

Based on the strength of the Indian Navy of the late 1960s, as projected in the future plans drawn up at the Naval Headquarters in 1948 which proposed the acquisition of a large number of aircraft carriers, cruisers, destroyers, frigates,tankers, minesweepers, hydrographic survey vessels, landing craft, store ships, submarines, submarine tenders, diving tenders, coastal craft, harbour craft, naval aircraft and helicopters, and in consultation with the British Admiralty, it was decided to suitably expand the Dockyard expeditiously and augment the facilities and services provided by it. Accordingly, Sir Alexander Gibb and Partners, consulting engineers of international repute, were contracted to prepare a suitable plan for creating, firstly, additional space within the Dockyard by reclamation, secondly, additional berthing facilities by constructing new wharves and, thirdly, additional dry-docking facilities for the repair of capital ships, i.e., cruisers and aircraft carriers, with the proviso that the expansion plan was to be implemented without affecting the normal functioning of the Dockyard.

In May 1950 the consultants finalised their report which provided for an increase in the existing land area of 39 acres to 120 acres by reclamation and by acquiring some portions of the Ballard Pier and the Royal Bombay Yacht Club, the construction of a 3,200-foot breakwater to form an artificial tidal basin and increasing the protected water area from 24 acres to 150 acres, construction of new workshops, offices, stores and other buildings on the reclaimed and extended land area, construction of two 'graving' (dry) docks of suitable size for all classes of vessels to be acquired during the next two decades, and the extension of the total berthage within the area of the tidal basin by nearly four kilometres. After a few modifications regarding the location of the docks and the various buildings and workships, the consultant's recommendations were projected to the Government of India along with the proposal for a Rs 25.1-crore, five-stage, 12-year Naval Dockyard Expansion Scheme with Captain (later Vice Admiral) Daya Shankar, Chief of Material at Naval Headquarters, being the nodal functionary for obtaining Government approval and for the implementation of the project.

In 1952 the Government of India accorded its approval in principle for a modified two-stage project, the Rs 11.32-crore first stage comprising the extension of the Ballard Pier by 750 feet, reclamation of 27 acres of sea area, erection of three wharves on the reclaimed area providing 2,300 feet of wharfage and construction of a cruiser-graving dock on the reclaimed area. The Rs 14.59-crore second stage would extend the reclaimed area by another 40 acres on which would be constructed the outer deep-water basin with allied wharves to provide greater berthing facilities to be used for repairs and for operational reasons.

The Bombay Port Trust authorities and the Maharashtra Government did not, however, take very kindly to the Dockyard's proposed expansion scheme. The Port Trust felt that it would hamper the movement of passenger liners and freighters to and from the Ballard Pier and demanded a monetary compensation of Rs 1.4 crore while the Maharashtra Government's objection was based on the apprehension that it would mar an important tourist attraction - the panoramic view of the harbour from the Gateway of India. The controversy had delayed the launching of the project by over two years when Prime Minister Jawaharlal Nahru intervened, overruled the objections and decided in favour of the Dockyard's expansion. Work on the project entrusted to various contractors around the globe and overseen by Sir Alexander Gibbs and Partners could, therefore, commence only in 1955. Work on the project, however, came to a standstill once again in 1956 when differences over contractual obligations led to arbitration and further consequent delay in construction work.

In 1958 the late V.K. Krishna Menon, who was the Union Defence Minister, vexed by the slow progress of the project, dissolved the Naval Dockyard Construction Committee, which had been overseeing the expansion of the Dockyard on behalf of the Government of India, and ordered the formation of a Naval Dockyard Expansion scheme with Commodore (later Admiral) S.M. Nanda as its first Director General. He was armed with adequate facilities, finance and authority to steer the project clear of the hazards it had so far been faced with. In 1960 Rear Admiral P.K. Mookerji of the Navy's Engineering Branch took over as the Director General and, during his long tenure of seven and a half years in this assignment, succeeded in completing several major projected works.

Construction of the cruiser-graving dock, equipped with three Pump-houses, two heavy-duty cranes and the attendant services, was well under way when it was decided to acquire the Navy's first aircraft carrier, *Vikrant*. The dock was, therefore, suitably extended and its shore end modified to accommodate the carrier's forecastle and its protruding gun sponsons.

After its completion, the cruiser-graving dock had the unique distinction of docking all three post-Independence flagships of the Indian Navy -

Delhi, Mysore and *Vikrant*. In 1963 a large oil tanker, *SS Sarulla*, which had sprung a leak and had thus become a pollution hazard to Bombay Harbour, was isolated by being docked in the cruiser-graving dock, on a request received from the Bombay Port Trust, and necessary repairs carried out. There were occasions when as many as four ships - submarines and frigates - were simultaneously docked in the cruiser-graving dock.

Along with the cruiser-graving dock, which was commissioned by Shri Krishna Menon, the barracks wharf, the destroyer wharf, the boat wharf and a patent slipway were completed and by 1962 the Ballard Pier was extended by 750 feet.

Construction of a south breakwater wharf, a rubble-mound breakwater and a protective retaining bund was commenced in 1958 after obtaining the clearance of the Bombay Port Trust. For this phase of the project, 24 large reinforced concrete caissons had to be laid on the prepared foundation, the tidal basin had to be deepened to 34 feet and nearly 40 acres of sea area had to be reclaimed by removing rocks, blasting charges underwater and filling up the cleared areas. The breakwater thus erected was capable of berthing the largest naval ships on the protected inner face in all weather conditions and on the outer face in fair weather. A novel feature of the south breakwater, owing to the cellular construction of the caissons, was the additional facility for the storage of fresh water and oil, provision of pressurised salt water and compressed air, location of electrical substations and a battery of cables and other equipment below the breakwater's upper exposed deck. This deck was left clear for the installation of cranes and other handling gear, for the movement of vehicles and for laying rails for the supply or removal of heavy machinery and weapons. The slipway was built for hauling up, drying out and repairing smaller craft such as patrol craft, minesweepers and local naval defence vessels without having to dry dock them.

The areas reclaimed around the cruiser-graving dock and the newly constructed wharves were utilised for the construction of workshops for the repair and maintenance of propulsion machinery, generators, weapons, weapon control systems, sensors, data transmission systems and navigational equipment installed on board the ships acquired after Independence as these were far more sophisticated and superior in their capabilities than similar equipment of World War II vintage.

Meanwhile the tidal structure and the pattern of the deposition of silt in the area contiguous to the Ballard Pier and south breakwater underwent a complete change owing to the erection of the concrete structure a few kilometres long and the reclamation of a sizeable area. The dredging fleet of the Dockyard was hence expanded and placed under the Commander of the Dockyard (acronym 'C of Y'), who controls all movement of ships in the Dockyard, for maintaining the required depth of sea water in the area.

In order to improve the operational efficiency of the Dockyard, the National Productivity Council was invited in 1963 to examine its organisational structure and operating procedure. A team deputed by the Council, headed by a Ford Foundation specialist, conducted a detailed study of all aspects of the Dockyard's activities for a period of four months and pointed out the deficiencies in staffing, training, organisation and the planning and control of its maintenance and refitting operations.

As regards staffing, the main lacunae pointed out were quick rotation of technical officers, who mainly comprised officers in uniform, inadequate educational and professional training of technical personnel and low morale due to a poor wage structure and promotion prospects that had remained close to the low water mark since the cessation of hostilities in 1945. Training activities were considered infrequent and lacking in professionalism and needing reorientation on modern scientific lines and interaction with other similar technical establishments in India and abroad. The NPC team thus stressed the fact that the Dockyard was lacking in discharging several important functions of management, viz., process planning and estimating, production control, work study, data processing and a standard cost system - and recommended their inclusion in the organisational structure and operating procedure of the Dockyard. Accordingly, the organisational tree of the Dockyard was pruned, cross-cut and revamped and a production planning and control department was created in 1964 for improving the utilisation of human and material resources and productivity. A work study team was also created to systematically study and critically examine all activities of the Dockyard, recommend more efficient techniques of recording and evaluating defect and repair operations, and for reorienting the layout of workshops for improving their efficiency.

Construction also commenced of a Rs 2.9-crore steam test house for the repair of the shipboard steam-driven equipment such as turbo-generators, air compressors, pneumatic instrument controls and turbine-actuated blowers, pumps and ejectors. Work also began on setting up a modern weapons and control systems repair shop (WECORS), which was responsible for not only the maintenance of modern weapon and weapon control systems but also the calibration and overhaul of diverse electronic devices, weapon computers, sensors and video displays and their support facilities - electrical, electronic, mechnical and hydraulic. The Rs 5.8-crore first phase of the WECORS project was sanctioned in 1961 and a specially-equipped, air-conditioned, dust-free enclosure of 80,000 square feet floor area was erected by 1966 and inaugurated by the then Naval Chief, Vice Admiral (later Admiral) A.K. Chatterji. The construction of WECORS lent concrete shape to the concept of integrated equipment repairs and fault diagnosis on a scientific basis.

The other improtant workshops set up were the diesel workshop for testing and repairing high-speed diesel engines and thus indigenising their maintenance, a steel fabrication shop for making steel castings for the replacement of damaged propellers, propeller shafts, junction boxes, crank pins, journals, casings, condensers and switchgear used on board ships and yard craft and a quality control department to ensure reliability of shipboard equipment, machinery and weapons, to test raw material and spares for their suitability for use and to lay down specifications by the process of inspection, tests, documentation and scientific analysis of spares and components.

The Dockyard also undertook in-house maintenance and construction of its heavy-duty machinery equipment such as hydraulic engines, boilers, caissons and dock gates. Arrangements were also made for the repair of cranes, davits, machine tools, motors, captive generators and hauling and other equipment by the dockyard staff. The functions of estimating, forecasting, procuring, provisioning, safekeeping, preserving, accounting and supplying a wide variety of stores and equipment by the Naval Store Organisation and the Spare Parts Distribution Centre were further streamlined on the basis of the modern concepts of logistics and material management with the assistance of the Administrative Staff College, Hyderabad and a special supply procedure evolved for handling spare parts of critical importance required for the refit of ships without upsetting the refit schedules of other ships urgently required for operations and exercises.

Since research and development in metallurgy and the chemical sciences has a direct bearing on quality control, Dr J.E. Keyston, the Chief Scientist of the Royal Naval Scientific Service, was requested in 1948-49 to prepare a report on this aspect of the Dockyards's activities. One of the recommendations made by him was the setting up of a Naval Chemical and Metallurgical Laboratory (NCML) within the Dockyard premises. Accordingly, an NCML came into being in 1953 with Dr G.E. Gate of the Royal Naval Scientific Service on loan service as the Scientific Adviser to the Indian Navy. The Laboratory was located in a 600-square-metre building within the precincts of the Dockyard and was suitably equipped to handle research in metallurgy, chemistry, biology, material corrosion and paints and to devise means to indigenise the production of naval stores.

The NCML made a significant contribution to the operational availability of ships by reducing the 'down-time' of weaponry and equipment through its sustained effort to improve the quality of components. The main thrust of its activities, however, was on fighting the worst scourge at sea - corrosion. When the ship's hull was made of timber, it was protected from the sea organisms by covering it with a thin layer of copper which had to be periodically reinforced by 'recoppering' but when ironclads were intro-

duced in the 19th century with an increasing variety of shipboard equip ment made of metals, the main problems faced by the maintainers wer rusting and fouling. In his article 'Saboteurs of Ships at Sea', Dr K.P. Buch a senior Defence Scientist, says,

> Ironically, in the very waters it seeks to protect, the Navy faces its worst enemies - nay saboteurs - hidden in the sea! They are corrosion and marine fouling organisms, the latter directly contributing to enhance corrosion. What cancer is to the human body, corrosion is to the metallic structures immersed in sea water, whether they are static or moving. Like cancer, corrosion can be localised or spread over large and isolated areas. If it is not detected in time and curative measures not initiated, corrosion can be fatal to the immersed structure. Corrosion affects the ships by attacking not only underwater hull and machinery components, but also every compartment, weapon systems and all fixtures and fittings on board.

The major achievements of the NCML were the development of heavy-duty paints containing synthetic chemicals, not affected by sea water in order to provide better protection to ships' hulls from corrosion and the introduction of 'galvanic anodes' designed in its laboratory for providing cathodic protection to the hull, i.e., passing a current to reverse the corrosive chemical reaction that has already taken place. The laboratory also developed sophisticated techniques of *in situ* welding and chemical cleaning of ships' machinery.

From Independence to the middle of the 1960s the Naval Dockyard, which had a distinguished record of service to the Royal Navy, Royal Indian Navy and the Indian Navy for well over two centuries, continued to reorient its operational philosophy towards meeting the increasing challenges of warship maintenance and their quicker turn-around. Since invention and sophistication of weapons, equipment, machinery, hulls, etc., is an ongoing process, spurred on by the ever-increasing pace of naval operations, and the need for quicker reaction in attack and defence leading to even further automation of ships and weapon systems, the Naval Dockyard continued not only to handle the task of carrying out complex repairs of and providing logistic support to the Western Fleet more efficiently, but also to play the role of the lead yard of the Navy in warship maintenance and fitting out. And it continues to live up to the spirit of what Winston Churchill said on February 9, 1941, 'We shall not fail or falter; we shall not weaken or tire. Neither the sudden shock of battle nor the long-drawn trails of vigilance and exertion will wear as down. Give us the tools and we will finish the job.'

8

THE MEN BEHIND THE MACHINES

Personnel

One of the grave inadequacies the fledgling Royal Indian Navy faced during its formative years after Independence was the inadequacy of personnel, especially in the senior cadres, and serious imbalances in its personnel structure. Much of this had stemmed from the policies followed by the British in respect of service in the RIN during the decades preceding Independence.

Until 1947 our naval forces, such as they were, comprised virtually a navy of mercenaries led almost entirely by British officers. Britain, whose own navy was the instrument through which she wielded influence and enforced her policy around the globe, had no need for another navy of any consequence which might even remotely challenge its authority at a future date. All she wanted was a substantial bulk of manpower on shore which the British Indian Army provided most effectively. This probably explained why the Navy was the last of the Services to which Indian officers were admitted.

Another major problem that faced the Royal Indian Navy on Independence arose from the fact that the bulk of recruitment into the sailor rank was from among the Punjabi Muslims. Thus, when partition came, an alarmingly large number of senior sailors went over to Pakistan leaving a gaping void in the hierarchical structure of the truncated Navy.

While the imbalance in the officer cadre caused by the partition of the country was tided over by resorting to a deliberate policy of borrowing officers from the Royal Navy, particularly in the senior ranks, until the comparatively junior Indian officers could gain the necessary experience, a crash programme of recruitment and intensive training of sailors was also undertaken, and was particularly aimed at filling the gaps in the senior ranks.

At the time of partition about 21 per cent of the officers of the undivided RIN opted for Pakistan but in the case of sailors no less than 47 per cent were transferred to the Pak Navy. By 1950, however, the officers' strength had increased by 59 per cent to 720. In 1955 the borne strength was 999 which was an increase of 39 per cent. By 1960 the borne strength had gone up to 1425, i.e. a substantial increase of 43 per cent and by 1965 the strength was increased to 1934, i.e., an increase of 39 per cent. Various schemes of recruitment including direct entry had been initiated and these brought in an adequate number of officers into the various branches. Foundations were thus firmly laid for sustaining a personnel cadre that could man and handle diverse specialist tasks, ashore and afloat, in the Navy of the future.

With regard to the strength of sailors which, as stated earlier, had been reduced by nearly 50 per cent of the undivided RIN's complement at the time of partition, was increased in 1950 by about 40 per cent of the truncated RIN's complement with the strength being raised to 6,950. By 1955 the sailors' strength had increased to 9,609, i.e., an increase of 38 per cent, and in 1960 the sailors' strength was further raised to 12,822 which was an increase of 33 per cent. In 1965 the sailors' strength was 16,933 i.e., an increase of 32 per cent. Here also a firm base was progressively created for the vital sailor structure to meet the increased requirements of multiplying skills in the different disciplines of an expanding Service.

The training establishments, which had been geared up to ensure effective training of a very large number of naval personnel, did a commendable job to meet all the commitments for the different branches of the Services without allowing any fall in standards. By this time the Navy had not only made up the steep fall in its officer and sailor cadres caused by the partition of the subcontinent but had also created a sizeable skill-bank, i.e., a nucleus of officers and sailors with considerable experience in their specialisations and subspecialisations and capable of reaching high levels of proficiency in the various operational, maintenance, logistic and shore-support disciplines required to run a viable naval force with state-of-the-art equipment, technology and strategic and tactical manoeuvrability.

Officers

On August 15, 1947 all British officers of the RIN and its Reserves (Royal Indian Navy Volunteer Reserve and Royal Indian Navy Reserve) were compulsorily retired. They were paid compensation for the 'loss of career' and were granted full or proportionate pension based on the length of service. As regards the Indian officers, Muslims residing in India and non-Muslims from areas in Pakistan were given the option to elect service with either of the two new navies while Muslims from Pakistan could only opt for service with the Royal Pakistan Navy and non-Muslims residing in India could serve only in the Royal Indian Navy.

British officers released from the RIN were invited to volunteer for service in the Armed Forces of India and Pakistan and those who volunteered were transferred to a Special List of the Royal Navy and were placed under the administrative control of the Deputy Supreme Commander (Navy) who assigned them to the RIN or RPN. A number of these officers opting to serve with the RIN were granted commissions in the Service on a contract basis with effect from 1 January 1948. In addition, it was decided to obtain the services of 88 commissioned officers and 61 warrant officers of all branches on loan from the Royal Navy to meet the manning requirements as a stop-gap arrangement.

In order to cater for the expansion of free India's Navy, it was decided to step up the annual recruitment of Cadets from 24 to 46 and to resort to direct recruitment of commissioned officers in all branches of the Navy.

By the end of 1950, the number of Royal Navy and Royal Navy (Special List) officers in the RIN had respectively gone up to 61 and 8 with an outstanding demand for 19 more officers. In addition, 33 Special-Entry Cadets, 30 Joint-Services-Wing-Entry Cadets and 48 Direct-Entry short service commission officers had been recruited into the Navy. Besides, as many as 33 officers were reputed to undergo various courses with the Royal Navy.

During the following two years, 1951 and 1952, two senior appointments, viz., Captain Superintendent, Naval Dockyard, Bombay, and Naval Officer-in-Charge, Vishakhapatnam, were nationalised, the number of British officers on deputation was reduced to 50, initial training of junior officers of the Executive and Supply and Secretariat branches was initiated in India, 60 Naval Cadets, 10 Special-Entry Cadets and 66 commissioned officers were recruited to the various branches and 82 ex-Reserve officers were granted permanent commissions in the Navy.

By 1958 a number of senior appointments had been Indianised. These were: Chief of Staff and Deputy Commander-in-Chief, Indian Navy; Commodore-in-Charge, Cochin; Commander-in-Charge, Bombay; Chief of Material, Naval Headquarters; Director of Engineering, Naval Headquarters; Officer-in-Charge, Torpedo Antisubmarine School; Staff Officer, Educa-

tion, at *INS Venduruthy*; Chief Instructor (Navy), Defence Services Staff College, Wellington; Chief Hydrographer; Flag Officer Commanding, Indian Fleet; Director of Naval Education, Naval Headquarters; Director of Music, Indian Navy; Chief of the Naval Staff.

During the five years from 1954 to 1958 as many as 200 Regular-Entry Cadets, 59 Special-Entry Cadets, 50 permanent regular commissioned officers and 41 short-service commissioned officers were recruited in the Executive, Supply and Secretariat, Engineering, Electrical and Constructor branches of the Navy. In 1956 the use of the distinctive colour lace between the rank stripes of officers of the Indian Navy worn on their sleeves or epaulettes was abolished. (Executive - no colour, Supply and Secretariat - white, Engineering - purple, Electrical - dark green, Education - blue, and Special - light green).

Until 1957 promotion to the rank of Commander was only by selection. In 1958 officers became eligible for promotion to this rank by time-scale as well. Substantive Lieutenant Commanders who had completed 24 years of reckonable service before attaining the minimum age of compulsory retirement and who were considered fit for promotion were now eligible for promotion to the rank of Commander by time-scale. Also, the existing age of compulsory retirement, viz., 45 years, for officers of the rank of Lieutenant Commander was raised in 1958 to 48 years.

By this time there were only two Royal Navy officers left with the Indian Navy - the Chief of Naval Aviation and the Deputy Director (Flying) at Naval Headquarters.

In 1959, on the institution of the scheme for granting honorary ranks in the Navy, His Highness the Nawab of Palanpur was the first to be granted the honorary rank of Lieutenant Commander in the Navy, one Senior Commissioned Officer (equivalent to the rank of Sub-Lieutenant) was granted the honorary rank of Lieutenant on the Active List and three Chief Petty Officers were granted the honorary rank of Commissioned Officer on the Retired List. The year also saw the recruitment of 34 Regular-Entry Cadets, four Special-Entry Cadets, 12 permanent regular commission officers and 27 short service commission officers. Eighteen ex-Reserve officers were also granted permanent commissions during the year.

It was also during 1959 that, due to poor response to advertisements for the selection of Direct-Entry officers in the Electrical Branch, the University Entry scheme was launched, a scheme under which students in the final and pre-final years of the degree course in electrical engineering at various technical institutions were selected and were screened by a selection board before being recruited into the Navy in the rank of Acting Sub-Lieutenant in the final year while continuing their studies. Under this scheme 16 candidates were recruited in 1959.

During the year 37 officers were deputed to the UK for undergoing various courses including those of Electrical Aquaintance, Constructor, Advanced Aeronautical Engineering, Observers, Advanced Marine Engineering, Advanced Armament Inspection, Advanced Air Engineering, Air Electrical Engineering, Survey, Atomic, Bacteriological and Damage Control, Air Weapons and Engineering Specialisation, Navigation and Direction and attachment to aircraft carriers and aircraft manufacturers.

In the course of the next six years, 499 officers comprising 268 Regular -Entry Cadets, 47 Special-Entry Cadets, 10 Naval Aviation Cadets, 15 University-Entry officers for the technical branches, 90 permanent regular commission officers and 69 short service commission officers were recruited into the Navy. By the end of 1965 the total strength of officers had risen to 1,940. (Executive Branch - 921, Engineering Branch - 312, Electrical Branch - 215, Supply and Secretariat Branch - 237, Instructor Branch - 117 and Medical Branch -138). The number of officers holding commissions in the Indian Naval Volunteer Reserve (INVR) and Indian Naval Reserve (INR) was 90. Ninety two officers had been deputed to the United Kingdom for the new ships that were being acquired for the Navy and 24 officers were deputed to the UK and USA for various specialist courses. The awards made to officers of the Navy comprised: 1960 - one Naosena Medal; 1961 - One Vishisht Seva Medal Class I, two Vishisht Seva Medals Class II, two Vishisht Seva Medals Class III, one Naosena Medal; 1962 - three Ashoka Chakras Class II, one Vishisht Seva Medal Class II, four Ashoka Chakras Class III, five Naosena Medals and four Mentions-in-Despatches.

Indianisation of the Navy's officer cadre was completed in 1962 when the last British officer still on deputation to the Service - Commodore (later Admiral) D.W. Kirke, Chief of Naval Aviation - returned to England.

Sailors

With the cessation of hostilities in August 1945 recruitment of sailors had been suspended and a number of Naval recruitment camps had been closed down. The policy of recruitment had been revised and the eligibility for enrolment in the RIN had been restricted to, firstly, Indians who were British subjects or subjects of an Indian State and who were either domiciled in British India or Indian States, secondly, Anglo-Indians who were domiciled in British India or Indian States, and thirdly, Goans (it will be recalled that Goa was under the Portuguese at this time) who had taken out naturalisation papers under either the British Nationality and Status of Aliens Act, 1914, or the Naturalisation Act, 1926.

Plans had also been finalised for lowering the strength of sailors to approximately 11,000 by June 1946 and the process of demobilisation had been stepped up. In the first phase about 6,000 sailors including ex-Army person-

nel, Hostilities Only (H.O.) sailors, pensioners, supernumeraries and re-servists recalled during the War and recruits under training had been released from service by the end of 1945. Some of the temporary substantive branches of sailors such as Security, Coder and Signalman (A/M) had been abolished. A number of sailors of higher ranks of branches or categories declared surplus such as the Landing Craft Wing and Hostilities Only category had, however, been transferred to the other branches and retained in service.

A demobilisation centre had been opened at *Kakauri* at Versova, Bombay immediately following the end of the War but since it could not handle the large number of sailors scheduled for release, another demobilisation centre had been opened at *Cheetah* at Trombay in January 1946. By December 1946, 16,835 sailors had been released from service.

After Independence, in order to make up for the sudden loss of nearly 50 per cent of the Navy's lower-deck manpower, recruitment of sailors was once again commenced and a large number of sailors deputed to the UK to undergo various courses such as Telegraphist/Signal Boatswain, Quarter Armourer, Electrical Artificer (Radio), Electrical Mechanic and Torpedo Detection. A number of new Part II Qualifications (specialist qualifications) were also introduced. The RIN Guards used for the security of shore establishments were disbanded and were replaced by personnel from the Ministry of Defence Security Corps. Boys and Artificer Apprentices continued to be recruited as before.

The recruitment of direct-entry sailors had soon to be stepped up further in order to make up for the sharp fall in the personnel strength at the time of partition and the deputation of a large number of sailors to the Royal Navy establishments in the UK for specialist courses in communication, gunnery, store-keeping, hydrographic survey, torpedo and antisubmarine warfare, radar control, shipwright, aircraft technology and all disciplines of engineering - mechanical marine, electrical and radio. The C.W. (Commission-Worthy) Scheme - also known as the Upper Yardmen Scheme - was used to select suitable candidates from the lower deck for promotion to the rank of Acting Sub-Lieutenant in all branches. Consequent on the introduction of naval aviation, several categories of sailors were introduced for aviation duties.

By 1951 the manning situation had considerably improved and hence the direct-entry recruitment of sailors was stopped except for the 'Domestic' branch comprising Cooks, Topasses (sailors responsible for the sanitation of ships' living and working spaces), Musicians and Sick-Berth Attendants. By 1953, in order to meet future shortages, recruitment to the Communication, Writer, Stores and Steward Branches was resumed. A large number of sailors, who had qualified in the selection tests for officers,

were promoted to the Commissioned Rank (Branch List), the new nomenclature for the erstwhile Warrant Rank.

The education tests for advancement to higher ranks or for promotion to commissioned rank, the Educational Test 1 (ET1) and the Higher Education Test (HET) respectively, were revised to suit the changing requirements of the Navy. In addition, a modified test called Educational Test 1 - ET1(M) - was introduced in 1954 for Cooks and Stewards for advancement to the rank of Leading Cook and Leading Steward. In 1961 the designation of Sick-Berth Attendant was changed to Sick-Berth Assistant with the acronym remaining unaltered - SBA.

In 1963 the nomenclature of the Commissioned Rank (Branch List) was changed to the Special Duties (SD) List and the rules for promotion to higher ranks for this category of ex-lower-deck officers suitably revised to improve their career prospects and retirement benefits.

By 1965 the annual intake of Boys had gone up to 800, that of Artificer Apprentices raised to 160 and the number of direct-entry sailors recruited had been stepped up to 1500. As many as 40 sailors were promoted during the year to commissioned rank in the Special Duties List and six sailors were granted the rank of Acting Sub-Lieutenant in the General List under the Upper Yardmen Scheme. A Batch of 40 sailors was deputed abroad for manning new ships being acquired for the Navy.

The awards made to sailors during the period from 1951 to 1965 included Commendations by the Chief of the Naval Staff, Long Service and Good Conduct (LSGC) Medals with or without gratuity (the amount of the gratuity paid was initially Rs 25 but was later raised to Rs 100), Meritorious Service Medals (MSM) with or without annuity (initially a sum of Rs 25 was paid per annum as annuity but this was also later raised to Rs 100 per annum), Ashoka Chakras Class III and Naosena Medals (NM). The numbers of the awards made are given in Table 8.1

Table 8.1 Awards made to sailors from 1951 to 1965

	Commendation from the Naval Chief	*LSGC with Gratuity*	*LSGC without Gratuity*	*MSM with Annuity*	*MSM without Annuity*	*Ashoka Chakra Class III*	*Naosena Medal*
	1	2	3	4	5	6	7
1951-52	8	-	-	-	-	-	-
1953	11	-	-	-	-	-	-
1954-58	-	93	9	-	41	1	-
1959	-	26	13	-	3	1	-
1960	2	28	14	-	5	-	1
1961	-	31	16	-	3	-	-

	1	2	3	4	5	6	7
1962	-	32	16	4	-	-	-
1963	5	36	18	-	6	-	-
1964	10	38	19	5	-	-	-
1965	20	42	21	8	-	-	-

An impressive pace of development of the Navy's personnel structure had thus been built up by 1965 which enabled the Service to continue to meet its manning requirements during the following decades and to provide suitable personnel for the new acquisitions of the 1970s and 1980s.

Phasing out the British Presence

When partition came on August 15, 1947, the Indian Navy was a Service most of whose top echelons were occupied by British officers with the seniormost Indian officers, Ram Das Katari (later Admiral) being only a Captain. The sudden, though unavoidable, large-scale retirement or 'repatriation' of British officers to their parent Services in the UK and of Muslim officers from the areas allotted to Pakistan to that country, thus left a sizeable void at the senior levels of the Navy's hierarchy.

British officers of the undivided Royal Indian Navy and its Reserves were compulsorily retired, regular officers being granted compensation for premature retirement and officers not qualified for full pension paid proportionate retirement benefits. Some of these British officers who volunteered for Service in the Armed Forces of India and Pakistan were transferred to a Special List of the Royal Navy and were placed under the Deputy Supreme Commander (Navy) for service with the Royal Indian Navy and Royal Pakistan Navy. The Supreme Commander's office was closed down on December 31, 1947 and because of the persisting acute shortage in the cadre of officers, especially in the senior ranks, a number of British officers who had volunteered were selected for extended service with the RIN on a contract basis for three years from January 1, 1948. The services of a few senior officers were, however, obtained on loan from the Royal Navy for the seniormost appointments in independent India's Navy, the total number of Royal Navy personnel attached to the RIN being 149 (88 commissioned officers and 61 warrant officers).

Thus on August 15, 1947 Rear Admiral J.T.S. Hall, RN was selected by the Government of India to command and reconstitute independent India's Royal Indian Navy and was designated the Flag Officer Commanding, Royal Indian Navy (FOCRIN); Commodore M.H. St. L. Nott, RN was

appointed the Chief of Staff at Naval Headquarters, the appointment of Flag Officer, Bombay was abolished and Commodore H.R. Inigo-Jones, RN assumed the duties of Commodore-in-Charge, Bombay in lieu. All these officers belonged to the Special List of the Royal Navy (undivided Royal Indian Navy). They were later joined by a few senior officers on loan from the Royal Navy who included Commodore H.B. Ellison, who was appointed the Commodore-in-Charge, Cochin.

A number of British Officers from the undivided Royal Indian Navy opted to serve in the post-partition Royal Pakistan Navy. Out of these officers, Captain J.W. Jefford was promoted to the rank of Rear Admiral and became the Flag Officer Commanding, Royal Pakistan Navy after partition. Having later become a Vice-Admiral, he was the only regular British officer of the old RIN ever to reach this rank.

Besides Rear Admiral Hall, Commodore Nott and Commodore Ellison, the other senior British officers who served in the Indian Navy with distinction were Vice-Admiral Sir Geoffrey Miles, who had taken over as the FOCRIN from Vice-Admiral J.H. Godfrey in March 1946 and was appointed the Deputy Supreme Commander (Navy) after Independence. Vice-Admiral (later Admiral Sir Edward) E.W. Parry, Vice-Admiral (later Admiral Sir Mark) M. Pizey and Vice-Admiral (later Admiral Sir Stephen) S.H. Carlill, all four of whom served as the Naval Chief in succession between 1947 and 1958, Commodore H.N.S. Brown, who was the Commanding Officer of *Delhi* and the Commodore Commanding the Indian Naval Squadron (COMINS), Commodore (later Rear Admiral) G. Barnard who commanded the Indian Fleet as the COMINS and later RACINS (Rear Admiral Commanding, Indian Naval Squadron), Commodore H. Drew and Commodore (later Rear Admiral) G.A. French who served as the Deputy Commander-in-Chief and Chief of Staff to the Naval Chief, Commodore E.G. McGregor and Commodore A.D.H. Jay who in turn succeeded Commodore Ellison as Commodore-in-Charge, Cochin, Commander A.J. Petrie Hay and Captain R.M. Garside who served as the Naval Secretary at Naval Headquarters; Captain J.E.M. Glenny, Captain A.H.F. Hunt and Captain I.F.M. Newnham who served as the Chief of Material at Naval Headquarters; Rear Admiral N.V. Dickinson, Rear Admiral F.A. Ballance and Rear Admiral St. John (Rear Admiral Sir St. John) R.J. Tyrwhitt, Baronet, who succeeded Rear Admiral Barnard as the Fleet Commander designated as Flag Officer Flotilla, Indian Fleet (FOFIF), Captain R. Jessel who was the Chief Instructor at the Defence Services Staff College at Wellington in the Nilgiris and Captain H.C. Ranald, Captain J.E. Smallwood, Captain R.H.P. Carver and Commodore (later Rear Admiral) D.W. Kirke who held the appointment of Chief of Naval Aviation.

All these officers had had adequate experience in their field of specialisation and command and were inducted into independent India's fledgling

Navy, notwithstanding the general policy of nationalisation and the winds of self-reliance and indigenisation of all professions blowing across the nation to prop up an unbalanced cadre and to provide adequate experience to senior Indian officers in discharging their functions efficiently. Over the years the number of British officers on loan from the Royal Navy gradually diminished but the majority of senior appointments were held by them for nearly a decade after Independence.

The standard of performance of these officers, their willingness to adopt and adjust, their diligence and keenness to convert their areas of responsibility into set-ups that were far more than 'well-oiled machines' is widely acknowledged by Indian officers who served with them at that time. Admiral R.D. Katari who, as the first Indian Naval Chief, took over from Vice Admiral S. Carlill in 1958, says in his *A Sailor Remembers*,

> With a few exceptions, the Indian Navy of the post-Independence years was served well by the officers that were lent to us by the Royal Navy. This is particularly true of the three senior officers lent to us to head the Service - Vice-Admirals Parry, Pizey and Carlill. Each one was different in his own way, but looking back, I believe each one's different personality and special capacities were projected on to the Service at the right stage in its development. Parry's balanced personality and high administrative ability were just what were needed in the immediate post-Independence years when the Navy was still recovering from the imbalances introduced by the mutiny and partition. Pizey's bubbling enthusiasm and operational experience had their impact on the Service just as it was settling down into some sort of personnel stability and needed operational skills injected into it. Carlill's sincerity and genuine identificaton with the aspirations of the Navy and his attitude of goodwill towards all men and malice towards none was just the right medicine to get the Navy on its way to sound adult health. And it made for a smooth transition from British into Indian hands at the apex.

While analysing the personality traits of the three British Chiefs of the Navy, Admiral Katari adds,

> In October 1951, we also had a change in the higher direction of the Navy. Admiral Parry returned to his parent Service and was replaced by Vice-Admiral Mark Pizey. Parry did an excellent job of bringing stability to a rather unsettled Service. His experience and maturity enabled him to bring a calm, sober approach to the many problems created for the Navy by recent events. His leadership and understand-

ing guidance to me in my efforts to sort out the complicated personnel situation was an immense boon to me. It is probably not generally known that it was he, sometime in early 1951, I think, who gave us the first reports of the Chinese construction of the Aksai Chin Road. Having been the Director of Naval Intelligence in the Admiralty, he still had contacts in the Department which passed on this titbit to him. His successor was an equally experienced officer, but their personalities and methods of functioning were as different as chalk from cheese. Whereas Parry was a tall, angular person with a matter-of-fact, no-nonsense way of dealing with things, Pizey was somewhat rotund and round-faced. His enthusiasm and energy often left one groping when trying to follow his thinking. His past experience made him more of an operational man which was probably the right emphasis to introduce into this service at that stage.

Admiral Carlill provided a happy mix of operational and administrative ability and, in the execution of his responsibility, displayed much wisdom and marked sincerity. Indeed the latter quality was one of his outstanding attributes which impressed all with whom he came into contact, from Pandit Nehru downwards, and endeared him to the rank and file of the Service. So much so that when Carlill left, it was at the Prime Minister's initiative that he was given the honorary rank of Vice-Admiral in the Indian Navy, a fitting honour to the last of the British Admirals who nursed the Indian Navy along in its formative years after Independence.

Six British officers headed the Navy's Fleet after Independence - Hall who held temporary charge after handing over to Vice-Admiral Parry as the Flag Officer Commanding, Royal Indian Navy, Brown, Barnard, Dickinson, Ballance and Tyrwhitt. Commodore Brown took over from Rear Admiral Hall and was designated the Commodore Commanding, Indian Naval Squadron (COMINS) besides holding the command of Indian Navy's first cruiser, *Delhi*, since her commissioning. Admiral Katari says that though Brown was;

> a total stranger to the Indian Navy, it was remarkable how he identified himself with the aspirations of his Indian ship's company and established a mental rapport with his Indian shipmates. He was deceptively stern-faced but, in fact, an amiable, human person. He thoroughly deserved the CBE he was awarded and it was a pity that the luck of the draw denied him promotion to flag rank in his own service.

Another officer who had served on the secretarial staff of Commodore

Brown when he was the Squadron Commander, reminisces,

> I had the good fortune to come in fairly close contact with Commodore Brown, the first Commanding Officer of *Delhi*. As no Indian officer had so far had the experience of commanding a cruiser, it was decided to entrust the job to a suitable officer of the Royal Navy. And what a suitable officer he proved himself to be! Though not very tall in height, his poise, dignity, rectitude and thorough professionalism gave him a stature which I have not seen any other commanding officer to equal, before or since. The officers and men respected and adored him. He neither sought cheap popularity nor was a regressive disciplinarian and the personal example he set was high and immaculate. Once, during a flag-showing cruise along the East African Coast, a local British group invited him and other British oficers in the ship for an evening's entertainment. Commodore Brown replied: 'It's either all officers or none'. The invitation was then extended to all officers. On another occasion, following a slight administrative error in the ship's office, he received a letter from a shore authority who, not being content to point out the mistake, urged him to 'take necessary disciplinary action against the persons concerned, to avoid unnecessary correspondence' in future. Not even bothering to call his secretary to ascertain the facts, Commodore Brown pencilled the following instruction at the bottom of the offending letter: 'Reply: Internal corrective action will be taken without external request. Your letter comes under your own heading of unnecessary correspondence.'

Commodore (later promoted to the rank of Rear Admiral and knighted) Geoffrey Barnard, who excelled himself during the entire period of his tenure as the Fleet Commander, relentlessly pursued the goal of reaching the highest rung of operational efficiency and by the time he returned to England, the Indian Fleet could effortlessly outmanoeuvre the other Fleets during the annual Commonwealth naval exercises known as the Joint Exercises off Trincomalee (JET). Rear Admiral Krishan Dev, who served on his staff, recalls,

> `His sole aim was to lick the Indian Squadron into a strong, well-knit fighting unit and train the Indian personnel to work together in all aspects of warfare at sea. During the early years of Independence when intense anti-India propaganda in Pakistan led to a sharp deterioration of relations between the two countries and a conflict seemed possible, Barnard prepared detailed operational orders and 'worked up' the Fleet to a high pitch of operational efficiency in order to face any such eventuality. Air Commodore Arjan Singh, AOC Operational Command (later Air Chief Marshal and

Chief of the Air Staff) who attended the Fleet Exercises during Barnard's period as Fleet Commander, reminiscences: 'I spent 3 or 4 days in the Indian Ocean as a guest of Barnard on Delhi. Barnard was a very inspiring Commander. He hardly left the bridge of Delhi even though during the last day or so he had visibly swollen ankles. He had amazing stamina and the Indian ratings and officers appeared to adore him'.'

He indeed was one of the best 'acquisitions' from the Royal Navy as the Fleet Commander and his conduct of the Fleet exercises and goodwill cruises was legendary.

Barnard was succeeded by Rear Admiral N.V. Dickinson who also made his contribution to the maintenance of a high standard of Fleet operations. Popularly known as Uncle Richard, Admiral Dickinson ran a well-synchronised Fleet with high efficiency, both operationally and administratively. As Admiral Katari describes him, 'He was something of a rough diamond but very human and a good practical seaman.' He was a stickler for the highest standards in ships' 'turn-out' (appearance) and ceremonials which earned the Indian Fleet high praise from Admiral Mountbatten during the Coronation Commonwealth Naval Review at Spithead, Portsmouth in June 1953.

The fourth British officer to command the Fleet was Rear Admiral F.A. Ballance who was a specialist gunnery officer and laid considerable emphasis on the gunnery efficiency of the ships of the Fleet as guns were the prime weapons at sea during the early 1950s and the difference between immobilising or sinking the enemy and getting immobilised or sunk lay on the relative gunnery efficiency of the combating fleets. An Indian contemporary gunnery specialist says that during Admiral Ballance's command of the Fleet it was 'gun drills and more gun drills and firings and more firings. It is absolutely right to say that the gunnery efficiency of the Fleet, particularly of cruiser *Delhi* and the three Hunt class destroyers, *Ganga*, *Gomati* and *Godavari*, was at its height with Ballance in command.'

Rear Admiral St. John (Rear Admiral Sir St. John) R.J. Tyrwhitt, Baronet, blended into one the qualities of the four Fleet Commanders that preceded him - Brown, Barnard, Dickinson and Ballance. His main contribution to the operational efficiency of the Fleet was that he was a master tactician and effectively raised the level of gunnery and antisubmarine tactics during exercises besides having one of the keenest seaman's eyes which enabled him to monitor ship's movements and evolutions without having to take recourse to referring to the radar scan or other navigational displays. He encouraged ships' commanding officers to develop their initiative, boldness and the offensive spirit and he 'hated half-heartedness, tardiness and being chicken-livered.' A befitting farewell was accorded to the last British Commander of the Indian Fleet when Admiral Tyrwhitt was

given a rousing ceremonial send-off at Ballard Pier, Bombay after he had handed over to the first Indian Fleet Commander, Rear Admiral Katari, on October 2, 1956 - a watershed in the history of the Indian Fleet.

A term-mate of Admiral Mountbatten, Commodore (later Rear Admiral) Godfrey French, a specialist in navigation, had served in the Royal Indian Navy's Directorate of Training during and after World War II as a deputy director from 1944 to 1946 and was later recalled from retirement to serve as the Indian Navy's Deputy Commander-in-Chief from 1953. He was also a proficient naval historian and wrote entertainingly on naval life in England and India.

An acclaimed hero of the Malta and Arctic Convoys, with a Distinguished Service Cross and bar, three Mentions-in-Despatches, a DSO and Knighthood 1st class of the Order of St. Olav, Captain Richard Jessel was a destroyer captain of outstanding dash and bravery during World War II and had served on the Directing Staff of the Royal Naval Staff College at Greenwich before being picked up by Admiral Mountbatten in 1953 to teach naval strategy and tactics to the Indian Services at the Joint Services Staff College, Wellington as its Chief Instructor (Navy). He was held in high esteem at the Staff College by all the three wings and a whole generation of Indian officers regarded him as a 'guru'. Vice Admiral R.K.S. Ghandhi (as also the author) was a student of Captain Jessel at the Staff College and says:

> Dick Jessel served for three years in that assignment and those were the great days of the College, with giants such as General Lentaigne as Commandant, Brigadier (later Lieutenant General) Bhagat as Chief Instructor (Army) and Group Captain Moseby, an officer of the Royal Air Force, as Chief Instructor (Air). Even amongst such a distinguished and brave band of brothers, Dick stood out - whether it was on the golf course, or the officers' mess or the syndicate room when recounting the Battle of the *Scharnhorst* for three hours before a huge chart, without a single note in front of him.
>
> He was an inspiration to all students and I well remember many little stories about him, particularly when we would rush to see his comments on our exercises. Dick Jessel commented very little and we all aspired to get the three magic letters from him - VGI (Very Good Indeed) - the less he wrote on one's exercises, the better it was. He taught us to be bold and ingrained in us the offensive spirit though he himself was a gentleman to the core.

Commodore M.H. St. L. Nott, RIN a signals specialist, had been associated with the Royal Indian Marien and latter the Royal Indian Navy since

1928 and had commanded four RIN ships, *Ramdas, Investigator, Pansy* and *Narbada*, had served in naval training establishments and as Naval Officer-in-Charge in Karachi, Staff Officer (Plans) at Naval Headquarters and Chief Staff Officer to the Flag Officer Bombay during World War II. He had also drawn up detailed plans for the sea-borne assaults which led to the immobilisation of the Persian Navy and the capture of Bandar Abbas and the German and Italian ships sheltered there during the war, his 'masterminding these operations with outstanding ability' winning him an OBE and a Mention in Despatches. When partition came, having lost the Naval establishments in Karachi, the need for independent India's navy to develop new training establishments became urgent and hence Nott, with his varied experience in training naval personnel, was appointed the Naval Officer-in-Charge, Cochin in 1947 for developing the establishment as a combined training base. Within a few months he was shifted to Naval Headquarters as the Chief of Staff and Deputy Chief of the Naval Staff to the Flag Officer Commanding, Royal Indian Navy where his most important task was planning a balanced navy for independent India.

Nott applied himself to his task with indefatigable keenness and energy and his sustained efforts bore fruit in the shape of plans prepared with masterly expertise and erudition which led to the Indian Navy evolving its fleet into a balanced yet formidable force at sea in South East Asia within a decade. He, along with his wife and son, was tragically killed in an air crash off Corsica while proceeding to the UK on deputation in March 1948.

In his assessment of the British officers who served in the Indian Navy, only a few of whom find a mention here, Vice-Admiral M.P. Awati lauds their contribution,

> I believe it has been essentially a beneficial association. The slow progress towards Indianisation has helped the Navy to lay a firm foundation of its training and discipline. The switch from the old traditions to new ones has been almost imperceptible, so imperceptible in fact that we came to believe that things were always done the way they were. A tradition is as important to a fighting Service when moving from an older format to a new order as mother's milk is to a child which is progressing from being a crawler to becoming a toddler. Bereft of either, the Service or the child would grow up ill-founded and incapable of facing the strains and stresses inherent in their respective growth to maturity. I do sincerely believe that the years that followed the upheaval attendant on the struggle for independence caused virtually no damage to the Navy's fabric of discipline and good order,

the Service holding fast through the vicissitudes of the post-partiti years, thanks to what had been so well-imbibed from a very worth mentor.'

Reinforcing the Sinews of War - Training

The partition of the subcontinent left very few training establishments with the truncated Royal Indian Navy and the severance of the Royal Navy's apron strings, to which the RIN had been tied for nearly three and a half centuries, made it imperative for independent India's Navy to, firstly, indigenise expeditiously all operational training both for officers and sailors, secondly, to expand and update the training facilities in the existing training establishments and, thirdly, to set up new training establishments in disciplines which had not so far been catered for.

A Directorate of Naval Training and Education had been functioning at Naval Headquarters, New Delhi since July 1943. This Directorate not only planned the contents and schedules for the various courses conducted by the naval training establishments and training ships but also oversaw and monitored the progress of the courses by these training agencies. In 1948 the Directorate had been split into two directorates, the Directorate of Weapons and Training and the Directorate of Education. In 1952 a separate Directorate of Training started functioning at Naval Headquarters and the appointment of Commodore Superintendent, IN Training Establishments was abolished.

Consequent on the loss of the Boy's training establishments at Karachi, *Bahadur* and *Dilawar*, to Pakistan in 1947, a temporary training establishement was set up at *Akbar*, Bombay and shifted to *Circars* at Vishakhapatnam in December 1947. The training schools at Cochin, viz., the Communication School, the Antisubmarine School (the last having been set up soon after Independence), the Supply and Secretariat School and the Cookery School, the mechanical training establishment at Lonavala, *Shivaji*, and the Torpedo School at Jamnagar, *Valsura*, were found to be totally inadequate for undertaking the training commitments of free India's fledgling but fast-expanding Navy. In addition, it was felt necessary to discontinue deputing officer trainees to Royal Navy establishments for basic and specialist training and to initiate the creation of training facilities for officers in India.

As regards the training of officers, the number of cadets recruited annually was increased from the pre-Independence figure of 24 to nearly double that figure to 46 each in 1948 and 1949 and to 47 in 1950 besides deputing 21 cadets to the Royal Naval College at Dartmouth in England in

1948 and 25 in 1949. In order to make up the acute shortage in the various cadres of officers caused by the partition of the subcontinent and the consequent resignation, retirement and repatriation of British oficers of the RIN, a scheme was introduced for the recruitment of officers on short service commission of seven years' duration and some of the officers who had been released earlier were recalled.

The first experiments in inter-Service basic training of officers in India were made at the Inter-Service Pre-Cadet College (ISPCC) at Nowgong and then at Almora, where officers and NCOs of the Army, Navy and Air Force worked together to train possible future officers for the three Services. These cadets were the applicants for commissions, both from civil life and from non-commissioned members of the forces, who were screened by selection boards to ensure their suitability for military service. The training schedule and course contents were largely based on that imparted at the Highland Field Craft Training Centre in the UK.

The experiment at the ISPCC had been watched with interest by officers of the three Services. As Chairman of the Indian National War Memorial Committee, Field Marshal Sir Claude Auchinleck, the then Commander-in-Chief of the three Services, later recommended, as a War Memorial, the establishment of an Academy to train officers of all the three Services. The proposal was accepted by the Governor General-in-Council and a Committee, set up to examine the project in detail, advised that it should be equivalent to a degree in arts or science and that residential schools were to be established as feeders to the Academy.

The partition of the subcontinent delayed the implementation of the scheme and the Chiefs of Staff Committee suggested, as an experimental and interim measure, the setting up of a Junior Inter-Service Wing (ISW) at Clement Town, Dehra Dun while planning for the Indian National War Academy at Khadakvasla, Pune proceeded. In January 1948 the Defence Minister's Committee approved of this. The ISW was to start functioning in January 1949 and, with the Indian Military Academy at Dehra Dun to be renamed the Military Wing, was to form the National War Academy or Armed Forces Academy.

Later there were changes in nomenclature. What started as the Inter-Service Wing (ISW) became known as the Joint Services Wing (JSW). The Armed Forces Academy became the National Defence Academy and the Military Wing reverted to the Indian Military Academy which remained at Dehra Dun while the National Defence Academy was moved to Khadakvasla.

The aim of ISW training was to encourage co-operation between the Services and with the civil administration which had, for various reasons, been considered inadequate. It was hoped that those who spent two or more

of their formative years as Cadets in an inter-service atmosphere, having been trained together and formed associations overlapping the boundaries of the different Services, would, when they became senior officers, meet each other in staff conferences and other common platforms in an atmosphere of greater understanding than those who had seen and known little of each other before.

Entrance to the ISW was to be through an examination conducted by the Union Public Service Commission followed by tests conducted by the Services Selection Boards. At that time the Navy was the Senior Service and for a month after they joined, the Naval cadets put on the RIN uniform and then switched over to the common uniform which has continued to this day.

The inauguration ceremony of the ISW in January 1949 was performed by Sardar Vallabhbhai Patel, the then Home Minister, and was attended, amongst others, by the three Chiefs of Staff, Vice Admiral Sir Edward Parry, General K.M. Cariappa and Air Marshal Sir Thomas Elmhirst.

The inter-Service seniority, however, as is well-known, underwent a change when, on January 26, 1950, the Indian Army became the senior Service and the Navy occupied the middle berth.

For the first few courses, the duration of training at the ISW was two years on completion of which the Army Cadets went to the IMA, Naval Cadets were sent to the UK for further training for one year as Cadets and the Air Force Cadets proceeded to the Air Force Academy at Jodhpur.

Naval Cadets of the First Course proceeded to the UK for one year's training as Cadets in the Royal Navy's ships and establishments in March 1951. They returned to India in April 1952 and joined *Tir*, the then Midshipman Training Ship, in May 1952. This was the first time that Midshipmen's training was being conducted in India. After completing eight months' training on board the *Tir* and another eight months on board other ships, these officers against proceeded to the UK where they were commissioned on September 1, 1953 and underwent their Sub-Lieutenant's professional training of 16 months' duration.

The 4th Course (1st Course JSW) was the first to spend three years at the JSW, out of which the first four terms lasting two years were devoted to common training and the last two terms lasting one year on naval training. Cadets of this course then joined the *Tir* for six months' training as Cadets followed by six months' training as Midshipmen. Thereafter the Midshipmen were transferred to other ships for further sea training for six months and then proceeded to the UK for 18 months' professional training as Sub-Lieutenants.

This was the last batch to proceed to the UK for, with the 5th Course, the entire training syllabi were covered in India - as Cadets, Midshipmen and Sub-Lieutenants - with the duration of Sub-Lieutenant's training re-

duced to one year. Thus, by 1954-55, the entire training commitments from the basic training at the National Defence Academy to the professional training courses at the various training establishments were being met by the Indian Navy's training ships and establishments and hence the deputation of officers to the UK for undergoing basic courses was discontinued. Besides, the duration of the course conducted at the NDA had been increased to three years, that of Midshipmen reduced from 16 months to 12 months and the time as Acting Sub-Lieutenant reduced to one year.

The National Defence Academy was shifted to Khadakvasla in January 1955 with Major General E. Habibullah continuing as its Commandant and with Shri Morarji Desai, the then Chief Minister of Bombay, taking the salute at the colourful inaugural parade. The 8th Course Cadets completed their training for the sixth term and were the first course to pass out of the Academy at Khadakvasla in June 1955 when Prime Minister Jawaharlal Nehru took the salute at the passing out parade. The pattern of sea training of these officers remained the same, i.e., six months' training as Cadet and six months' as Midshipmen on board the *Tir*, three months on board the *Delhi* and another three months on other ships of the Fleet.

This pattern of training remained unchanged until January 1974 when the duration of sea training for Midshipmen was reduced from one year to six months.

During the early 1960s it was realised that the turnover of the National Defence Academy of approximately 40 Naval Cadets every six months would not meet the requirements of the expanding Service and hence it was decided to set up an academy for training Naval Cadets at Cochin and to introduce a revised special entry scheme. Accordingly a Naval Academy was commissioned at Cochin in January 1969 with Commander (later Admiral) L. Ramdas as its first Officer-in-Charge. The first batch of Cadets of the Academy completed its training in December 1970 when Rear Admiral (later Vice-Admiral) V.A. Kamath, who was the Flag Officer Commanding the Southern Naval Area at that time, took the salute at the passing out parade.

It was later decided to shift the Academy to Goa because adequate accommodation for a training institution of its kind with all attendant facilities was not available at Cochin. However, after a countrywide search, a suitable site for permanently locating the Academy has been found at Ezhimala in Kerala where it is expected to start functioning in the mid-1990s.

In 1955 it was decided to use two ships for training, *Kistna* (later *Krishna*) and *Tir*, one as the Cadets' Training ship and the other as the Midshipmen's training ship for the first six months of their sea training period. This was done to remove congestion from the only ship that

performed dual roles. Later, with the arrival of *Mysore* in 1958, Midshipmen's training began to be carried out exclusively on cruisers.

Deputation of Engineering and Electrical Cadets to the UK for training was stopped in 1955 and Midshipmen of the Electrical Branch were admitted to the Victoria Jubilee Technical Institute, Bombay for a degree course in Electrical Engineering. This arrangement, however, proved to be unsatisfactory and hence an Engineering and Electrical College was started at *Shivaji* in 1957 as a permanent measure for training in these two disciplines.

Consequent to the partition of the sub-continent, the Defence Services Staff College at Quetta went to Pakistan and hence the requirement was immediately felt for setting up a similar institution in India. It was thus that India's Defence Services Staff College was set up in 1948 at Wellington in the Nilgiris with Major General (later Lieutenant General) Joe Lentaigne as its first Commandant and Brigadier (later Lieutenant General) Shiv D. Verma as its first Chief Instructor. The first course, of six months' duration and conducted during the period 1948-49, had a strength of 50 officers including two from the Indian Navy, Lieutenant (later Commodore) B.K. Dang and Lieutenant (later Commander) R. Aibara. It must be mentioned here that three officers of this course later rose to the top rungs in their respective Services - General T.N. Raina, General O.P. Malhotra and Air Chief Marshal H. Moolgavkar.

In 1958 specialist courses, better known in the Navy as 'long courses', which had so far been held in the UK started being conducted in India. These courses required a thorough study of the modern equipment fitted in the Fleet ships and a very detailed knowledge of the subjects and hence needed highly efficient specialist instructional staff, which was fortunately available, and the latest equipment installed in the training schools and on board ships. The first Long Navigation and Direction Course (ND) and Long Torpedo and Antisubmarine Course (TAS) were started in February 1958, the Long Communication Course (C) in October 1958 and the Long Gunnery Course (G) in November 1958. The other major courses started during the mid 1950s were the Supply and Secretariat Advanced Course (SSAC), Physical Training Course (PT), Action Information Organisation (AIO), Meteorology Course (Met), Advanced Navigation Course (N) and Deep Sea Diving Course (D).

The courses for Commissioned Officers (Branch Rank) commenced in India during this period included the Commissioned Boatswain Course, Commissioned Boatswain (Plotting Radar) Course, Commissioned Communication Officer Course, Commissioned Gunner Course, Commissioned Gunner (Torpedo and Antisubmarine) Course, Commissioned Electrical Officer (Power) Course, Commissioned Electrical Officer (Radio) Course and Commissioned Wardmaster Course. The Courses for sailors com-

menced in India included those for Gunnery Instructors, Gun Layers, Quarter Ratings, Radar Controllers, Quarter Armourers, Torpedo and Antisubmarine Instructors, Underwater Controllers, Underwater Weapons, Plotting Radar Instructors, Radar Plotters, Quartermasters and Divers.

About this time the Ordnance Branch of the Navy merged with the Engineering Branch. Officers of the Ordnance Branch were given conversion courses in marine engineering while Ordnance Artificers were given conversion courses to qualify for Engine-Room Artificers or Electrical Artificers.

Because of the non-availability of specialised equipment and trained instructional staff, however, officers had to be deputed to the UK for certain other courses, viz., Constructor's Course, Observer's Course for aviators, Advanced Marine Engineering Course, Advanced Armament Inspection Course, Advanced Aeronautical Engineering Course, Advanced Air Engineering Course, Long Hydrographic Survey Course and the Atomic, Bacteriological and Chemical Damage Course.

The first batch of Engineer Officers trained at the Engineering and Electrical College at *Shivaji*, Lonavala, passed out in 1961 and with that an *alma mater* was provided to the Navy's technical officers, besides totally indigenising their training.

Soon after the commencement of indigenisation of officers' and sailors' training, several foreign navies sought the assistance of the Indian Navy in training their personnel. The courses conducted included not only the basic courses for officers and sailors but also technical and specialist courses at all levels and the countries from Asia and Africa who deputed their personnel for training were Burma, Sri Lanka, Indonesia, Malaysia, Iraq, Iran, Egypt, Ethiopia, Ghana, Sudan, Mauritius and Nigeria. The specialist courses conducted for the officers from these countries included the Long Gunnery Course, Long Navigation and Direction Course and the Long Hydrographic Course.

During this period a number of inter-Service courses began to be carried out. The courses conducted by the Navy for the other two Services were the Maritime Antisubmarine Course for IAF officers at the Torpedo and Antisubmarine School at Cochin, attachment of Army officers undergoing the Technical Staff Officers Course at the College of Military Engineering (CME), Kirkee, to the Gunnery School at Cochin, Diving Courses for Army and civilian personnel, Technical Courses of short duration for student officers of the Defence Services, Staff College, Wellington, and courses in Mine Warfare as a part of the IAF's Fighter Controller Course. The courses conducted by the other two Services for Naval personnel were the Bomb and Mine Disposal Course at CME, Kirkee, Diving Instructor Course at the Corps of Military Police at Faizabad, Security and Intelligence Course

at the Army Intelligence School at Pune, Selection of Personnel Course at th Psychological Research Wing School at New Delhi, attachment of nava personnel to the IAF for Jet Interception Training, the Meteorologica Course at Pune and the Junior Commanders' Course at the Army School o Infantry, Mhow, for officers undergoing the Long Gunnery Course.

The new training establishments and schools opened during the period included the Supply and Secretariat School at *Hamla*, Bombay in November 1953, the Tactical School at *Venduruthy*, Cochin in October 1954, the new Electrical School at *Vakura*, Jamnagar in 1955, the Torpedo and Anti-submarine School at *Venduruthy* in 1956 and the Signal School at *Venduruthy* in March 1958.

For some time the necessity was being felt for bringing out a thought-provoking magazine in the Indian Navy on the lines of the *Military Digest* or the *Air Force Digest*. In order to fill this gap, a biannual magazine called the *Naval Dispatch* was started in February 1957 with the specific objective of encouraging thought and discussion on such subjects as strategy, tactics, naval operations, staff work, administration, organisation, command, discipline, education, naval history and other disciplines affecting the operational and maintenance efficiency of the Navy.

Another periodical, the *Varuna*, containing articles, poems, short stories, sketches, cartoons and reports on goodwill cruises and exercises also started being published biannually early in the 1950s.

The training establishments and units that came into being during 1959 were the Naval Hydrographic Training Unit at *Angre*, Bombay for conducting survey courses for officers and sailors, a Basic and Divisional Training Unit at *Hamla* for the training of personnel of the Supply and Secretariat branch and *Sanjivani* at Cochin as an authorised training establishment for Sick-Berth Attendants.

It was during the 1950s that the Naval Wing of the National Cadet Corps (NCC) came into being and the Sea Cadet Corps (SCC) was activated. Regular pre-commission and refresher courses for the NCC Cadets began to be conducted at *Venduruthy*, Cochin. Besides, combined annual training camps for both Senior and Junior Division Wing Units at Bombay, Cochin, Vishakhapatnam and Jamnagar and within their respective circles provided adequate exposure of life at sea to the officers and cadets undergoing training at these places.

As a voluntary organisation based at Bombay and Madras, the aim of the Sea Cadet Corps was to develop qualities of good citizenship and to help boys from schools, wishing to make their career at sea, to achieve their ambition. The Navy provided the necessary facilities to the Corps for the sea training of SCC Cadets on board naval ships during the passage of the Fleet between Bombay and Cochin.

In 1960 a 16-mm film, entitled *Fire-fighting at Sea*, was produced by the Films Division of the Ministry of Information and Broadcasting. The object of the film was to demonstrate the correct techniques of fire-fighting on board ships with particular emphasis on first-aid and the appliances used in the Navy and their maintenance. The films Divison later produced two more films entitled *Damage Control on board a Ship* and *A sailor in the Making* depicting the damage control organisation, equipment, etc., on board a ship and life on board a ship at sea respectively. The Armed Forceds Film and Photo Division produced a number of film strips for training in the Navy.

After World War II a Petty Officers' Leadership School was set up at *Venduruthy*, Cochin for imparting training in leadership to senior sailors. In 1961 this school was shifted to West Hill Barracks, Kozhikode and commissioned as *Varakkal*. In the same year the Hydrographic Training Unit was shifted from Bombay to Cochin. The Petty Officers' Leadership School was shifted to Coimbatore on April 22, 1965. On September 18, 1965 this school was amalgamated with the Naval Detachment, the Rifle Range and the Aircraft and Engine Holding Unit at Sulur with the new nomenclature, *Agrani*.

Because of the inadequate scientific background of Cadet-Entry officers selected for specialist courses, it was decided in 1962 to depute such officers to the Institute of Armament Studies (IAS), whose nomenclature was later changed to the Institute of Armament Technology (IAT), at Kirkee for a Naval Scientific Orientation Course (NSOC) of about 22 weeks' duration before proceeding to *Venduruthy*, Cochin for undergoing the 'long courses' in Navigation and Direction, Gunnery, Torpedo, Antisubmarine and Communication. Consequent to the introduction of this course the duration of Long Courses was suitably reduced by deleting instruction in scholastic subjects previously covered during these courses.

As regards sailors, soon after independence, the training establishments initiated the conduct of specialist courses for junior sailors at Cochin. These courses included those for Radar, Plotting, Radar Control, Gunnery, Quartermaster, Communication, Aircraft Artificers, Leading Patrolmen and Writers. Arrangements were also made to standardise the conduct of educational examinations for senior and junior sailors - the Higher Education Test (HET), which had been officially recognised as equivalent to the matriculation examination and which qualified sailors for commissioned rank and the Education Test 1 (ET 1) which qualified junior sailors for promotion to senior ranks.

Soon thereafter specialist courses for senior sailors were also introduced at the various training schools at *Venduruthy*. By 1952 an Atomic, Bacteriological and Chemical Damage Control (ABCD) School for officers and sailors was set up at *Shivaji*, the mechanical training establishment at Lonavla, which had already been conducting mechanical and marine engi-

neering training courses for sailors for many years. The permanent Navigation and Direction School and Gunnery School had started functioning at Cochin and plans for the future development of the various other training schools had been worked out. Work on the new Electrical School at *Valsura* at Rozi in Jamnagar had also commenced. Reference libraries were set up in ships and establishments and a compulsory Hindi test was introduced for all Service personnel.

In 1953 new courses were started at Cochin for Torpedo and Antisubmarine sailors and Navigator's Yeomen and, for the first time in India, five sailors undertook the qualifying course for promotion to the rank of Commissioned Boatswain.

In November 1953 the Supply and Secretariat School was shifted from Cochin to *Hamla* at Marve, Bombay and construction was commenced for the Torpedo and Antisubmarine School and the Tactical School at Cochin.

During the course of the next five years, the Torpedo and Antisubmarine School (1956), the Tactical School (1954), the Signal School (1958), the Diving School (1958) had also started functioning at Cochin and courses were commenced at these schools for Gunnery Instructors, Gun Layers, Quarter Rating, Quarter Armourer, Torpedo and Antisubmarine Instructor, Underwater Control, Underwater Weapon, Radar Plotting Instructor, Deep Sea Diver and Shallow Water Diver sailors. The new Electrical School at *Valsura* was opened in 1955 for the training of officers as well as sailors. In 1959 a Basic and Divisional Unit commenced operating at *Hamla* for training personnel of the Supply and Secretariat Branch and *Sanjivani*, the naval hospital at Cochin, began training Sick Berth Attendants for naval hospitals, ships and shore establishments.

In 1954 Naval personnel began to undergo courses in mountaineering, both basic and advanced at the Himalayan Mountaineering Institute, Darjeeling.

INS Shivaji

Bearing the name of one of the most illustrious sons of India who had converted the Sahyadri ranges into the launching pads for his daring exploits against the invaders, *Shivaji*, situated at a height of 630 metres above sea level and only 8 kilometres away from Maharashtra's popular hill resort, Lonavla, has been the *alma mater* of officers and sailors of the navy's engineering branch for several decades. The crest of the establishment depicts a hand, holding a mallet, rising from the sea thus signifying the tasks of engineering personnel at sea with the logo *Karmasu Kaushalam* (skill in work) below it.

This Mechanical Training Establishment, as it was referred to earlier,

was commissioned as *Shivaji* on January 8, 1945 for undertaking the training of sailors and artificers of the engineering branch. The first Indian Officer to command the establishment was Captain (later Vice-Admiral) D. Shankar who took over from his British predecessor on January 26, 1950. This training establishment was entrusted with imparting technical training to Stokers, Mechanics, Boys, Artificers and senior sailors such as Leading and Petty Officer Mechanics and Mechanicians.

During the period from 1950 to 1965 the average number of Artificer Apprentices recruited annually varied from 48 to 90; besides 66 Artificer Apprentices from the Sri Lankan Navy and 15 from the Indonesian Navy underwent training at *Shivaji*.

The Atomic, Bacteriological, Chemical and Damage Control (ABCD) School started in 1952 at *Shivaji* was assigned the nomenclature *Avinash* in November 1953. From a modest beginning made with a few firetrays and hand-held fire-fighting appliances, the ABCD School progressively grew into a self-contained specialist organisation for imparting training in fire-fighting and damage control to Naval personnel and on occasions, to those of the other two Services. The first course for officers was conducted in 1954 and for sailors in 1955. About a decade after its establishment this institution came to be known as the Nuclear, Bacteriological, Chemical, Damage Control and Fire-Fighting (NBCD) School.

INS Valsura

Before World War II all electrical equipment were looked after by personnel of the Engineering Branch on board ships of the RIN. However, owing to the development and installation of several electrical and electronic equipment during the War, it had become necessary to establish a separate electrical branch. Subsequently, as more and more modern ships with high-resolution radar and sophisticated weapons, weapon control systems, Asdics, wireless and minesweeping equipment were acquired, the Torpedo Branch came into being for the maintenance of torpedoes, depth-charges and all shipboard electrical equipment and a Torpedo School was established in the Naval Dockyard, Bombay on December 28, 1941.

War conditions and paucity of space in the Dockyard necessitated a search for a more suitable site for this school. His Highness Shri Digvijay Sinhji Jadeja, Maharaja Jamsahib of Nawanagar, donated the land for the School at Rozi, near Jamnagar, and built the training block which was named the Digvijay Block. It was on August 15, 1942 that the new establishment was commissioned as *Valsura*.

After Independence, a considerably large quantum of electrical and electronic equipment was acquired for the Navy and this establishment was

consequently subjected to a major expansion programme between 1950 and 1965. The new school, the foundation stone of which was laid by the Jamsahib on November 15, 1952, was inaugurated in April 1955.

While the courses conducted at *Valsura* during the 1940s were essentially utilitarian in nature and concept, the vast technological advances made during the later years made it imperative to reorient the training courses. Over the next two decades all courses for officers and sailors were Indianised and no need was felt for deputing electrical personnel abroad for training in electrical or electronic technology. Several trainees from Nigeria, Ghana, Mauritius, Sri Lanka, Sudan, Malaysia, Bangladesh, Iraq and Iran were also trained at this establishment.

INS Hamla

Originally *Hamla* comprised four establishments - *Hamlawar* and *Marve*, the Indian and British wings respectively of the Combined (Amphibious) Operations Training Centres at Malad, Bombay and two similar centres, *Hamla I* at Malir, Karachi and *Hamla II* at Versova, Bombay. On January 15, 1946 all these establishments were amalgamated into one establishment, *Hamla*, at Malad.

When the hostilities ended all Combined Operations activities were terminated and the establishment virtually went into hibernation. And on January 6, 1954, this establishment became the training establishment of the Supply and Secretariat Branch when the Supply and Secretariat and Cookery School was shifted from its temporary accommodation at Cochin to Malad.

The establishment was made responsible for the professional training of sailors of the Supply and Secretariat and Domestic branches such as Writers, Store Assistants, Stewards, Cooks, Topasses and even Sick-Berth Attendants; the training responsibilities of the last branch was later transferred to *Asvini* at Bombay. An added assignment for *Hamla* was to conduct the Supply and Secretariat Advanced Course, for which officers had hitherto been deputed to the United Kingdom, which was commenced in 1954.

Torpedo Antisubmarine School

With the development of the offensive capability of submarines during the interregnum between the two wars and the installation of the ASDIC technique of submarine detection, it was felt necessary to commence antisubmarine training in India. An Antisubmarine (A/S) school was thus opened on the ramparts of the Castle Barracks, Bombay on December 17, 1941 followed by the establishment of a Torpedo School at the Naval Dockyard, Bombay. As stated earlier, the Torpedo School was shifted to

Rozi near Jamnagar on December 15, 1942 and commissioned as *Valsura*. The Antisubmarine School was shifted to Versova, Bombay on December 26, 1942 and was commissioned as the combined Royal Navy and Royal Indian Navy Antisubmarine School with the name *Machlimar*. In 1946 this establishment was paid off and the Antisubmarine School was shifted to *Venduruthy* at Cochin. A year later the Torpedo School was also shifted to *Venduruthy* and on September 20, 1947 these two Schools were combined to constitute a Torpedo Antisubmarine School for the RIN. The School shifted to its new building in November 1955. It wouldn't be out of place to mention here that this school was renamed the Antisubmarine Warfare (ASW) School on October 1, 1985. The courses conducted by the School include Specialist Long Antisubmarine Warfare Course, technical courses for officer trainees, professional courses for sailors selected for commissioned rank, Antisubmarine Warfare Instructor's Course, professional courses for sailors assigned to the disciplines of Underwater Warfare and Underwater Control and shallow-water and deep-sea diving courses for officers and sailors.

Signal School

A Signal School was set up at *Talwar* at the site now occupied by the Motor Transport Pool at Bombay in April 1941 for the training of officers and sailors of the Communication Branch in encryption and decryption of messages, semaphore signalling by light and wireless telegraphy and processing incoming and outgoing signals of various categories. The School was later shifted to *Venduruthy* at Cochin where the foundation stone for this School's permanent building was laid by the Chief of the Naval Staff, Admiral Sir Mark Pizey.

The School, whose new building was inaugurated by Vice-Admiral Sir Stephen Carlill, Chief of the Naval Staff, on March 8, 1958, undertakes several courses for officers and sailors including the Specialist Long Communication Course for officers, technical courses for officer trainees, professional courses for junior and senior sailors and those who are selected for promotion to commissioned rank.

School of Naval Oceanology and Meteorology

Meteorological training in the IN began with the deputation of Lieutenant (later Captain) I Chawla to the UK for a course in naval meteorology early in 1949. By this time the crucial role played by meteorology towards the successful conduct of sea and air operations, as exemplified by a number of sea battles during the two World Wars, had been adequately appreciated and a beginning was made by incorporating it in the factors that go into

tactical planning and by imparting meteorological training to four officers of the Education Branch and four sailors in 1952.

Initially the main emphasis was laid in imparting instruction to sailors of the Aviation and Seaman branches on the intricacies and compulsions of weather-watching. While Air Handlers were trained in detecting the technical variations in weather data and their effect on aircraft operations, the Meteorological Observers were taught to keep a continuous weather-watch, record and disseminate meteorological observations to air traffic controllers, pilots and ships, code or decode weather messages and to issue weather warnings.

A training cell, located in *Garuda*, Cochin had started functioning in the early 1950s and gradually grew into a full-fledged Meteorological Training Section in 1968. Later it was assigned the new nomenclature - School of Naval Oceanology and Meteorology (SNOM).

Gunnery School

It was *Himalaya* at Manora Island, Karachi which undertook the training of junior sailors of the Gunnery Branch before Independence. With the loss of this establishment to Pakistan at the time of the country's partition, training of sailors of the Gunnery Branch was suspended for about a year but was resumed on October 12, 1948 when a Gunnery School was set up in an improvised building near the Command Parade Ground at Cochin. And it was on October 30, 1952 that the training of Gunnery sailors was shifted to its permanent premises, viz., the Gunnery School in *Venduruthy*.

Initially this school imparted professional training to the Third-Rate, i.e., juniormost sailors of the Gunnery Branch, the senior sailors and officers being sent to *Excellent*, the RN gunnery establishment at Whale Island in Portsmouth, England. With the 1950s heralding an era of indigenisation in the country, however, this School soon began to conduct these courses in India. Resources and equipment soon began to be mobilised and the courses introduced between 1952 and 1958 included those for Second-Rate sailors (1952), Cadet-Entry Sub-Lieutenants (1952), First-Rate sailors (1954), Senior Sailors selected for promotion to commissioned rank (1955), Gunnery Instructors (1957) and Specialist Long Gunnery Course for officers (1958).

Prior to 1957 the sailors of the Gunnery Branch used to be sub-divided into five specialist trades - Quarter Armourer (QA), Quarter Rate (QR), Layer Rate (LR), Anti-Air (AA) and Radar Controller (RC). In 1957, however, the LR and AA trades were merged into one trade known as Gun Layer (GL), Similarly the QR trade was merged into the QA trade. Later the GL trade was also abolished and the existing sailors of this trade were converted into the RC and QA trades.

During this period the theoretical aspects of the various courses were covered at the Gunnery School while for practical tracking and firing, the trainees had to be perforce transported to the Naval Battery and Coast Battery at Fort Cochin. This resulted in considerable wastage of training time and resources. Hence a new establishment for conducting all aspects of gunnery training was set up at Fort Cochin during the 1970s and commissioned as *Dronacharya*, named after the wise preceptor who trained the great warriors of the Mahabharata in the art of weaponry.

Naval Police and Regulating School

The Naval Police and Regulating School, which also incorporates the Motor Driving School, came into being in 1943 for training Petty Officers and sailors of higher rank of the Regulating Branch, i.e., the Naval Police Branch for promotion to the rank of Master-At-Arms at *Dalhousie* (now *Angre*) Bombay. In 1948 this School was shifted to the Naval Provost Barracks, Old Talwar Camp, Colaba, Bombay where courses for Leading Patrolmen were commenced in 1950. In July 1954 the School was shifted to the Navy's provost establishment, *Kunjali* in Colaba, Bombay.

Kunjali soon was entrusted, besides running the Naval Police Regulating School, with the responsibility of managing the training courses at the Motor Driving School, the administration of the Music Branch and the Detention Quarters and the training of Naval Bandsmen.

Indigenisation of Training Complete

When Independence came other than the basic training of sailors and short courses in operational training for junior officers, all courses for officers and sailors were conducted abroad. But by 1965 besides setting up training facilities, acquiring training equipment and commissioning a large number of training schools and establishments, both operational and technical, the high standard of training for the entire gamut of training from basic and divisional courses for sailors to specialist courses for officers earned enough kudos from foreign navies to attract student officers and sailors from as many as 12 countries. This also led to the formation of a sizeable skill-bank of instructors in the categories of officers and senior sailors.

9

OF FUNDS AND FINANCES

The Naval Budget

The Navy continued to receive a very tiny slice of the already small financial cake that had been set apart for Defence. In the early stages, therefore, it was not possible to have any appreciable growth and development of the Service. The emphasis at that time was on spending more on development and less on Defence and this was brought out in the then Prime Minister Jawaharlal Nehru's own words. In a letter written to the Chief Ministers on March 1, 1950, he said:

> You will remember that in the President's speech on the opening day of Parliament, reference was made to a reduction of military expenditure. After careful thought we had come to the conclusion that every effort should be made to reduce this expenditure. It is, in the long run, impossible for us to spend 50 per cent of our Central budget on defence. All progress is stopped by this top heavy expenditure. Recent events, however, have made it very difficult for us to make any substantial reduction, as we had hoped. Nevertheless, in the budget presented yesterday, there is some reduction. Last year's actuals were 170 crores for defence. This year the figure is 168. This includes a new item of 8 crores for the State armies. If we exclude this, then the reduction of 10 crores is noticeable. Of course, as our Finance Minister pointed out, we have to keep vigilant and we shall have to spend more on Defence if necessity requires it. This reduction in the present year, in spite of our difficulties and crisis, shows how earnest we are in the matter of

reduction on Defence expenditure.

This emphasis on development vis-a-vis defence, was a continuing factor and any increases in defence expenditure were indeed frowned upon. Commenting on the budget for 1951-52 wherein expenditure on the Army had been reduced by Rs. 12.88 crore, Nehru wrote:

> Most major countries are today spending vast sums of money in huge rearmament programmes. We are rather unique in this respect. When armies are growing up in Europe and America and more and more we hear the tramp of armed men elsewhere, in India we have had the courage to reduce our army. We have done so after the most careful thought, for the primary duty of a Government is to take no risks about the country's security. We do not think we have taken any undue risk. We have fine defence services and we are proud of them. But strength depends more on quality than on principle. Strength depends not merely on the defence services but also on the productive capacity and the economic foundation of a country. It depends finally on morale and that unquenchable spirit which never surrenders to evil or accepts defeat. We have to keep all these facts in view. The defence forces cannot carry on unless they are fed continuously by the nation's productive apparatus. Therefore, while making every endeavour to keep up our army, navy and air force at a high level of efficiency, we have also given thought to those basic foundations which make not only the defence services but the nation generally function in a satisfactory manner. We cannot do all that we want to do because of our limited resources but we can apply those resources to the best advantage.

Later, commenting on the rise in defence expenditure, he wrote on August 1, 1957:

> Why has defence suddenly come up before us in this way and forced our hands to spend more and more in foreign exchange, at a moment when we could ill-afford to do so, when indeed we wanted to save every bit of foreign exchange? Few things have pained me so much recently as to spend large sums of money on the apparatus for defence. I wish we could avoid it and spend this money instead for our schemes of development and in bettering the lot of our people. But, in some matters and most of all, where the safety and security of the country are concerned, there is no choice and no risks can be taken.

The budgetary methodology followed by the Government was to ar-

rive at a national budget estimate by working out the overall availability of financial resources for the coming year. An affordable percentage of this budget was then allocated to defence, which was then subdivided into portions for the Armed Forces and the other standard heads of expenditure, like Ordnance Factories, for instance. In making these allocations, the detailed annual expenditure over the preceding years was studied and the long term plans of the Armed Forces were looked at, though not necessarily adhered to. This methodology was regarded at the time as being eminently practical.

The size of the Army and the ever-present land threat was the paramount strategic factor. Since direct air support in the land battle was regarded as a *sine qua non*, the needs of the Air Force took the next priority. The Navy, considered at the time to have no perceptible influence on the land battle, was the last in the queue. It was accepted as a necessary adjunct, but one which could be built up more gradually. Our political leaders understood the maritime factor, but the compulsions of the moment made their financial allocations for its development seem residual. This generated a feeling in the Service that what it received was whatever could be spared after the parcelling out for the others had been done. Admiral Katari, our first Indian Naval Chief has recorded:

> Government budgetary policies left very little for expenditure on the Navy, certainly not enough to permit it to put into effect plans for its expansion, plans which were comprehensively drawn up as early as 1948 and for a whole decade all we could do was to keep the service just ticking over and its morale just above the demoralization level. It inevitably called for just that much more in the way of exercise of leadership at all levels.

Admiral Katari has later recorded that:

> It was a continuous stand-up row between the then Defence Minister, Krishna Menon, and Finance Minister Morarji Desai with the Prime Minister playing the role of an angry, autocratic arbitrator. In spite of the soft corner he nursed for Menon, he generally came down on the side of the Finance Minister. He was once heard to explain, 'You will not get a pie more. If we are attacked, you cope with what we have. Fight with lathis if necessary'. Admiral Katari adds that the three Chiefs of Staff who were there in attendance at the Defence Committee of the Cabinet Meetings, were mute witnesses to these embarrassing scenes. The author who was a Staff Officer in the Military wing of the Cabinet Secretariat during this period recorded the minutes of these

meetings for three years where the defence budgets were discussed. At one of these meetings where foreign exchange was sought for a critical item of defence equipment, Panditji peremptorily dismissed it with the remark that "Gandhiji taught us to fight with our inner strength!"

Notwithstanding all this, each year of the fifties saw a slightly higher percentage allocation for the Navy, as shown in the tables. It was never enough, but from 4 per cent in 1950-51 it more than doubled to 9 per cent in 1956-57 and reached 12 per cent in 1959-60.

Following the Chinese aggression there was a steep fall in the navy's budget allocation, descending to 4 per cent in 1964-65. Indeed the Chinese aggression was such a blinding surprise that we seemed to have lost sight of the maritime perspective for several years thereafter.

Everyone in the Government accepted the fact that the Navy was an equipment-oriented Service rather than a manpower-oriented Service, and that made it an expensive one. The Navy's capital budget, spent on acquiring hardware for combat, maintenance and training involved heavy expenditure, much of it in foreign exchange. Left with no permanent training establishments after partition, a heavy civil works budget was necessary for setting up new facilities. And the fact that we had switched from acquiring second hand to buying new ships of the latest design meant the establishment of a whole new range of maintenance facilities in our repair yards.

Out of Rs 168 crore allocated to Defence in 1950-51 the Navy received only Rs 8 crore which was not more than 4 per cent of the Defence budget. Increases continued to be small as years went by, but in 1953-54, out of the total allocation of Rs 197 crore, the Navy was allocated Rs 12 crore which now worked out to 6 per cent of the Defence budget. There was, however, a substantial increase in 1954-55 raising the naval budget to Rs 15 crore and Rs 19 crore in 1955-56. The capital expenditure had also gone up from Rs 2 crore in 1953-54 to Rs 7 crore in 1955-56, but new acquisitions and initial and part fulfilment of development plans absorbed these increases. In 1957-58 the total defence budget was Rs 278 crore and the Navy's share went up to Rs 27 crore. The capital expenditure had increased to Rs 13 crore. In 1958-59 the Navy received Rs 31 crore with capital expenditure increasing to Rs 15 crore. The Service now had 10 per cent of the defence budgetary allocation. Thereafter, in the next year, i.e., in 1959-60, while there was a small decrease in revenue expenditure, the capital expenditure increased by Rs 4 crore, and the Navy now received Rs 33 crore which was 12 per cent of the total Defence budgetary allocation.

In 1960-61 the Navy's allocation decreased and came down to Rs 32 crore and in 1961-62, 1962-63, 1963-64 and 1964-65 the Navy's allocation further went down and ranged from Rs 24 to 28 crore. It was a continuous

struggle to get adequate funds even to maintain the naval force at a minimum level for limited defence and there were always better reasons adduced for spending more on the Army and the Air Force.

Table 9.1 shows the total defence allocation and the rise and fall in the allocations to the Army, Navy and Air Force during this period of 15 years.

Table 9.1. Resource allocations to the Army, Navy and Airforce during 1950-51 to 1960-65

(Rs in Crores)

	50-51	%	51-52	%	52-53	%	53-54	%	54-55	%	55-56	%	56-57	%	57-58	%
Revenue																
Army	132	79	135	74	142	77	134	68	133	68	118	62	129	61	159	57
Navy	7	4	7	4	8	4	10	5	11	5	12	6	12	5	14	5
Air Force	10	6	15	8	14	8	28	14	28	15	28	15	37	17	70	25
Others	15	9	14	8	15	8	15	8	15	8	14	7	14	7	14	5
TOTAL	164	98	171	94	179	97	187	95	187	96	172	90	192	90	257	92
Capital																
Army	6	4	10	5	6	3	7	3	5	3	9	5	6	3	6	2
Navy	1	0	1	1	2	1	2	1	4	2	7	4	8	4	13	5
Air Force	4	2	1	1	2	1	2	1	2	1	3	2	4	2	4	1
Others	-7	-4	-2	-1	-4	-2	0	0	-3	-2	-1	-1	2	1	-1	0
TOTAL	4	2	10	6	6	3	11	5	8	4	18	10	20	10	22	8
Revenue + Capital	168		181		185		197		195		190		212		278	

	58-59	%	59-60	%	60-61	%	61-62	%	62-63	%	63-64	%	64-65	%
Revenue														
Army	155	53	142	54	164	58	204	62	314	66	532	65	524	65
Navy	16	5	14	5	17	6	19	6	19	4	21	3	23	3
Air Force	82	28	59	22	52	19	59	18	74	16	134	16	126	16
Others	14	5	15	6	15	5	19	6	18	4	17	2	20	2
TOTAL	267	91	230	87	248	88	301	92	425	90	704	86	693	86
Capital														
Army	8	3	9	3	10	4	13	4	27	6	68	8	76	9
Navy	15	5	19	7	15	5	6	2	5	1	6	1	5	1
Air Force	4	1	3	1	4	1	5	2	17	3	35	4	26	3
Others	1	0	4	2	4	1	1	0			2	0	6	1
Total	28	9	35	13	33	11	25	8	49	10	111	14	113	14
Revenue + Capital	249		265		281		326		474		815		806	

: Others - Pensions & Defence PSUs

It is apparent from the above that though the allocation made to the Navy during the period rose from Rs 8 crore to Rs 33 crore, the percentage of the total budget allocation rose from 4 per cent in 1950-51 to 12 per cent in 1959-60 but dropped to 4 per cent in 1964-65. The service thus failed to develop owing to inadequacy of funds, to a level commensurate with its tasks and responsibilities in the context of the politico-military situation developing in the Indian Ocean area. This was probably due to the persistent land-oriented defence perception of the powers that be and thus the capabilities of the Service continued to be confined to a brownwater role. The prospects for development proposed in the Plan Papers of the Navy prepared after Independence also continued to remain unfulfilled.

Footnote:

Defence Budget - 1991-92

The Defence budget has gone up by Rs 600 crore in the budget proposals for 1991-92; up from Rs 15,750 crore in the revised estimate for 1990-91 to Rs 16,350 crore.

The revenue expenditure for the defence sector is estimated at Rs 11,139 crore for 1991-92, up from Rs 11,012 crore in the budget estimates last year.

The capital expenditure for the defence sector has jumped from Rs 4,737 crore in the budget estimate last year to Rs 5,211 crore in the budget estimate for 1991-92.

Of the three wings of the armed forces, the army, with Rs 8,079 crore attracts the lion's share in the budget estimates followed by air force with Rs 2,054 crore.

The Defence Budget at a glance

(in crores of rupees)

Total defence expenditure	16,350
Defence revenue expenditure	11,139
Defence capital expenditure	5,211

Defence Revenue Outlay

	1990-91 Budget Estimate	*1990-91 Revised Estimate*	*1991-92 Budget Estimate*
Defence Services - Army	7,910.15	7,965.00	8,079.13
Defence Services - Navy	877.00	826.00	892.06*
Defence Service - Air Force	2,017.76	2,072.74	2,054.96
Ordnance Factories	143.20	148.70	112.63
Defence Capital Outlay	4,801.89	4,737.56	5,211.22

* Revenue 892.06
Capital 1413.00

2,305.06

10

DISCIPLINE AT SEA

Evolution of Naval Law

The Earlier Centuries

Ever since man began to sail the seas, masters of ships and craft have had to resort to various punitive measures to ensure discipline on board, both at sea and in harbour. Some of these measures were extremely harsh because, besides the spirit of adventure and the lure of the unknown that encouraged men to go to sea, the more important reasons for them to opt for a maritime profession in the olden days were unemployment, banishment from the state, slavery, questionable antecedents, fugitation from law and debt and piratical propensities. No code for such punishment had however, been laid down or adopted during the earlier centuries of bluewater seafaring and for several millennia it continued to be totally arbitrary.

The first instance of codification of laws for ensuring shipboard discipline in the Indian subcontinent is found in the records pertaining to the War Office of Emperor Chandragupta (321 B.C. to 297 B.C.) who has been described as one of the greatest and most successful kings known to history. These records include the writings of Megasthenes and Strabo and Kautilya's *Arthashastra*, an important landmark in the history of Indian civilisation.

In its chapter on the Naval department of Chandragupta, the *Arthashastra* describes in detail the administrative machinery of the department and the duties and responsibilities of *Navadhyaksha*, i.e., the Superintendent of

Ships. Besides his other functions, the *Navadhyaksha* was entrusted with the maintenance of discipline and bringing to book all violators of harbour regulations and miscreants that were dangerous to public peace. Ships of pirates, ships violating customs, coastal or harbour regulations and ships bound for the enemy's country were destroyed. The persons arrested by the port or harbour authorities for violating the norms of behaviour were: a person eloping with another's wife or daughter, a person committing larceny, a person suspected to have committed an offence, a person with a 'perturbed appearance', a traveller without any baggage, a person who attempted to conceal or evade the cognisance of a load carried by him, a person in disguise, a person stealthily carrying valuables, a person attempting to pass himself off as an ascetic, a person pretending to be suffering from a disease, a person in a state of alarm, a person spying for a foreign country or agent, a person who had committed murder or assault, a person carrying weapons, explosives or poison and, finally, a person not in possession of a valid pass or entry document.

During the period from the 16th century to the 18th, i.e., from the reign of Akbar to that of Aurangzeb, the functions of the Mughal Admiralty, known as the *Meer Behry*, were governed by the regulations laid down by the Mughal government. These have been described in detail in *Ain-i-Akbari*, the well-known treatise on the life and work of Akbar. According to the records left by Abul Fazl, elaborate regulations had been framed for the organisation of the Naval Department, which had four main functions: construction and supply of ships and boats for waging war and for transportation of troops, passengers and merchandise; recruitment and supply of sailors to the ships of the Admiralty; surveillance of rivers and other waterways; and the imposition, realisation and remission of duties. These regulations very closely correspond to those of Chandragupta's Navadhyaksha, formulated nearly two millennia before the advent of the Mughals. The harbour regulations of the Mughals also provided for measures to be adopted for the maintenance of discipline and a code of conduct for persons manning ships and ports.

During the earlier centuries, the navies of the littoral states of the Indian subcontinent had a suitable organisational structure for their naval forces down the centuries but in most cases, their administration was not formalised and was left to the discretion of the commanders of such forces. Consequently, the grading of punitive measures resorted to for maintaining discipline varied from region to region and from commander to commander. It was only with the coming into being in the seventeenth century of the East India Company's Marine, which was largely modelled on the British Navy, that the administration of shipboard discipline, which had remained amorphous for centuries, began to crystallise.

The British Model

The evolution of naval law, so far as today's navy is concerned, owes its origin to the laws and customs of the sea which formed the original body of rules for the day-to-day maintenance of order and discipline afloat in Great Britain's navy. No requirement for a statutory code of law was felt, largely due to there being no standing navy in England until the 16th century. Fleets were raised, as the nation's interests demanded, from private ships acquired for the occasion and fitted out. When the expedition was ready, the commander of the expedition would issue specific instructions to the assembled fleet for the punishment of offences and the maintenance of discipline. These instructions were limited to the particular service for which the fleet had been raised.

With the passage of time, it became customary for commanders, on subsequent occasions, to issue the same broad instructions that had been put forth by their predecessors, modifying them as they considered necessary for their particular purpose or mission and thus developed an informal body of law based on the customary practices of the seafaring community. One remarkable feature of these instructions was their undue harshness which was probably necessitated by the 'lumpen' section of society from which sailors were recruited at that time.

As the great majority of the rank and file were unable to read, it became the custom to read out these instructions, which were later termed the 'articles of war', at a muster of the men once a month. This explains the genesis of the provisions in the Queen's Regulations for the Royal Navy requiring the articles of war to be read out to the 'ship's company', i.e., all officers and sailors on board, at the first opportunity after the commissioning of the ship and to be displayed in a prominent position in the ship for the information of the men. This practice has also been adopted by the Indian Navy and is incorporated in Regulations for the Navy, Part II (Statutory).

Brutal Punishments

It is interesting to observe that disciplinary powers were originally vested only in the ships' operational commanders, who would delegate them to their captains, reserving to themselves the right to deal with more serious offences such as mutiny, murder and manslaughter. The captains were to exercise these powers in accordance with the laws and customs of the sea and according to the gravity of the offence. The early British military law provided for such macabre punishments as tying a murderer to the dead body of his victim and throwing both into the sea. At one time, dismissal from the naval service entailed first ducking a man under two fathoms of

water and them towing him from the stern of a ship to the shore where, if the man survived, he was dismissed from the service. A man convicted of causing grievous injury to another could be buried alive or have his limbs hacked off or have boiling water poured over his head. With the passage of time, the punishments became slightly more humane and the convicted man was lashed to the bowsprit (a strong spar projecting over the bows of a sailing ship) given a biscuit, a can of beer and a knife. He then had the choice of starving to death or cutting his bonds and falling into the sea. Then there was 'keel-hauling', i.e., punishing the convicted man by hauling him under the keel of a ship by ropes from one side to the other while the ship was under way or the man being subjected to 'marrying (or kissing) the gunner's daughter', i.e., being tied to a gun and then being flogged. It was said of these punishments that they could tame the most crude and savage sailors in the world.

The Three Forms of Trial

The rules of discipline were formally prescribed for the first time in 1645 when an ordinance and articles concerning martial law for the governance of the navy were produced by the Lord Commissioners at the Navy Office, London. These enjoined trial by a council of war and laid down three forms of trial. Firstly, the commander-in-chief, assisted by a council of war, could try and punish all offences committed against any article of war, though the approval of the Lords Commissioners was required before inflicting the punishment of death or mutilation. Secondly, the flag officer of a fleet or division of ships could call to council at least three of his captains to try all offences arising in his division but punishments involving the penalities of death, mutilation or the cashiering of an officer were to be ratified by the Lords Commissioners. The third form was the ship's court. The captain, with the assistance of his second-in-command and other officers on board, was empowered to try all offences committed by those on board his ship but in this case also, sentences of death, mutilation or the cashiering of any officer were to be referred to the superior authority.

These courts were essentially courts of rough but effective justice, concerned only with the maintenance of discipline and harmony in the fleet. It is interesting to find that the present-day system of naval justice has changed very little over the last 300 years and our existing general court martial, disciplinary court and summary trial by the commanding officer are virtually the continuance of the three courts conceived as early as the 17th century but with progressive modifications. The original direction to the Commander to inflict punishments according to civil law, martial law and customs of the sea has been continued in the successive Navy Acts.

The Judge Advocate

The requirement of appointing a judge advocate at a council of war, charged with the responsibility to administer an oath to witnesses, to advise the court on matters of law and to prepare minutes of the proceedings, was prescribed as early as 1653. The term 'judge advocate' with its suggestion of completely opposite functions being performed by the same individual is today curiously and potentially misleading. It might lead an accused person to think that the judge advocate is not only a legal adviser to the court but also an advocate for the prosecution as well. It is, however, true that until late in the 19th century, it was the dual function of the judge advocate at a naval court martial to act as an 'assessor', i.e., to advise the court on all points of law and practice which might arise, and also when no prosecutor was appointed, to conduct the proceedings in support of the charge before the court on behalf of the public. A better explanation of the title may lie in the description given in 1864 by Lord Cransworth of the duties of the judge advocate, where he refers to him as 'judex advocatus', i.e., judge called to assist the court, though forming no constituent part of it.

The transition from a council of war to a court martial in its present form was a matter more of name than of substance. The exact time at which courts martial under that name began to be held is not precisely known but they are mentioned for the first time in the Admiralty Regulations issued on May I, 1663. It is not necessary for the purpose of this chapter to go into the subsequent history of the evolution of Naval Law in the Royal Navy. Suffice it to say that after the great mid-19th century legal reforms, an attempt was made to bring the system of naval justice closely in line with the procedure of the English criminal law and the Naval Discipline Act 1866 was the result of these reforms. This act remained in force for 91 years although numerous amendments were made to it from time to time, and was ultimately replaced, so far as the Indian Navy was concerned, by the Navy Act, 1957.

Indian Military Law

The Indian Military law had its origin in the British military laws which were made applicable to the Indian troops employed by the East India Company. Statutory provision was first made for the discipline of the East India Company's troops by an act passed in 1754 for punishing acts of mutiny and desertion by officers and soldiers. This act empowered the Crown to frame articles of war for the effective command of these troops. Although there was doubt as to the applicability of the British act, in the absence of any other court, the Governments of Bengal, Madras and Bombay applied the act and the articles of war with such modifications and omissions as appeared necessary for the administration of the Indian troops maintained by them.

In order to clear doubts that had arisen in regard to the legal validity of the then existing arrangements for the discipline of the Indian troops, a specific provision was made in the Act of 1813 which gave power to the Governments of Bengal, Bombay and Madras to frame laws, regulations and articles of war for the governance of all officers and soldiers in their respective service. It was specifically provided in the 1823 Act that such legislation would apply to the Indian troops of each Presidency, wherever serving.

Regulations of the Navy Framed

Soon after World War I, the question of reorganisation of the Royal Indian Marine as a combatant force came under active consideration and subjected to continued discussion during the period from 1919 to 1926. As a sequel to these discussions and with the concurrence of the Secretary of State and the Admiralty, it was decided in 1926 to establish the Royal Indian Navy. In the following year, a bill was passed in the British Parliament amending Section 66 of the Government of India Act, 1919, which provided for the establishment of the Royal Indian Navy, applying the British Naval Discipline Act to this force with such modifications and adoption as was found necessary. Accordingly, a bill was placed before the Central Legislative Assembly of India in 1928. However, the House, then led by Shri Shanmukham Chetty and having stalwarts like Pandit Motilal Nehru, Pandit Madan Mohan Malaviya, Lala Lajpat Rai, Mr Mohammed Ali Jinnah, Sir Hari Singh Gaur and others, defeated the motion to refer the bill to a Select Committee by one vote. The main ground on which the motion was then passed was that the Indian Legislature would not have any control over the Royal Indian Navy but would be required to maintain it and pay for it and, further, that the force could be requisitioned by the British Government without the consent of the Legislature. In 1934, however, the bill was again presented but this time it was passed by the Indian Legislature after a lengthy and heated debate and became the Indian Naval (Discipline) Act, 1934 with the Royal Indian Marine becoming the Royal Indian Navy. In order to give effect to this Act, the Regulations for the Indian Navy (Indian Navy Book of Reference No. 2, short titled INBR 2) were framed and promulgated in 1938 as the Regulations for the Navy (INBR 2).

The Indian Navy Discipline Act, 1934

The law relating to discipline in the Indian Navy was thus contained in the Indian Navy (Discipline) Act, 1934, passed in pursuance of Section 66 of the Government of India Act, 1919 which was later replaced by Section 105 of the Government of India Act, 1935. The Government of India Acts of 1919

and 1935 empowered the then Indian Legislature to apply to the naval forces raised in India, the provisions of the British Naval Discipline Act, 1866 which was set forth in the First Schedule to the Indian Navy (Discipline) Act, 1934. The Independence of India necessitated, the adoption of certain acts for the purpose of the Governance of the Navy in keeping with the constitutional changes, and action was taken to adopt the Indian Navy (Discipline) Act, 1934, by virtue of the two orders: the Indian Independence (Adaptation of Central Acts and Ordinances) Order, 1948 and the Adaptation of Laws Order, 1950.

The Indian Navy (Discipline) Act, 1934 largely dealt with disciplinary provisions and there were no statutory provisions concerning various other matters such as administration, enrolment, grant of commissions and deductions from pay and allowances of officers and sailors. The necessity was, therefore, felt to have a consolidating statute covering discipline, administration, appointment of officers and enrolment of sailors, statutory deductions, applicability of fundamental rights and various other aspects.

The Navy Act, 1957

The revised Army Act and the Air Force Act were passed by the Parliament in 1950. The revision of the Naval Act proved a more formidable task and it was felt that as the conditions of service at sea differed from that on land and that the Indian Navy (Discipline) Act, 1934 was in many respects different from the law relating to the Army and the Air Force, no attempt should be made to assimilate the revised Navy Act in other respects to the law relating to the Army and the Air Force. Besides, in the United Kingdom a Select Committee had been appointed to examine the revision of the British Naval Act and it was thought that advantage should be taken of it by adopting some of the recommendations of that Committee, commonly known as the Pilcher Committee.

The draft of the revised Navy Bill closely followed the report of the Pilcher Committee. The draft bill was referred to a Select Committee and, after having been examined by that Committee over a period of four years, was passed into law and became effective from January 1, 1958. Consequent to the passage of the Navy Act, 1957, three earlier Acts were repealed. These were the Indian Navy (Discipline) Act, 1934 (XXXIV of 1934), the Indian Naval Reserve Forces (Discipline) Act, 1939, and the Naval Forces (Miscellaneous Provisions) Act, 1950 (LVII of 1950).

Some important changes were made by the Navy Act, 1957 over the law as contained in the Indian Navy (Dicipline) Act, 1934. Firstly, the maximum punishments were modified to conform to the agreed decision concerning punishments in the three Services; secondly, specific provisions were included concerning grant of commissions and enrolment in the

Service and for prescribing conditions of service; thirdly, provisions were inserted in pursuance of Article 33 of the Constitution to restrict or abrogate the application of fundamental rights to the members of the Armed Forces in so far as this was necessary for the maintenance of discipline; fourthly, provisions were incorporated for the deduction from pay of officers and sailors for absence without leave, damage to Government property, naval messes, canteens and similar places; fifthly, the penal sections were rationalised and a few amendments made as necessitated by experience; sixthly, the jurisdiction to try civil offences was modified to conform to that existing in the Army and the Air Force; seventhly, the main points of procedure of courts martial were incorporated in the Act itself; eighthly, officers of the non-Executive branches of the Navy, who were formerly not eligible to sit at courts martial, were made eligible, it being provided, however, that the majority of the officers would be of the Executive Branch with the additional provision that in certain special cases, only officers of the Executive Branch should sit as members of a court martial; ninthly, provision was made for the issue of commissions to examine witnesses; tenthly, the Indian Evidence Act was made applicable to the proceedings of courts martial; eleventhly, the judicial review of the Judge Advocate General of the navy, hitherto known as the Judge Advocate of the Fleet, was placed on a statutory footing and the qualifications for appointment of officers to the Department of the Judge Advocate General were prescribed, twelfthly, the existing naval court martial procedure, permitting the accused to give evidence on oath, was continued with a slight modification to conform to the provisions of the Criminal Procedure Code, as amended by the Criminal Procedure Code Amendment Act, 1955 and finally, provision was made for winding up of the estates of deceased persons.

It would thus be evident that the Navy Act, 1957 brought about a revision of the naval law by incorporating in it necessary provisions of other related enactments and regulations with a view to making the law itself sufficient and to adopting the then existing provisions to suit the new constitutional set up and present-day requirements.

Inter-Service Act Differences

The Army and the Air Force Acts had been cast in the same mould and initially the draft Navy Bill was also drawn up on the same pattern but this was later given up and significant differences were allowed as these were dictated by the peculiar conditions of service at sea and naval traditions and usages. Nine important points of difference between the Navy Act, 1950 are given below:

(a) The Army has four kinds of courts martial such as general court

martial, district court martial, summary general court martial and summary court martial. The Navy, on the other hand, has only one type of court martial in peace time and of course one more during war time for the trial of officers for certain specified offences, called the disciplinary court. During peace time, the Navy has five types of tribunals: the Commanding Officer, the Flag Officer Commanding-in-Chief, the Chief of the Naval Staff, the Central Government and the court martial.

(b) The sentence of a court martial under the Navy Act is not subject to revision or confirmation and takes effect immediately on pronouncement by the court martial except in the case of a sentence of death which requires confirmation of the Central Government before execution. The provisions relating to revision and confirmation of the findings and sentence of an Army court martial are peculiar to the Army. The existing naval court martial procedure does, however, give power to the convening authority not to put a sentence into effect, should he doubt its legality; provision exists for the Central Government or the Chief of the Naval Staff to reduce or remit the sentences.

(c) So far as an acquittal by a naval court martial is concerned, it is not subject to any revision or review by any authority. Under the Army Act, till recently an acquittal by a court martial was not final but by an amendment to Army Rules, 1954, the provisions of the Navy Act have now been incorporated in the Army Act as well.

(d) In the case of the Navy, the accused person is not required to be present at the time of recording the summary of evidence against him and therefore cannot cross-examine the witnesses whose summary of evidence is being recorded.

(e) Another important difference is that under the Navy Act, an accused person can be a witness in his own trial whereas in the Army Act there was no such provision, till very recent times. The Navy Act thus incorporated the change in the law of the land by the Criminal Procedure Code Amendment Act, 1955. The Army has woken up to this development only recently.

(f) There are different scales of punishment for similar types of offences committed by persons in the Army and the Navy. These differences were referred to Sir Arthur Trevor Harries, the then Chief Justice, for his views. Based on his recommendation, the Chiefs of Staff of the three Services agreed on a common scale of punishment which have been incorporated in the Navy Act, 1957. The Army and the Air Force have agreed to incorporate this common scale when their respective Acts go for amendments before the Parliament.

(g) Whereas the Navy Act has made statutory provisions in the Navy Act itself for the main steps of the procedure of court martial, the Army Act

has left it to the Army Rules.

(h) The Navy Act makes statutory provision for the judicial review of all proceedings of court martial by the Judge Advocate General. This is not so in the Army and the Air Force Acts, which only provide for confirmation and revision of the findings and sentence of a court martial by the prescribed military commanders. Besides, the duties, qualification and functions of the Judge Advocate General and the officers of his department are laid down in the Navy Act, 1957 which is not so under the Army Act.

(i) The summary powers of punishment of a Commanding Officer under the Navy Act, 1957 are more extensive than under the Army Act. A Commanding Officer can award up to three months' imprisonment or detention to a sailor, subject to approval of the administrative authority; whereas, under the Army Act, his powers of punishment in relation to persons other than commissioned officers, junior commissioned officers or warrant officers, are restricted to 28 days' imprisonment in military custody or detention.

The rationale for the above differences lies in the fact that the disciplinary needs of the navy differ from the other two Services in three major respects:

— There is a high proportion of cases in the navy that are tried summarily. A court martial cannot normally be held with convenience at sea, and the navy is a highly mobile force whose movements cannot be held up while a court martial is held in a port to try a comparatively trivial offence. For this reason, a high degree of disciplinary power must always be instantly available to the Commanding Officer of a ship.

— Since the safety of a ship and her complement must depend on the same high standard of discipline at all times, there cannot be any major difference between naval discipline in peace time and in war, unlike the practice in the other two Services where penalties for offences are lighter in peace time than they are in war. The reason for this is that life at sea has its own hardships, and there would inevitably be resentment if there was this added knowledge that the same conduct were to be punished more severely afloat than when committed by a sailor asore.

— As a matter of historical tradition, the Navy Act has incorporated some of the salutory provisions of the British Naval Discipline Act, taking advantage of the recommendations of the Pilcher Committee which thoroughly examined the British Naval Code.

Comparison with Civil Courts

It would also be instructive to make a comparison of the procedure and system of trials by court martial with the procedure and method of trials as it exists in the ordinary civil courts in India. Such comparison would reveal

that the naval system of justice incorporates not only some of the essential conditions in relation to the administration of justice but also in relation to its procedure, by its freedom from technical forms and obstructive habits that delay the operation of civil courts. This has resulted in a summary and swift administration of justice well worthy of imitation in some respects by the civil courts.

The procedure by which charges against an accused sailor or officer are investigated and brought to trial is in many respects similar to those by which an alleged offence is investigated and tried by the civil courts. In the naval system, the function undertaken by the magistrate of himself disposing of minor charges or conducting a preliminary investigation of those to be brought to trial before a superior court, is undertaken by the commanding officer of the ship or establishment, who, in his capacity as the examining magistrate, may dismiss any charge if he is not satisfied it is made out; if he dismisses a charge, his dismissal is final and the accused cannot be tried on that charge by any military authority.

In order that an accused person is not kept in custody for an unreasonably long period of time, the administrative instructions provide for time-bound disposal of cases. As a result, a sailor arraigned on a charge is brought to expeditious trial within a matter of days and the proverbial delays of civil criminal courts are unknown to the naval system of justice. If the case is one which the commanding officer is not empowered to deal with or not prepared to try summarily, he takes steps to have the evidence reduced to writing, with a view to trial by court martial. On the basis of documents submitted to him, the convening authority decides to convene a court martial, and copies of summary or abstract of evidence serve, like the deposition in a trial or indictment, to inform the accused of the case against him. The accused is entitled before trial, as a matter of course, to a copy of at least the substance of the expected testimony of every prospective witness against him and to information regarding every item of evidence in possession of the prosecution which may be used against him.

The procedure at a court martial attended by a judge advocate is substantially similar to the proceedings of a trial before an ordinary criminal court, there being a striking resemblance to the procedure before a trial by jury. The only difference is that whereas a jury is chosen by lot, the members of a court martial are appointed by the convening authority. Like the number of jury men, the number of members of a court martial is within the statutory limits. As in the Criminal Procedure Code, the law makes allowance for challenge against the jury both by the prosecution and the accused. This right has also been secured to the naval accused. There is again similarity in the manner of swearing in of the jury, opening of the case by the prosecution and the defence, the taking of special pleas by the accused,

viewing of the place of offence, summing up of their respective cases by the prosecution and the defence, and the judge's charge to the court. The object is to obtain a competent and impartial tribunal actuated neither by partiality, nor favour or affection. The main differences between a trial by court martial and a trial by jury in a criminal court are, firstly, the court martial may arrive at its findings or sentence by a majority and under the Indian law, the Criminal Procedure Code permits the majority verdict of a jury to be received, whereas a jury, under English law, must be unanimous; and secondly, members of a court martial fix the sentence and the role of the judge advocate in the determination of the sentence is only advisory, whereas under the Criminal Procedure Code, a jury has nothing to do with the sentence which is decided by the judge alone.

The evidence against the accused in a court martial is given under the sanction of an oath or affirmation as in any judical proceedings before civil courts. The witnesses are liable to punishment for perjury committed before a court martial. The competency and credibility of witnesses is also tested by the same rules of evidence as prevail in the civil courts. In fact, courts martial are bound in general to observe the fundamental rules of law and principles of justice as observed and expounded by civil courts. They are also governed by the Indian Evidence Act as followed by the criminal courts, subject to certain exceptions as dictated by the exigencies of naval service. One lacuna in this procedure is that the Indian Evidence Act is drawn chiefly from English Law and was enacted in 1872 when Britannia ruled the waves and Queen Victoria ruled over the Indian subcontinent. Despite repeated exhortations by legal luminaries for a review of the 1872 Act, the continued application of its archaic provisions to conditions prevailing after the lapse of over a century, under a totally different environment and in an ethos which is radically different from that of our former rulers, has become an anachronism.

As in the civil administration of justice, a court martial has a coercive power to secure the attendance of witnesses. The witnesses are liable to penalties and punishments upon complaint of non-attendance in like manner as any witness neglecting to attend a trial in any civil court. Protection from arrest is also given to witnesses in going to and returning from a court martial in the same manner as witnesses attending any of the courts of law are privileged. A court martial like a civil court is an open court to all persons other than the witnesses.

It would thus be evident that the procedure of trial by court martial is almost analogous to the procedure of trials in the ordinary criminal courts, and that the naval justice system affords to an accused person some of the basic protections available to an accused before an ordinary criminal court. Notwithstanding this, the system of trial by court martial has some ac-

knowledged faults which prevent it from being equated with the civilian criminal justice. In some respects, the present system is so antiquated that one is inclined to agree with what Justice Willian O. Douglas said in an American case, 'A civilian trial is held in an atmosphere conducive to the protection of individual rights, while a military trial is marked by the age-old manifest destiny of retributive justice.' The main defects in the existing system of naval justice are, firstly, the absence of the right to bail to an accused person; secondly, the ad-hoc composition of the court martial and its determination of both guilt and the sentence; thirdly, the invidious position of the judge advocate; fourthly, the possible command influence by the convening authority; and, fifthly, there is no right of appeal to any superior court.

As a result of these shortcomings, courts martial are prone to be regarded as summary and arbitrary proceedings. Although the description of the naval system of justice as 'drumhead justice' is over-drawn, there are indeed glaring defects as regards the safeguards afforded to an accused person and a court martial is in fact regarded as an instrumentality of the executive power to enforce discipline in the Service. Though the other democratic countries have carried out large-scale revision of their military codes to bring them in line with the changing conditions and concepts of penology and administration of justice, our system of justice has remained static and is now lagging behind the systems of justice in other countries.

Friend of the Accused

'Friend of the Accused' has been an institution in the Service which has become considerably diluted over the years and there would be many reasons for this. True, law has become more complex and therefore, some may feel happier in the 'company' of civil lawyers to assist them to obtain justice in Courts Martial. Generally, Courts Martial in which prosecution and defence have been conducted by competent naval officers gets down to brass tacks in a quick, direct and unfussy manner yet preserving an aura of equanimity and dignity. Civilian lawyers certainly bring a wide, strong knowledge of law to bear on the cases they handle and it is an education for service personnel to listen to some of them. On the other hand, there have been instances when much time was spent on what was, in plain terms, regarded as no more than pettyfogging over matters of no worthwhile import, as frequently happens in civil courts.

A distinguished old timer, who rose to be the Commanding-in-Chief of the Western Naval Command before retirement and who has been a legendary 'friend of the accused' for over a quarter of a century, reminisces:

I was never trained in law and my involvement in Courts Martial was

essentially that of an amateur who, by some sedulous self-study, a small accumulation of experience and a few successes, found himself the object of more faith and respect than he deserved. I took to acquiring a knowledge of naval law and discipline because I regarded it as a necessary part of a naval officer's professional equipage. My experiences of our Courts Martial system of trial generated and sustained a wholesome respect for it. It is up to those who administer this system to achieve the high quality of justice it was structured to attain.

I always found it essential (and fascinating) to carefully study the demeanour of witnesses, as recommended by many famous judges and lawyers. It gave me precious insights into the strengths and weaknesses of their evidence and helped me to decide how to tackle them in cross examination. The law books say that cross examination is a two-edged tool. How true.

Professional lawyers probably develop a certain dispassion in handling the cases of their clients. Not being one of them, I found it hard to be distantly aloof from the fears and hopes of those I defended. That is probably why I regarded the label 'Friend of the Accused' an ideal one. It implied an act of comradeship rather than a more sang froid lawyer-client contract.

Unified Inter-Service Code

It would be interesting to allude at this stage to the efforts made by the Government of India to bring about uniformity in the three Services' Acts. The war-time experience of countries like the United States, Canada and the United Kingdom indicated the desirability of making the rights and duties of the members of the Armed Forces readily ascertainable with reference to a single code. These countries had thus gone in for a uniform code for the three Services. The Government of India, also being convinced of the importance of allowing the three Services to develop a feeling of the essential oneness of the Defence organisation, set up in 1965 a committee consisting of representatives from the Ministries of Defence and Law and Justice, and the three Service Headquarters, with the avowed objective of drafting a uniform code for the three Services. The aim was to rationalise the three Services' Acts, taking into consideration the developments in criminology and also the fact that members of the Armed Forces would in future come from more educated and politically conscious classes.

The Uniform Code Committee, after having deliberated over the matter for nearly 14 years, brought out a draft uniform code. Whilst this draft uniform code was in the final stage of consideration the Army Headquarters wished to reconsider the usefulness and desirability of having a

single uniform code for the three Services and withdraw from the committee, advocating that each Service should bring about amendments to its own Service Act to meet its own peculiar conditions. As a result, the efforts at bringing about a uniform code of Service discipline were given up and the draft uniform code was put in cold storage. Recently, however, the Army Headquarters has had second thoughts about its earlier stand and there is a feeling that military justice also needs to be brought in conformity with the modern notions of criminal justice. This thought has obviously emanated from the flood of court cases involving the Army which has made the present higher echelons of the Service rethink about the antiquity of the Army Act, 1950 and the need to reform it and bring it in conformity with the changed notions of justice.

Naval law, or 'the laws of the navy' as it is termed in a popular ditty, has gradually developed into its present form over the last three millennia, i.e., from the days of triremes and galleys to the days of nuclear submarines and ballistic missiles, and has attempted to keep abreast of the changes in the perception of human rights, requirements of discipline ashore and afloat and the growing transcendence of civil procedures into the Services. Like many other disciplines, it is basically protean in nature and would thus continue to evolve in keeping with developments within the Services and without, and to constitute the most important implement for the maintenance of discipline at sea.

11

THE LAW OF THE SEA

No history of the Indian Navy would be complete without highlighting the contribution that the Navy has made towards the formulation of the rational policy governing the uses of the oceans. There has, over the centuries, been a connection between naval strategy and the law of the sea, but never have the implications of this relationship been as complex as they promise to be in the foreseeable future, with the rapidly changing development in these spheres. So far as India is concerned, it had been realized during the first decade after Independence that the trend towards unilateral claims and appropriation of huge areas of the oceans made by many countries around the globe, particularly among the developing coastal states, would engender legal inhibitions to the exercise of naval power. Notwithstanding this realization, there was no institutional mechanism within the Government to evaluate and co-ordinate ocean-related activities, both national and international, and formulate a national oceans policy. Apart from piecemeal advice from the Ministries of Law and External Affairs or their considerations, the practical problems in the field of the law of the sea were increasingly referred to the Navy for examination and advice. Such references to Naval Headquarters led to the realisation that changes in the political character of the world's oceans will require a rebalancing of efforts within the traditional naval roles of sea control, projection of national power

and naval presence. It was realised that the increasing complexity of naval missions would principally arise through denial of large areas of ocean space coming under the actual or claimed jurisdiction of coastal states.

In fact the law of the sea had been developing over the centuries around the widely-accepted notion of the freedom of the seas which justified placing the oceans at the disposal of all. This principle was based on two underlying assumptions, firstly, the resources of the oceans were regarded as essentially inexhaustible and, secondly, the resources were treated as *res communis* (common heritage of the world community) as opposed to *res nullius*, granting preferential rights to the 'first-comer', and hence were not liable to appropriation for exclusive use by any single state. In view of these assumptions, the oceans were the subject of political or naval rivalry but their vast economic potential was scarcely recognized and the exploitation of their resources, living or mineral, was minimal.

During these centuries the navy constituted the key element in the development of a nation's uses of the sea. As a result, the coastal states were mostly content with merely claiming a narrow belt of territorial waters. It was only in the 20th century that coastal states, finding their fishery resources near their shores increasingly threatened by large and better-equipped vessels of foreign states, sought to protect them by extending their national authority over waters adjacent to their coast. The end of World War II saw the beginning of the decolonisation of the possessions of Western powers and the emergence of new states in Africa and Asia. Fears and prospects of depletion of land-based natural resources stimulated practical applications of modern technology, leading to revolutionary changes in the uses of the oceans or ocean beds. The Truman Proclamation on the continental shelf, inspired by the American fear of a shortage of hydrocarbons, was followed immediately by those of the developing countries, culminating in the convening of the First Law of the Sea Conference in 1958 and the adoption of the four Geneva Conventions on the Law of the Sea.

Soon after Independence in 1947, India claimed a territorial sea of three nautical miles. Later various questions relating to maritime areas were examined between August 1955 and December 1956 and four Presidential notifications were issued claiming a territorial sea of six miles, a contiguous zone of 12 miles, a conservation zone for fisheries extending up to 100 miles and the continental shelf - the bed of shallow sea area bordering a continent. The notifications were mere general pronouncements and no consequential action regarding them was ever taken. As a result of indecision or inaction, India's accession to the four Geneva Conventions on the Law of the Sea continued to remain under consideration for a long period. On September 30, 1967, the territorial waters of India were extended to 12 miles, largely as a reaction to Pakistan's extension of her waters from three to 12 miles rather

than on any considerations of deliberate policy. Thus, in the then prevailing attitude towards the oceans, the need to articulate any management policy for the oceans was never felt and consequently the question of having any institutional arrangements never arose since the navy represented the major national activity in ocean issues.

It must, however, be recognised that the contribution of the navy in the decision-making apparatus of the Government of India was largely the result of individual efforts made by officers who manned the Law Cadre of the Navy from time to time. One such officer deserving of mention is Shri E.E. Jhirad who took over as the Judge Advocate of the Fleet in 1946 after having served in the Royal Indian Navy for a few years. He was an acknowledged expert in the field of International Law and because of his interest and specialisaton, he took keen interest in the deliberations of the International Law Commission which had been set up in 1949 by the General Assembly of the United Nations in order to select topics relating to the law of the sea for codification.

The laws relating to the oceans were intensively examined by the International Law Commission between 1949 and 1956 and on the basis of the extensive groundwork done by the Commission, the First United Nations Conference on the Law of the Sea was convened in 1958 and succeeded in adopting four conventions on territorial seas and contiguous zones, high seas, fisheries and conservation of the living resources of the high seas and continental shelves.

The first conference, however, failed to agree on two of the most important issues submitted to it, viz., the precise extent of the territorial sea and the extent of the exclusive fisheries zone. In 1960, therefore, the second United Nations Conference on the Law of the Sea was convened to resolve these two issues but the conference could not succeed in achieving a consensus.

Shri Jhirad the then Judge Advocate of the Fleet was a member of the Indian delegation which participated in the deliberations of the first and the second conferences on the Law of the Sea and made a significant contribution by espousing and protecting national maritime interests. As a member of the Indian delegation, Shri Jhirad stressed on the *res communis* aspects of the oceans and seas at the two conferences and made significant contribution to the evolution of an acceptable regime relating to the definition of the continental shelf, nature of rights exercised by a coastal state on its continental shelf, character of the superjacent waters of the high seas or the air space above those waters, laying and maintenance of submarine cables and pipelines on the seabed, prohibiting construction of military installations or bases on the continental shelf, delimitation of the continental shelf between adjacent and opposite states and the dispute settlement procedure, the right

of hot-pursuit in international law, pollution of the seas from dumping and radioactive waste, and the passage of warships through territorial waters. The reports on the deliberations in the two conferences amply testify to the persistence and assiduousness with which national viewpoints on these issues were negotiated and gained the acceptance of the international community.

Apart from the work of the two United Nations Conference on the Law of the Sea, three major developments were gradually intervening in the 1950s which required a re-evaluation of the scope and importance of sea power. The first major development was political in nature and involved the rapid increase in the number of new nations. Some of these newly emerged nations were inclined to look on international law as an alien system which the Western nations had imposed on them and who in effect, had begun to claim the right to select those rules which suited their interests or which arose out of agreements to which they had themselves been parties earlier. Thus, psychologically, the developing states had come to feel that conditions had changed and that they were not obligated to abide by rules created by others - rules that were not designed to protect their particular interests.

The second development, which was technical in nature, was that the rapidly escalating technological revolution around the globe, especially in developed countries, had alerted the nations of the world to the vast seabed resources of the continental shelf and ocean floors. This technological revolution in the oceans had just started gathering momentum when the Geneva Conventions were concluded in 1958. Thereafter, our vision of what the seas can offer altered and expanded enormously. Until recently, the exploitation of petroleum resources took place in a few areas close to the shore; now off-shore platforms extracting the liquid gold from the depths of the oceans dot the seas all over the world and are rapidly moving towards deeper waters.

The third development was the political polarisation of the nations on the issue of the extent of the territorial sea in 1958 and 1960 around the three and 12-mile limits. The Soviet Union was attempting to gain international recognition for her long-standing 12-mile claim while the United States was still championing the cause of the three-mile limits. There were significant blocks of nations aligned with the positions of the two superpowers. Some of the newly emerging nations of Asia and Africa voted for broadened territorial sea limits as an anticolonial measure and cast their votes with the communist bloc. Aligned with the US were most of the NATO countries and certain traditionally Western-leaning nations. This East-West dichotomy was thus a major problem in the first two Conferences which impeded the development of laws governing the oceans.

After the two Law of the Sea Conferences held in 1958 and 1960 had failed to reach an agreement on the width of the territorial sea, extension of offshore jurisdiction began to increase at an alarming rate. A number of countries extended their territorial waters to 12 miles or beyond. The Latin American countries which had earlier claimed a territorial sea extending to 200 miles from the coast, consistently maintained it. Some of the African states like Nigeria, Congo, Mauritania and Ghana also extended their territorial sea to a distance much beyond 12 miles.

A strong tendentious move was thus evident whereby coastal states were making unreasonable claims appropriating huge portions of the oceans as an extension of the areas within their jurisdiction and control. Moved to action by this alarming trend, the initiative to call a world conference was taken by Arvid Pardo, Malta's representative at the United Nations. Pardo had a horrendous dream wherein he saw that the era of surface vessels had passed and that the seabed and the ocean floor was littered with crawling and creeping defence installations and other vessels and that mankind was facing the prospect of extinction. Soon after this vision became public knowledge and statements were made by some of the advanced countries denouncing the use of the submarine-launched ballistic missile (SLBM) and other sophisticated ballistic missiles which could be fired underwater from vast distances, and with the articulation of the philosophy of MAD (Mutual Assured Destruction), Pardo was convinced that what he had envisioned was a distinct possibility. He made an impassioned plea in the General Assembly of the United Nations imploring the member nations to preserve the oceans as a common heritage of mankind. This vigorous speech helped a great deal in bringing to sharp focus the pressing need to evolve suitable means for the peaceful uses of the oceans.

In his speech he expressed the apprehension that some countries might be tempted 'to use their technical competence to achieve near-unbreakable world dominance through predominant control over the seabed and the ocean floor'. This process, he added, had already begun 'and will lead to a competitive scramble for sovereign rights over the land underlying the seas and the oceans, surpassing in magnitude and in its implications last century's scramble for territory in Asia and Africa.' He further pleaded that in order to prevent this scramble by the developed states from causing sharply increasing tensions, the 'claims to sovereignty over the seabed and ocean floor. . . should be frozen until a clear definition of the continental shelf is formulated' and that this 'common heritage of mankind' should be used for peaceful purposes and its resources 'exploited primarily in the interests of mankind, with particular regard to the needs of the poor countries.'

In 1968 the General Assembly of the United Nations constituted a 42-member committee on the peaceful uses of the seabed and the ocean floor

beyond the limits of national jurisdiction known as the Seabed Committee. In December 1970 the General Assembly adopted the 'Declaration of Principles' governing the seabed, the ocean floor and the 'subsoil thereof' beyond the limits of national jurisdiction which declared, *inter alia*, that the area concerned and its resources are the 'common heritage of mankind' and shall be subject to an international regime established by an international treaty generally agreed upon.

The General Assembly further adopted a resolution to convene a Third Conference on the Law of the Sea which would establish an equitable international regime for the seabed and the ocean floor and 'subsoil thereof' beyond the limits of national jurisdiction. The Seabed Committee was enlarged from 42 to 86 members to act as a preparatory body for this Conference.

With the convening of the Third United Nations Conference on the Law of the Sea in 1973, the Indian Government set up an Inter-Ministerial Committee on the Law of the Sea and the Seabed under the Cabinet Secretary. The Secretaries of some of the Ministries of the Government of India and the Chief of the Naval Staff were *ex officio* members of this Committee. For each session of the Third UN Conference on the Law of the Sea, the brief for the Indian delegation was processed by this Committee. The Indian delegation to the Third Conference was led by the Minister of Law, Justice & Company Affairs and included two senior naval officers as representatives of Naval Headquarters and the Ministry of Defence - Commodore (later Rear Admiral) F.L. Fraser, Chief Hydrographer of the Navy and Captain (later Rear Admiral) O.P. Sharma, a specialist in naval law who was the Judge Advocate General of the Navy. These officers were responsible for negotiations on all aspects of traditional laws of the sea e.g. the extent of the territorial sea, the contiguous zone, the newly developed concept of the exclusive economic zone, the broadened continental shelf, the high seas and the nature of rights exercisable by a coastal state in all these maritime zones and those of ships of other nations transiting these zones. Though some of the developments mentioned are beyond the scope of the period covered in this volume, their significance merits inclusion here, but what also needs to be stressed at this stage is that the conflict involving the interests of developed, developing and underdeveloped states and the incompatible demands of the littoral and landlocked states have virtually led to an impasse especially because the exploitation of the oceans, ocean beds and 'subsoil thereof' has been escalating on a geometrical scale and the ocean resources, especially hydrocarbons are dwindling at an alarming rate. To qoute Rene-Jean Depuy, author of *The Law of The Sea - Current Problems*, (Current Problems - author)

> The process of decolinisation (particularly after World War II - author) has introduced into the international scene a large number of coastal

and landlocked and otherwise disadvantaged States. The oceans are becoming areas of potential conflicts. As far as the law of the sea is concerned, it is necessary, as the late Wolfgang Friedman said, to go from the law of mere coexistence toward the law of co-operation.

As in all periods of upheaval resulting from the advent of new technological or economic factors, contradictions are exaggerated, but it is possible to isolate the principles of dialectical tension which activate them. We see four:

- the law of the sea was unidimensional, it is becoming pluridimensional;
- it was essentially a law relating to movement, more and more it is taking its place as a law relating to appropriation;
- for the most part it was a law of a personal character in which the notion of sovereignty has little place; today, on the contrary, it has become territorial law with the juridical consequences that it implies;
- a law of a universal nature and function, it now gives effect more and more to regional situations.

These four principles should be understood, as always in a dialectical analysis, as portraying not phenomena of substitution but sources of tension; for each principle, the second alternative does not replace the first; it only confronts the first alternative obliging the first to take account of it without succeeding in destroying the first.

The evolution of the new law of the sea has a direct bearing on India's interests in maritime law. Besides being an important member of the comity of Asian and African nations which for many years had been demanding extensive changes in the Western concept of the law of the sea and claiming the right to have a say and to participate in the formation of the sea law, India had special and vital interests in the emerging law because of her peninsular configuration. After Independence the country was preparing herself to protect her economic interests through national legislation, which she did later in 1976, by declaring the extent of her territorial waters to 12 nautical miles, contiguous zone to 24 nautical miles, exclusive economic zone to 200 nautical miles from the 'base line', i.e., the low-water line, and the jurisdiction of the continental shelf over the seabed and the soil below the seabed 'throughout the prolongation of its land territory to the outer edge of the continental margin or to a distance of 200 nautical miles from the base line where the outer edge of the continental margin does not extend up to that distance'. India's policy is thus to support the protection of the marine resources in the coastal areas for exclusive exploitation and the acceleration of the pace of progress towards establishing internaitonal laws that would not only promote the development of a more balanced and just economic order but would also widen the scope for international cooperation for its establishment.

India has a vast coastline extending to over 6,000 kilometres and a 'constellation' of 1,280 outlying islands and islets, most of which are in the archipelagos of the Andaman and Nicobar Islands in the Bay of Bengal and Lakshadweep group of islands in the Arabian Sea. The Indian coastal margin in these two seas covers a very large area that has tremendous potential for exclusive exploitation for hydrocarbons and other living and mineral resources.

As defined in Article 10 of the 1958 Territorial Sea Convention, an island is a 'naturally formed area of land, surrounded by water, which is water at high tide'. Since India has 1,280 islands, even if some of these islands are very small, with the growing acceptance of the 200-miles limit of the exclusive economic zone, each island would bring a minimum of 125,000 square nautical miles of sea area into the country's jurisdiction though in some cases there will be considerable overlap of these areas around the coastal islands and mid-ocean archipelagos. These sea areas, along with the entire 200-nautical mile stretch of coastal exclusive economic zone, would place a very large area at the disposal of India for the exclusive exploitation of its resources.

The growing realisation of the immense potential of ocean resources and the rapidly dwindling land resources has already led the main naval powers to attempt to frame the law of the sea to suit their own needs as a result of which they have ended up among the possessors of the biggest exclusive economic zones on the world map. Writing on the international developments concernig the law of the sea in its issue of July 18, 1987, *The Economist* paints a grim picture,

> In one of the greatest grabs of all time, a quarter of the earth's surface has been quietly poached within a few years. Claims covering a total area four times the size of Africa have been asserted and, for the most part, conceded with so little fuss that few people either noticed or understood what was happening.

The growing demand for hydrocarbons and protein from the sea, the growing sophistication of the fishing fleet for taking fish from the sea, the rapidly increasing turnover of the offshore platforms extracting petroleum and gas from the oceans' subsoil and the growing fears of large-scale marine pollution have put paid to the old 'high seas' or 'freedom of the seas' doctrine of the national jurisdictions being confined to a narrow strip of territorial waters, preferably only three miles wide.

As stated earlier, extensive claims to arbitrary stretches of the sea, especially in the Americas, began to multiply from 1945. In 1951, the principle of the three-mile-limit was virtually abandoned by the judgement of the International Court of Justice on the dispute between Britain and Norway, leading to greater prospects of conflict and chaos. The first United

Nations Conference on the Law of the Sea in 1958 (UNCLOS 1) accepted the continental shelf convention, resulting in the countries bordering the North Sea to divide the sea area and extract hydrocarbons from the subsoil. The participants, however, continued to be divided over many issues and it wasn't just a case of rich states bargaining with poor ones; there were many more complex issues concerning the coalition of coastal states, landlocked states, archipelagic states, 'Broad-margin' claimants, states contesting the rights of passage through international straits such as the Gibralar, Hormuz and Malacca straits, land-based mineral producers and many other groups with conflicting interests and overlapping memberships trying to carve out as much of the new 'world' for themselves as they possibly could, remainding one of the 'gold rush' of yore.

But by the middle of the 1960s, winds of change blowing across the oceans were perceptible around the globe and the developing nations began to assert themselves. The first United Nations Conference held in 1958 had codified the traditional law which appeared to run counter to the interests of newly independent countries though it had produced four conventions reaffirming the old practices: freedom of the seas as long conceived; the coastal state's sovereignty in its territorial sea; its ancillary physical, customs, sanitary and immigration rights in a contiguous zone; and its sovereign rights over the continental shelf. The second Conference held in 1960 attempted to extend the jurisdiction of coastal states over territorial waters to six miles and an additional six miles as exclusive fishing zone but failed to gain the required two-thirds majority for its acceptance and the newly found treasure from the oceans and the ocean beds failed to augment the meagre resources of the developing countries. During the 1960s, however, the accelerating pace of technological, economic social and political changes considerably altered the man-ocean relationship. In 1930 the members of the first conference numbered only 44, the UNCLOS 1 in 1958 had 86 participants, the UNCLOS 2 in 1960 had 88, but the UNCLOS 3 held in 1973 had as many as 137 participants, adding a touch of universality to its proceedings though the alignments, for obvious reasons, increasingly resembled the North-South confrontation of other United Nations Committees; with developed countries seeking to maximise their benefits and the developing countries attempting to develop a new equitable law for sharing the ocean resources. It is interesting to note that during the third Conference, 'no less than 81 states asserted over 230 jurisdictional claims of varying degrees of importance.' The claims for the exclusive economic zone ranged from 18 to 200 nautical miles, for territorial seas from three to 200 nautical miles and widely varying pollution control zones. Arvid Pardo's 'common heritage of mankind' had virtually overnight shrunk to 65 per cent of the available ocean area. What is even more significant is that the remaining 35 per cent,

which is being claimed by the coastal states, an area almost equal to the land area on planet Earth, contains nearly all oil and gas resources, 95 per cent of the harvestible living resources and a very large percentage of the mineral resources.

Besides the petroleum resources, the total reserves of polymetallic nodules in the oceans of the world, which are generally found at depths of 3,000 to 6,000 metres and which are widely distributed throughout the major oceans of the world, are estimated at 3,000 billion tonnes and, unlike fossil fuels, are renewable. These pollymetallic modules constitute an abundant source of important metals such as manganese, nickel, cobalt, copper and, to a lesser extent, molybdenum, vanadium, zinc, lead and cadmium, and are spread over an ocean area ranging from 10 to 15 million square kilometres in the Indian Ocean as against 47 million square kilometres in all the oceans of the world, the richest deposits having been found in the Pacific Ocean.

Besides fish, another important living resources of the oceans is the seaweed which can be exploited for food, fertiliser, chemicals and pharmaceutical products. The demand for agarphytes (tropical seaweeds) and alginophytes (algae) in India and abroad is increasing very rapidly though our country is yet to develop a viable seaweed industry.

The recent allocation of a sea area of 150,000 square kilometres by the International Seabed Authority, a United Nations body for the exploration and mining of the oceans' mineral wealth for commercial exploitation, to India, the first country to be entrusted with such exploitation by the UN, augurs well for the developing countries and could forge an alliance of the 'South' states for an equitable distribution of the ocean resources and acquisition of the technology for their extraction and exploitation. After surveying an area of over four million square kilometres in the central Indian Ocean, two mine sites, each of 150,000 square kilometres of commercial viability, the richest areas at these sites having a density of 21 kilogramme of nodules per square metre, have been identified for the extraction of our ocean wealth.

> As Rene-Jean Depuy, member of the *Institute de Driot International*, says Freedom of the seas has been akin to 'Freedom of Labour' in the Industrial Europe of the 19th century: in effect the right of the great was licence, that of the poor was submission. But all that has changed and there is a growing realisation in the world comity of nations that the changes in the technological, political, economic and sociological structure of the international society must be accompanied by changes in Law.

Ram Prakash Anand, Professor of International Law at Jawaharlal Nehru University, New Delhi, opines that new law

is taking the place of old dogmas, and this new law must be in accordance with the needs of the new society. The sea is no longer a mere navigation route, a recreation centre, or dumping ground. It is the last phase of man's expansion on the earth and must become an area of co-operation for orderly progressive world development in which all will share equally and equitably.

One hopes that the law of the sea would continue to evolve to fulfil this hope.

12

THE SUN SETS ON PORTUGAL'S ASIAN EMPIRE

Liberation of Goa, Daman and Diu

By the end of the 16th century, the Portuguese occupied territories in India, popularly known as the 'jewels in the Portuguese Crown' that dotted the entire length of the Indian coastline included Diu, Daman, Goa, Salsette, Bassein, Chaul, Bombay, San Thome (near Madras) and Hooghly (in Bengal). By 1947 most of them were lost save Goa, Daman and Diu, which were finally liberated by India in 1961. With that ended the 'suzerainty' of the King of Portugal over the isolated Portuguese 'pockets' in this country, who held the title 'Lord of the Conquest, Navigation and Commerce of Ethiopia, Arabia and India' ever since Vasco da Gama set foot on Indian soil in 1498. This overlordship had been granted to the Portuguese monarchs by the bull (papal edicts) of different popes such as Nicholas V, Alexander VI, Julius II and Leo X on the basis of whose fiat, during the last decade of the 15th century, Portugal was given the exclusive right to all the undiscovered countries to the east of 'an imaginary line drawn 370 leagues west and south of Cape Verde Islands.'

Though 'no event during the Middle Ages had such far-reaching repercussions on the civilised world as the opening of the sea-route to India' by Vasco da Gama, the European discovery of the sea-route to this country *per se* was of no great importance as a feat of exploration or even of nautical adventure. To quote K.M. Panikkar:

> The historical results that have flowed from the direct contact of European Powers with India and the commerce and wealth which the control of the Indian seas has given to Europe, have shed an exaggerated light on Vasco's achievement. . . . India was in no sense a *terra incognita*. It was in close contact with Europe, through the Venetians and the Moors. Besides, the seafaring people on the coast of Africa, consisting mainly of Arabian settlers, knew the routes and the winds, and da Gama had the help of competent Arab pilots supplied to him by the King of Melinde (the pilot who brought him to India from the African Coast Davane, was, however, an Indian). . . . His glory is based entirely on the historical results that followed, for which he was hardly responsible!

Europe's Quest for a Sea Route to India

Ever since the dim centuries before the Christian era, India has been carrying on trade with the West by land and sea, the sea route passing generally from the ports on our West Coast to the Persian Gulf or the Red Sea, the merchandise then being carried overland respectively to Beirut, Alexandria or other Mediterranean ports and from there by sea to various European entrepots. The main Indian port was Cranganore (Kodungallore) from where the trade routes fanned out to Arabia, Egypt and Europe carrying merchandise, which mainly comprised pearls, pepper and gems, to these countries and bringing back coal, tin, lead and other commodities. With the rise of Islam in Arabia, Muslims, referred to in Europe those days as Moors, gradually took over this trade. By the last quarter of the 15th century, a regular maritime trade had been in existence for several countries between ports in India and those in the Arabian Sea, Red Sea and the Persian Gulf. This flow of merchandise between the east and the west resulted in Venice becoming the focal point of trade through these ports which engendered considerable jealously in other European maritime nations. These nations were hence determined to bypass Egypt and Venice and establish their own direct trade routes to India.

The three countries that led this quest for the 'Indies' were Spain, Portugal and England. They sent many expeditions in search of the pepper (pepper was the most coveted merchandise) route and one of these resulted in the accidental discovery of the West Indies and America by Columbus in 1492. The Portuguese had already been exploring the immense expanse of the West Coast of Africa from 1418 but success continued to elude them despite the fame of India beckoning the brave explorers and the seemingly interminable stretch of the African continent southwards that would thwart the efforts of even the intrepid 15th century adventurers of the Iberian peninsula and other parts of the Western world.

Reports from travellers about the fabulous wealth of India were the stimulus for several great voyages of discovery, leading to the search for a sea route to the East receiving fresh impetus under the Portuguese Prince Henri the Navigator, during the first half of the 15th century. The European nations at that time did not know the exact location in the Indian Ocean of India, China and Sri Lanka, the main sources of silk and spices. When Dom Pedro, Prince Henri's brother and a great traveller, obtained an invaluable map of the world prepared by Marco Polo, the greatest traveller known to the Middle Ages, it provided a tremendous fillip to the quest for the sea route to the 'mysterious East'. But India continued to be as elusive as before 'in a dark corner of an imperfectly understood world'.

Emperor Joao II of Portugal, in perpetuation of the bull granted by the Pope to Henri the Navigator, conferring on him and his successors suzerainty over all the lands that might be discovered beyond Cape Bojador on the African West Coast, discovered in 1434, 'including India', sent expeditions to the East, both by land and sea, with the dual goal of developing Indo-European trade and spreading Christianity. The two emissaries despatched by Joao II, Alfonso de Paiva and Joao Peres de Colvilhao, parted company after reaching Aden, the former proceeding by land to Ethiopia and the latter embarking on an Arab Vessel and reaching the Malabar Coast and also visiting Calicut. On his return to Aden from Calicut, Colvilhao proceeded to Sofala and extracted information from Arab sailors on the trade with India, the sea route to Calicut, the location of the major islands in the Indian Ocean and navigational data on this Ocean. He then proceeded to Cairo from where he sent a detailed report to his King. The report also pointed out that if the Portuguese ships which traded with Guinea on the African West Coast were to continue their course southwards, they were likely to reach the southern tip of the continent and then proceed eastwards to India. Thus what had so far been limited to rumour and hearsay among European seafarers and explorers had now been confirmed by Colvilhao.

It was Bartholmew de Diaz, a brave seafaring adventurer, who was sent out by King Joao II in 1487 to sail down the west coast of Africa in quest of the pepper route. Diaz proceeded down the African West Coast and was the first Portuguese to round the continent's southernmost tip though he encountered heavy storms while rounding the cape. He sailed on for some days despite his sailors' entreaties to turn back but, after a few days he abandoned his projected venture across the Indian Ocean and returned to Portugal, after having been on the voyage for seventeen months. King Joao II realised the significance of Diaz's discovery and renamed the stormy cape of Africa (Cabo Tormentoso) the Cape of Good Hope (Cabo de Boa Esperanca) which, as it was 'hoped', would open the sea route to India. 'It may seem strange', Panikkar says, 'but it is nonetheless true, that till the last

decade of the 15th century, except perhaps the Vikings, no European natio had ventured into oceanic navigation. The navigational activities of th European peoples were confined to inland seas like the Mediterranean, the North Sea and the Baltic and to the coasts of Europe. Only the Hindus, the Chinese and the Arabs had developed a tradition of oceanic navigation and of these, the Hindus had the largest share till the end of the 13th century.

Compared to the achievements of the Indian and Arab seafarers, what Diaz achieved by hugging the west coast of African during his voyage to the Cape, was in no way remarkable but, in a way, it is considered epoch-making as it made a direct route to India from Europe possible.

Vasco da Gama's Indian Landfall

In 1495 King Joao II died and his successor, King Manoel, continued the efforts to reach India by sea. From the experience gained by Bartholomew de Diaz and other Portuguese seafarers of the sea conditions at the Cape of Good Hope and the east coast of the African continent, a new design of ships with long endurance was evolved by Portuguese naval architects and three ships were specially built for the expedition to India.

Vasco da Gama, an experienced sailor, was to lead the new venture on board the *Sao Gabriel* (120 tons), the flagship of a four-ship fleet which also included the *Sao Raphael* (100 tons) commanded by his brother Paulo da Gama, *Berrio* (50 tons) commanded by Nicolas Coelho, and a navire de charge, i.e., a store and ammunition ship (200 tons), commanded by Gonsalo Nunes, an ordnance officer. The *Sao Gabriel* had an overall length of about 85 feet and a draught of 8 feet, had three masts and six sails, was equipped with an array of 20 guns and displayed on her main-top mast a white flag with the Portuguese coat of arms of King Manoel.

With the fleet of four ships and 160 men under the command of Vasco da Gama, the expedition set sail from Belem near Lisbon on March 25, 1497. The fleet arrived in Moussel Bay at the southern end of Africa in December 1497. While rounding the Cape, the fleet encountered a violent storm and the ships' crew conspired to mutiny but it was put down by da Gama threatening to throw the ringleaders over the side and arresting some recalcitrant members of the *Berrio's* crew.

Land on the African southeast coast was sighted by the expedition on December 25, 1497 and was promptly and appropriately named *Terra de Natal* (land of birth). By February 1498, having encountered several storms on the way, the *Berrio* had lost her watertight integrity and seaworthiness and was found to be well beyond repair. She was hence broken up to repair the two vessels, *Sao Gabriel* and *Sao Raphael*, which had also suffered some damage. The store and ammunition ship had already been sent back to

Portugal after her stores had been transferred to the other ships.

There were now only two ships left, the *Sao Gabriel* and the *Sao Raphael*, which reached Mozambique, then an important Arab trading centre of the African coast, in March 1498. At this African entrepot, they acquired necessary stores and victuals for the voyage across the Indian Ocean and also carried out some major repairs to the two remaining ships. Vasco da Gama then engaged a local pilot who helped him navigate the ships further north to Melinde, the regular port of departure for Indian destinations. There was considerable traffic in those days between India and the African and Arab ports across the Indian Ocean and so it was not difficult for Vasco da Gama to find a capable and experienced pilot. It was a Gujarati Moorish broker and pilot, Davane, who had excellent knowledge of the winds and the route. He offered to counsel da Gama against raising any possible Arab jealousy and to pilot the expedition across the Ocean.

By this time the first monsoon winds had already begun, the weather was favourable and Vasco da Gama and his brother embarked on their historic voyage across the Indian Ocean on April 24, 1498. After spending three weeks at sea they sighted a large blue land mass on the eastern horizon which, on a closer approach, was clearly defined as the famous landmark on India's west coast, Mount Deli (also known as Kappat). The ships then coasted down to a roadstead off Capocate 'which stood two leagues to the north of the great city of Calicut' and dropped anchor on 17 May, 1498.

The Hindu ruler of Calicut, who bore the hereditary title of Zamorin, accorded a warm welcome to Vasco da Gama whose visit opened the way for the establishment of commercial relations between Portugal and the principalities on the Indian peninsula's western seaboard. This was soon followed by Portuguese merchants coming to India's shores in large numbers. As Panikkar looks at it, 'The full significance of da Gama's arrival at Calicut can be recognised only if we appreciate that it was the realisation of a 200-year-old dream and of 75 years of sustained effort'.

The Portuguese Spread their Tentacles

Until the arrival of Vasco da Gama, Indo-Portuguese trade was exclusively in the hands of Arabs who were reputed for their commercial probity and who, in matters of trade, had held complete sway over the Indian Ocean and the Arabian Sea for several centuries. In fact, a large number of Arabs had already been settled on the coast of Gujarat, Cambay and Malabar for five or six centuries before the Portuguese arrived on the scene.

Vasco da Gama soon returned to Portugal and was followed by Pedro Alvarez Cabral, a renowned explorer, who sailed out of Lisbon on March 9, 1500 with a fleet of 33 ships under his command, bound for India's west

coast. But Cabral had other ideas. Instead of confining himself to the route established by da Gama, Cabral took a westerly course after passing the Cape Verde islands which led to the discovery of Brazil which was promptly claimed as Protuguese territory. He then altered course to skirt the coast of Africa and passed through the stormy stretch of the Cape of Good Hope where half his ships were lost. With dogged determination, he continued his venture and reached Mozambique in July and Melinde in August. From there, with the help of two Gujarati pilots, he reached the Gulf of Cambay, coasted to the island of Anjadip and then proceeded to Calicut, by which time only six of his 33 ships were left.

From the very outset Cabral had decided to establish the supremacy of the Portuguese in the eastern seas. Hence, instead of confining himself to the limits of legitimate trade, he began raiding merchantmen of other nations and depriving them of the benefits of their commerce. Zamorin, the ruler of Calicut, whose prosperity largely depended on Arab merchants with whom he and his subjects had extremely cordial relaions, was thus inevitably brought into hostilities with the Portuguese. In their efforts to establish a toehold on Indian soil and full control over Indian trade with West Asia and Europe, the Portuguese then started befriending and entering into alliance with rulers of other principalities on the west coast of India, especially the Rajas of Cochin and Kolathiri (Cannanore).

On his arrival at Calicut, Vasco da Gama had expressed to the Zamorin a desire to trade with him. An indication of the marauding policy he was going to adopt was his refusal to pay the customs of the port. Cabral, who followed him, laid on unequivocal and uncompromising claim to the complete monopoly of the seas including confiscation of all goods from those who navigated the seas without the permission of the Portuguese. This led to a sea battle between the Zamorin's navy and Cabral's fleet as a result of which the latter had to sail away.

The Capture of Goa, Anjadip, Daman and Diu

The real foundation of Portuguese power in India was laid by Afonso de Albuquerque, who came to India in 1503 and was later appointed Governor of Portuguese Affairs in India, in 1509. Goa, which belonged to the Bijapur Sultanate at that time, was captured in 1510 by Albuquerque who then strengthened its fortifications and increased its commercial activities. And as a matter of Portuguese policy he, like da Gama, continued with his policy of persecuting the Moors - the Muslim traders from West Asia.

As regards the capture of Goa, Henry Beveridge, author of *A Comprehensive History of India*, says,

> Albuquerque made his appearance off the west coast in the beginning

of 1510. At first anticipating a valiant resistance, he sent his nephew along with Timoja to take soundings. They discovered a fort which was well provided with guns and defended by 400 men, and they not only had the hardihood to attack, but the good fortune of capturing it. This seemed a most auspicious commencement, and proved only the first of a series of fortunate events which followed rapidly, and put Albuquerque in possession of this most important locality before he was required to strike a blow. According to Portuguese accounts, some conjuror or *fakir* whose predictions were implicitly believed, had announced that Goa was destined shortly to become subject to foreigners. On the faith of this prediction, the inhabitants thought it a stroke of good policy, instead of enduring the miseries of a siege which must ultimately be successful, to make a voluntary surrender. Accordingly, to the great but most agreeable surprise of Albuquerque, when he approached Goa in March 1510, he was received ashore by the population as if he had been their native prince, conducted in state to the gate, where he received the keys and thereafter put in possession of a palace.

When Adil Shah, the Sultan of Bijapur, was informed of Albuquerque's cake-walk capture of Goa, he made preparations and attacked Goa in May 1510, with a large contingent of troops and drove the Portuguese out of Goa. Albuquerque and his fleet had to perforce return to Anjadip and then to Cannanore. A few months later, however, he returned to Goa with a large fleet when the Bijapuri garrison was away and launched a brutal attack. He soon recaptured Goa and, in an act of great blood-bath and wanton cruelty, he put 6,000 Moors to the sword. Goa thus became the capital of Portuguese India and by the time Albuquerque died in 1515, the Portuguese were controlling India's west coast and had established themselves as the strongest naval power in the region.

The island of Anjadip, situated about eight kilometres southwest of Karwar, was first visited by the Portuguese in 1498 when Vasco da Gama and his fleet spent a few days. They established themselves there in 1503 after capturing it from Arab traders who had occupied it after driving out a Vijaynagar garrison in the 15th century. The Portuguese reinforced the island by building a formidable fortress on it. However, the fortress that exists on the island today was built in 1682 and was manned by a Portuguese garrison until its liberation. Anjadip was used for centuries thereafter as a watering station for Portuguese sailing ships.

Daman, which lies on the entrance to the Gulf of Cambay about 160 kilometres north of Bombay, was formerly ceded to the Portuguese by the Marathas in 1780. Until 1954 this Portuguese settlement comprised Daman

proper and a detached *pargana*, Nagar Haveli, to its east, the latter including a tiny enclave, Dadra. The intervening land between Daman and the two enclaves, Dadra and Nagar Haveli, was Indian territory which had to be crossed to gain access to the two pockets. Freedom fighters from both these enclaves ousted the Portuguese in 1954 which was followed by their accession to India.

Daman is divided into two distinct parts, Nani (small or northern) Daman and Moti (big or southern) Daman, with a ferry crossing over a tidal river being the only means of physical communication between these two parts. After the loss of the two enclaves of Dadra and Nagar Haveli, the area of Daman had been reduced from 213 square kilometres to about 60 square kilometres.

The Portuguese colony of Diu comprised a small area on the mainland, the island of Diu about 11 kilometres long and 3 kilometres broad, and a small island, Panikota, about 16 kilometres away to the east northeast. This colony was gifted to Albuquerque by the ruler of Gujarat and Cambay, Mahmud Begarha, after the Egyptian fleet under the renowned Admiral Mir Hussain, had fought two inconclusive sea battles with the Zamorin's support against the Portuguese in 1509 - he was in fact deprived of an outright victory by an act of treachery on the part of the Governor of Diu, Malik Aiyaz, who had withheld the supplies from the fleet - and had sailed away in disgust. The ruler of Gujarat and Cambay released Portuguese prisoners of war, entered into a treaty of peace and allowed the Portuguese to construct a factory and a fortress on Diu island.

Albuquerque died in 1515 but his successors gradually established a number of important Portuguese settlements near the sea - Goa, Daman, Diu, Salsette, Bassein, Chaul, Bombay, San Thome near Madras and Hoogly in Bengal - dotting the entire length of the Indian Coast. The major part of Sri Lanka too was under Portuguese influence. But over the next century and a half most of these places were lost and by 1662 only Goa, Daman and Diu were left with the Portuguese.

Historical Background

Goa's history goes back to our hoary past. References to it can be found even in the *Ramayana* or *Mahabharata*. The ancient Hindu city of Goa, of which only a few fragments are identifiable today, is mentioned in the *Puranas* and certain other inscriptions as Gove, Govapuri and Gomant. Goa is also mentioned in the Periplus of the Erythraem Sea (Guide to the Indian Ocean) compiled in the 1st century A.D. wherein it is said to have been politically and commercially supported by the ports of Naura (Cannanore) and Tyndis (Ponnani). Goa was referred to as the Island of Aegidni in West Asia at that

time. The mediaeval Arab geographers knew it as Sindabur or Sandabur and the Portuguese as Goa Velha.

Originally a tribe of Dravidian origin known as Kannadigas, inhabited Goa and were converted to the Hindu faith by Hindus who came from the north. At the time of Ashoka, Buddhism came to Goa and was widely practised until the beginning of the 2nd century B.C. Then a Hindu tribe from Karnataka known as Kadambas captured Goa, developed the place into a centre of trade and commerce and defended their territory with a strong army and navy for the next fifteen centuries. In 1312 Malik Kafur, the Commander-in-Chief of Sultan Alauddin Khilji, invaded South India and, after considerable devastation and plundering, captured Goa. The territory was soon recovered by the Kadambas but was plundered once again in 1327 by the army of Muhammad Tughlak. The Kadambas once again captured Goa but were soon thrown out by the navy of the Nawab of Honavar. It changed hands between the Mohammedan rulers of the Bahamani Kingdom and the Hindu emperors of the Vijaynagar Empire for over a century and a quarter thereafter, until the break-up of the Bahamani Kingdom into five independent kingdoms in 1482 when it was passed into the power of Yusuf Adil Shah, King of Bijapur, who was its ruler when the Portuguese first reached the Indian shores.

For centuries Daman was known for its commarce and trade and continued to flourish under the Portuguese but the trade languished with the decline of Portuguese power in the east. Early in the 19th century Daman's main trade was confined to opium which came from Karachi and was exported to China but this was stopped when the British annexed Sind in 1843.

During the earlier centuries of the Christian era, Diu had a flourishing trade with Arabia and the Persian Gulf and hence was a prosperous and wealthy island. It was this wealth which attracted the Portuguese who became its masters around the middle of the 16th century. There was regular trade and commercial intercourse between Diu and Mozambique for several centuries. However, this trade gradually dwindled and ultimately fishing became the chief occupation of its inhabitants.

In fact, by the 18th century, the Portuguese had lost their influence in the sphere of Indian trade, though they were the earliest 'intruders into the East', and most of them had taken to robbery and piracy. The causes of their downfall were their religious intolerance, their clandestine and dishonest trade practices, their ignorance and lack of respect for local customs, the discovery of Brazil which drew their colonising activities to the west and their failure to compete successfully with the other European trading companies.

The Portuguese persecuted not only the Moors but all non-Catholics

including Christians. The infamous Inquisition was in force in Goa from 1560 to 1814. They destroyed the places of worship of all non-Catholics including Hindus and Muslims. According to Panikkar, 'The popular idea, which was on the whole right, was that the Portuguese were, as a nation, treacherous, untrustworthy and barbarously cruel'. They even alienated the Raja of Cochin, who was friendly to them and supported them in their operations against the Zamorin, by plundering and destroying one of his temples after having pledged not to harm it. They indulged in large-scale nepotism and auctioning public appointments and had a highly inefficient and corrupt administration. It was because of these aspects of their attitude towards Indians and other Asians that they eventually lost their possessions to the Dutch, the English and the French who had also proved to be better soldiers and seamen.

The Struggle for Freedom Begins

Ever since the Portuguese occupation of Goa, the local population had been making all efforts to throw off the yoke of slavery. Revolts started in the very first year of Portuguese occupation and were ruthlessly put down. From 1555 there were a number of rebellions averaging once every decade.

An uprising known as Pinto's rebellion occurred in 1787 and was planned by some army officers and a group of priests who were determined to overthrow the Government and establish a republic but they were betrayed by some colleagues and the first major attempt to liberate Goa was smothered.

Meanwhile, a series of revolts were staged since 1755 by members of a martial class known as Rane. The Ranes in Goa continued in their efforts and rose in rebellion several times before being finally put down in 1912 when the Portuguese authorities resorted to the use of troops brought from Portugal and some Portuguese colonies in Africa.

Until the final suppression of the Rane rebellion in 1912, the freedom struggle in Goa was violent in nature. However, during the third decade of this century, they decided to adopt non-violent means on the lines of the philogophy of *ahimsa* of Mahatma Gandhi. In 1928 a Goa National Congress was formed by Goans in Bombay at the instance of Dr Tristao Braganza Cunha, a firm believer in non-violence. This organisation decided to adopt the Gandhian creed for attaining liberty.

On June 30, 1946 Mahatma Gandhi wrote in he *Harijan*, 'I would venture to advise the Portuguese Government of Goa to recognise the signs of the times and come to honourable terms with its inhabitants rather than function on any treaty that might exist between them and the British Government'. At a meeting held on August 12, 1946 the Congress Working

Committee passed a resolution accusing the Portuguese Government of Goa of having reduced the people of Goa to a state of penury leading to their migration out of the enclave and declaring that 'Goa has always been and must inevitably continue to be part of India. It must share in the freedom of the Indian people'.

The struggle for freedom gained momentum after India attained Independence on August 15, 1947. Agitators in Goa began holding meetings to demand freedom in June 1948 and during the course of one of these meetings, the Indian socialist leader, Dr Ram Manohar Lohia, and several local leaders were lathi-charged and arrested. In 1949 the Government of India wrote to the Government of Portugal seeking the peaceful transfer of their enclaves to India but the Portuguese, far from responding to the Indian request, intensified their repressive measures and radically curtailed civil liberties in Goa. All efforts to negotiate Goa's merger with India were brought to nought by the Portuguese Government's intransigence.

With India becoming a republic on January 26, 1950 the French Government had decided to vacate its territorial possessions on India's east coast and with that the freedom movement in Goa had been intensified. An Indian Legation was then opened in Lisbon to discuss the modalities for the transfer of Goa but the Portuguese Government responded by not only refusing to even discuss the liberation of Goa but also stepping up the repressive measures already instituted in the enclaves by detaining freedom fighters without trial, shadowing the leaders of the freedom struggle and restricting their movement. In 1953 another attempt was made to start negotiations with the Portuguese - this time with the added assurance that the cultural identity of the enclaves would be preserved after their transfer and the laws and customs would remain unchanged - and yet they were as intransigent as before and refused to even respond to the overtures made by India. It was, however, made clear to the Portuguese authorities that the three enclaves of Goa, Daman and Diu were culturally, linguistically, ethnically and geographically integral parts of India. It was pointed out that the presence of a foreign power in these enclaves ran counter to the winds of change that were blowing across the entire globe and an anticolonial movement was gathering momentum in the subject nations of the third world, most of which had already gained independence and acquired their 'places in the sun'. It was also reiterated that India was a firm adherent to the principles of peaceful settlement of such issues and would welcome bilateral discussions to finalise the modalities for the peaceful transfer of the enclaves. As was to be expected, the only reaction of the Portuguese Government to these overtures was the further tightening up of the Draconian repressive measures, for which the Portuguese have been notorious for centuries, and their refusal to discuss the issue. The Indian Legation in

Lisbon was consequently closed in June 1953.

Rebellion in Daman

As a reaction to these repressive measures, Dadra, the detached Portuguese pocket east of Daman, rose in rebellion on July 21, 1954. The volunteers of the United Front of Goans liberated the pocket well before nightfall. Only eleven days later, on August 1, 1954, Nagar Haveli, the other Portuguese pocket east of Daman, overthrew the Portuguese regime. And that marked the beginning of the end of Portuguese colonial rule in the Indian sub-continent. The Papal Bull had ceased to be omnipotent.

In December 1955 Portugal appealed to the International Court of Justice at the Hague accusing India of having sent armed Indians into Dadra and Nagar Haveli and demanded the right of passage from Daman to these pockets through Indian territory in order to re-establish Portuguese rule there. After over four years of protracted argument, the International Court delivered its judgement on April 12, 1960, upholding India's refusal to allow the right of passage to the Portuguese as perfectly legal stating that Portugal 'never had and has not any right of passage over Indian territory to these regions and between each of them. It added that, 'since the right of passage assumes the continuance of the administration of the enclaves by the Portuguese, the establishment of a new power in the enclaves must be regarded as having *ipso facto* put an end to the right of passage'.

For some time after their liberation, Dadra and Nagar Haveli were treated as autonomous territories administered by a *Varishta Panchayat* which sought their merger with India. Two bills for integrating these enclaves into the Indian Union, to be administered by the Centre, and according these enclaves the right to be represented in the Lok Sabha, were passed by the Parliament in August 1961, irretrievably granting to them the status of being integral parts of the Indian Union.

The Movement Reaches Flash-Point

Meanwhile, the clouds of revolt had started gathering over Goa, Daman and Diu, On the night of August 14/15, 1955, *Satyagrahis* (non-violent freedom fighters), armed only with the Indian tricolour as banners of freedom and dogged determination, entered Goa, Daman and Diu from all directions to demonstrate their sympathy and support for the liberation movement. The Portuguese army and police, who had already manned the border, attacked the 'invaders' with lathis and rifles. The Goans joined the Indian *Satyagrahis* by hoisting the Indian tricolour on buildings and distributing leaflets carrying the imprints of *Jai Hind* and *Viva Goa*. The army and the police opened fire and caused a large number of casualties - 22 Indians and two

Goans shot dead, including a woman *Satyagrahi*, Subhadra Bai Sagar, who was carrying the Indian standard and was cut down at point-blank range. As many as 225 persons were injured, 38 of them seriously, and a large number of Goans were rounded up and brutally assaulted before arrest.

A groundswell of resentment had already been sweeping across India for some time as reports of indefinite incarceration of Goan freedom fighters and their inhuman torture at the hands of the Portuguese were carried by the Indian press. The savagery perpetrated on the participants in the movement launched on August 15 caused the groundswell to develop into a tidal wave of anger. *Bandhs* (strikes) and demonstrations were held all over India and the Government was strongly urged to take police action against the Portuguese administration of Goa. The Prime Minister, Jawaharlal Nehru, conceded that while such situations could not be handled in haste or anger, it was necessary to prevent any further escalation so that conditions could once again be created to start negotiations and to settle the issue peacefully. The Government of India sealed the borders of the three enclaves, the world press assailed the Government of Portugal but the Portuguese persisted in their refusal to compromise.

The case for Goa's liberation came up in the United Nations too. Several countries demanded in July 1960 that Portugal be asked to submit requisite information on its colonies and possessions around the globe before the United Nations but the Portuguese retort was that these were not their colonies or possessions but integral parts of Portugal and hence the developments in Goa were an internal matter of Portugal. This led to the UN Trusteeship Council passing a resolution in November 1960 urging the General Assembly to request Portugal to provide the information asked for. Once again Portugal refused to co-operate. The Trusteeship Council then passed another resolution in November 1961 conveying its condemnation of 'Portugal's refusal to transmit information about its overseas territories and requested all member states to deny to Portugal any help which could be used for the subjugation of the people of the non-autonomous territories under Portuguese administration'.

Prime Minister Jawaharlal Nehru's exhortations to the Indian people to exercise restraint and to try to achieve their objective - liberation of Goa - in a calm and considered manner was misinterpreted by the Portuguese during the debate in the Trusteeship Council to say that the Indian Prime Minister had given the assurance that he would not resort to the use of force to end Portuguese rule in Goa. The Indian representative at the UN, Shri V.K. Krishna Menon, made the Indian position very clear in November 1961 by stating that India 'had at no time abjured the use of force in international affairs' and that 'India would not hesitate to use force if provoked'. That the Prime Minister of India too had resolved to use 'other means' to liberate Goa

had already become apparent when, while addressing a seminar on Portuguese colonialism in October 1961, he said that the policy of using peaceful means to resolve the Goa question had failed and that 'we have been forced into thinking afresh by the Portuguese to adopt other methods to solve this problem. When and how we will do it cannot be forecast now. But I have no doubt that Goa will soon be free'.

Freedom for the Goans was now only two months away and little did the Portuguese know at that time what began in the very first year of the Portuguese occupation of Goa, i.e., 1510, and continued to be ruthlessly put down for four and a half centuries by Portuguese tormentors, would soon achieve success and that their day of reckoning would dawn on December 19, 1961.

Nehru's Green Signal to the Armed Forces

A couple of months before Operation VIjay - the Armed Forces operation in India for the liberation of Goa and the other Portuguese colonies in India - it had become apparent that Prime Minister Nehru had realised that he would have to eventually resort to 'other means' to liberate the colonies soon and rid India of the last bastions of the Portuguese dictatorial might, though the Armed Forces had not yet been apprised of the probability of India using any military action. However, Lieutenant General (later General and Chief of the Army Staff) J.N. Chaudhuri, the then General Officer Commanding-in-Chief of the Sourthern Command, had prepared a comprehensive 'appreciation' (assessment) of the prevailing situation covering its land, sea and air aspects and a detailed plan for the tri-Service operation.

Deployment of Portuguese Forces

According to his appreciation, the Portuguese Army in Goa had a strength of three Portuguese infantry battalions whose total strength was approximately 2,200. Daman and Diu had three companies of strength 360 each. In addition, all strategic points were defended with anti-tank and anti-personnel mines. Four squadrons of armour had been positioned at Mapuca, Bicholim, Ponda and Bally and three batteries of artillery comprising 105-mm howitzers had been deployed at Margao, Vasco da Gama and Bicholim. Anti-aircraft guns had been installed at Dabolim airfield and Marmagao harbour, the latter having also been provided with long-range anti-shipping coastal guns. The border of the Goan enclave was being defended by 3,000 armed local police personnel and customs guards equipped with mortars and automatic weapons. The borders of Daman and Diu were being protected by about 450 such personnel each.

For the naval defence of Goa, it was reported that there were four

frigates, each equipped with three 120-mm guns and four multiple pom-poms (automatic rapid-firing guns), which patrolled the sea areas of all three enclaves. These ships were the *Afonso de Albuquerque, Bartholomeu Dias, Gonsalves Zarco and Joao de Lisboa.* When the action took place, however, it was found that only the *Afonso de Albuquerque* was available for the naval defence of Goa, the other three having sailed for Portugal earlier.

The Portuguese air force in Goa was reported to comprise a few transport planes fitted out to carry bombs and up to a squadron of transonic fighter bombers located at Dabolim airport which had been modernised and equipped to international standards. Daman and Diu had an airstrip each but these could only be used for staging purposes. The total strength of the Portuguese forces thus was 5,200 in Goa, 800 in Daman and 800 in Diu.

The Task Force

The Army task force required to liberate Goa, as envisaged by General Chaudhuri in his appreciation, included two infantry brigades, one independent para brigade less one battalion, one light infantry battalion, two light armoured regiments, one medium artillery regiment and some engineer units. For capturing the Portuguese forces at Daman, it was estimated that the Army would require one infantry battalion with one 25-pounder battery and at Diu the requirement was one infantry battalion and one company.

To assist the task force in its operation, General Chaudhuri recommended the assignment of four tasks to the Navy - first, blockade of the ports of Marmagao, Panjim and Daman and the islands of Diu and Anjadip, second, prevention of the removal of important stores and equipment, third, close support by Naval aircraft, if required, and fourth, close support by naval guns in an emergency.

The Air Force was likely to be assigned the tasks of providing close support to the ground forces, carrying out air drops whenever necessary, providing intercommunication flights, undertaking interdiction, whenever necessary, and immobilising Portuguese aircraft in Goa.

The Denouement Begins

Merchant ships had for many years been taking passage through the mile-wide expanse of water between the Portuguese-occupied Anjadip island and the Indian mainland with the tacit concurrence of both countries but on November 17, 1961, when the Indian steamship *Sabarmati* was negotiating this short stretch on her way to Mangalore, Portuguese soldiers on the island suddenly resorted to unprovoked firing on the ship which was caught totally unprepared for such an eventuality. While the damages suffered by

the ship were not extensive and the ship succeeded in reaching her next port of call, the Chief Engineer of the ship, Shri Pehna, was injured when a bullet hit the ship's superstructure, ricocheted and hit him.

This incident generated considerable tension in the three Portuguese enclaves and the neighbouring territories on the mainland. When a protest was lodged with the Portuguese Government accusing it of having committed an act prejudicial to the laws of the sea thus having violated the right of innocent passage through the stretch of water which all merchant ships enjoyed, they denied that the *Sabarmati* had been fired upon by the Portuguese. They however, committed a diplomatic *faux pas* by claiming that while passing through 'our territorial waters' on the night of November 24, 1961, a week after the *Sabarmati* incident which they had denied, some Indian merchant ships had refused to identify themselves when challenged and had made at attempt to reach the island of Anjadip.

(It is interesting to note that the *Sabarmati*, which was the first vessel to face Portuguese wrath, was present in Marmagao harbour on January 26, 1962, the first Indian Republic Day to be celebrated in post-liberation Goa)

On the same night, i.e., on November 24, 1961, the Portuguese garrison on Anjadip island committed another belligerent act by once again opening fire on Indian fishermen who were operating close to the same area in about 20 fishing boats. The unprovoked firing fatally injured Rajaram Atmaram Kochrekar, one of the three-member crew of a *tony* (fishing craft). Kochrekar died before medical aid could reach him. Four other fishermen were seriously injured.

During this firing three rounds had been fired from Anjadip Island. The first had buzzed over Kochrekar's *tony*, the second hit the front side of the deck and the third hit him.

On November 28 Prime Minister Nehru told the Lok Sabha that in a statement issued by the Portuguese Government and broadcast by the British Broadcasting Corporation, they had stated that some Indian fishing boats and passenger ships had carried out an attack on Anjadip Island. Nehru said that the Government of India would not send fishing boats and passanger ships to attack this island as she had 'stouter ships' to attack the island with if she wanted to.

These two events became the turning points in the history of the two nations. For the Portuguese it signalled the final departure from the Indian subcontinent, after having entered the race for European colonialism in South East Asia four and a half centuries ago, and for the Indians it meant the beginning of the elimination of the last vestiges of colonialism.

In order to boost the sagging morale of the fishermen of the area and to ensure Indian Naval presence in the area as a deterrent, two ships of the Indian Navy, *Rajput*, a destroyer, and *Kirpan*, an antisubmarine frigate, were

deployed off the Karwar coast on November 28, 1961. The two ships held exercises at a distance of 10 kilometres from the Portuguese-occupied enclaves, this distance having been assumed to be the extent of the Portuguese territorial waters. The ships arrived at Karwar on November 28, 1961 and started patrolling the area.

Meanwhile, all roads leading to Goa's interior from the border had been heavily mined by the Portuguese and a dusk-to-dawn curfew imposed. At a public meeting held on December 1 at Allahabad, Prime Minister Nehru reacted to these developments with anguish and said, 'We cannot tolerate such acts. We will take the necessary steps at the right time'.

Sanitising the Approaches

By December 1, Naval Headquarters had instituted a surveillance and patrolling exercise - *Operation Chutney*. The two ships positioned at Karwar, *Rajput* and *Kirpan*, had been withdrawn and *Betwa* and *Beas*, two anti aircraft frigates, commenced a linear patrol off the Goan coast at a distance of 13 kilometres. They were to report all ingress and egress - of shipping, aircraft and personnel - into and out of the Portuguese enclaves and to retaliate with necessary force, if engaged by the Portuguese units in the air or on the surface.

This patrol remained established by a relay of ships till after D-Day, with minor alterations to its length and the distance from the coast. Throughout the period the ships on patrol observed and signalled useful information. Though the bulk of intelligence obtained by them related to the volume of merchant shipping, the situation of an airfield at Dabolim was established with considerable accuracy. They did not, however, observe any air activity other than four-engined and two-engined transport aircraft occasionally using this airfield, neither did they observe any flying activity from anywhere in the vicinity. All this convincingly indicated the absence of any other airfield in the area and also the absence of any Portuguese combat aircraft.

The ships on patrol also maintained an effective watch on the only Portuguese man-of-war seen, the frigate *Afonso de Albuquerque*, whose movements between Anjadip Island and Marmagao were faithfully reported. It was also observed that other than the *Albuquerque*, there did not seem to be any other men-of-war of the Portuguese Navy of similar or larger size in the area (though the area even today teams with 'Portuguese men-of-war', sea-animals which are able to give a painful, even deadly, sting)!

These tow ships could not, however, confirm the existence of coast batteries in the area. The location of such batteries had been indicated on charts, albeit of circa 1880 vintage, and were later confirmed by IAF air reconnais-

sance just prior to D-day.

No definite information regarding Portuguese submarines operating in Indian waters was available but on the basis of the existence of a submarine wing in the Portuguese Navy. it was decided not to discount submarine threat in the area.

Meanwhile, Naval Headquarters had promulgated the requirement for Indian Naval Ships *Vikrant, Mysore, Delhi, Talwar, Kuthar, Khukri Kistna, Dharini, Shakti, Karwar, Kakinada, Cannanore* and *Bimlipatan* to be made operational at the earliest possible date. This was in addition to the ships which were already operational, viz., *Rajput, Trishul, Betwa, Beas, Kirpan* and *Cauvery*. It was also decided to embark 14 Seahawk aircraft of the No. 300 Air Squadron and 15 Alize aircraft of the No. 310 Air Squadron on the carrier by December 10.

The initial reaction of the Government of India to the firings on *Sabarmati* and the fishing craft was to occupy only the Anjadip Island. detailed consideration of this course of action, confirmed that no particular advantage would accrue by restricting the 'take-over' to Anjadip Island. Consequently, the 'take-over' of Portuguese territory in the enclave of Goa, and the Island of Anjadip was favoured. Later, on reconsideration, in order to obviate Portuguese retaliation originating in the enclaves of Daman and Diu, these two enclaves were also included in the proposed 'take-over' action plan.

Portuguese Irritants and World Opinion

The threatening posture adopted by the Portuguese soon became more acute with Portuguese soldiers trespassing into Indian territory, harrassing Indian villagers, carrying out searches, confiscating villagers' possessions and then opening fire and withdrawing into Goan territory. For instance, on December 10, twenty Portuguese soldiers crossed into Indian territory and fired 300 rounds on the unarmed people of village Talwadi and then withdrew into Goa. Soon thereafter the Foreign Minister of Portugal sought the aid of the NATO powers in throwing the Indian forces out if Goa was attacked and threatened to take up the issue at the Security Council, asserting that the local residents of Goa had for centuries been loyal to the Portuguese and wished to remain with them.

At this time Professor J.K. Galbraith, who had achieved worldwide recognition as an eminent economist, writer, journalist and diplomat, was the US ambassador to India. Datelined New Delhi, December 8, 1961, he said in his book *An Ambassador's Journal*', 'Early this week I got off a long, elegantly constructed telegram (to the US Government) urging our final detachment from Portugal, or at least from its possessions. . . . Only those inexperienced

in association with paper strongmen and dictators would be uncontrollably anxious to support Salazar'. In a footnote to this entry, he added, 'Goa, which occupied some 65 (square) miles of the west, or Malabar, coast of India to the South of Bombay, constituted, along with the two small enclaves of Daman and Diu, the Portuguese Africa in India. There was no obvious reason, its greater antiquity (from 1510) apart, why it should not have become part of the Indian union, along with British and French India and the partially independent Princely States at the time of Independence. The failure of the Portuguese to yield was a major annoyance to the Indians as was the use of Goa as a centre for smuggling on a considerable scale including the whisky that was banned by the formidable dry laws of the adjacent state of Maharashtra. Though extensively converted to Christianity, the Goanese are not ethnically distinct from the people of India'.

As regards the unflinching US support to the Portuguese cause, Galbraith said, 'In 1955, in a uniquely regressive gesture, Dulles (US Secretary of State) had agreed with the Portuguese Foreign Minister, Cunha, in calling Goa a province, that is to say, an integral part of Portugal. This endorsed a latter-day constitutional amendment adapted by the Portuguese in 1951, which so described the overseas territories and thus made them exempt, hopefully, from anticolonialism. Secretary Rusk enthusiastically continued, both in Spain and Portugal, what liberals in the Department, some at least, called the *Iberia uber Alles* (Iberia above everything) policy'.

Galbraith continued in his endeavour to seek a peaceful solution to the Goa problem especially because 'India, having rid herself by peaceful means of the British and the French, would be showing real weakness if ever she had to use force to be rid of the Portuguese people'. He made all efforts to dissuade Nehru from using force and as late as december 17, 'I had another talk with Nehru. He was much more relaxed, listened appreciatively to my arguments and we parted in friendly fashion. . . . I came away with the feeling that the operation might be put off and also that my arguments had something to do with it'.

The Portuguese, sensing danger, 'went to Adlai Stevenson, the US Representative in the United Nations in grave alarm to say an attack was imminent. The latter got U Thant (Secretary General of the United Nations) who drafted a letter to Indians and Portuguese calling for talks within the framework of the UN Charter and Resolutions. Since the latter are anticolonial, the Portuguese protested violently, so the letter was despatched by Thant with the proviso that the Portuguese did not accept the anticolonial provisions of the Resolutions. When it got here (Delhi) the Indians exploded at the reservation'.

Another development that irked Galbraith as well as India was the fact that Dr. Franco Nogueiria, the Portuguese Foreign Minister, had approached

Dean Rusk, the US Secretary of State, at a NATO meeting and made two preposterous proposals. First, to ask Islamabad to move 'a couple of Pakistan divisions to the border to frighten the Indians', and next, to bypass the UN 'with its inconvenient anticolonial attitudes' and bring as much pressure as possible to bear on the Indians to desist them from using force. Rusk's reaction to these two proposals was sphinx like silence. It is interesting to note that Rusk was a defender of armed action against Cuba.

Meanwhile George Ball and George McGhee, US State Department officials, 'had called in B.K. Nehru (the Indian Ambassador in the USA), urged the disastrous effect on American public opinion, damage to Nehru's reputation and chain reaction of violence which would result from the Indian action. Then they proposed that Prime Minister Nehru announce a six-months' suspension. They would then promise to make a major effort with the Portuguese. The nature of the latter effort was unspecific and badly hedged but it did mean in effect that we (the US) would do something to bring the Portuguese round'.

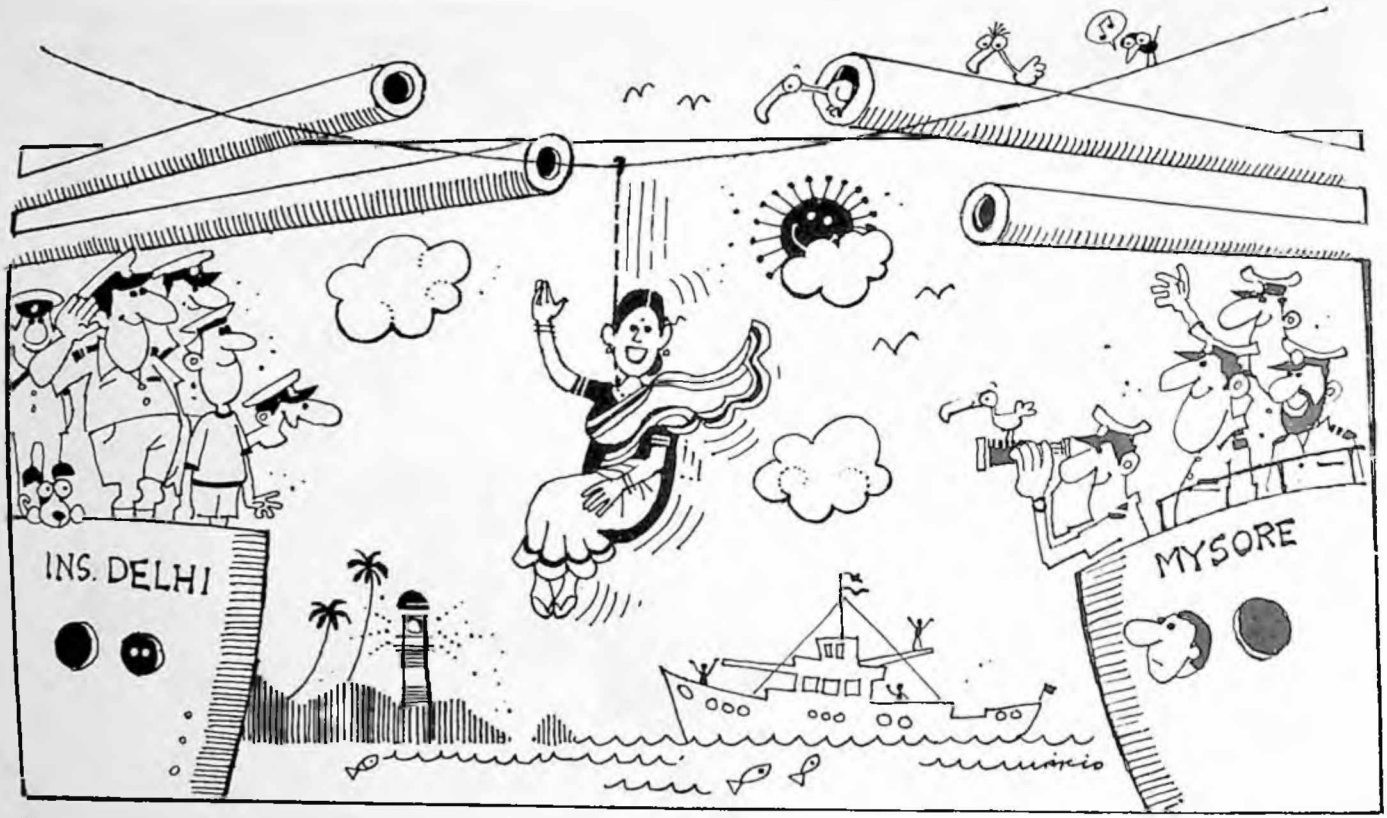
On the evening of December 17, Galbraith met Nehru and pleaded 'only for sufficient time to put the arm fully on the Portuguese. But in the course of the discussion, it became plain to me that the zero hour had passed'.

Yes, until the zero hour came, Nehru had remained averse to the use of force and was hesitant to send the armed forces in. Ever since India's Independence, there had been parleys between Portugal and India but these had reached an impasse by the end of 1956 and Nehru, being a believer in *Panch Sheel*, and not being a hardliner, felt that India should act with responsibility and wisdom and should exercise restraint, but what action was contemplated was not clear.

Ellsworth Bunker, who was the US Ambassador to India earlier, had made the quaint suggestion to Nehru to consider the 'purchase' of Goa from Portugal as had been done by the United States for acquiring Louisiana from France in 1803 for $15 million or by Denmark when King Christian I mortgaged the Shetland and the Orkney Islands in 1469 for the dowry for his daughter, Margrete's marriage to King James III of Scotland. Denmark had also 'sold' Serampore and Tranquebar to the British in 1844 for the modest sum of Rupees 12 lakh and 'transferred' the Virgin Islands to the United States in 1917 for $25 million. Little did Bunker know that the Portuguese were not prepared to trade off their possessions in Africa or India for mere lucre, however impressive the sum, though they had ceded Bombay to King Charles II of England as a part of his dowry for marrying Infanta Catherina of Braganza, the Portuguese princess, in 1622 (King Charles II had in turn transferred Bombay to the East India Company in 1668 at a princely annual rental of £10).

Vice Admiral RD Katari taking over as the Chief of the Naval Staff from Vice Admiral Sir Stephen Carlill on 22 April 1958. With Vice Admiral Katari taking over as the first Indian Chief of the Naval Staff, a newly designed Admiral's Flag was brought into service. The special feature of this flag was the addition of the 'Dharma Chakra' superimposed on the centre of the St. George's Cross.

Commissioning of Kuthar' in July 1959, with the Commanding Officer Commander SS Sodhi. Also seen are the Chief of Staff to C-IN-C Portsmouth and Captain RF Jessel – formerly Chief Instructor Navy at the Defence Services Staff College, Wellington.



Transfer by Jackstay from *Mysore* to *Delhi* – Mrs. Meena Nagarkar, wife of Commander WS Nagarkar – the first Indian eve to bounce across the waves in a bosun's chair in 1959.

Courtesy Mario Miranda

Captain VA Kamath reading the commissioning warrant of Trishul, 13 Jan 1960. Also seen in the picture is Captain RS David, the then Indian Naval Advisor, London.

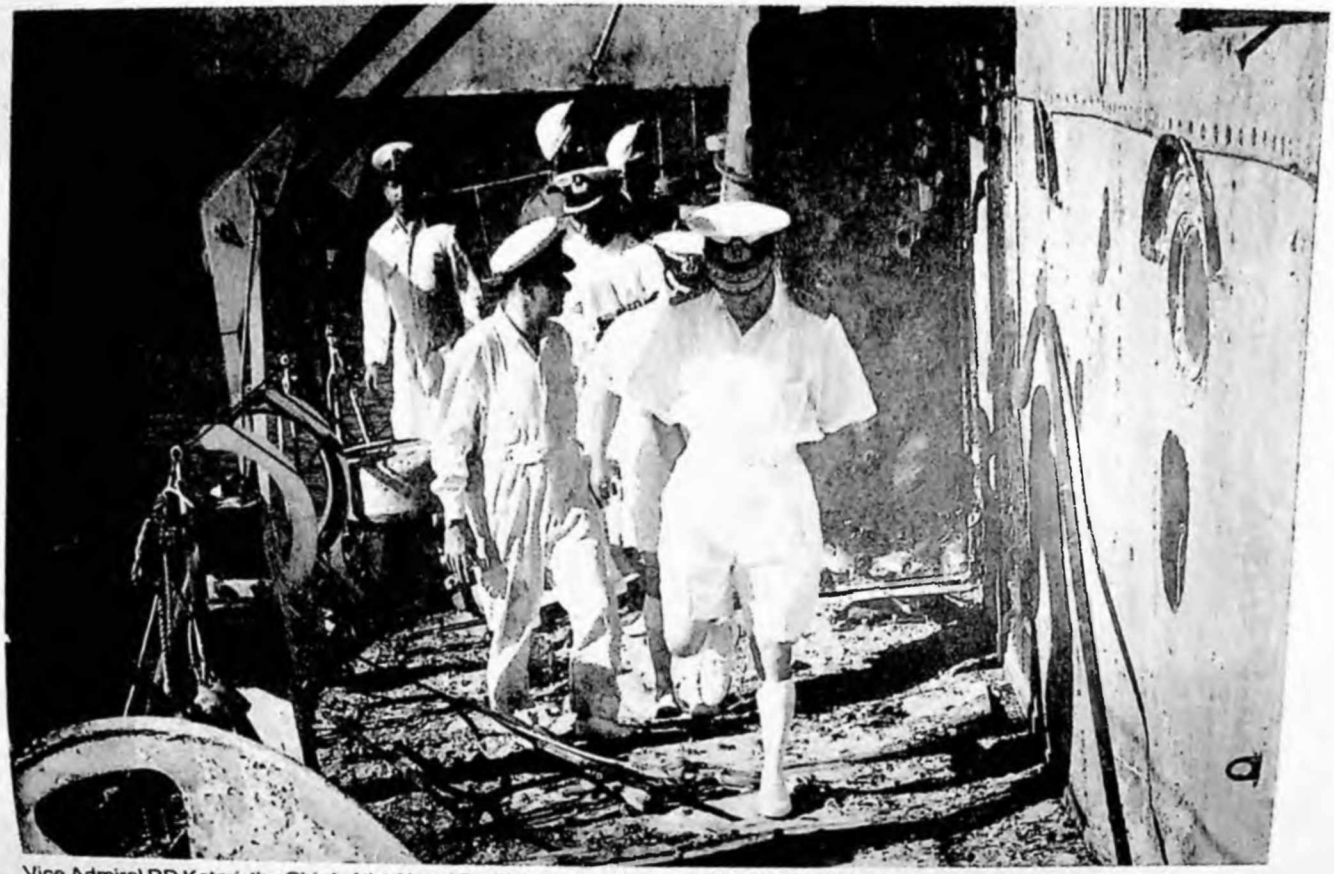
Cutting the commissioning cake on board *Vikrant* by Shrimati Vijay Lakshmi Pandit, Indian High Commissioner in London on 4 Mar 1961. Also seen in the picture are the Commanding Officer, Captain PS Mahindroo and Commander Krishan Dev.

Lieutenant Commander BR Acharya Squadron Commander 300 Squadron (Sea Hawks) briefing Naval pilots before a practice strike mission at Royal Naval Air Station Brawdy in 1961. Also seen in the picture are Lieutenants RV Singh, A.G. Jog, RH Tahiliani, SY Tipnis, SK Gupta, KASZ Raju and RN Ghosh.

Prime Minister Jawaharlal Nehru on board on Vikrant's arrival at Bombay on 03 Nov. 1961. Also seen in the picture are Shri VK Krishna Menon, Minister of Defence, Shrimati Vijay Lakshmi Pandit, Shri Raghu Ramiah Minister of State for Defence, Vice Admiral RD Katari, the Chief of the Naval Staff, Rear Admiral BS Soman, Flag Officer Commanding Indian Fleet, Captain PS Mahindroo, Commanding Officer and Lieutenants MB Kunte and MML Saxena.

Portuguese prisoners on board **Mysore** after their surrender in December 1961.

Courtesy Commander N Bobo (Retd)



Vice Admiral RD Katari, the Chief of the Naval Staff inspecting the 'remains' of Albuquerque in December 1961 at Goa. Also seen are Commodore HA Agate, the then Naval Officer-in-Charge Goa: the engineer in overalls is Commander TR Dalal.

Courtesy Vice Admiral RKS Ghandhi *(Retd.)*

Monument to the heroes of Anjadip Island – Plaque carries the names of those killed in action in December 1961. Admiral L Ramdas, the Chief of the Naval Staff laying a wreath at the monument. Also seen in the picture is Vice Admiral KASZ Raju, the C-in-C Southern Naval Command.

Earl Mountbatten of Burma, Admiral of the Fleet on board *Vikrant* in May 1963. Also seen in the picture are Rear Admiral SG Karmarkar, Flag Officer Bombay, Captain N Krishnan Commanding Officer and Mrs. Krishnan.

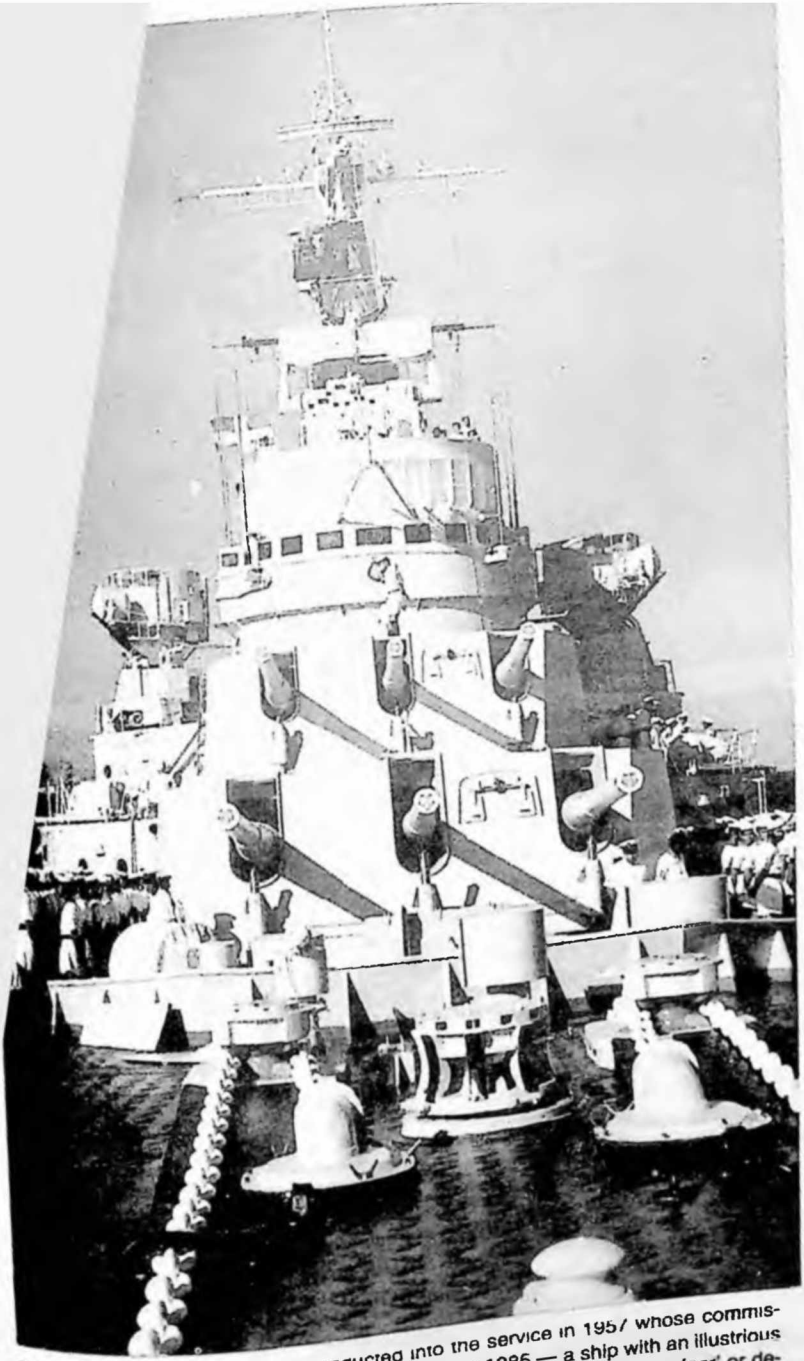
Commissioning Ceremony of Jarawa (Port Blair) on 15 Feb 1964. The tribals seen are the Jarawas.

Defence delegation to USSR in 1964 for exploring naval requirements – missile boats and submarines and other equipment. Seen in the picture are Shri Y.B. Chavan, Defence Minister and leader of the delegation, Mr. Nikita Khrushchev, Mr. T.N. Kaul, Ambassador and Shri H.C. Sarin, Additional Defence Secretary.

Photograph: Courtesy Shri H.C. Sarin

Type 41 Anti-aircraft frigate INS-*beas* has the distinction of having being commanded by father and son - Commander (later Commodore) BR Kapoor (inset) and Commander (now Captain) Sanjiv Kapoor (inset).

Rear Admiral BA Samson, the then Flag Officer Commanding Indian Fleet on board Vikrant during Exercises at sea 1965. Also seen are Major General Som Dutt and Group Captain R Engineer.



INS *Mysore*, our second cruiser inducted into the service in 1957 whose commissioning pennant was hauled down on 29th August 1985 — a ship with an illustrious history whose memory will be with us forever — a ship which 'knew no fear' or defeat. न विषेति कदाचन

The most famous name in the history of Indian hydrographic surveying is that of the Surveying Ship *Investigator*. The first 450-tons sailing vessel *Investigator* was employed for surveying duties in the China Sea until she was paid off in 1828. The second *Investigator* a wooden paddle steamer with a 581-tons displacement was commissioned in 1881. The third ship to bear the same name was a steel single-screw ship commissioned in 1907. She was continuously employed on surveying duties until 1932 when she was replaced by a fourth ship of the same name, a converted cable-laying vessel, the *Patrick Stewart*. *Kukri*, a river class frigate was converted into a surveying ship and commissioned in 1950 as fifth *Investigator* which was decommissioned in 1974. Photograph shows the sixth *Investigator* (indigenously built) which was commissioned on 11 January 1990, one hundred and sixty two years later. To be secure on land, we must be supreme at sea

The Three Investigators.

At his meetings with Members of Parliament from various parties and even in his public statemnts, Nehru had ruled out military action in Goa. He had, in fact, expected the United States and Britain to advise him in the matter especially because the latter had already compelled the Sultan of Muscat to transfer Gwadar to Pakistan. He had instructed M.C. Chagla, the Indian Ambassador in Washington, to discuss the Goa dilemma with officials of the State Department and to convey to them India's unwillingness to wait indefinitely for the Portuguese enclaves' integration into the Indian Union. 'The ultimate solution can only be close association with India, with possibly internal autonomy', Nehru said. He was even prepared to accept 'an interim settlement short of merger of Goa with India' on the lines of the transfer of the French possessions in India, in deference to world opinion in general and American opinion in particular and at the risk of contravening Indian public opinion and his own preferences and commitments.

On the occasion of the silver jubilee of Goa's liberation in 1986, the noted political analyst-commentator, Shri M.V. Kamath, wrote:

> Looking back now it is astonishing to what extent Nehru was willing not to use force out of respect for world opinion, even when he had every right to do so. How would the Western countries have reacted if India had been in occupation, say, of Calais or Hamburg or Liverpool and refused to budge? Would France or Germany or Britain have tolerated it for a moment? And yet, India was a victim of its own non-violent philosophy. We were being quietly taken for a ride.
>
> Neither Britain nor the United States were of any help. They had their own reasons to embarrass Nehru. Nehru tried to isolate Goa economically, but that only rebounded against India. The boycott resulted in widespread smuggling while there was no noticeable pressure on Portugal to relent. Had there been an internal revolt in Goa, Nehru could then have with some justification sent his army in. But no such revolt took place.
>
> The Western powers were in no mood to oblige Nehru. At Delhi, there was a new US Ambassador, Kenneth Galbraith. Galbraith was close to Nehru and advised him not to use force in order not to blot his and India's good record in the past. Galbraith urged Nehru to go to the United Nations. But after his Kashmir experience, Nehru was in no mood to fall into that trap. He told Galbraith that his cup was full and beginning to spill over.
>
> It is amazing to what extent Nehru went to stay away from the military option. He did not want to use force, but, at the same time, he did not want to appear irresolute. He told Britain's Prime Minister,

Harold MacMillan, that he couldn't promise he would not use force in any circumstances, giving himself some elbow room to manipulate.

Meanwhile, Krishna Menon had fixed a date for the invasion and the Indian Army was raring to go. Galbraith came to know of it and persuaded Nehru to postpone action for two more days. Galbraith encouraged Nehru to think that the US would compel the Portuguese Government to agree to leave Goa on the understanding that India would take a generous view of the economic and cultural interests of Portugal in Goa - a commitment which Nehru had no difficulty in giving.

But Galbraith had overestimated his own influence in Washington and with President Kennedy. Kennedy gave no hint to Portugal that, in his opinion, India had a good case. On the other hand, the US State Department indicated active sympathy for the Salazar regime's adamant attitude.

When UN Secretary General U Thant suggested negotiations, Salazar would only say that such negotiations could only be held on the basis of co-existence of India and a Portuguese Goa. The United States was playing a double game. On the one hand it was standing solidly behind Portugal and on the other it was warning India that it wouldn't be good form to attack Goa. Galbraith suggested that India sponsor a resolution on Goa in the UN General Assembly. But only a fool would have fallen for the trap. At this point the US Government came up with another suggestin that India postpone action for another three months. When this proposal was taken by Galbraith to Nehru, the latter was even then willing to listen. But then Krishna Menon told Nehru that it was too late and that advance parties of the Indian Army had already begun to move.

Madhu Limaye, the well-known parliamentarian and former editor and columnist, played a major role in the Goans' freedom struggle and participated in a *Satyagraha* in Goa in 1954. He was arrested by the Portuguese authorities and sentenced to 10 years' imprisonment along with several other freedom fighters from India including N.G. Gore and Tridib Chaudhury, and released on being given amnesty at the intervention of the Pope in 1957. Limaye feels that the three Portuguese enclaves could have been liberated within a few months of India's Independence. He says:

> The military action started finally in the midnight of December 17-18 and everything was over by the evening of December 19, 1961. Was such an action really necessary? To me it seems that a small-scale police action, say, by a 'disbanded battalion', would have done the trick in

Goa in 1948. But Nehru then would neither countenance unofficial armed action nor an official one.

About the morality of the use of force, I must say that the state is a state, and as long as it maintains armed forces, it must keep them in a state of readiness, and use them both to defend its territory as well as to enforce its birthright. India was precisely doing that in Kashmir and Goa.

Mahatma Gandhi had lent support to the Goan freedom movement from its very beginning. When Lohia was arrested by the Portuguese authorities on June 18, 1946, he not only justified Lohia's defiance of the prohibitory orders but also lauded the latter's 'service to the cause of civil liberty and especially the Goans.' He said that the Portuguese enclaves existed 'on the sufferance of the British government' and once India became free, Goa could not be allowed to exist as a 'separate entity'. He advised the Portuguese to recognise the 'signs of the times' and expressed the hope that Goa would be able to claim the rights of citizenship of the free India state. He also advised the inhabitants of Goa to shed fear of the foreign power as Indians did and seek the freedom of the enclaves. When the Portuguese Pro-Consul criticised Lohia for having acted against the 'historical truth of the four centuries' and 'troubled the peaceful people of Goa', Gandhi wrote, 'I suppose you know that I have visited Mozambique, Delagao and Inhambane. I did not notice there any government for philanthrophic purpose. Indeed, I was astonished to see the distinction that the Government made between Indians and Portuguese and between the Africans and themselves.' He added that the inhabitants of Goa could 'afford to wait for independence until much greater India has regained it. But no person or group can thus remain without civil liberty without losing self-respect.' Limaye adds, 'Although Gandhi's politics 'probably' differed from his (Lohia's), yet Lohia, Gandhi said, had commanded his 'admiration' for his having gone to Goa and put his finger on its black spot.'

On August 12, 1946, the Congress Working Committee had passed a resolution on Goa asserting that 'Goa has always been and must inevitably continue to be part of India. It must share in the freedom of the Indian people. Lohia had founded the Goa National Congress to organise peaceful resistance and was arrested on September 29, 1946 and kept in solitary confinement in the Aguada fort. At his prayer meeting on October 2, 1946, Gandhi lauded Lohia's action and praised his learning. His intervention soon secured Lohia's release.

Pakistan too had attempted to have a finger in the Goan pie in 1953 by laying a vague claim to the Portuguese possessions in India. The baggage declaration forms of Pakistan referred to the Goan enclaves as Portuguese

Pakistan and an air agreement had been concluded between the two countries in 1958. And what led to serious apprehension was the fact that a seven-member military delegation from Pakistan visited Daman during the second week of December 1961 and a Pakistan Navy ship, *Zulfiquar*, had been sighted a few days earlier leaving Karachi and sailing towards the Konkan coast. During the same period several aircraft were reported to have been flying between Goa and Karachi evacuating the families of Portuguese personnel in the three enclaves. It was, therefore, decided that plans for the liberation of Goa would also have to cater for the contingency of Pakistan joining hands with the Portuguese.

Britain was in an unenviable position. It had recognised the Indians' right to freedom and had withdrawn from the subcontinent in 1947 and was aware of Portugal's intransigence regarding the Portuguese enclaves. And the fact that India, after independence, had become an important member of the Commonwealth while Portugal was Britain's oldest ally, led to the latter assuming an attitude of neutrality by advising India to adopt non-violent means for liberating Goa, preaching avoidance of provocation to Portugal and supporting the Portuguese proposal of sending international observers to Goa. This was not acceptable to India as it would imply an endorsement of the Portuguese claim of sovereignty over the enclaves. The Portuguese persisted in their demand for the appointment of international observers to 'witness if and how violations of frontier and provocative acts take place' while rejecting all suggestions for negotiations for withdrawal from 'the Portuguese State of India' which they refused to consider as a Portuguese colony in India.

While the United Nations and all major nations were opposed to colonialism and supported the move for freedom of colonies around the globe from foreign rule and while India was advised not to resort to the use of force, attempts to persuade Portugal to withdraw peacefully failed. India had persevered with a nonviolent negotiated course of action for over fourteen years and since there was no change in the Portuguese attitude, it was apparent that a military action was called for.

While addressing the Parliament on December 11, Prime Minister Nehru reiterated that India's patience in regard to Portuguese activities in Goa had finally been exhausted and expressed the hope that Portugal, either on her own initiative or on the device of her friends and allies, 'would accept the natural culmination of the present developments, which is her withdrawal from Goa.' He, however, said that India's policy of solving the Goa question by adopting peaceful means had failed and that 'we have been forced into thinking afresh by the Portuguese - to adopt other methods to solve this problem.

Portugal's persistent refusal to discuss their possessions in India had

forced India to resort to armed action. The operation was set to be launched originally on December 15, then deferred by a day and then postponed once again by another two days with the hope that intense last-ditch diplomatic efforts would perhaps achieve a peaceful settlement and concellation of the military operation. But that was not to be and the Rubicon was finally crossed when India's Army, Navy and Air Force closed in for the excision of the colonial pustules from India's visage in the early hours of D-day, December 18, 1961.

The Action Plan

The operation for the liberation of Goa, Daman and Diu - Operation Vijay - was placed under the control of the Chiefs of Staff Committee at New Delhi whose members were Vice Admiral (later Admiral) R.D. Katari, Chief of the Naval Staff, General P.N. Thapar, Chief of the Army Staff and Air Marshal A.M. Engineer, Chief of the Air Staff. Lieutenant General J.N. Chaudhuri, General Officer Commanding-in-Chief, Southern Command, was the Theatre Land Force Commander for Operation Vijay, Major General (later Lieutenant General) K.P. Candeth, General Officer Commanding the 17th Infantry Division, in command of the Goa Operation, Rear Admiral (later Admiral) B.S. Soman, Flag Officer Commanding the Indian Fleet, as the Threatre Naval Commander and Air Vice Marshal (later Air Marshal) E.W. Pinto, Air Officer Commanding, Operational Command, was the Theatre Air Commander.

At Goa the Army was to move in from two directions, the east and the north, with a decoy entry from the south. The eastern thrust was planned to be made by the 17th Infantry Division along the route from Anmod to Mollem to Ponda; the northern thrust was to be launched by the 50th Infantry Para brigade along the route from Dodamarg to Assonora to Bicholim with a part of this force moving westwards to Mapuca and then southwards to Betim; and the 'decoy' force, titled the 20th Infantry Brigade but actually of a company strength, was to enter from the south along the route from Karwar to Majalito Canacona.

Tactical support to the ground forces was to be provided by the Indian Air Force operating from the airfields at Pune and Belgaum whose main task was to gain air supremacy by destroying all aircraft of the Portuguese Air Force, putting the airfield at Dabolim out of action and silencing the wireless station at Dabolim.

The Naval Task Force was to enforce a blockade of the ports of Marmagao and Panjim, neutralise the coast batteries defending these ports and sink or immobolise units of the Portuguese Navy deployed inside Goa harbour or patrolling its sea approaches.

An amphibious operation by the Army, i.e., landing of troops, was ruled out as the required number of assault craft were not available, the troops deployed had not been trained in amphibious operations, there was no time available for such training, and it was felt that such an operation did not offer any particular tactical advantage.

For capturing Daman, the 1st Maratha Group was to enter the territory from the direction of Vapi, capture the airfields north of Daman town and then capture the town itself. The IAF was to deploy two aircraft at intervals of two hours to provide air support to the land force and to carry out surveillance of the airfields and prevent their use either for escape or for landing reinforcements. The Navy was to enforce a blockade in the entire sea area off Daman and prevent the ingress and egress of all vessels.

In the absence of assault craft for the capture of Diu, which is separated from the mainland by a narrow creek, 20 Rajput was to cross the creek on improvised rafts and land on the north of the island during the night preceding the operation, move south-east and capture the airfield and then move eastwards and capture the town and fort of Diu. One company of 4 Madras was to capture Gogla, which is north-east of the citadel of Diu, before the landing by 20 Rajput and to provide covering fire to the troops attacking the fort from the west. The requirement of air support was considered minimal and so only one aircraft was positioned at Jamnagar for the purpose. The Navy was to provide adequate support by deploying a cruiser off the island so that it could provide naval gunfire support to the Army, neutralise the fort and citadel, if necessary, and land an assault or occupation force, if required.

The island of Anjadip was to be captured by the Navy by landing a naval assault force after softening up the island beaches with close range weapons and then providing adequate gunfire support to the assault force.

The Navy was also to deploy its carrier task group in order to be able to use Alize and Seahawk aircraft to carry out reconnaissance of the sea area off Bombay, to prevent any Portuguese warships from reaching within the gun range of Bombay or approaching the Indian coast anywhere else, to carry out strikes on Portuguese warships breaking through the patrol line off Goa or as required by the Flag Officer Commanding the Indian Fleet, to carry out searches of specific sea areas and to provide necessary naval air support to the Army in all the three sectors.

The task of conducting maritime air reconnaissance and providing integral air support to the Navy was assigned to the Air Force and was to be carried out from the Navy's maritime operations room at Bombay. An officer from the Air Force was placed at the headquarters of the Flag Officer, Bombay (FOB, the earlier incarnation of the FOCINC, WNC - Flag Officer Commanding-in-Chief, Western Naval Command) for co-ordinating the

maritime reconnaissance operations and two officers were positioned on board *Mysore* and *Delhi* for advising, controllig and directing Air Force strikes against targets in the Goa and Diu sectors and for surveillance of the tactical areas.

A minesweeping force comprising *Karwar, Kakinada, Cannanore* and *Bimlipatam* was to be kept for minesweeping operations if the approaches were found to have been mined.

A Naval Officer-in-Charge organisation headed by Commodore H.A. Agate was placed on board *Dharini*, which was to be positioned close to Marmagao, for taking over the administration of the liberated port on the surrender of the Portuguese. Commodore Agate, who was to take complete charge of Marmagao and Panjim harbours, was to be on the staff of the Military Governor at Panjim but would be responsible to the Chief of the Naval Staff for naval administration.

The tasks assigned to the Navy were scrutinised and gone over with a fine-tooth comb and a detailed Naval Operation Order issued on December 12, 1961. The Flag Officer Commanding the Indian Fleet (FOCIF), Rear Admiral (later Admiral) B.S. Soman, was to be the Naval Task Force Commander and was to receive necessary orders from Naval Headquarters. The naval operations were to be conducted and controlled through the Maritime Operations Room at Bombay.

On November 30, when the Government of India decided to adopt the military option, only six ships of the Navy were ready and available for operations and the only tanker of the Fleet, *Shakti*, was expected to be ready for operations only on December 14. This, besides the requirement of all available ships to be employed at sea on D-Day, made it necessary to exercise centralised control over their employment during the period preceding any projected D-Day. As the trend of political thought and the decisions could be made available at short notice only at New Delhi, it was decided to entrust the control of all preparations, deployment and employment of ships, repairs, logistic support and other related tasks till the initial sailing of ships for the projected operation to Naval Headquarters and not to delegate it to the Task Force Commander.

Commander (later Vice Admiral) Nar Pati Datta was appointed a Naval Liaison Officer and was attached to the General Officer Commanding-in-Chief, Southern Command who had set up his headquarters for the operation, at Belgaum. He was to maintain a wireless link with the Flag Officer Commanding the Indian Fleet who was embarked on *Mysore* and had been designated the Naval Task Force Commander, through the Maritime Operations Room at Bombay. This wireless link was also to be used for all communications between the Flag Officer Commanding the Indian Fleet and the General Officer Commanding-in-Chief, Southern Command as

well as the Air Officer Commanding, Operational Command, both operating from Belgaum. One Army officer and one Air Force officer were attached to the headquarters of the Flag Officer Commanding the Indian Fleet for liaison between the Fleet and the Army and the Air Force Commanders.

The Naval Task Force and the Tasks Assigned

The tasks assigned to the Naval Task Force were, firstly, the establishment of effective control of the seaward approaches to the Portuguese territory of Goa (including the harbour of Marmagao Bay and Enseada da Aguada), Daman and Diu and capture of Anjadip Island and, secondly, the prevention of hostile action by Portuguese warships on Indian territory.

The Task Force organisation was as given below in table 12.1.

As seen in the organisational chart, the Naval Task Force was divided into four task groups - the Surface Action Group comprising the Indian Naval Ships *Mysore, Trishul, Betwa, Beas and Cauvery,* the Carrier Task Group comprising the ships *Vikrant, Delhi, Kuthar, Kirpan, Khukri* and *Rajput,* the Minesweeping Group cornprising the minesweepers *Karwar, Kakinada, Cannanore* and *Bimlipatam* and the Support Group with only one ship, *Dharini.*

Intelligence

Intelligence regarding Portuguese forces and their activities indicated that the Portuguese frigate *Afonso de Albuquerque* had last been seen anchored about four cables northeast of Anjadip Island and had been shuttling between the island and Goa. Three other ships which were suspected to be warships could probably be in Goa, two of them having been sighted by *Beas* and *Betwa* on December 2 and December 4, and the other located at Vasco as reported by police wireless. There were no warships at Daman and Diu.

The volume of shipping traffic in Goa had been heavy and merchantmen and tankers were arriving and leaving for unknown destinations regularly. Military four-engined aircraft with Portuguese markings had been observed on reconnaissance flights over Goa and on one such occasion on December 8, a four-engined Skymaster had approached *Vikrant,* which was at sea, and had flown over her at a height of 5,000 feet. The author was serving in *Vikrant* at that time.

There were no confirmed reports on the presence of submarines in the sea area off Goa though *Kuthar,* an antisubmarine frigate had reported a possible submarine contact on a patrol line close to Goa at 0815 hours on December 7. About seven hours later on the same day, *Kuthar* one again had a confirmed contact of a possible submarine and fired one live antisubma-

Table 12.1 Commander Task Force Flag Officer Commanding the Indian Fleet - Rear Admiral B.S. Soman

Commander Task Group-1	*Commander Task Group-2*	*Commander Task Group-3*	*Commander Task Group 4*
(Commanding Officer, Mysore - Captain D.St.J. Cameron) D.St.J. Cameron)	(Commanding Officer, Vikrant - Captain P.S. Mahindroo) P.S. Mahindroo)	(Senior Officer,149 Minesweeping Squadron, i.e. Commanding Officer, Karwar - Cdr. H.F. Dubash)	(Commanding Officer, Dharini Commander K.K. Mukherji)

Task Unit 1.1	*Task Unit 1.2*	*Task Unit 1.3*	*Task Unit 3.1*	*Task Unit 3.2*	*Task Unit 4.1*
Mysore (Cdr. Task Unit- CO, *Mysore* Capt. D.St. J. Cameron)	*Trishul* (Cdr Task Unit - Senior Officer 15th Frigate Sqn , i.e., CO, *Trishul* Capt. K.L. Kulkarni)	*Betwa Beas* (Cdr. T.J. Kunnenkeril) *Cauvery* (Lt. Cdr. S.V. Mahadevan) (Cdr. Task Unit - CO, *Betwa* Cdr. R.K.S. Ghandhi)	*Karwar Kakinada* (Lt. Cdr. D.B. Mohindra) *Cannanore* (Lt. Cdr. A.K. Kaul) (Cdr. Task Unit - CO, *Karwar* Cdr. H.F. Dubash)	*Bimlipatam* (Cdr. Task Unit - CO, *Bimlipatam* - Lt. V.K. Kochhar)	*Dharini* (Cdr Task Unit - CO, *Dharini* - Cdr K.K. Mukherji)

Task Unit 2.1	*Task Unit 2.2*	*Task Unit 2.3*	*Task Unit 2.4*
Vikrant (Cdr. Task Unit - CO, *Vikrant* - Capt. P.S. Mahindroo)	*Delhi* (Cdr. Task Unit - CO, *Delhi* - Capt. N. Krishnan, DSC)	*Kuthar, Kirpan* (Cdr. A.H.R. Sirajuddin) *Khukri* (Lt Cdr. R.N. Batra) (Cdr. Task Unit - CO, *Kuthar* - Cdr. R.S. Malia)	*Rajput* (Cdr. Task Unit - CO, *Rajput* - Capt. I.K. Puri)

rine projectile but the submarine succeeded in giving her the slip. The probability of a submarine operating in the vicinity of Goa could, therefore, not be ruled out. As was reported later, the submarine detected was a British submarine on its passage to the Far East which was keeping a tab on the developments in the sea area off Goa.

Intelligence reports also indicated that the Portuguese garrison on Anjadip island had been reinforced. There were also unconfirmed reports that the entrance to Marmagao and Enseada da Aguada and the approaches to the landing beaches on Anjadip island had been mined.

The Task Force's Carriculum Vitae

The displacement, speed, weapon, package, horse power and certain other features of the ships taking part in the operation were:

Table 12.2. Curriculum Vitae of the Task Force

Name of the Ship	*Displacement (tons)*	*Maximum Speed (Kts.)*	*Armament*	*Brake/ Shaft Horse Power*	*Year of Commissioning*	*Aircraft*	*Torpedo Tubes*
1	*2*	*3*	*4*	*5*	*6*	*7*	*8*
Vikrant	19,500	24.5	15x40 mm	40,000	1961	21	-
Mysore	10,040	31.5	9x6 inch 8x4 inch	72,500	1957	-	-
Delhi	9,740	32	12x40 mm 6x6 inch 8x4 inch	72,000	1948	-	-
Rajput	2,424	30	14x40 mm 4x4.7 inch 4x40 mm 4 Depth Charge Throwers	40,000	1949	-	8x21inch
Trishul	2,557	30+	2x4.5 inch 4x40 mm 2 Limbo	30,430	1960	-	-
Betwa	2,515	25	4x4.5 inch 4x40 mm 1 Squid (Antisubmarine)	12,380	1960	-	-
Beas	2,515	25	4x4.5 inch 4x40 mm 1 Squid (Antisubmarine)	12,380	1960	-	-
Kuthar	1,456	27.8	2 Limbo (Antisubmarine) 3x40 mm	15,000	1959	-	-
Kirpan	1,456	27.8	2 Limbo (Antisubmarine) 3x40 mm	15,000	1959	-	-
Khukri	1,456	27.8	2 Limbo (Antisubmarine) 3x40 mm	15,000	1958	-	-

1	2	3	4	5	6	7	8
Cauvery	1,925	19	4x4 inch 4x40 mm 2DCT	4,300	1943	-	-
Dharini	4,625	-	—	—	1960	-	-
Karwar	425	15	1x40 mm 2x20 mm	1,250	1956	-	-
Kakinada	425	15	1x40 mm 2x20 mm	1,250	1956	-	-
Cannanore	425	15	1x40 mm 2x20 mm	1,250	1956	-	-
Bimlipatam	170	14	1x20 mm	550	1955	-	-

The tasks of capturing Anjadip Island, enforcing a blockade of the waters off Goa, neutralising any opposition from Goa to operations from seawards and landing a party of Naval personnel to administer the port of Panjim (Goa) after the Portuguese surrender, were assigned to Task Group 1. Task Group 2 was entrusted with blockading the sea areas off Daman and Diu, providing naval gunfire support and landing parties for the capture of Diu, preventing Portuguese warships from approaching Bombay and providing naval air support for search and strike, whenever necessary. The minesweepers of Task Group 3 were to stand by for sweeping the entrance to Panjim and Marmagao harbours after the termination of hostilities. Task Group 4 would be required to embark personnel for the temporary administration of the captured ports, harbours and territory and to provide logistic support, if required by other ships.

As mentioned earlier, patrolling of the sea area off Goa in pursuance of Operation Chutney had been taken over by *Betwa and Beas* on December 1. The two ships continued to maintain effective surveillance of the area and to report on the movement of ships, operations from Dabolim airfield and the activities ashore.

The initial plans for the naval operations included bombardment of Anjadip Island, neutralisation of the Portuguese coast batteries and a blockade of the entire Goan coast. It was, however, later felt by the planners that it would not really be essential to neutralise the coast batteries and shore bombardment by ships should be avoided as it was not considered necessary. It was, therefore, decided to undertake neutralisation of coast batteries only when fired upon first and to assist the land forces as necessary to enable them to accomplish their task with expedition.

The capture of Anjadip Island was considered the primary task for the Naval Task Force as the Portuguese provocative operations had originated in this island. It was initially planned to send in a contingent of the Karwar Armed Police for the occupation of the island after the surrender of the Portuguese garrison. But it was soon realised that Goa was still in Portuguese occupation and the police could move in, if political implications were to be

avoided, only after a civil adminstration had taken over the liberated areas from the military authorities. The landing party or the assault force had, therefore, to be provided by the Army or the Navy.

Since the Army expressed its inability to provide troops trained in amphibious operations as time for training in such operations was not available, the Navy took on the task. Naval Headquarters felt that 'it is necessary that full naval control is established on Anjadp Island as quickly as possible after H-Hour, by physical occupation of the island by naval personnel.' Captain (later Vice Admiral) K.L. Kulkarni, who was the Commanding Officer of *Trishul* during the operation, recalls that 'the Navy had taken on this job in spite of the fact that Lieutenant General J.N. Chaudhuri, Commander of Operation Vijay, had sent a signal to the effect that the use of Naval landing parties against well-entrenched troops was not advisable.'

For the capture of the island, *Trishul* was to pass between the northern point of Anjadip and Binge Point at H-Hour keeping as close to Binge Point as navigationally possible. *Trishul* was then to anchor in Binge Bay, covering the Island with her Bofors, and lower her boats while watching for opposition from the island. After one burst on the beaches with close range weapons, the landing party was to be sent in. A motor boat with a light machine gun mounted on its bows and towing a whaler was to be used for the landing party.

Mysore was to lie off the northeast shore of the island at this time and provide gunfire support to the landing party, if necessary, and to provide a motor cutter and a whaler to *Trishul* to expedite landing operations.

Members of the landing party were exhorted to use their weapons only in extreme necessity. 'Trigger-happiness is to be avoided at all costs. Treatment of all Portuguese armed forces personnel captured or surrendering is to be under the normal usages of war. Behaviour of our personnel is to be exemplary.' It was, however, assumed that there would be little or no resistance from the Portuguese personnel stationed on the island and hence Naval landing parties as opposed to trained Army commandos were considered adequate for the task. Suitable measures were adopted to scotch rumours and to ensure that the Portuese weren't alerted before the operations began as they hoped that the NATO powers would somehow prevail upon India and international political pressure would force India to adandon the military alternative.

Preparations Begin

During the preparatory stage it was considered necessary to divert the attention of the general public, the foreign intelligence gathering agencies in India and their ubiquitous 'moles' from the subtle changes in the mobilisa-

tion, training, maintenance and ammunitioning activities of the Naval Task Force. As Captain (later Rear Admiral) D.St. J. Cameron, who was the Commanding Officer of *Mysore* during the operation and Flag Captain to the Flag Officer Commanding the Indian Fleet (the latter, along with his staff, was embarked on the cruiser), reminisces on the preparations made:

> As so frequently happens, rumours were going round the ships to the effect that an operation against Goa was in the offing - this may have been triggered off by the fact that the ships concerned were being given undue attention from the point of seaworthiness and battle-readiness and all this with no projected cruise or exercises in sight.
>
> Therefore, in order to quash the rumours and also to lay a red herring for any possible watchers ashore who might convey the news regarding the departure of ships on an unspecified mission to authorities in Goa, it was decided to take the *Mysore* and some of the ships concerned to sea for exercises covering two days; this was scheduled to be done a few days before 'D minus 2'.
>
> Accordingly, without prior warning, all leave was cancelled and those ashore were recalled and the ships prepared for departure. The ships sailed out of Bombay Harbour at 2130 hours, fully darkened. Exercises were out off Bombay in plain visibility of watchers and passing ships. After spending two nights at sea, the ships returned to harbour in the early hours of the second morning and reverted to normal routine and leave.
>
> Fresh exercise orders were issued and the ships readied for sea on 'D minus 2'. Once again, with ships darkened, we left harbour at night, hoping that the watchers, if any, would presume that we had proceeded for exercises again.
>
> On clearing Bombay harbour, Delhi was detached and directed to proceed independently in execution of her task in support of Army units scheduled to commence operations for the occupation of Diu.
>
> *Mysore*, with the remaining ships in company, set course and speed to arrive off Goa and Anjadip in the early hours of December 18, keeping well outside the shipping lanes.
>
> Shortly after midnight on December 17/18, *Betwa*, *Beas* and *Cauvery* were detached to proceed to their patrol area off Goa in pursuance of the task assigned to them.
>
> *Mysore*, with *Trishul* in company, proceeded to arrive off Anjadip before first light on December 18. These two ships, fully darkened, closed Anjadip Island by radar during the pre-dawn hours of the D-Day. No signs of the ship's presence in the vicinity of the island having been detected were observed.

Trishul was detached to proceed to the southeast of the Island and then to send in her landing parties. *Mysore* was to patrol the seaward side of the island and cover *Trishul*'s movements by carrying out close-range bombardment of the western side of the island with her light anti-aircraft Bofor guns. This was in keeping with the directive to use minimum force.

It would appear, however, that this distracting action militated against the operation as it obviously disclosed our presence in the vicinity of the island and alerted the personnel of the island to the possibility of a landing.

The First Salvo is Fired-Portugal's Perfidy

Captain (later Vice Admiral) K.L. Kulkarni, Commanding Officer of *Trishul*, recalls:

At daybreak *Trishul* steamed into Binge Bay and carried out a short bombardment of the area around the beach. As our instructions were to use the least force, we made sure that the bombardment was clear of houses, barracks, the two churches and other structures (subsequent examination showed that excepting for a few tiles accidentally blown off from the roof of the northern church by 40-mm Bofors' fire, no damage was done to any other building). The whole place, as we entered, was deathly still with no lights or movemnt of personnel. After the bombardment *Trishul* was manoeuvred to the lee of a small island (Round Island) which was off the southeast extremity of Anjadip and lowered the boats with the landing party led by Lieutenant (later Rear Admiral) Arun Auditto. The first wave which left at about 0715 hours landed at the beach without any opposition and the boats returned to *Trishul* for the second wave. This is when we saw the white flag and men with raised arms on the northern beach. When the second wave, which left at about 0745 hours, was landing, we saw a white flag on the church on the northeast tip of the island. It was after the white flag was hoisted that the second echelon of the landing party reached the island and were fired upon. It was about 0800 hours at that time. When I saw the white flag I was happy but immediately after they attacked my second boat, I moved the ship to the centre of Binge Bay and bombarded the island with 4.5 inch high explosive shells, as well as with 40-mm Bofor guns. The fire was lifted after about five minutes. It was rather difficult even to bombard as I was not absolutely sure whether my fire would hit my landing party, and therefore the bombardment had to be extremely accurate. I directed most of the fire into

the woods behind the buildings on the eastern beaches on the northern side of the island. We had by now landed the entire landing party of 75 men and two officers and the boats were told to lie off.

Mysore had meanwhile been engaging other enemy concentrations and installations with her 40-mm Bofor guns and sent a landing party ashore which landed on the beach to act as a link between Lieutenant Auditto's landing party and *Trishul*.

The Landing Party's Work-Up

Lieutenant Arun Auditto, who was the officer-in-charge of the Naval landing party was to cover himself with glory during the landing operations, neutralisation of the Portuguese garrison and mopping-up operations on the island despite being wounded by Portuguese gunfire during the landing phase. He provides a graphic account of the Portuguese betrayal of the international convention, their last-ditch efforts to thwart the island's occupation and their unconditional surrender when cornered and finally overwhelmed by superior firepower and clever manoeuvring on the part of the two ships and the landing parties that combed the island. He was later awarded the Naosena Medal (NM) for his valour and devotion to duty and for having 'conducted landfighting operations with imagination, vigour and determination. Auditto reminisces:

It all began in early November 1961 when I, as a young Lieutenant, was undergoing the Long TAS (Torpedo Antisubmarine) Course at Cochin, I was called by Commander H.C. Tarneja, the Officer-in-Charge, TAS School, and was told that the Navy was organising a landing platoon of which I was to be in command and that I was to report to the Gunnery school for further instructions.

The next day when the platoon was mustered in the drill shed of the Gunnery School, Commander (later Rear Admiral) A.P.S. Bindra, Officer-in-Charge, Gunnery School, stated that the platoon was being raised for a demonstration of land-fighting to the public during the forthcoming Navy Week. There was no mention of the impending Goa Operation.

We started our work-up in earnest which consisted mainly of field training. The bulk of the platoon consisted of Seaman Gunners-sailors who had just passed out of the Boys Training Establishment and were undergoing a short gunnery, small arms and parade training course. We also had one demolition section of TAS sailors who had specialised in underwater weapons. It was no easy task to get these young men,

who were just about acquiring their sea-legs, to do Army-style crawling. Neither could they really understand the purpose of all this, everything being still shrouded in secrecy,

I realised that none of these sailors had really carried out weapon training whereas here we were carrying Lanchesters, Brens, mortars, grenades, in addition to the good old 303. Furthermore, they were ill-equipped for any land operation and were conspicuous in their blues. I, therefore, sought an interview with the Commanding Officer of Venduruthy (a Naval base at Cochin), Captain (later Vice Admiral) R.N. Batra, to sort out some of these problems. During the discussions I stressed specifically on each and every sailor actually firing various weapons and asked for each one of them to be given confidence in throwing grendes and in wearing khaki uniforms, field dressings, etc. My ministrations were somehow constructed as a tale of woe and I was told that perhaps I was not too keen to do the job and that someone else would be found. Two days later I was reinstated and I must say that all my earlier demands were conceded except that only one field dressing, as against two stipulated, could be provided per person.

After another spell of intensive training including practical firing of all weapons from the beaches around the Naval coast battery at Cochin and exercises by the demolition section at the range at Alwaye as well as trials for disembarkation from ships by scrambling nets, the platoon was ready to be deployed. Still there was no official news of deployment though rumours were rife about the use of the platoon in connection with the Goa Operation. In fact, the vegetable vendor queried my wife as to when I would be leaving for Goa!

On December 16 the platoon was embarked on board *Trishul* at Cochin with a ceremonious send-off. The next day the ship, along with other ships of the Fleet, was poised off Karwar. This was the first clear indication of the task ahead, which was to capture the Island of Anjadip.

On the eve of 'D-Day', i.e. December 18, the Task Force Commander, Rear Admiral Soman, was transferred by jackstay from *Mysore* to *Trishul* to discuss the plan of action for the assault and capture of Anjadip. I was called to the cabin of the Commanding Officer, Captain K.L. Kulkarni, and I was shown the map and aerial photographs of the island together with the location of the Portuguese garrison and other topographical features and landmarks. There was fairly detailed intelligence on the number of troops as well as their likely disposition as constant surveillance had been maintained from Karwar Head.

After detailed discussions I was informed that as there would be very little opposition - 35 to 40 Portuguese men as against my 75 - it

would be best and easiest to land on the main beachhead in the northeast. I argued that this may well be suicidal as we would be landing in an open boat and from all indications the garrison area would be heavily defended. I suggested landing on a beach about three kilometres to the south of the garrison as this would also bring in an element of surprise notwithstanding the fact that this beach was surrounded by the thickly wooded central plateau and would, therefore, be difficult terrain.

The Task Force Commander readily agreed to this plan stating that I, as the officer commanding the platoon, was the best judge. It was, therefore, decided that just prior to dawn next day, beach-softening would be carried out by using the ship's 40-mm Bofor guns immediately followed by the landing at the southern beach in two waves. This was necessitated by the fact that only the ship's cutter (boat) was available for use and hence with its limited carrying capacity, the platoon would have to be split into two. I was to be in the first wave and Senior Commissioned Gunner (later Commander) N. Kelman, a Special Duties Officer of the Gunnery Branch who was my second-in-command, was to be in the second wave. Having wished me and my men the best of luck, the Task Force Commander was jack-stayed back to the flagship. That night the Captain invited me to dine with him and we discussed other details over dinner.

Hands call, i.e., the time to wake up for all on board, on December 18 was at 0500 hours, sunrise being at about 0645 hours, and the whole platoon was mustered in the ship's antisubmarine mortar well. I talked to the men and explained the tactical deployment, especially the first wave which would land and take the brunt of any opposition and thereafter give cover to the second wave as it landed.

On directions from the Captain, each man was given a tot of brandy as we waited in anticipation of action - but for some time nothing happened. The ship continued to circle the island as dawn broke and the bright blue tropical sky lit up with the rising sun - and still nothing happened!

The Landing Party's Moment of Truth

Auditto continues:

> It was after three hours of waiting, i.e., at about 0715 hours, that I was informed that the Portuguese had hoisted a white surrender flag at the mast on the northern end of the island. We were, therefore, ordered to land without any resort to softening up of the enemy defences and in

broad daylight with the assurance that 'nothing really would happen as the garrison had already surrendered.'

I took charge of the first wave of the assault party from *Trishul* called *Rustum* and we went peacefully towards the beach and I began to believe that the 'surrender business' was indeed true. We landed at the beach, took position around the beach and the boats were sent back to bring the second wave. Fifteen minutes later, the second wave, under the command of Senior Commissioned Gunner N. Kelman, set course to approach the beach at about 0745 hours. Suddenly all hell broke loose as sprays of machine-gun bullets opened up on the boat from Portuguese gun-posts near a pill-box on the south hill top. Kelman, with great presence of mind, continued towards the beach, zigzagging the boat to counter the accuracy of the machine-gun fire. A few minutes later, by the time the boat beached, it had been riddled with bullets. Kelman had been wounded on both his thighs - fortunately only flesh wounds but all the same, seriously. A number of sailors were wounded, some grievously, and a few succumbed to the injuries a little latter. The young Seaman Gunner sailors were shocked into inactivity and it took some forceful handling by me to get them out of the boat and to take cover. A little later some white troops were seen digging near the white flag.

As each man had only one field dressing I had to give mine to Kelman and leave him on the beach, while I mustered the force to move north-westwards. The main wireless set had been damaged and the walkie-talkies were out of range of the ship and so we were literally cut off from any help that the ships could render.

I heard later that the machine gun had been silenced by the ship opening up with its 40-mm Bofor guns directed at the Portuguese gun emplacement on the hill where it had been positioned. This, no doubt, saved many lives or else we may have lost the whole of the second wave as well as the boats before they hit the beach.

After regrouping the force I left Kelman in charge to attend to the wounded and to ensure their return to the ship as soon as feasible. Both boats had been holed and were shipping water but managed to return to the ship with the dead and the wounded. The plan of action for me was to get up to the central ridge, proceed north-westwards till we could overlook the main garrison which was then to be surrounded from the rear, i.e., from westward, and thereby cutting off various outlying posts of the enemy and forcing them to surrender.

All our training on the field and with the weapons was now brought into play. A grenade attack on the menacing machine-gun post enabled us

not only to take position on the upper reaches of the ridge but also to capture three enemy soldiers at that post. We proceeded northwards under cover of the wild growth and shrubbery. We came under cross-fire from machine-gun posts on the west as well as under very accurate sniper fire from the northern hilltop near the flag-mast. By about noon we had almost reached the objective overlooking the garrison. It was here that we had to cross an open area of about 200 yards where there was hardly any cover. The accurate fire from the hilltop, which was about 200 feet higher than our positions, pinned us down. Two of our men were wounded and one killed outright by a bullet shot which penerated his helmet. The two-inch mortar was ineffective as the location of the enemy was well concealed in the thick forest.

In order to get a better view of the area and reassess the tactices, I had to move swiftly across ten yards to get behind a tree. Just as I reached the tree a shot hit me on my left upper arm. It caused a deep flesh wound but, like senior Commissioned Gunner Kelman, I was fortunate that it had missed the bone. As I had no field dressing, having given mine to Kelman, one of the men in the rear passed me his dressing which I used effectively to stem the bleeding.

It was at this stage that we succeeded in establishing wireless contact on the walkie-talkie set with *Trishul*, which was by now circling the island. She told us that a landing party from *Mysore* had also been inducted and landed on the beach. In my opinion this was a wrong thing as we had no communication with the other party and also the other party was dressed in blues (the working dress on board Naval ships at that time), totally untrained and would in fact hazard and consequently impede our action. I informed *Trishul* accordingly but as they were not in contact with the other shore party, they could do nothing. As it came to light later, this party fortunately moved along the coast. In fact they went smack into a machine-gun post near the southern end of the Portuguese garrison, as they were moving in a line-ahead formation, and the first man got hit in his guts and collapsed.

I asked *Trishul* to open up with her 4.5 inch guns on the northwestern hill top, taking particular care not to hit the church there, in order to silence the opposition from the direction. On receiving clear directions from me, *Trishul* then plastered the northern hill and later bombarded hill 212 and its slopes. Thus establishing communication with the ship and obtaining gun support was providential as it enabled us to move down to the garrison and force the surrender of their troops.

By now it was about 1600 hours and as we went down, we came upon the wounded man from the *Mysore's* landing party who was now almost dead. Although we later took him back to the ship, he succumbed to his

severe injuries a few hours later.

After the parties from *Trishul* and *Mysore* had withdrawn to the beach, it was decided to bombard the northern part of the island by the cruiser from the south-west and the frigate from the south-east. It was then that the ships' intention became clear to the Portuguese and they decided to surrender and started emerging with their hands over their heads with one of them waving a white cloth. Auditto's Party was instructed by *Trishul* to take over the prisoners of war and bring them on board the *Mysore* in boats to be sent later. Officers and sailors were sent to other beaches also for taking charge of the surrendering Portuguese soldiers.

Audito recollects:

> Our men then surrounded the barracks area of the Portuguese troops and the church to the north, thereby rounding up the Portuguese troops numbering 35 who at this stage surrendered without any resistance. Thus the operation was successfully concluded.

After the conclusion of the first phase of the mopping-up operations on December 18 during which some more Portuguese troops and Goan civilians were apprehended, the Indian tricolour was hoisted on top of the Flagstaff at 1425 hours on December 18.

In a news item datelined April 11, 1964 at Bombay, the *Indian Express* said: 'Lieutenant Arun Auditto was decorated with the Naosena Medal for 'exceptional devotion to duty' at a ceremony on board the aircraft-carrier, *Vikrant* off the Naval Dockyard, Bombay, on Friday, April 10, 1964.

> The award, hitherto presented by the President, was for the first time made by the Chief of the Naval Staff, Vice-Admiral B.S. Soman.
>
> Lieutenant Auditto of *Khukri* was honoured for valour and devotion to duty, displayed during the Goa Operation in December 1961.
>
> Called upon to lead a 75-strong landing party on Anjadip Island under heavy enemy fire, Lieutenant Auditto who had no experience in jungle warfare, conducted landfighting operations with imagination, vigour and determination, the citation said.
>
> His calmness and courage inspired the officers and men under his command to go forward in the face of stiff opposition to final victory, the citation added.

A letter from Vice Admiral B.S. Soman, who had by then taken over as the Chief of the Naval Staff, addressed to Lieutenant Auditto, read:

> I am very pleased to extend to you my heartiest congratulations on the

award of the Naosena Medal for the calmness, ingenuity and courage displayed by you during the Anjadip Operations on December 18, 1961.

The Navy is proud of the fine example you set on this occasion and the qualities of leadership you displayed which contributed greatly to the ultimate success of the Operation.

The citation for Senior Commissioned Gunner Kelman, who was awarded the Ashoka Chakra Class II (Kirti Chakra), reads; 'Senior Commissioned gunner N. Kelman was in command of the second assault boat during the landings on December 18, 1961. When the boat was at some distance from the beach, the enemy opened heavy and accurate fire. A number of sailors in the boat were killed and wounded. Kelman was hit by a bullet which went through both thighs. Despite his serious wounds, he displayed exemplary courage, maintained discipline and calm in the boat and continued steadfastly towards the beach. On touching down he jumped ashore encouraging his men and led them to the support of the first wave.

Soon after landing on the Island, Kelman was advised to return to *Trishul*. He, however, made light of his wounds and continued to assist in the conduct of operations throughout the day. It was only when operations had virtually ended and the National Flag was hoisted on the Island that he eventually returned to *Trishul* for medical attention.

The fine example, high quality of leadership and outstanding personnal courage displayed by Senior Commissioned gunner N. Kelman, in complete disregard of his personal safety and discomfort, inspired the men under his command and contributed greatly to the victory of the day.

The others decorated were Chief Petty Officer Gunnery Instructor, Ali Mohammed, Ashoka Chakra Class III (Shaurya Chakra); Ordinary Seaman, Samuel Jayaselan Mohandas, Ashoka Chakra Class II, posthumously; Ordinary Seaman Bechan Singh, Ordinary Seaman Bachan Singh and ordinary Seaman Vijendra Pal Singh Tomer, Ashok Chakra Class II, all posthumously; and Able Seaman Jaswant Singh Bawa, Ashoka Chakra Class - III (Shaurya Chakra).

Chief Petty Officer Gunnery Instructor Ali Mohammed was the most experienced member in land-fighting. He was the senior sailor of the first wave to land in Anjadip Island on December 18, 1961. He deployed the men into selected positions to cover the landing of the second wave. When the second boat was at some distance from the beach, it came under heavy fire from positions behind a wall further up the hill.

Mohammed immediately led the first wave as they advanced up the hill against the enemy. On reaching the wall he threw a hand grenade over and was the first to jump over leading his men into action. This prompt

action drew off much of the fire opened on the second boat, reduced their casualties and contributed greatly to the successful landing of the second wave.

At about 1500 hours the same day, it was thought that a number of enemy snipers might be concealed in a group of houses close behind the beach. These snipers could be a serious threat to our men and boats engaged in evacuating prisoners on the beach. Chief Petty Officer Mohammed and three sailors carried out a swift and thorough search of these houses and captured 12 armed Portuguese soldiers without firing a shot.

Chief Petty Officer Ali Mohammed displayed outstanding leadership and great courage and ability on many occasions on this day, often at great personal risk and in complete disregard of his safety.

One of the sailors who made the supreme sacrifice during the Anjadip Operation was Ordinary Seaman Samuel Jayaselan Mohandass, who was cut down by enemy fire after he had silenced several Portuguese gun positions by launching a series of grenade attacks.

The citation for the postumous award of the Ashoka Chakra Class II to him reads, 'The landings were made in two waves on December 18, 1961. The first wave landed without opposition. The second wave, however, came under heavy fire and stiff enemy opposition continued for most of the day. At one stage the advance of the landing party was halted by heavy and accurate fire from enemy positions concealed in bushes and behind rocks. Ordinary Seaman Mohandass was detailed to approach the hidden enemy positions and silence them by throwing hand-grenades.

Mohandass crawled fearlessly towards the enemy positions under fire. On each occassion of throwing a hand-grenade he was forced to break cover and expose himself to heavy and accurate enemy fire. On one such occasion while throwing a hand-grenade, Ordinary Seaman Mohandass was caught in the enemy fire and was killed in action.

Ordinary Seaman Mohandass, though a young and inexperienced sailor, displayed commendable courage and devotion to duty of the highest order.

Three other sailors, Ordinary Seaman Bechan Singh, Ordinary Seaman Bachan Singh, and Ordinary Seaman Vijendra Pal Singh Tomar, were also members of the assault party that attacked the Portuguese gun positions from where the enemy had opened fire on the boats that landed in the second wave, and made the supreme sacrifice while displaying outstanding courage and devotion to duty of the highest order in keeping with the highest traditions of the Service. Out of these, Bechan Singh and Vijendra

Pal Singh Tamor received the posthumous award of the Ashoka Chakra Class II (Kirti Chakra) while Bachan Singh received the posthumous award of Ashoka Chakra Class III (Shaurya Chakra).

Able Seaman Jaswant Singh Bawa, was a member of the armed escort accompanying the second wave of the landing party. To quote from the citation for the award of Ashoka Chakra Class III (Shaurya Chakra) to him for his contribution to the success of the operation during which he was wounded:

> Bawa was the Bren Gunner in the bows of the motorboat of *Trishul* which escorted the boat conveying the second wave to the beach during the initial landing on December 18, 1961. When the boats were about 75 yards from the beach, the enemy opened heavy and accurate small-arms fire. Bawa was one of the first to be wounded and was shot through the right ankle. Despite his wound, Able Seaman Bawa remained at his post and even while under heavy fire, returned fire on the enemy in defended positions ashore. Bawa continued to provide accurate and effective covering fire for the landing party untill the second wave had landed.
>
> Bawa's brave deed did much to upset the accuracy of the enemy fire, prevented excessive casualties in the boats and contributed to the successful landing of the second wave. His devotion to duty and outstanding performance under heavy enemy fire are of a high order and in the finest traditions of the service.

The recipients of Mentions in Dispatches were Commander A.F. Collaco, who led the landing party from *Mysore*, Surgeon Lieutenant T. Suryarao, who was a member of the medical team on board *Mysore*, Chief Petty Officer Gunnery Instructor Parkash Chand, who was the coxswain of the motorboat used in the second wave of the landing operation, and Leading Patrolman Rajendar Singh, who was a member of the landing party in the second wave.

Chief Petty Officer Prakash Chand, one of the awardees of a Mention in Dispatches, a senior Gunnery sailor, who was the coxswain of the motor whaler (the other boat, a motorboat, was coxswained by Petty Officer V.C. Nair) showed great presence of mind when the Portuguese opened fire, and was responsible for saving many lives by taking suitable 'avoiding action'. The moment the Portuguese opened fire, Chand recalls:

> I steered my motor whaler away from the motorboat so that the enemy would have two targets to engage and kept dodging the bullets by alternately steering towards and away from the successive bursts of

bullets. When I reach shore, I landed all members of the party safely but the very next moment the boat was riddled with 11 bullets and was grounded by the impact of the burst. I ordered the whaler crew to clear the whaler by pushing it but since the young fellows showed signs of nerves, I jumped out of the whaler, cleared and refloated it and, after jumping back into it, I steered it away from the beach. Meanwhile, the ship's Bofors had opened up and silenced the enemy guns. I then noticed that the motorboat coxswained by Petty Officer Nair had also grounded on rocks and was flooded upto the gunwales. It had three dead and two wounded sailors. *Mysore* now sent a boat under the charge of Commissioned Boatswain Charanjit Singh and, between the two of us, we took the dead and the wounded back to the ships.

The Communications Team Lands

Commander (later Captain) A.F. Collaco, a specialist in Naval Communications, was embarked on *Mysore* as the Fleet Operations officer of the Indian Fleet. He volunteered to lead a communications team from the cruiser ashore and had a major role to play in providing adequate support to the beleaguered landing party from *Trishul* and in mopping up the remnants of the Portuguese garrison after the formal surrender of the Portuguese forces. For displaying raw guts in the face of the enemy, as mentioned earlier, he was later awarded a Mention in Dispatches.

Since he hailed from Goa, Collaco knew a smattering of the Portuguese language and hence was considered the right person for communicating with Portuguese and interrogating the prisoners of war before or after the surrender, if required. Despite the lapse of over a quarter century after the operations, Collaco, now settled in Canada, vividly recalls:

> Setting the scene requires a review of the preceding events, the opposing forces and a host of interlinking factors. Perhaps an early introduction may provide the reader with a gauge to judge the authenticity of this narrative of events that took place over 29 years ago.
>
> I had been a DS (member of the Directing Staff) at the Staff College at Wellington and had been in charge of the Tactical School at Cochin for some time when I was appointed Fleet Operations Officer of the Indian Fleet.
>
> The organisation of the Fleet was at that time being revamped and Douggie (Captain D.St.J.) Cameron was on board the *Mysore* as the Flag Captain. Daljit Paintal (Commander, later Rear Admiral, D.S. Paintal) was the Fleet Torpedo Antisubmarine Officer, Misra (Commander N.C. Misra) was the Fleet Gunnery Officer, Karbhari (Com-

mander, later Captain, Dara Karbhari) was the Fleet Administration Officer and Dinshaw (Commander Minoo Dinshaw) was the Fleet Communications Officer.

The Fleet's objective was to capture Anjadip and then provide sea support to the Army in Goa. Anjadip was to be a breeze or so it was thought.

It is my recollection that a lot of the orders received by the task force were issued by Naval Headquarters. *Trishul* was supposed to send two landing parties ashore and *Mysore* was supposed to provide all necessary support including fire support.

From its northern end to its southern tip, Anjadip, a small island, is about a kilometre and half long. At its widest parts it must be about 400 metres; a narrow neck is about one-third way down. Along the east coast are about three usable beaches but none on the west; rocky inlets and coves make the west shore a smugglers' paradise. The ground rises sharply from the shore line to about 200 feet. There are places with high grass; coconut trees dot the shore line. The water teems with a kind of stinging fish (sea urchins) that makes swimming to the mainland almost impossible.

Shortly before the operation, I had attended the Naval Commonwealth Planning Conference at Singapore - planning the Joint Exercises off Trincomalee (JET). My Royal Navy colleagues were certain that I knew more about the forthcoming operation than I really did. I was never treated better, wined and dined and questioned. When I learned from them that one of the ships of the Indan Fleet was patrolling off Goa, I gave them the impression that I knew all about it. The more I smiled knowingly, the more gracious was my host, because a British submarine, heading for the Far East Station, thought it would provide intelligence and kept an eye on what was happening off Goa while occassionally being depth-charged (the C.O. of the submarine and I met in Cochin after the whole operation was over and talked about it).

At first light on that December morning (December 18) we closed in on Anjadip. We rounded the southern end after *Trishul* (and *Mysore*) had carried out a preliminary bombardment. We could see the soldiers in their undershirts running to man their posts. *Trishul's* first wave of the landing party landed on the beach under the command of Lieutenant Auditto who was to be awarded the Naosena Medal for his great work that day. He got ashore and climbed to a high point with his men. By this time, the Portuguese soldiers had reached high points on either side of our landing beach and were engilading it, creating havoc with *Trishul's* second landing party. All I can remember is that the boat

which brought back the wounded and the dead to Mysore was awash with blood. Our sailors peering over the side at their comrades were very demoralised. On *Mysore's* bridge, I found the Admiral very worried as he had no news from the first landing party. *Trishul* had no news either as the landing party's wireless had broken down. We could see what was left of the second landing party (about 10 men and an officer) still held down on the beach. I suggested to the Admiral that I, being a Long 'C' (a communications specialist), take a communication party ashore to find out what was wrong with Lieutenant Auditto's party and to establish a link with them and with the ships. He reluctantly agreed. On the quarterdeck, a volunteer Communications Team - two wireless operators with backpack radios and two signals sailors with portable Aldis signalling lamps - went ashore. As we were leaving the ship, a Squadron Leader (of the Indian Air Force), who was on board *Mysore* as the Defence Public Relations Officer covering the operation, asked if he could come along and bring a cameraman. The Admiral agreed and he accompanied us throughout the day.

How we got ashore is a mystery to me. First the water then the rocks - the second party seemed to be at a standstill. By this time the cross-fire from above seemed to be petering out and one or two other sailors needed help. I asked Senior Commissioned Gunner Kelman if I could take the remainder of the second landing party while the officer returned to the ship with the wounded. He seemed dazed by the firing and glad to do so. The firing had decreased by now and we started climbing to higher ground in single file. Once on higher ground, we headed northwest. I was ahead of the column and keeping in constant touch with both *Trishul* and *Mysore*. We knew there were Portuguese soldiers around and were as alert as our lives depended on it.

We moved along a rough narrow path, about two feet wide, and I caught a glimpse of lighter-complexioned skins about fifty feet ahead of me. I had a hand-gun which I had never used before and I remember firing it and diving to the left, so did the Squadron Leader and a sailor but the fourth member of our party did not dive fast enough and received a fatal bullet in the stomach which came out from the seat of his pants and gave the impression of being a superficial wound. He fell to the right of the path (the cliff side). Attempts to get him across the path were futile as the path was in the line of fire from both sides. *Mysore* had signalled us that she was going into Karwar with the dead and wounded and would be back as soon as possible. I had managed to get in touch with Lieutenant Autitto's party and acted as a link between it and *Trishul*. We were stuck in this position for what seemed like ages. Time was meaningless. The sailors (his name was R. Singh,

I learned later) kept moaning softly. After a while he moved further to the right. We couldn't see him. We didn't see him. We didn't know he had fallen down the steep side and lay dying.

Portuguese Capitulation

After this stalemate, we heard a lot of firing from the north-west of the island and since the firing along the path had stopped, we moved away climbing still further up the hill and heading for the north-west. At a certain height we got in touch with the landing party and acted as a link. They asked *Trishul*, through us, to give them fire support. It is a vivid memory of us on the hill top, *Trishul* out at sea firing away, the Portuguese soldiers running in the direction of the buildings and towards the north-eastern sector, trees being uprooted by *Trishul's* firing, scenic beauty mixed with death and devastation. It was all over soon after that - by the time we reached the north-eastern cover, the firing had stopped. Lieutenant Auditto reported that the Portuguese had given up and were lined up as prisoners on the beach. He returned to *Trishul* and en route picked up R. Singh who was later taken to Karwar but died on the way. I looked at my watch. It was 1500 hours. I had left the ship early in the morning and had not had or worried about food. We were so jumpy - a young boy coming down a coconut tree with a fine coconut (for me) almost got shot by a sailor who thought he was a sniper. *Trishul* was left to clean up and establish a presence on the Island. Unfortunately she ran aground. The Portuguese soldiers were brought to *Mysore* and also taken to Karwar. I was glad to be alive and see the last of Anjadip but it was not to be.

Meanwhile we heard that the Army was doing very well and had taken Goa and would be reaching the coast within a day or two. We also heard that *Betwa*, *Beas* and *Cauvery* had dealt *Afonso de Albuquerque*, the Portuguese frigate, a deadly blow and she lay there in the harbour, aground and crewless less than ten minutes after the fight had started. We went into Marmagao Harbour and made sure no Portuguese soldiers were hiding below decks in the merchant ships. I was so jubilant at being alive, I literally skipped on board these merchantmen.

That night, Commodore H.A. Agate, an old Commanding Officer of mine who was taking over as the first Naval Officer-in-Charge of liberated Goa, gave me the keys to a captured jeep and 'Toothie' Nazareth (Commander Freddie Nazareth, *Mysore's* Dental Officer) and I went all the way inland to visit relatives. We were told that 'the Indians are coming to burn us all', they asked us. 'The only thing

burning will be these two Indians' tongues after eating your solpotel (a highly spiced Goan delicacy) and drinking your Johnnie Walker', we told them. At least our relatives were reassured but it took quite a bit of Scotch to complete the job. They had much more reassurance and much less Scotch. They could hardly believe that they had become as much Indian as we were. They still felt they were Portuguese subjects.

Intelligence Reports had indicated that a British destroyer (I think it was *Rhyll)* was preparing to leave Singapore and diplomatic pressures were being applied on Britain by her oldest ally, Portugal, to help in recovering her lost colony. We heard that *Rhyll* had sailed from Singapore.

Before too long, the Government of India was asked to make an announcement to the hundred or so British residents in Goa that they were all safe and that they were free to leave Goa if, when and how they chose. This was broadcast. However, when a request was received for the British ship to enter Goa to embark British citizens, it was not approved. A signal clearly stated that entry into Indian territorial waters would be considered to be an unfriendly act. The ship turned back to Singapore.

Mopping up on Anjadip

On January 2, 1962, after the New Year, Admiral Soman and I talked about affairs at Anjadip. The situation was this. *Trishul* was, for a variety of reasons, not fully operational. A garrison of 50 additional sailors was put on the island under the control of the Commanding Officer of *Trishul*. The garrison had control of the northern half of the island but each night some of the Portuguese soldiers who had refused to surrender, would come out of hiding, cross the narrow neck of land and fire a few rounds of flashless cordite in the general direction of our sailors who returned the fire from three points. Before long there was a real fireworks display when the firing lines of our sailors crossed in the dark. The United Nations had been told that the Goa Operation was history and all was well. However, there were reports reaching the outside world that there was still fighting going on. Portugal wanted the story to be kept alive. If passing merchantmen could report gunfire on Anjadip, it would make news and embarrass the Indian Government. We established two firm objectives for me to accomplish since I had been to the island. They were, first, cleaning up of Anjadip once and for all and, next, not a single life was to be lost.

Next day a Naval aircraft took me to Goa, and a 70-foot motor

launch to Anjadip. The motor launch reminded me of the coastal forces during World War II. The garrison which had been in C.O. *Trishul's* command passed into mine. I also had operational command of the motor launch. There was a recently-captured prisoner. He and another Portuguese soldier had tried to make it by swimming to the mainland. He had been stung and exhausted, recaptured, on the beach and the other had died of stings or bites from sea urchins. The prisoner we had, had nearly recovered but his arrogance had also recovered. He demanded that our sailors washed his dirty food dish. His demand was not met, needless to say. He had a smattering of English, so I took him aboard the motor launch, gave him a loud-hailer and we cruised around the island while he advised his friends hiding in the coves to give themselves up. His first Portuguese advice went something like 'these Indian pigs and dogs', at which time I interrupted him with the only Portuguese I knew (which my father would use) 'Vamos pro casa' (let's go home) in a loud stern voice pointing overboard. He smartened up fast. But there were no line-ups of Portuguese soldiers waiting to give themselves up.

That night we had thirty men with automatic weapons and flashlights across the neck of the island so that nobody should cross over from the southern half of the island. There was no shooting that night but we nearly shot up a bunch of wild pigs using the well-guarded route.

We took another cruise around the island in the motor launch and using the loud-hailer warned that I intended setting fire to the island next day. It was obvious that we had been watched and could have been shot at any time. Their objective was to keep the pot boiling without shooting any of us. Our objective was to stop their show as fast as possible to save embarrassment. While walking around the island, I came across our medical officer kneeling by the side of the corpse of a Portuguese soldier. Our sailors dug a grave and I gave him a solemn Christian burial with my prayers. Most of the half dozen houses we found were shacks and even the Church was dilapidated and empty.

Next morning we started at the northernmost point and with the prisoner leading the way using his loud hailer, members of the garrison and I combed at arm's length every cove, every rock, every crevice, burning the brush behind us. The flames, fanned by the wind, made the burning grass a spectacular sight. Wherever the prisoner's voice quivered, he inadvertently alerted us of possible trouble. Though there were signs of recent occupation there was no opposition. At the longer of the two caves at the southernmost point, there was rafts and broken oars, some torn clothes and all the signs of a recent pull-out.

After signalling the Admiral, I returned by motor launch to Goa. *Trishul* remained on for a while but there were no more shootings. Anjadip was quiet.

Mopping up the soldiers remaining on the island on December 18 was done by *Trishul* soon after she had opened up with her main armament for the second time. Vice Admiral Kulkarni recalls:

As soon as my second bombardment was started, we saw a number of people with their hands raised near the northern church. On lifting the firing, I sent Lieutenant Commander M.N. Neogi, the Supply Officer of *Trishul*, with a small armed party and a magaphone to go near the beach and capture the prisoners. By now the *Trishul* landing parties had swept the island from south to north and by about 1400 hours had hoisted the national flag at the flagstaff point. The *Mysore* and Trishul then anchored in the Bay. We sent more personnel ashore with food and water and other things and had carried out a muster of the people. I had found that there were three people short and even though it was getting dark, sent a reconnaissance party to sweep the area in case there were casualties. They recovered the three men. Neogi landed and captured all the prisoners and took them to the *Mysore*. The dead and the wounded were also collected and sent to the *Mysore*. In all there were seven dead and a number of them injured. By 1600 hours the entire island was in our control. According to the Portuguese, they had one person missing and one man was dead.

At about 1700 hours I landed along with Lieutenant (later Admiral and Chief of Naval Staff) L. Ramdas, my Communication Officer, and inspected the night arrangements and went right up to the flagstaff point. On the 19th the funeral of the people who gave their lives was held in Karwar which was attended by the entire Karwar town - really a touching sight worthy of Gods!

During the course of bombardment, the road leading from Karwar to Belgaum off Binge beach had become an interesting sight - it was lined literally by thousands of people who had come to watch the fun after hearing the noise of bombardment.

I was ordered to go to Marmagao on the 20th where on arrival, we went on board *Mysore* and met Admiral Katari, General Candeth and Mr Vishwanathan, the Home Secretary. We then went to Bombay and, after a day's stay, left for Cochin to return the landing party.

The Task Force Commander Reminisces

As regards the treachery of the Portuguese, their violation of the interna-

tional convention and the resultant heavy loss of life, Admiral Soman says:

The first I heard of the proposed operations was at a meeting in Delhi - I do not remember the date now - to which I had been invited. I had no idea what the meeting was about and when, while waiting outside the Defence Minister's office, Lieutenant General Chaudhuri asked me what were my plans for the operation, I said, 'What operation?' It seemed that he had been associated with the proposal earlier. As you know, a few weeks before the operation, there had been some firing from Anjadip Island on our coastal shipping and, during one of the Defence Minister's visits to Bombay, when I had gone to the airport to meet him, I had casually mentioned to him that it was about time that we put a stop to it before the Navy got further maligned.

At the Defence Minister's meeting I was told that I would be responsible to take Anjadip, starting the operation at daybreak on the morning after the start of the nightlanding operations by the Army and we must take it by the same evening. When I asked what troops were being provided by the Army for the landing, I was told that landing parties would have to be provided by the Fleet from its own resources. The date had already been decided and when asked for, there was not much information available as to the number of Portuguese troops on Anjadip; I was told that there might be about 30 or 40 of them, mostly local Goans. I was also informed that *Delhi*, which was then not a part of the fleet, would be acting independently, under NHQ orders to support the Army for the action at Daman and Diu. Having gone through the amphibious operations course in UK and trained the Army in such operations at Mandapam during World War II, I was somewhat taken aback by the way the operation seemed to have been planned without the association of the Fleet Commander, a specialist in such operations, and that too committing sailors to play the Army role. Of course, Anjadip was a small island, very close to the mainland, and so there was no point in my making an issue of it. But I did mention to the then Chief of the Naval Staff that I should have been associated with the plans earlier.

I called for volunteers from the Fleet to 'play' Army, selected the officers, and asked them to select their men from amongst the sailors, giving preference to unmarried men, everything else being equal. Landfighting training was organised for the landing parties, both officers and men, at Cochin. At the meeting I had asked for further information on troop strength on Anjadip but till the last day none had been received.

Commenting on the casualties suffered by the Navy at Anjadip, Admiral Soman said, 'I must make it clear that the Naval landings on Anjadip were forced on us though we took it on willingly when the Army said that they could not provide the few soldiers required.'

Albuquerque Brought to the Block

The operations off Goa are vividly described by Vice Admiral (then Commander) R.K.S. Ghandhi, who as the Commanding Officer of the *Betwa*, was the main architect of the *Albuquerque's* capitulation. When dawn broke on December 18, *Betwa* and *Beas* were on patrol 13 kilometres off the Goan coast as a part of Operation Chutney. The *Afonso de Albuquerque* was lying at anchor in the Marmagao harbour and opened anti-aircraft fire against IAF aircraft when they appeared overhead. Though her firing appeared to be ineffective, it was obviously a danger and a nuisance. Besides, the 4.7-inch guns mounted on the *Albuquerque* would pose a serious threat to Indian troops when they entered Goa town and hence the ship needed to be silenced, if not neutralised, before she could do any serious damage.

The *Albuquerque* was a frigate drawing 1,788 tons and was armed with four 4.7 inch guns, two 3-inch antiaircraft guns, eight 20-mm antiaircraft guns and four depth-charge throwers. Her turbines could develop a shaft horse-power of 8,000 at a speed of 21 knots and she had a radius of operation of 8,000 nautical miles. The ship was of 1934 vintage and hence was already 27 years old and due for decommissioning.

Admiral Ghandhi recalls the success of his Task Group in these words:

In early December 1961, *Betwa* had been put on patrol off Goa in Operation Chutney. The task allotted to *Betwa* was to remain outside the Portuguese territorial waters and shadow the Portuguese frigate *Afonso de Albuquerque*, report its movements and gather any other intelligence. Various ships of the Indian Navy came and went during this period but *Betwa* vacated her patrol station only to fuel once at Bombay.

Just 48 hours before we went into Goa, *Betwa* had a serious gear box leak but the ship's engineers had very smartly plugged this with canvas and epoxy resin.

Orders for Operation Vijay were received about three or four days before the event. The ships allocated to the Goa sector were *Betwa* commanded by me, *Beas* commanded by Commander (later Commodore) T.J. Kunnenkeril and *Cauvery* commanded by Lieutenant Commander (later Commander) S.V. Mahadevan.

Betwa divided the Portuguese maritime boundary into three sectors and allocated *Beas* to patrol th northern, *Betwa* took the centre

which was off Goa harbour and *Cauvery* was allotted the southern sector. The ships were ordered to carry out an uncoordinated linear patrol eight miles off land.

On Saturday, December 17, orders were received that Operation Vijay would be executed the following morning at dawn. That night in *Betwa*, orders were issued to prepare for battle and all officers and sailors were instructed to have a bath and put on clean underwear. This is necessary because, if one receives wounds, there is less chance of infection with clean underwear. As *Betwa* had been on patrol for so long off Goa, I had acquired a Portuguese dictionary from a book-seller in Bombay, in case I had to send any message to the Portuguese authorities. As it so happened, when I had to make a signal to the *Albuquerque*, I did this in English.

My Gunnery Officer at that time was Lieutenant (later Vice Admiral) R.P. Sawhney and he and I had discussed in detail the method of fighting the *Albuquerque*. We had agreed that, as the Portuguese ship had open mountings, it would be best to use HE/VT (high explosive (HE) shells fitted with variable time (VT) or proximity fuses which go off when they are a few feet away from the target) in 25 per cent of our armament, as the shrapnel would have the best chance of killing or wounding the gun crews and upper deck personnel. Thus one barrel of the X turret (the ship's rear turret with twin 4.5-inch guns) was loaded with HE/VT shells for the following day's action. As a result hundreds of shrapnel gashes were seen all over the *Albuquerque* after the operations were over.

On the night before the operation, we saw Goa signal station call us and make a signal to us - it was from the freedom fighters who said that they had been watching *Betwa* for the last few days and wished us best of luck on the following day.

On Sunday, December 18, 1961 at about dawn, we saw four Indian Air Force Canberras approach Dabolim airport from seaward and shortly thereafter huge clouds of dust bellowed upwards. The IAF had bombed the runway.

(The *Afonso de Albuquerque* had been moving between Anjadip and Marmagao, carrying supplies and reinforcements for the Anjadip garrison and on this morning was seen lying at anchor in Marmagao harbour)

During the course of the day, we heard from the Task Force Commander, who was conducting operations at Anjadip Island, about the treachery of the Portuguese hoisting a white flag and then opening fire on our landing parties. As *Betwa* was steaming up and down the coast of Goa only at a distance of 13 kilometres, we could distinctly see the

Albuquerque raising steam and preparing to leave harbour.

At about noon *Betwa* received a signal, which was personal from Admiral Katari, which said, 'Capture me a Portuguese frigate, please'. When I received this signal, I was a little perplexed as the capture of a fighting machine is very difficult especially if it is manned and fought bravely. But I had served intimately with Admiral Katari as his Fleet Operations Officer and knew his mind perfectly. Within a few seconds of getting this order, *Betwa* increased speed to maximum and I made one signal to *Beas* and *Cauvery*. It read: 'Join me. My speed 23 knots. Intend to capture/destroy *Albuquerque*'.

Having made this signal and received acknowledgement, I headed for Goa harbour at full speed. *Beas* was quite close to me, so I ordered her to follow me and she slid in astern of *Betwa*. As we were entering an unknown harbour and going at high speed and intended to have a gun duel with *Albuquerque* in confined waters, I asked my number one (second in command), Lieutenant Commander (later Captain) R.P. Khanna, a specialist in Navigation and Direction and another watch-keeping officer (an officer manning the bridge) to draw 'clearing' bearings on the chart of Goa. Then Khanna went on one wing of the ship's bridge and the other officer on the other wing to ensure that we were in safe navigational waters throughout the battle. A few minutes later, at about 1215 hours, as soon as we could see *Albuquerque* clearly through the many merchant ships which were in the harbour at a range of a little over 7,000 metres, I made a signal to her to say, 'please surrender or I open fire'. This message was made by light and was received by *Albuquerque*.

My gunnery officer, who was on the ship's gun direction platform at the time, reported that his main armament (two twin turrets of 4.5-inch guns) was ready to engage the enemy. I told him we would give *Albuquerque* three minutes to surrender. During this period we received a message by light from *Albuquerque* to say 'Wait'. I had made up my mind not to wait. As soon as the three minutes by my wrist watch were over, I ordered 'Open fire!' Only those who have been in action and ordered 'open fire' on an enemy can know how exciting this is and, I am sure, my heart beat faster when I uttered that order.

I think our second broadside was a direct hit on the antiaircraft gun director of *Albuquerque*. This director toppled over and fell on to the main director and shrapnel pieces killed, as I came to know later, two sailors and wounded the Captain.

Albuquerque now slipped her cable, turned towards the exit and started to move out, opening fire at *Betwa* and *Beas*. Her fire was furious and erratic and mainly short, but I distinctly remember one shell falling

hardly 25 yards over the bows of *Betwa*. The fire of *Betwa*, particularly the HE/VT shells, was devastating and it looked as if there was a cloudburst of shrapnel over *Albuquerque*. Lieutenant (later Commander) Mani Rawat, who was my Navigator at the time, was in the Operations Room and he reported that on his radar he could see our shells continuously straddling (falling just short of and beyond) *Albuquerque*.

(Since the *Albuquerque* had taken shelter inside the harbour which had a large number of merchant ships, there was the grave danger of some of them being accidentally hit by the shells aimed at the Portuguese frigate. Rather than coming out of the harbour and fighting it out, the *Albuquerque* continued to fire at *Beas and Betwa* and appeared to be trying to move behind a cluster of ships).

As we were going very fast, I had gone too far to the northward and wanted to alter course to starboard to open my 'A' arcs (arcs within which guns can be fired), in order to allow my guns to bear on the target. But my executive Officer, Khanna, vetoed this and said that we were moving into shallower water so that my ship could alter course to port and again come down southward firing all the time. The gun battle was fought at a mean range of about 6,000 yards.

The whole battle with *Albuquerque* - and I must admit she kept on firing till the last - was about 10 minutes in duration. *Beas*, in the meantime, had also opened fire and there was some confusion over fall of shot, but it did not worry us. *Cauvery* too soon arrived on the scene and took part in the engagement by firing a number of 4-inch salvoes and in fact delivered the coup de grace. After about ten minutes of running battle, it was plainly obvious that *Albuquerque* had had enough, she had been very badly hit, was burning amidships, she hoisted a large, very large white flag, she turned back into Goa harbour and beached herself off the Dauna Paula jetty.

When we saw this, the order of cease fire was given and, with my binoculars, I clearly saw the sailors of the *Albuquerque* jumping off the ship and abandoning her. As soon as we stopped firing, I ordered the other two ships to withdraw and we made the necessary signals to Naval Headquarters to say that *Albuquerque* had been destroyed and was now lying sunk in Goa harbour.

We had received a fair amount of duff intelligence from Naval Headquarters. For example, we were told that Pakistani men-of-war would try to interfere with our operations, that a British submarine was in the area, that the Portuguese had four frigates in Goa and that a British frigate was on her way to Goa from the Persian Gulf to evacuate British personnel. As it so happened, only the intelligence on

the submarine and the British frigate was correct, but Naval Headquarters had warned the British man-of-war to keep well clear of the area and assured them it was the Indian Government's duty to look after the welfare of British citizens.

Having this intelligence, after the battle, we still remained closed up at action stations, but personnel were allowed to relax at their quarters and action lunch was served. But nothing happened on the *Albuquerque* front thereafter and with that ended the battle of Goa and the next day, the Indian Army entered Panjim.

At about 2000 hours on the night of the action (December 18), *Betwa* was ordered to proceed up north to the Maharashtra-Goa boundary, through which a river flows, where Naval Headquarters' duff intelligence told them that there was a Portuguese frigate and *Betwa* was ordered to investigate and neutralise this. I went up and could find nothing there except a well-illuminated merchant ship, presumably loading iron ore. However, on the radar scan, we saw an object and, before opening blind (radar-assisted) fire on it, I thought I would illuminate this with star shell. The illumination showed nothing and I reported to Naval Headquarters, who asked me to return to Bombay. The funny side of the story is that, when I fired star shell, the police in the village got through on the telephone and informed Bombay that the Portuguese had another frigate there, which was opening fire on them.

So now *Betwa* moved northward full speed towards Bombay. The next day I was told that Talwar, commanded by Commander (later Captain) P.N. Mathur, would rendezvous with me and I should transfer my operation orders for Operation Vijay to her. This was done. When *Betwa* entered Bombay harbour, Commander (later Vice Admiral) V.E.C. Barboza, who was then in command of Tir, asked me to proceed through the Naval anchorage where he, as the senior officer, had, in an impromptu gesture, ordered men of all ships to man the ship's side and cheer *Betwa* as she entered harbour. This was a very moving spectacle and *Betwa* enjoyed it thoroughly.

After a couple of days in Bombay, we were ordered back to Goa to give logistic suport to the Navy who had established a small Headquarters at Vasco. On reaching Goa, I landed and called on the Commanding Officer of *Albuquerque*, Commodore Antonio da Cunha Aragao, who was then in Panjim hospital and had two of his sailors looking after him. I took with me chocolates, flowers and brandy as a gift for the Commodore who was 57 years old. At that time, I was 20 years younger, and I felt very sorry for him. He was sitting up in bed with a big bandage across his chest and very produly he showed me a piece of my shrapnel which had been extracted from his chest just short

of his heart. This was about three inches in length and it was lying on his bedside table. I picked it up and found it to be as sharp as a razor blade. He could speak broken English and, when I told him who I was, he said to me, 'You are F-139' and I said, 'Yes'. He was indicating, of course the pennant number of *Betwa*. The he turned round and he said, 'Ihit you', 'Ihit you' twice and I told him,' I am very sorry, you did not hit me'. So he replied and said, ' But why did you make so much smoke?' Then I had to tell him that I was going at full speed and that the diesels of the Type 41 frigate did smoke rather a lot at high speed.

I asked him why he did not surrender and he said the Navy never surrenders. He aded that his orders from Lisbon were to sink the ship after fighting it out but the Governor General of Goa had countermanded these and said that he was to defend the harbour and when the situation was hopeless, to beach her and wreck the engines! he said he had done his duty. With feeling he added, 'You know, in January (1962) I was to have sailed the ship back to Lisbon - you came one month too soon!!' But my feelings were that we had gone in one month too late.

(Commander T.J. Kunnenkeril, Commanding Officer of *Beas*, also visited the Commanding Officer of the *Albuquerque* when the latter stated that he knew that the Indians would launch the attack on December 18 and that he was waiting for the operations to commence from dawn on that day. He said his ship, besides trying to defend Goa, was transmitting all signals as the wireless station ashore had been put out of action during the early stages of the operation. He added that he had planned to fight till the end but had to beach the *Albuquerque* soon after the commencement of operations because three of his guns had jammed. The Portuguese Captain also told him that as naval officers they had both done their jobs and it was now left to the politicians to do the rest.)

Vice Admiral Ghandhi continues:

I then asked him if he would like any message to be passed to his family in Portugal and, having got the address, on return to the ship, on my wireless set, we called up Whitehall W/T and asked him to pass the message, which they did.

I later went and saw the *Albuquerque*. She had been badly battered from the funnel forward and as the fires burned for many days, even the ship's plates were warped; she was gutted badly between decks.

(The *Albuquerque* was aground upright in 10 feet of water on the northern shores of Marmagao harbour. The forward superstructure, especially the bridge, was partially burnt, the quarterdeck had been severely damaged, the after magazine was flooded and two forward

4.7 inch guns had been destroyed)

Many years later, one officer gave me the sword of the Commanding Officer of *Albuquerque* which I presented to Vice admiral M.P. Awati when he was the Commandant of the National Defence Academy, Khadakvasla. The silk battle ensign of *Albuquerque* was given to me about a month after the action by Captain D.St.J. Cameron, Commanding Officer of *Mysore*. This I presented, shortly before my retirement, to the gunnery training establishment at Cochin, *Dronacharya*.

(The *Albuquerque's* decrepit hulk lay in Margamao harbour as a derelict for a few months and was repaired and refloated on March 10, 1962. In July 1963 it was proposed to convert her into an oceanographic research ship to be operated by the Navy for the Indian National Committee for Ocean Research (INCOR). It was later decided to convert her into a static accommodation ship for two reasons: first, the ship's oceangoing capabilities had been considerably reduced by her age, state of machinery and equipment and the damages suffered during the engagement with *Betwa*, *Beas* and *Cauvery*, her short 'remaining life' and the excessive cost of conversion; and, next, the INCOR, which had initially shown some interest in the ship had later decided to acquire an oceanographic research vessel from the USSR. It was soon realised that the ship's conversion into a static accommodation ship was also not likely to be cost-effective and, finally, *Albuquerque*, rendered *hors de combat* by the Navy's extremely accurate firepower, was sold to the shipbreakers for Rs. 7.71 lakh on June 5, 1965.)

Some years later, I was told a story by a Minister - I cannot remember which Minister told me this, or it might even have been Panditji himself during some gathering. It goes as follows: That Jawaharlal Nehru was very much against the Government of India using force to liberate Goa. However, in a Cabinet Meeting, he was pressurised by the other Ministers, particularly Krishna Menon, and he reluctantly agreed to allow the Armed Forces to enter Goa to liberate it. He, however, made one condition, because his conscience would not allow force to be used, he said, 'Please do not tell me the D-Day, otherwise in my talk with someone, I will blurt it out'. A truly non-violent human being!

After the surrender ceremony, a party of officers and sailors boarded the *Albuquerque* and found that the Portuguese had abandoned the ship in a hurry but had left a dead sailor on board. The body was recovered and, in true naval tradition, accorded a sea burial a few days later.

It is to the credit of the Navy's gunners and it speaks volumes for their precision firepower, operate as they do from weapon platforms that roll,

pitch and yaw and resort to high-speed zigzag manoeuvres during action, that only one ship other than the *Albuquerque* suffered damage during the operation. *S.S. Ranger*, a Panama-registered ship belonging to Ciamavitna Del-Panamanian, was anchored close to the *Albuquerque* when the latter was engaged by the Betwa and the Beas following which the *Albuquerque* had slipped her cable, got under way and placed herself behind the *Ranger*. Despite the high rate of fire of the armament fitted in the Indian ships, the heat of the battle and the *Ranger* having been positioned in their direct line of fire, only one or two rounds of 4.5 inch ammunition hit the *Ranger* and caused minor damage to the ship. There was one shell-hole on the port side of her number two hold, one shell-hole in a hatchway and some splinter holes on the upper deck. The damage suffered by the ship was soon repaired locally at Goa through the ship's agents in Marmagao, Murgogoa Namgadera Ltd., before she sailed for home. No reparations were claimed by the ship's owners or agents.

The Capture of Diu

On the morning of December 18, the Army made an attempt to enter Diu but encountered stiff resistance from the Portuguese. The Air Force and the Navy were then asked to neutralise all war vessels in the area and soften up the Portuguese defences. As had been planned earlier, *Delhi* arrived at a point 16 kilometres off Diu at 0330 hours on that day, waiting for H-Hour, i.e., 0400 hours, to commence her operations.

Captain (later Vice Admiral) N. Krishnan was the Commanding Officer of *Shivaji*, the Mechanical Training Establishment of the Navy at Lonavla, in 1961 when he was asked by the Naval Chief to take over command of the cruiser. To quote from Vice Admiral Krishnan's recorded reminiscences:

> Whilst I was adjusting myself to the new task of running a training college (in *Shivaji*), things were gradually heating up over Goa and the other two Portuguese colonies - Daman and Diu. It was a complete anachronism that a foreign power, thousands of miles away, should hold on to these pockets in the independent subcontinent of India. It was as incredible as it was intolerable that even after 14 years of the British withdrawal, we were tolerating this blight on our motherland. At the meeting of the Defence Committee of the Cabinet that approved the ten-year plan for the Navy's development, Sardar Patel had asked me, 'What about Goa? Can this Fleet push the Portuguese out?' I had replied on behalf of my Admiral, 'Sir, this Fleet can not only take Goa but fight the entire Portuguese Navy if they try to stop us.'

Every time I passed this territory, I used to close the ship as near as possible and burn with indignation, recalling the Sardar's words uttered several years before.

Now (in 1961) we had an ardent and fiery Defence Minister in V.K. Krishna Menon, and it looked as though he was going to do something about it.

At a late hour on a cold December night the phone rang in *Shivaji* House (my official residence at Lonavla) and it was the Chief of the Naval Staff, Admiral Katari calling from New Delhi, who asked me, 'How soon can you take over command of the *Delhi* again?' 'I will be in command of the ship by colours tomorrow' ('colours' is the hoisting of the naval ensign on board naval ships and establishments at 0800 hours every day) I replied.

'Look, I want you to get the ship stored, ammunitioned and fuelled and be ready for sea within two weeks. Can do?' he asked. 'Most certainly, Sir', I replied. 'Could I have my old team back, Sir?', I asked.

Yes, I shall ask the Chief of Personnel to get on with it', the Naval Chief said and rang off. (Captain Krishnan had earlier commanded the *Delhi* for two and half years from the end of 1958).

It will be seen that throughout the conversation, there had been no mention either of Goa or my mission. It was not necessary. I knew and he knew that I knew.

Some virtually incredible things happened in the next seven days. When I arrived on board the *Delhi* at 0700 hours the next morning, my erstwhile Navigator, 'Podgy' Nadkarni (later Admiral J.G. Nadkarni, Chief of the Naval Staff), was there along with my Executive Officer, Commander Freddie Sopher, to receive me. The former had moved in anticipation of orders! Within 48 hours I had most of my crew back and it was delightful to address my ship's company of friendly and grinning faces once again. I exhorted them with most of the very words I used to an entire fleet almost exactly ten years later (i.e., in December 1971). 'Boys!', I said, 'I want this ship fully operational and ready for battle in exactly five days from now. All procedures will be short-circuited. When I say operational, I mean, one hundred per cent fit in all respects. It will mean working day and night. Let it be so. All red tape will be out. Every problem must be solved even if you have to beg, borrow or steal. We have one hundred and twenty hours and I know you can do it.'

By Heavens, how they worked! Any Naval person who reads this will appreciate the enormity of the task in getting a cruiser stored, ammunitioned and fuelled, all equipment to be tested, all defects rectified.

For instance, it takes a minimum of three days to embark the full wartime outfit of ammunition in a cruiser and we did it in less than twenty hours. In fact, the Gunnery Officer, Lieutenant Commander (later Commander) J.S. Dhindsa, came up to me and said, 'Captain, Sir, we are breaking every rule in the book. Every one is dead tired. Can we not slow down a bit?' He was quite right, of course. Men were carrying on and when too tired, lay down where they were for a bit of rest only to start again and get on with it. I also knew that if we slackened the momentum, we would never be able to work up the zeal and enthusiasm for quite a while. So I told Dhindsa 'What the hell are you worried about, Guns? If something goes wrong, none of us will be here to face any court martial. Leave the worrying to me and get on with it'. Immediately after colours on the eighth day, I sent a signal to the Flag Officer Commanding the Indian Fleet, 'Ready in all respects for sea'.

At the briefing, the mission of *Delhi* was spelt out for me. The ship was to proceed off Diu and give 'distant support' to our Army units who would cross over the creek separating Diu from the Indian mainland. I asked what exactly the planners had in mind when talking of 'distant support'. The answer was vague in the extreme, 'We do not have a very clear picture of the state of the defences. Diu has an airfield from which aircraft may operate. They are bound to have coast batteries. It is also possible that there is a submarine threat. They also have motor torpedo boats. So *Delhi* should remain about 10 miles away from the shore'.

This was absolutely crazy. Why didn't we have enough intelligence regarding Diu's defences? We had had several years to collect all the information regarding this place which was within a stone's throw from our mainland. If there were shore batteries, how were they going to be silenced before the army got across? Had there been no air reconnaissance to find out whether there were aircraft at the enemy airfield? Of what earthly use would I be to the Army, skulking ten miles away? It was perfectly obvious that I could expect no answers to these questions about an impending operation that had been planned in a most woolly-headed and haphazard manner.

Incredibly, *Vikrant*, our latest and newest acquisiton, was not taking part in the operation but was going to be deployed somewhere in the middle of the ocean where she would be 'safe'. After giving distant support to the Army, I was to join *Vikrant* and *Delhi* was to give her close support!

It was getting 'curioser and curiouser' and when the 'mad hatter's tea party' was over, it was a relief to get back on board and set about the task of sailing.

On D-Day, December 18, 1961, at about 0330 hours I arrived off Diu Head to await H-Hour that was scheduled for 0400 hours. Before leaving Bombay, I had embarked an Army officer who, by wireless link, was to liaise between the ship and our Army ashore.

It was pitch dark and at about 0430 hours our radar picked up two echoes on the radar screen which were closing the ship at high speed. This might be the expected torpedo attack. We tracked the boats carefully and let them come to within five miles and then at H-Hour, 05.15 am, opened fire, first illuminating them with star-shells (these are shells burst over the enemy which produce brilliant flares that slowly descend, in the meanwhile illuminating the enemy ships) and identified them as shore patrol craft. On being challenged and called to surrender, the two craft started making off towards the harbour at high speed. I accordingly engaged them and sank one almost immediately and out of hand. The other craft turned tail and raced away back towards harbour. We had drawn first blood.

Soon we could hear gunfire from ashore and evidently the armies were in action against each other. As dawn broke, I saw from the distance that the island was quite flat and the beaches open. At the Eastern end, where our Army was to cross, was a high ground and perched on top was a solidly built citadel from where Portuguese artillery had opened fire to hold up the Indian Army converging on Diu and was offering stiff resistance.

Our Liaison Officer communicated with his counterparts ashore. The battalion commander reported that very heavy and well-directed fire was coming from the citadel and the Army's attack was fizzling out and its units were also suffering heavy casualties.

I decided to close in. I said to the Liaison Officer, 'Tell him I am coming in'. I asked my Navigator, 'Pilot, how close can we get to the shore without going aground?' After consulting the chart, Nadkarni said, 'There is enough water about a mile from the town and beach, Sir'. 'Right, draw a line parallel to the beach and a mile away. We will steam along the line and to hell with distant support'.

It was bright daylight by now and I had a grandstand view of what was happening ashore. The citadel looked quite impregnable and the plight of our Jawans was thoroughly unenviable. They were coming under withering rifle and machine-gun fire from the well-ensconced soliders within the fortress.

We sent a signal to the watch-tower in the citadel, 'Strike your flag immediately and surrender'. In the meantime, I asked the Gunnery Officer to aim at a lighthouse sticking out from the centre of the enclosures of the walled castle. There was obviously no point in firing on the

rocky walls. If we burst high-explosive shells among the defenders, things were bound to happen fast. I also wanted to prevent any retaliation from shore defences. A few well-placed shells would be the best dissuasion.

Since there were no reply to my signal, we opened up with all our six guns. A broadside of six-inch guns makes a deafening roar and is terrifying at the receiving end.

The very first shots found their target and we saw the incredible spectacle of a whole big lighthouse being lifted clean into the air and disintegrating. I always have believed that if force had to be used, then there should be no pusillanimous or half-hearted measures and preponderant force, used to good effect, would produce the quickest results. In eleven broadsides, we sent some 66 six-inch high explosive shells in to help them make up their minds. Just fifteen minutes later, down came the Portuguese flag that had fluttered there, planted in our country by Vasco da Gama some four and a half centuries ago. And then up went the white flag of surrender. I sent my boat with two of my officers ashore with an Indian national flag and they had the honour of replacing the white flag with our national colours. Since the Army did not move in till the next day, I decided to stay on and patrol the area. It was reported to me that the Portuguese were likely, in sheer anger arising out of frustration, to blow up the airfield installations. We closed the shore off the airfield and set their barracks nearby on fire.

At about 1100 hours the shore patrol craft that had previously retreated into harbour, broke harbour and set fire to herself. In about 20 minutes time she blew up and sank off the harbour entrance.

Sub-Lieutenant (later Commodore) S. Bhandoola was the second-in-command of *Delhi's* landing party at Diu and had the honour of hoisting the Indian tricolour atop the flagstaff on the Portuguese citadel. Bhandoola reminisces: 'The first thing that I vividly remember is that just before we actually got into the operation off Diu, the action at Anjadip had already taken place, and the first reports about casualties suffered by Indian Naval personnel had come in. Immediately on receipt of the news of the results of the Anjadip action, my Commanding Officer, Captain N. Krishnan, announced to the whole ship's company that not a single man of his ship would step ashore until he had bombarded the Portuguese citadel to neutralise all possible resistance. Coming at the psychological moment that it did, this announcement of the Commanding Officer went a long way in boosting the morale of the ship's company just before we went into action.

Intelligence reports regarding the resistance expected from the Portuguese had indicated that from the main fort at Diu, which was to

be captured by the Indian Army, there would be very little, if any, resistance and the Army would have no problem in crossing a small creek and marching into the fort to take it over. It had also been reported that the small citadel, which was to be captured by *Delhi*, was unmanned and that all we would have to do would be to send a small landing party and to hoist the Indian tricolour there.

While the Indian Army was in the process of advancing towards the main fort to capture it, without any expected resistance, *Delhi* was moving towards the citadel. Volunteers had been asked for, for the landing party, and against the traditional mother's advice never to volunteer, being very young, full of enthusiasm and totally indiscreet, I had to, but of course, volunteer! Lieutenant B.S. Ahluwalia, our Gunnery Officer, was the platoon commander of the landing party and I, the only other officer in the party, was the second-in-command. Our plan was that *Delhi* would go close to the citadel and the landing party would go ashore in two or three boats. These boats were to land us on a small beach on the islet. As the citadel was reported to be deserted, the ship would just lie off while the landing party went ashore and hoisted the Indian national flag on the flagstaff there.

It was our guardian angel that was protecting us in the landing party because the ship was still heading south towards the citadel when we got a call from the Army that they had run into heavy opposition while trying to cross the creek and they requested us to bombard the citadel from where they were being shelled by twelve-pounders. Why I say that this call by the Army at this particular juncture was our guardian angel watching over us will become clear as I narrate the events of what happened later.

At this moment the landing party was told to stand down and the ship went into 'State One' for gunnery action. I also happened to be the turret officer of *Delhi*'s 'A' Turret, i.e., one of the forward 6-inch turrets, and I ran to close up at my action station. The ship turned northward, closed into very short range of the citadel and then did a run parallel to the coast and commenced bombardment of the citadel and the Portuguese airfield in its close vicinity with all three twin turrets of her 6-inch armament firing. I do believe that this bombardment of a shore target by *Delhi* was the first occasion when a unit of the Indian Navy fired her shipborne weapons, after Independence, at an enemy, in anger.

We did a number of bombardment runs, first firing into the citadel followed by bombardment of the airfield. While bombarding the airfield, one of the targets selected was the air traffic control tower. However, inspite of concerted efforts by the six-inch director, i.e., the rotating structure from where gunfire is directed and controlled, we

were unable to hit it. Finally, perhaps feeling that the target was too small to be accurately engaged and hit, the order of 'check, check, check' to cease firing was given. At about 1400 hours, being ordered to report 'state of guns', A turret (the forward turret) reported 'all guns loaded half-cocked' and I requested permission to clear the guns in local control, i.e., from the turret itself. Permission was given and we in the turret locally aimed at the air traffic control tower and fired both barrels. You can imagine our elation when, through the turret officer's sight, I saw the tower being hit, soaring into the air, crumbling and then disappearing. I vividly remember this as one of my most glorious moments of that action.

Soon after this, the Army reported that our bombardment had neutralised all resistance by the Portuguese and that they had crossed the creek. A white flag had been hoisted in the citadel and the Army was proceeding to formally accept the surrender by the Portuguese forces at Diu. *Delhi* was asked to send a naval representative to witness the surrender ceremony. Our Captain decided that we still had a task to do which was to hoist the Indian tricolour on the flagstaff in the citadel but that the landing party would first proceed to represent him at the surrender ceremony and thereafter return to the ship so that we could then go south and carry out the small and unglamorous mission of capturing an undefended fort.

Here again our guardian angel was watching over us and this decision to go to the fort only after the surrender ceremony possibly saved the lives of all of us who were in the landing party. Once again the reason why I say this will emerge as I narrate the events that took place hereafter.

The landing party proceeded ashore and the boats that carried us landed us at a landing point very close to the citadel. After landing we marched with our chests out, proud of a victory made possible by the role played by our ship, *Delhi*. We had presumed that the Army, having made the signal that they wanted to make about the surrender ceremony, would already be at the citadel. Imagine our surprise when we marched into the fort to find that the Indian Army was nowhere to be seen - they were still making their way towards the citadel. However, the white flag which the Portuguese had hoisted was a genuine indication of their surrender. They had laid down their arms and were congregated in one place in the citadel. So, as it transpired, it was the Indian Navy that was the first to reach the citadel and take it over from the Portuguese. In fact it was Sub-Lieutenant Suresh Bhandoola, Indian Navy, that is me, who hoisted the Indian tricolour at the flagstaff in the Portuguese citadel.

Soon thereafter the Army arrived and the formal surrender was signed by the senior Portuguese officer and was accepted by the senior officer of the Indian Army present. It was during this period that Lieutenant Ahluwalia told the Portuguese that *Delhi* had the task of hoisting the Indian flag at the fort and that, immediately after the surrender ceremony, at the citadel, the ship would be proceeding south and, from a point in the close vicinity of the fort, the landing party would proceed by boats to land on the small sandy beach on the islet on which the fort was situated. On hearing this, the senior Portuguese officer was very perturbed and told us that it would be inadvisable for us to undertake this mission in the manner we had planned. He said that, contrary to our intelligence, the fort was not deserted and that there were about ten Portuguese soldiers in it. He also told us that the beach on which we intended to land by boats had been mined and that any landing party endeavouring to capture the fort via the beach would be blown to smithereens. He obviously felt that if this happened we might take it out on him. When we asked him to convey to the senior officer of the fort that the Portuguese forces at Diu had surrendered and that they should also not offer any resistance to us, he stated that he had no communication facilities with the fort. It was, therefore, decided that a platoon of the Indian Army along with a Portuguese officer would proceed to the fort from landwards. Before this platoon entered the fort, the Portuguese officer would verbally tell those in the fort of the surrender so that there would be no chances of any unnecessary bloodshed.

Once again we of *Delhi* were asked to convey to our Commanding Officer a request to lie off the fort to render any assistance, if required. It was at this moment that we realised that the sequence of events which had occurred which resulted in the delay in our landing party proceeding for what we thought was an unopposed and innocuous mission were in fact, perhaps, our guardian angel watching over us! So we went back to our ship and the ship moved south to lie off the islet while the Army moved to the fort making its approach along the shore. Things went as planned and the fort was taken over by the Army without a shot being fired. We saw the Indian tricolour being hoisted on the flagstaff in the fort and heaved a sigh of relief that the mission had been completed. However, it was perhaps a little premature for us to think it was all over and that we could now set course for home after a victorious action because just then we got a call for help from the Indian Army Major who had been assigned the task of capturing the fort. Communications between the ship and the fort were very poor and all we really heard on the ship was that he needed some help

urgently as he had some problem which had something to do with some men who were lost ashore which required the use of a boat. By this time it was about 2200 hours and pitch dark.

Before I narrate the next part in which I was again personally involved, I need to give a clear picture of the location of the fort. As I have said earlier, this fort was located on a small islet, a few hundred yards off the mainland. Between the islet and the mainland there was a patch of rocks of an area of about 20 square yards. When the Army went to the fort from shorewards, it was low tide and they were able to wade across to it. At that time the water around the rocks was only about knee-deep.

Having been through a lot that day and, being off watch, i.e., off duty at that moment, I was down in my cabin getting some sleep when I was shaken up and told that the Captain wanted me on the bridge immediately. When I got to the bridge I was told that our friend, the young Major, had had some trouble but nobody was very clear as to what exactly his problem was. However, the fact that he had taken over the fort made us feel that the problem could not be very serious. It was assumed that he was cut off from the shore as the tide had risen and that he probably needed some help in the form of a boat to get ashore to look for some of his men, with whom he had lost touch. I was directed to get into a whaler and proceed to the fort and render whatever assistance was required. It was certainly not anticipated that we could get involved in any kind of a situation in which we would require to be armed.

So straight from the bridge I got into the whaler which was manned by the duty watch, i.e., sailors who were on duty at that moment. The boat was lowered, I was given the general direction of the fort and off I went. With me was the duty Petty Officer as the coxswain of the whaler and a crew of five for pulling, i.e., rowing the whaler. Because it was dark it was considered imprudent to use a power boat as we knew the waters between the ship and the fort were rocky. I was directed to feel my way very carefully to the fort. And this is exactly what we did. To help us to pick out the rocks along our path, the ship's 20-inch projector was switched on and in the light of this projector, we could see the sea breaking over the rocks. We moved very cautiously, navigating to avoid running aground, but inspite of all our efforts, we ran aground twice. On each of these occasions we had to get into the water, push the boat clear, and then once again carefully feel our way towards the fort using one of the crew with his oar in the bows to feel for deep enough waters through which we could traverse. And thus we reached the fort. The Major came to the wall and told us that he was not

sure where the boat could land. He then explained his problem to me.

After entering the fort and taking the Portuguese soldiers prisoner, he had the brilliant idea of keeping them out of mischief by making them wade across to the rocks and keeping them there under guard of two armed Indian Army jawans. This was to give him a chance to carry out a thorough search of the fort to ensure that all the Portuguese who were there had in fact been captured and taken prisoner. The logic of putting them on these rocks and not locking them up in a cell or a room in the fort while the search was being conducted is beyond my comprehension; but then it often happens that the logic of the foot-soldier is difficult for a sailor to appreciate!

Anyway, this typical Infantry Officer probably knew little about the tides. While he was conducting a search of the fort, the tide was rising and the sun was setting. When he had finished his search and he looked towards the rocks to give a signal to his men to bring the Portuguese prisoners back to the fort, to his horror he found that there were no rocks and no men. They had just disappeared. In panic; or perhaps it is wrong for me to use such a word, so shall I say, with grave concern, he called up the ship and asked us to send help immediately as he had lost a couple of men and eleven Portuguese prisoners of war.

He then told me that he was sending one of his jawans with us in the boat and that this man would swim out from the fort to the boat. He requested us to try and locate his men and the Portuguese prisoners.

It did not require a genius to appreciate what exactly had happened. When the tide started to rise, the men on the rocks realised it as soon as their feet started getting wet and had promptly waded ashore. The doubt in my mind was only whether in the process of this crossing the two jawans, who were guarding the Portuguese prisoners, could have been overpowered as they were outnumbered. In any event we soon had the Army jawan sent by the Major with us in the boat and headed for shore. As we neared the shore we stopped and the Army jawan and I got into the water and waded ashore. The thought that the weapons of the two jawans in charge of the prisoners of war could be in the hands of the Portuguese was very much in my mind. So I stopped while still in the water and asked the jawan with me whether he knew the names of the jawans who had been guarding the Portuguese prisoners. On getting an affirmative reply, I asked him to crouch down in the water with me so that just our heads were above the water and then told him to call out to his comrades.

At the top of his voice the jawan shouted 'O Banta Singh!'. Immediately after this we heard movement behind an outcrop of rocks but for a few seconds there was no reply. It was in these few seconds that

I really knew fear, expecting at any moment to be hit by a bullet. And then a man stood up behind the rocks and replid 'Hanh, ki hai?' My relief at hearing these words in Punjabi cannot be described! Suffice it to say that I breathed again on hearing these words and we waded out of the water to met Lance Naik Banta Singh. He told us that all was well; when the tide started rising they had realised it and knowing that there were no boats in the fort, had waded ashore, remaining in control throughout. Very close to the point where they emerged from the water they had found a deserted police post and had locked up the Portuguese prisoners there. The second soldier was even then standing guard outside the room where they were locked up.

So we went back to the fort and on getting close found that there was no way that we could get out of the boat and into the fort without getting into the water. So I decided that we would go the way the soldier had come. But when I was about to step into the water, this jawan refused to let me get myself wet and insisted on carrying me on his shoulders to the point from where we could get into the fort. The point I am trying to make is that having lived through a moment of fear together, a sudden and very strong feeling of comradeship had build up between us and this was his way of showing it.

Inside the fort I met the young Major and told him that all was well ashore and that he need not worry. He was very relieved and profusely thankful. I bade him farewell and returned to the boat. Once again my comrade, the jawan who had been ashore with me, insisted on carrying me back to the boat and no amount of protesting by me could dissuade him. I had of course in the meantime called up the ship and informed them that all was well.

We returned to the ship the way we had come. the only difference was that this time the strong light from the 20-inch projector, which had been such a help on our outward journey, was blinding us. We tried very hard to tell the ship on our walkie talkie to switch off the light but, communications being what they were, we just could not get the message through. As a result, whereas we had run aground only twice on our way to the fort, we ran aground five times on our way back. Anyway we reached the ship without any major mishaps and our arrival back spelt the end of our mission during the Goa operations.

Panikota, a small island 16 kilometres east-northeast of Diu, had been fortified by the Portuguese with a fort which was manned by a few soldiers. By the evening of December 19, this island had also been captured and one Portuguese officer and 12 soldiers taken prisoner.

Lessons Learnt

Operation Vijay was the second major operation after Independence in which all three Services participated, the first having been the Junagadh Operation in 1947. While the Operation was conducted as planned and the Portuguese surrendered within 40 hours of its commencement, there were some minor lacunae which needed to be looked into for improving the Navy's operational efficiency. Some of these lacunae and the lessons learnt were brought out at a debrief held after the operations, the more important of them being: the incapability of the Navy to fit out a landing party at short notice; the need for landing parties to be apprised of the nature of the terrain on which they would be required to land; lack of adequate training especially to operate under cover of darkness; requirement for a permanent Naval commando force; suitable landing craft should have been used for the landing operations; the platoon designated for the capture of Anjadip Island should have landed in one wave; modern weapons and equipment should be provided to landing parties; cumbersome and out-moded portable wireless communication sets slowed up the overrunning of the Portuguese garrison on Anjadip and the subsequent bombardment and should be replaced; the element of surprise had been jeopardised by *Tir* which had circled the island at close range and carried out a mine detection sweep a few days before the commencement of the operation; a landing party should include a medical team for rendering first-aid and for resuscitating the seriously wounded; Naval and Indian Air Force aircraft should operate in clearly defined sectors to facilitate identification and should not stray into lanes used by aircraft of international or domestic airlines as far as possible; whenever aircraft from the two Services are likely to operate in the same area, separate flying sectors should be allotted to each Service (when an Alize aircraft of the Indian Navy entered the air defence zone over Bombay during the operation, it could not be identified by the Sector Operation Centre as no common Interrogation Friend or Foe (IFF) equipment had been fitted on the aircraft; similarly, when IAF aircraft were flying close to *Vikrant*, the carrier immediately scrambled her combat air patrol, thus frittering away precious resources because inter-Service IFF equipment had not been installed and operational sectors had not been clearly defined); inadequate and inaccurate intelligence led to the strength of the enemy being overestimated in most cases and to the embarkation of the Flag Officer Commanding the Indian Fleet on *Mysore* for conducting the operation though his flagship was *Vikrant*.

At the beginning of December 1961 a large number of ships were undergoing major or minor refit at the Naval Dockyard at Bombay. Some of these ships needed to be drydocked, some needed replacement of gun

barrels and extensive repairs to their gun turrets, weapon control systems and aircraft landing equipment and some needed installation of new gun mountings, essential repairs to propulsion equipment and surveillance devices used for detection and tracking of targets in all three elements. Besides rectifying these defects, these ships were required to embark stores, fuel and ammunition, conduct trials of machinery and equipment and work up the personnel to a high pitch of operational efficiency by conducting exercises at sea off Bombay before they could be deployed for their assigned tasks. In the normal course, this would have taken at least a couple of months (four months in the case of *Delhi*) but as soon as it was known that the Navy was likely to go into action by the middle of December 1961, the Naval Dockyard, the Naval Store Depot, the Naval Armament Depot and their ancilliary organisations rose to the occasion and completed the task well before D-Day. A remarkable feature of their feat was that out of the sixteen ships that were to constitute the Naval Task Force, as many as twelve - *Vikrant, Mysore, Delhi, Cauvery, Rajput, Khukri, Kuthar, Trishul, Talwar, Dharini Beas and Bimlipatam* - were with the Dockyard for major or minor repairs at the beginning of December 1961 but all had been rendered fully operational with all stores and ammunition embarked by December 16, 1961.

In a letter written to all Naval Commands, Admiral R.D. Katari, the Chief of the Naval Staff, wrote on January 2, 1962:

> I have now had a chance to review in retrospect the events and preparations leading up to the very successful role that the ships of the Fleet played in the recent operations. It is quite clear that the success that attended the operations would not have been possible were it not for the devoted efforts and extremely hard work put in by the large number of people involved in getting the ships ready for operations. It is with great pleasure and satisfaction that I have learnt that such efforts had come forth in ample measure from all quarters, be they from the staff, the dockyard, the Naval Stores, the Spare Parts Distribution Centre, the Naval Armament Stores, Organisation, or the barracks and training establishments.
>
> I would like to quote one example which, in my opinion, epitomises the splendid spirit of devotion. I refer to *Delhi* which was in an advanced state of a major refit when the order was given to prepare her for operational duties. In less than three weeks, she was able to fire her main armament with success. The credit that the officers and men of the ship received for this must be shared equally by those who got her ready in such record time.

On January 10, 1962, a few weeks after the operation, Lieutenant General Chaudhuri wrote to Captain Krishnan,

> I would particularly like to thank you for the help you gave us while commanding *Delhi*. You really saved the situation. In a postscript on February 8, 1962, General Chaudhuri added, 'I think I have thanked you for the excellent work that you did in helping the Army at Diu but, just in case I had not, let me assure you that without the presence of yourself and *Delhi* things would have been much more sticky.' In a message to his men, Lieutenant General Chaudhuri said, 'I have sent thanks on behalf of us all to the Navy and Air Force whose active cooperation made our task so much easier.

Casualties

The number of casualties suffered by the two ships, *Mysore* and *Trishul*, and the Portuguese garrison at Anjadip and the Portuguese taken prisoner is given below:

Table 12.2. Casualties suffered at Anjadip

	Officers	*Sailors*
Indian Casualties		
Killed	-	7
Wounded	2	17
Total	2	24
Portuguese Casualties		
Killed		6*
Wounded		4
Total		10
Prisoners taken		
Portuguese		15
Goan		8
Total		23

* In addition, the dead body of one Portuguese sailor was discovered on board the *Albuquerque* when the ship was boarded after the operation.

A memorial was later erected at the Flagstaff Point on Anjadip Island to commemorate those sailors of the Indian Navy who made the supreme sacrifice for the liberation of the Portuguese Possessions.

As regards the casualties suffered by both sides on all four fronts, Goa,

Daman, Diu and Anjadip Island, the figures were;

Indian Casualties		
Killed	22 (plus one killed in an accident)	
Wounded	54 (plus five injured in an accident)	
Total	76	
Portuguese Casualties		
Killed	30	
Wounded	57	
Total	87	
Prisoner of War		
Portuguese soldiers		3,301
Portuguese policemen	9	
Goan soldiers	1,508	
Goan policemen	268	
Civilian personnel	8	
Total	5,094	

At 1400 hours on December 19,1961, General Manuel Antonio Vassalo e Silva, Commander-in-Chief of the 'Independent Territorial Command of Portuguese India', who was headquartered at Vasco da Gama, had sent a request for a cease-fire to the Commander-in-Chief of the Indian Armed Forces which read, 'According to the annexed communication I sent to you, and with the powers given to me by the commanding letter of Portuguese Central Government, I request you to cease fire between our forces from this moment.'

In an official statement issued along with the request for ceasefire, General e Silva had said:

> Having the defence of Peninsula of Marmagao - final stronghold of our defence as a base the occupation of our forces of positions that put Vasco da Gama city protected of the aerial, naval and ground fire of the enemy and of the inevitable consequences of nearby fights and having yet been considered the big difference between the forces and the resources they had that does not allow myself to proceed the fight without great sacrifice of the lives of the inhabitants of Vasco da Gama, I decided with my spirit well constrained and my patriotism well present, get in touch with the enemy, when his approach makes endanger the whole population of that city, that I wish to preserve, in order to get them according to my powers given by the command

letter. In this way I order to all my forces to cease fire.

I want to emphasise (sic) the calm and order the way of all population of this province since the invasion begun following the one always showed before.

In this moment I salute already dead in the camp of honour.

And, finally, in the instrument of surrender signed at 2030 hours on December 19, 1961 and accepted by Brigadier K.S. Dhillon, General e Silva said, 'I, General Manuel Antonio Vassalo e Silva, Commander-in-Chief of the Armed Forces of the Portuguese state of India, offer in my capacity as the Commander-in-Chief, unconditional surrender of the Armed Forces in Goa at 2030 hours on December 19, 1961.'

By the evening of December 19, the three Services of the Armed Forces of India, which had combined their distinctive skills in the three elements to weave a unique fabric of decisive victory within a period of just a day and a half, had enforced a dramatic surrender which earned kudos from the entire country.

Picking up the Pieces

On December 22 Commodore H.A. Agate took over the naval administration of the Portuguese enclaves of Goa, Daman and Diu and was designated Naval Officer-in-Charge, Goa. He was responsible for all land areas of the erstwhile Portuguese colony and offshore islands including Anjadip and the sea area between the parallels of latitude of 14°43' North and 15°43' North and between the meridian of 77°00' East and the Indian mainland coast.

Speaking to newsmen at Delhi on December 19, Prime Minister Nehru said, 'This operation, small as it was, deserves attention from the point of view of efficiency of our Defence Services and their close co-ordination with one another.'

Shri V.K. Krishna Menon, Defence Minister, complimented the three Services for the 'swift and bloodless' operation conducted with consummate skill and said, 'The unfinished part of the Indian revolution was completed this morning when the Indian Defence Services took over Goa, Daman and Diu and hoisted the Indian flag on our soil. We waited for years, we argued and gave opportunities for a settlement, but were then forced to adopt means which were not of our choice.' He reiterated the Indian stand to say, 'We have not violated anybody's integrity and we have not attacked Portugal, and added that Goa being an integral part of India's own soil, armed action had to be resorted to for its liberation since all efforts to negotiate a peaceful settlement had failed.

In a report filed on December 19, 1961 (*The Statesman*, December 20, 1961) the Press Trust of India said:

> Mr. Menon asked Portugal and her friends why they had not thought of lodging a complaint with the UN all these days if they were serious about a negotiated settlement.
>
> India did not have any quarrel with the world powers' attitude or the resolution seeking to condemn India in the UN 'we will answer them. But we do hope that some of our friends would take a dose of the medicine that they prescribe for us.'
>
> He told the nation and the world, 'We have not violated either the spirit or the words of the UN Charter in taking this action.' The UN had decided that colonies could not survive. India had only lived up to this.'

Western Nation's Fora React

India's armed action for the liberation of the Portuguese enclaves was hailed by all anti-colonial powers and countries which were still under foreign rule. The Western countries, however, bitterly and severely criticised India's action because India had been 'preaching the philosophy of non-violence' to the rest of the world.

On December 19, as had been expected, the Western countries, led by the USA, introduced a resolution in the UN Security Council denouncing India's action and seeking the withdrawal of Indian Forces to the positions held on December 17. The resolution received seven votes in favour and four against but was vetoed by the Soviet Union, thus frustrating the bid of the NATO powers, the most vociferous of whom were the UK, France and Turkey, to reverse the course of events in Goa and have the three enclaves delivered intact back to another NATO power, Portugal. Three other nations that voted against the four-power motion were Sri Lanka, the United Arab Republic and Liberia. India's most spirited defender was the Sri Lanka delegate, Shri Malasekara, who used incisive arguments and great oratory to stress that what India had done could by no stretch of imagination be called aggression for the simple reason that a country could not be charged with invading her own territory. It was also pointed out that by asking India to withdraw from Goa, the Western powers were only trying to pay India back for her stand on the Suez, Bizerta and Cuba.

The most intemperate expression of disapproval of India's armed action, however, came from unexpected quarters - President John F. Kennedy of the USA is reported to have said of Prime Minister Nehru, 'It is like finding a priest in a brothel'.

In a message sent to Prime Minister Nehru on December 22, the Soviet Prime Minister, Nikita Khrushchev, congratulated him and the people of India on the liberation of the Portuguese-occupied territory and their reunification with the motherland. He said, 'The resolute actions of the Indian Government to do away with seats of colonialism in its territory was absolutely lawful and justified . . . the step taken by the Indian Government is a big contribution to the cause of the people's noble struggle for complete and undelayed liquidation of the disgraceful colonial system.'

In a statement on the liberation of the three enclaves, the Government of the People's Republic of China said that the action of the Indian Government to recover Goa reflected the just demand of the Indian people. It said, 'Goa is an inalienable part of Indian territory. To oppose colonialism and safeguard national independence and the unity of their country, the Indian people have for a long time been demanding the recovery of Goa and have waged an unremitting struggle for this purpose,' and the liberation of the territory was a fitting finale to the struggle.

Shri C.S. Jha, who was India's Permanent Representative at the United Nations at that time had to face the brunt of the anti-Indian onslaught launched by the Western nations. 'For this', wrote Jha in a feature entitled *Exceeding One's Brief* published in *The Hindustan Times* on February 14, 1987,

> I had no brief from the Government. Fragmentary news was coming in on the teleprinter according to which the Defence Minister Mr. V.K. Krishna Menon, was emphasising in his statements that the Portuguese troops had opened fire on the Indian Army who had been obliged to enter Goa. There were elements of a brief here, but knowing the mood of the Council members and having read the screeching headlines in American papers accusing India of having committed aggression, I knew that this line would be totally unconvincing. I had, therefore, to 'brief' myself. I defended our action on the ground that it was in fulfilment of a pledge to rid the country of colonial rule, that this pledge pre-dated the UN Charter and would have to be fulfilled, 'Charter or no Charter, Council or no Council.' I also argued that colonial rule was born of aggression, and could not thereafter be declared legitimate. This line of argument gained the unanimous support of the Afro-Asian countries and frustrated a US move to take the Goa issue to the General Assembly under the 'uniting for peace' resolution.

There were several demonstrations in Portugal against Britain for its failure to prevent India from entering Goa and Dr. Salazar even threatened to withdraw from the United Nations as a protest against Britain's inaction

leading to the loss of the Portuguese *lebensraum*. An effective counter to his fulminations was provided by Captain S.N. Roskill, the noted naval historian and author of *The War at Sea*, who in a letter to *The Times*, London said:

> It is pertinent to remind our Portuguese friends that they did not rush to Britain's aid in 1939, nor even in 1940 when we stood alone against Hitler and Mussolini and sorely needed the use of the naval and air bases on the coast of Portugal. Furthermore, it took two years of patient - many people at that time felt far too patient - negotiations with Dr Salazar before, on August 18, 1943, he signed an agreement permitting us to use bases in the Azores, from which the Central Atlantic could be cleared of U-boats. And even then so many difficulties were produced by the Portuguese Government regarding American participation in those facilities that it was not until October 1943, that the agreement became effective. Portugal, had she stood by the alliance in our time of real need, could have saved us enormous shipping losses - after the end of 1942 at negligible risk to herself.

It could also be mentioned that during World War II, Goa was used by the Axis powers for logistic support and for transmitting intelligence on Allied shipping in the South Asian theatre which led to the sinking of several merchantmen by German and Japanese submarines. Two German merchantmen of Hansa Line were specially fitted with powerful transmitters and receivers and it was the German plan that on declaration of hostilities these would enter Goa harbour in order to carry out espionage from the Indian subcontinent. The Germans had already planted a 'mole' - an Indian official in the Ministry of Shipping and Transport at Bombay, who used to come to Goa regularly to deliver information on movements of Allied convoys; this information was regularly delivered by him to the German Consulate at Panaji. Eventually, an intrepid band of British territorials, interestingly called the Calcutta Light Brigade, assembled at Calcutta and went by sea in a leaky, ancient dredger to Goa, entered the harbour and, without losing a hair or drop of blood, destroyed the two German merchantmen and also an Italian ship which was there at that time. So much for Portugal's neutrality!

This author met Professor J.K. Galbraith during the latter's visit to India in February 1987 and enquired whether, from hindsight, his views on Goa and the developments associated with its liberation, had undergone any change after the lapse of a little over 25 years. Professor Galbraith said:

> My policy at that time, as frequently happened, differed somewhat from that of the State Department at Washington and the Indian

Government. I would always, to the greatest extent possible, resist the use of force and it was my feeling that the Portuguese Empire, as we later discovered, was a fragile thing. I did not like to seek any alliance with Salazar, the Dictator and so I urged the American policy of pressing Portugal to make concessions on Goa, Daman and Diu, an anachronism which should have passed to India, and I urged the Indian Government to be patient, allow six months, eight months, a year for such pressure to be brought to bear. Well, my policy was not companionable either in Washington or in New Delhi. New Delhi was anxious to get the matter settled which is understandable. Goa had eventually to come to India, there was no question about it. It was an anachronism and Washington, as usual, was worried about the bases in the Azores and its ancient alliance with Portugal. Some officials there, led by George Ball, the ablest man in the State Department under Kennedy, were on my side but it wasn't enough to carry the day. The tendency was not to bring direct pressure to bear on the Portuguese - may be, it would not have worked but that was my hope at that time. I have just been to Goa for a few days and I think that history has justified the course that was taken there.

There was very little bloodshed (during Goa's liberation). On the morning of the operation my military attaches - my naval attache and my army attache - who were on close terms and in close touch with their Indian colleagues, had a briefing at the Embassy at which they showed how the deployment was around Goa, around the Goa region and how the operation was being conducted. This they had been told by their Indian counterparts and gave their estimate that the operation would be over in another couple of weeks. After they had finished, I gave my estimate based on the fact that Portugal was using African troops, who would not be a formidable enemy. I gave my estimate that it would be over by late afternoon. For all practical purposes it was and my reputation as a military analyst was never higher!

As it happened the troops in Goa were both African as well as white Portuguese.

Asked why he had suggested that the matter be taken to the United Nations, the Professor said that he wanted the United Nations to bring direct pressure to bear on Dr. Salazar and the Portuguese. He said:

> I concede that these three anachronisms should have been in the Indian Union, and were the surviving remnants of the age of colonialism. The French Empire had gone, the American possessions in the Philippines and Puerto Rico had either gone or drastically altered and of course the

British. Why not Portugal? So I was impressed with the fragility or the fragile character of their position and of course that was evident only a few years later when they surrendered peacefully in Mozambique and Angola which were a hundred times more important than Goa.

As regards Prime Minister Nehru, he said, 'My impression was that Nehru was sympathetic to my point of view in a certain measure and he was also patient but he was also subject to the general impatience of India.' He added that he had requested the Indian Government to postpone exercising the military option by six months because he felt that he would be able to find a peaceful solution within that period. 'May be the thing to do was to have a quick solution but I have always opposed the use of force whenever possible and I was so motivated at that time and still am.'

Professor Galbraith summed up the discussion by expressing his satisfaction at the operation having been swift and decisive. 'The casualties were minimum. I am in favour of all wars being like the war between India and Portugal - peaceful and quickly over.'

Jewels Restored

The last of the 'jewels in the Portuguese Crown' were thus restored to their rightful owners in a swift and skilful operation lasting less than 40 hours and the Portuguese pustules were excised by scalpels that had been carefully honed for the purpose. And from the way the Portuguese went about preparing for defending the enclaves despite adequate prior knowledge of the impending action and their awareness of the reality of the march of time, it seemed as if they were firm believers in euthanasia.

13

THE BLUNTED SCIMITAR

The Navy's Trammels and Compulsions During the 1965 Indo-Pak War

Much has been written on Indo-Pak relations since the two countries attained Independence in 1947. In a very recent volume titled 'India and Pakistan - Crisis of Relationship', edited by Air Commandore Jasjit Singh, Director, Institute for Defence Studies and Analyses, he writes in his introduction 'If a single most dominant characteristic of the relations between Pakistan and India since 1947 was to be identified then the finger would almost involuntarily point to the mistrust and lack of confidence between the two sovereign states, both highly sensitive to their separateness and sovereignty as young modern nation states burdened by a deeply shared, historically long continuity of civilizational and cultural bonds. Although the manifestation of this in the shape of animosities is not necessarily shared by the peoples of the two countries, many attitudes and perceptions among them have been shaped by this crisis of relationship at the state-to-state level. This factor has been central to the growth and sustenance of antagonisms. The degree and form of crisis in the relationship - and the rhetoric that goes with it - has varied with time, events and personalities; but the substance of it has remained.'

He, further, very pertinently observes, 'The emotional upsurge which helped to establish the nation state (Pakistan) could not be translated or transformed into a durable political system to govern it. The fragility of

the political institutions increased with the passage of time. This in turn generated and sustained the third factor - the rise of the praetorian state in which the military, the bureaucracy and the feudal lords (of land and business) progressively acquired a dominant control over the state structure. This 'troika' of ruling elites, in a nascent nation state, not only sustained itself on the animosities in relaion to India but in the process acquired a vested interest in perpetuating conflictual relationship with India.'

In 1965 Pakistan was in the thraldom of Ayub's military machine which felt that the time was ripe to exacerbate the country's largely illiterate population's anti-Indian feelings. For this purpose the easiest course of action was to whip up anti-Indian hysteria and stage a limited operation to, firstly, 'liberate' Jammu and Kashmir, and secondly, to humiliate India in the eyes of the world polity. Some of the morale-boosters that Pakistan at this time had were its improving internal economy, the support of China which had exploded a nuclear device in 1964, a successful foreign policy bringing in a bonanza of military aid, both from capitalist and communist countries, the backing of the Islamic bloc and, what proved to be the most provocative spur, the Sino-Pak Protocol Treaty signed in March 1965! The stage was thus set for Pakistan to launch a major military adventure to humiliate India.

The Kachchh Episode

The 1965 Indo-Pak conflict began with the sudden Pak claim, after 18 years of freedom and the acceptance by that country of the carefully and clearly delineated international boundary line between the two countries, of a marshy expanse in the Rann of Kachchh known as Kanjarkot. A Pak Army brigade was soon moved from Malir, a cantonment near Karachi, to the Kachchh border in March that year. On April 9 this brigade suddenly attacked a contingent of the Indian Central Reserve Police Force (CRPF) at a patrolling post three miles south-west of Kanjarkot and captured the commander of the post. The attack was duly repulsed and soon Pakistan attacked once again, this time with armoured vehicles, and forced the CRP contingent to withdraw to a place called Vigokot. The task of sanitising the area was then taken over by the Indian Army which soon occupied Vigokot and served notice on the Pak Army for vacating Kanjarkot as it had been a part of undisputed Indian territory before its forcible occupation. Pakistan refused to comply and on April 16, 1965 it became apparent that the polarisation of the Pak attitude was complete and absolute when her Foreign Minister formally claimed the post to be Pakistani territory and ruled out any possibility of its being vacated.

Pakistan then moved an infantry division to the occupied area which, despite the presence of an Indian brigade, attacked four Indian positions on April 24 forcing the Indian Army to withdraw. On April 25 and 26 they attacked Biar Bet (the word bet in Kachchi means a high ground as opposed to the swampy low-lying areas of the Rann) and occupied most of it, though their attack on Vigokot and Sardar Post was effectively repulsed.

This was followed by an undeclared truce but only a month later, on May 25, Pakistani forces once again attacked an Indian military patrol in Biar Bet which was soon repulsed. Sporadic fighting continued for another month when, at the intervention of the British Prime Minsiter, Harold Wilson, the Pakistani President, Mohammed Ayub, and the Indian Prime Minister, Lal Bahadur Shastri, agreed to a cease-fire. There was a short welcome respite though the Pakistani hawks wanted the conflict to escalate to a full-fledged war and took the Indian bid for peace as a sign of weakness and attributed Ayub's acceptance of the cease-fire to his indecisiveness.

In his *My Years with the IAF*, Air Chief Marshal P.C. Lal confirms this impression, 'With the benefit of hindsight, it seems likely that the Pakistanis judged 1965 to be the right year to force a settlement of the Kashmir issue that had eluded them in 1947-48. The dismal showing of the Indian Army in April-May 1965 over the border dispute in the Rann of Kachchh bolstered their confidence. They took this as proof of India's apparent military weakness particularly since it came not long after Pandit Nehru's death. But before that the widespread troubles in Kashmir following the loss of a holy relic from the Hazratbal shrine on December 27, 1963 must have led them to believe the ground was ready to receive the seeds of revolt.'

In an article published in 1986 in the Islamabad newspaper, *The Muslim*, its editor, Mushahid Hussain, stated that this war had been started by Pakistan to divert public attention within the country from the political turmoil the country was going through. In his two-piece article, *Shadows of the 1965 War*, published in *The Hindustan Times*, New Delhi, Pran Chopra says, 'Another article (in *The Muslim*) by Mir Abdul Aziz, a veteran journalist, shows that President Ayub's motives in starting it were personal, base and unintelligent. He cites General Musa's *My Version* (General Musa was the Pak Army Chief during the 1965 conflict) to show that the General thought the plan was unwise and he shelved it for a year. Then 'something happened', says Abdul Aziz. He quotes Nawabzada General Sher Ali, a former Information Minister of Pakistan, as telling him that the 1965 war was suddenly started by 'Bhutto, Aziz Ahmed and Nazir Ahmed (former foreign and defence secretaries) in the hope that there would be reverses for Pakistan, for which the blame would be laid on Ayub Khan, who would

get pressed to quit and make room for younger leadership'. While this portrays Ayub, Washington's darling for over a decade as the ideal type (of) leader for Third World countries, as lacking the intelligence to see through the plot, Abdul Aziz leads another witness for worse evidence against Ayub, 'a retired officer of the Ministry of Inormation who in his official capacity was close to Prime Minister Bhutto.' Aziz says he learnt from this officer that though Ayub had first turned down the 1965 war plan, he turned to it again, on Bhutto's advice, as relief from his political difficulties following his near-defeat by Miss (Fatima) Jinnah in presidential elections. Bhutto told Ayub, says the informant of Aziz, 'General Sahib . . . if the nation is switched towards India it will forget everything and you will be the hero of the hour.' In the event Ayub did not become a hero even for one hour. Abdul Aziz adds, Ayub wanted some gain, and Bhutto wanted to play his own game. Bringing Kashmir into the limelight was a secondary proposition.'

Before going on to the other Pak acts of perfidy during the months following the Kachchh imbroglio, it must be mentioned that, just as had happened when the Kashmir issue had been referred to the UNO in the late 1940s and India had lost the Pak-occupied areas of Kashmir (POK), in the wisdom of the powers that ruled India during the second half of the 1960s, the dispute over the territory in Kachchh was referred to an international tribunal. On February 19, 1968, this tribunal awarded 480 square kilometres of Indian territory in Kachchh to Pakistan out of the 4,800 square kilometres claimed. And with this dispensation the international border in Kachchh was delineated anew resulting in Pakistan achieving tactical superiority in the area as the area awarded to it had a large number of bets while the area remaining with India comprised large expanses of low-lying swamp.

On to Kashmir

The scene had soon shifted to the Kashmir valley. Between May 16 and June 7, 1965, Pakistan had also committed a number of violations of the Pak-Kashmir border and had launched several attacks in the Kargil sector of Kashmir. In order to thwart Pak forces from continuing with such attacks, a counter-offensive had been launched and certain areas of Pak-occupied Kashmir had been captured. But when the Kachchh agreement was signed, India had relinquished all these positions thus giving Pakistan the impression that she was not capable of withstanding sustained full-scale attacks in case a war was launched. This had tempted that country to make a bid for Kashmir once again a few months later.

Thus, said Lieutenant General B.M. Kaul in his *Confrontation with*

Pakistan, '*Pakistan* had lulled us into a false sense of security by outwardly lying low after the truce of Kachchh, having assessed our reaction and pinpointed our weaknesses in this short conflict of April-May 1965. While our high command had remained blind to this ruse and was off-guard, allowing our forces to relapse into peacetime postures, the Pakistanis were secretly preparing to strike in Kashmir in August and take us by surprise.' And take us by surprise they did when 10,000 infiltrators - Pakistanis called them 'freedom fighters' though in act the main bulk of them were Pak Army officers and men in some kind of *mufti* leading a brain-washed band of tribesmen from the NWFP trained by the Pak Army in guerilla warfare to wage a *Jehad* for the 'liberation' of their Kashmiri Muslim 'brethren' in the 'Indian-occupied' part of Kashmir - crossed the 750-kilometre-long cease-fire line on August 5, 1965.

The Force Levels

At this time, the strength of the Indian Army was 800,000 comprising 16 divisions of full strength, nine of which were mountain formations and four of reduced strength. It had about 1,000 armoured fighting vehicles, including reserves, and about 2,500 pieces of artillery. The Indian Air Force had about 900 aircraft of various types including the MIG 21, out of which about 550 were combat aircraft. The small Indian Navy had one aircraft carrier, two cruisers, three destroyers, three escort destroyers, eight modern antiaircraft frigates, three frigates of World War II vintage, four coastal minesweepers, two inshore minesweepers, nine seaward defence boats, one landing ship, one landing craft, four shore patrol craft and a large number of auxiliaries and harbour craft but no submarines.

The strength of the Pakistan Army was 250,000 including about eight divisions of full strength and a large number of *Mujahids* (crusaders), *Razakars* (defenders of the faith) and other irregulars. It had approximately 800 armoured fighting vehicles including modern Pattons, and its artillery strength was less than India's though the guns were superior in firepower. The Pakistan Air Force had approximately 200 combat aircraft which included F-86 Sabre fighters, a squadron of F-104 Starfighters and B-57 Canberra bombers. The Pakistan Navy's Fleet consisted of one submarine (the *Ghazi* which was sunk later by the Indian Navy during the 1971 War off Vishakhapatnam), one light cruiser, five destroyers, two antisubmarine frigates, eight coastal minesweepers, four patrol craft, two seaward defence motor launches and a large number of auxiliaries and harbour craft.

At the beginning of May, the ships of the Indian Fleet had been carrying out routine assignments on both coasts and the Bay islands. The aircraft carrier, *Vikrant*, along with some of the other ships of the Fleet -

Ranjit, *Kuthar* and *Kirpan* - was at Cochin awaiting the embarkation of the Seahawk and Alize, squadrons from *Garuda*, the Naval Air station; the *Talwar* was on passage from Bombay to Cochin, the *Brahmaputra* was on patrol off Cochin, the *Akshay* was at Calcutta, the *Jumna*, *Sukanya* and *Ajay* were at Vishakhapatnam, the *Sharda* and *Investigator* were at Madras and the *Beas* was at Port Blair. The other ships of the Fleet were in various stages of refit at the Naval Dockyard, Bombay.

Regular maritime reconnaissance of the sea areas vital to the security of the country by IAF aircraft had revealed the fact that nearly all ships of the Pak navy had been put to sea and the submarine *Ghazi* had been positioned off the Western Coast of India. In fact, the *Ghazi* had been sighted while diving about 60 nautical miles west of Daman on May 9, 1965 by IAF aircrat and warships and had been sighted off Minicoy soon thereafter. A few unidentified aircraft had also been seen flying at high altitudes over the Arabian Sea off our West Coast and the Andaman and Nicobar islands in the Bay of Bengal but by the time IAF aircraft or ships of the Fleet were despatched to these areas to carry out searches, all aircraft, ships and the submarine had disappeared. Continuous vigil was, however, maintained by the Indian Fleet over the entire sea area off the Indian peninsula until the 'thaw' in Indo-Pak relationship with a *defacto* truce in May 1965 which was sporadically violated by the Pak forces a number of times, the last such violation taking place on June 15 when they suddenly attacked certain areas in the vicinity of Sardar Post and Vigokot in Kachchh but were beaten back after suffering heavy casualties and the capture of a Pak Army Major by the Indian forces.

The Sparring Begins

As mentioned earlier, it was on June 17, 1965 that Prime Minister Shastri met President Ayub of Pakistan at the Commonwealth Prime Ministers' Conference at London and the informal discussions between the two appeared to have been cordial enough to lead to a formal cease-fire, which was signed on June 30, 1965 and made operative from July 1.

Shri L.K. Jha, the noted diplomat-economist-civil servant-governor, who was the Principal Secretary to Prime Minister Shastri at that time, when interviewed on September 11, 1986, said,

> I was involved with some of the overall considerations which were guiding the war effort and meetings of the Emergency Committee of the Cabinet as well as the Secretaries where some aspects were viewed largely from the political point of view but equally from an operational point of view.

Now, first of all, the attempt on our part was to keep the whole thing confined, territorially as well as otherwise, to a local conflict, rather than allow it to assume the character of an Indo-Pak War. This was the prime objective of our policy - it had been in the past also.

But at the same time, we had come to realise that fighting on terrain chosen by the enemy would always leave you at a disadvantage. This came out very, very vividly during the Rann of Kachchh affair when Pakistan had all the logisitc advantage and we had a tremendous problem in getting men, material and supplies moving to the front. At that very time a political decision had been taken that we wouldn't fight with our hands tied behind the backs and therefore a plan for opening a second front in the Punjab by marching into Lahore had been drawn up and perfected. But it was not launched because a cease-fire came into existence, and we naturally hoped that some peaceful way of resolving the Rann of Kachchh dispute would be evolved and in fact it went to an international body to settle.

But even when there was the state of uncertainty, a kind of simple cease-fire without any formal agreement, the Commonwealth Prime Ministers' Conference was taking place in London. Shastriji went to London and I went with him. And when going, there was concern - supposing things hotted up in our absence should the operation to march into Lahore be launched or not. The arrangement I had made with Shri Y.B. Chavan, who was then the Defence Minister, was that if such a contingency arose, he would send me a message indicating the date by which the Prime Minister must get back because we were about to move forward. However, the contingency did not arise.

In fact, I recall, and it might be useful for the record, a meeting between Prime Minister Shastri and President Ayub during the Commonwealth Confernce session. It was a private meeting and I was there. Ayub said somewhat patronisingly. 'You know, your chaps tried to commit aggression on our territory, our chaps gave them a few knocks and then they began to flee.' Then Shastriji said, 'Mr President, you are a General. I have no military knowledge or experience. But do you think if I had to attack Pakistan, I would choose a terrain where we have no logistic support and you have all the advantages? Do you think I would make such a mistake or any of my Generals would allow me to make that mistake?' And one could see from the face of President Ayub that this thought startled him. Because quite obviously he had been led to believe, in my judgement by Bhutto, that the Indians had attacked in the Rann of Kachchh. And he was firmly of that view until this question posed by Shastriji and I could see him

visibly pause and not pursue the point any further.

The Navy's Deployment

A large number of the Navy's ships were either undergoing major and minor refit or were due for maintenance at the various repair facilities at Bombay and elsewhere till the time of the declaration of a cease-fire on July 1 1965. Since they had had to be hurriedly brought out for deployment at sea, it was now decided to update the operational readiness of as many ships as possible so that, first, they could be better prepared to meet an emergency and, next, to work up all these ships as a balanced task force, especially in antisubmarine warfare as the Pak submarine *Ghazi* would pose a serious threat to our Fleet ships as well as the merchant marine. The Indian Navy at this time had no submarine nor any practical experience in handling submarine threats except for the occasional exercises with the Commonwealth navies.

Said Admiral B.S. Soman, who was the Chief of the Naval Staff at that time,

> After the fizzle-out of the Kachchh affair for which the Fleet ships had been hurriedly brought out from their refit and periodic maintenance, we had the Hobson's choice of either committing them back to their refit and maintenance, or of continuing to keep them operational in order to make full use of the (already projected) live antisubmarine training with a Royal Navy submarine which was due to arrive in India shortly. It had been our experience in the past that no amount of simulated training on attack teachers in antisubmarine training schools ashore can ever make antisubmarine teams fully efficient.
>
> It was decided, therefore, that the live target hunting and tracking opportunity was too valuable to be missed even if, during the period, the ships were not in as good a shape in their material state as they should be, so long as their antisubmarine searching, hunting and attacking equipment and personnel were effective and efficient. In making this decision, I had assessed that we perhaps had time till about November 1965 before things might get hot again.
>
> In the context of this assessment, I must point out that while *Mysore* and the antisubmarine frigates were sent out to the East Coast for antisubmarine exercises with the British submarine *Astute*, *Vikrant* was put into the drydock for her normal but long overdue periodic maintenance, particularly the repairs to her flight-deck machinery, malfunctioning of which would have endangered valuable lives of

pilots and caused losses of aircraft. Another consideration in committing *Vikrant* to her refit during this period was that the weather and visibility conditions during the monsoon do detract somewhat from the full operational value of such a ship. All ships on the East Coast were due back from the antisubmarine exercises in early September 1965 and, after normal maintenance would have been operational again by early November 1965 by which time the *Vikrant* was also scheduled to get ready.

As it happened, events forestalled our calculations. *Mysore* and the first pair of frigates to complete their exercises with the submarine carried out such normal periodic maintenance as possible with the limited available resources at Vishakhapatnam, and were deployed in the Andaman and Nicobar area from where, during the monsoon period, smaller patrol aircraft are withdrawn. This was in accordance with the normal operational programme of the ships and was necessary, as there had been reports of surface and submarine (of unknown nationality) activity in this area. It was virtually in the middle of this deployment and before the second group of ships exercising with the submarine had finished their periodic maintenance, that all these ships had to be deployed to the West Coast to cater for any Pakistan naval activity. Needless to say, therefore, the material state of the ships, so far as their propulsion systems were concerned, was by no means at the optimum, as it perhaps could have been had we forgone the antisubmarine exercise. I have no doubt, however, that the antisubmarine exercises carried out with the submarine *Astute* stood our ships in very good stead.

From intelligence available prior to the end of August, it was known that the Pakistan Fleet was in Karachi carrying out maintenance and various exercises throughout the months of July and August 1965, while ours was on the East Coast. Being away from their home port, Bombay, our ships had to continue to make do with very meagre maintenance and repair facilities and resources which had yet to be developed on the East Coast.

A warning on the worsening situation was sent to the Fleet Commander, Rear Admiral (later Vice Admiral) B.A. Samson, on August 30, 1965, but it was not till the next day, September 1, 1965 that the Fleet ships were ordered to rush back to the West Coast; and operational directives to the Fleet and Commands were issued two days later.

The Preparatory Stage

It had already become apparent to politico-military observers that with

the rain clouds having receded during the later half of August 1965 and the gathering of war clouds over the western horizon, the Pakistani authorities had a sinister intent as it was common knowledge that Pak defence lines along the international border were being reinforced, massive military exercises had been conducted and the Pak forces, especially the army and the air force were being deployed in strategic positions in the Kashmir and Punjab sectors close to the border. While the Indian Army and the Air Force adopted adequate measures to forestall any wild land or air misadventure on the part of the Pak forces, the Naval Chief, Vice-Admiral B.S. Soman, was 'persuaded' by the authorities not to recall the Fleet from the East Coast for deployment in the Arabian Sea for reasons best known to the Government.

Recalls Vice-Admiral N.P. Datta, who held several important appointments in the Navy before his retirement in 1981 and who was the Deputy Director of Personnel in the rank of Commander at Naval Headquarters in 1965,

> The Pakistani operations with their tanks in the Rann of Kachchh was their first foray into Indian territory and, what is more important, into the will-power of the Indian Government and the Indian Armed Forces, to see whether they would be able to withstand the shock of a sudden onslaught. Our response, I think, was slow and probably guarded because of the fact that the Army thought it was only a side operation with a view to decoying our tank forces away from the main theatre into the Gujarat sector and they were not going to fall for it.
>
> That was the sum and substance of the Indian response and one could take two views on it: one, we should have given them a fitting answer and if we had done that, perhaps the September operation would not have materialised. On the other hand, one can say that we did not fall a prey to their manoeuvres and we kept our cool but the overall effect of it was that the Pakistani General Staff thought that the Indians had no fight left in them and thus they made a wrong assessment of India's ability to fight and it was this wrong impression which fortified the hawks in the Pak Army to undertake much larger-scale operations in September 1965.
>
> As the Deputy Director of Personnel at Naval Headquarters at that time, my job was to make that our forces at sea were kept in an operational state all the time. The normal annual turn-around of officers that took place in the Navy in March and April of every year had not been done with a view to not disturbing the ship's companies (crews) which had been worked up (brought gradually into a state of

efficiency) together for the last 18 months or so. So I froze all the appointments, both ashore and afloat, and saw to it that the efficiency of the Indian Fleet was not impaired in any way.

Soon after the Rann of Kachchh crisis was over, we realised that it probably was just a preliminary skirmish and the bigger test would come later on. So immediately my concern was to make the necessary changes as quickly as possible and to see that the Fleet worked up again in the intervening period which we did in the months of May, June and July and it was a wise precaution because very soon thereafter the whole thing flared up again.

My recollection of this phase of the operation is that the Indian Navy was not kept fully in the picture as to the extent of the operations envisaged by Pakistan and our reaction to it. It had been quite well-known even outside the military circles for some time that Pakistan was planning a major offensive in the Jammu and Kashmir sector with a few probes in the Northern Punjab sector as well.

It was also known at that time that the Government of India directive was that if Pakistan started any major operation in the Jammu and Kashmir region, our response would be to hit them back at the place of our own choosing in the Punjab sector which would mean an all-out war and in the situation of an all-out war it was not only the Army but the Navy and the Air Force as well that would be involved.

I distinctly remember that around the middle of August 1965 I had gone to the Naval Chief, Vice Admiral Soman, with whom I had earlier served in the Fleet as the Fleet Operations Officer, and had given him my view which was that the Indian Fleet at that time was embarked on a peace-time routine, that is to say, normal exercises were being carried out during the monsoon period in the Bay of Bengal which were combined with a few goodwill visits and, according to the programme at that time, the bulk of our strike force was tied up at Calcutta. If this force was to be recalled, it would take up to two weeks or even longer to get them back to the West Coast where they were likely to be required. Thereafter, having made such a rapid journey, it would require another week or 10 days for replenishment and necessary repairs and thus these ships would not become a fighting force till about the first week of September.

Admiral Soman said that this was the very point that he had made to the Chiefs of Staff Committee but had been overruled by the Army Chief, General J.N. Chaudhuri, as the Chairman of the Committee who had said that if any alterations were made in the disposition of the Indian Fleet, if the ships were hurriedly recalled

from Calcutta and sent back to Bombay, it would create a furore in the press and it would forewarn the Pakistani General Staff of the Indian Armed Forces' knowledge of their plans and hence their reaction would be severe - a curious line of reasoning because Pakistan was already planning the first aggressive moves in Jammu and Kashmir and could not be unaware that we were bound to react.

I did not thus quite see the logic of it because this was common knowledge and it was something being openly discussed in the newspapers. It was also common knowledge what the reaction of the Government of India would be in regard to preventing the Pakistani General Staff from making any rash decision to attack India. Prime Minister Shastri had repeated a number of times, on the floor of our Parliament and outside, that the consequences of any rash action in Jammu and Kashmir would be very severe. But I do not think that the Pakistani General Staff was in any doubt as to what our reaction would be and, what is more, they went by the disposition of the Indian Army and the Indian Air Force in the relevant sectors of Punjab and not by that of the Indian fleet because they thought that in a limited war the Navy would have a small part to play and it was generally known that the Indian Armed Forces - the armoured divisions, the fighting formations, etc - had been transferred in larger numbers to Punjab. They were in no doubt as to what our disposition was and what our intentions were.

But anyhow the Chairman of the Chiefs of Staff Committee was able to persuade Vice Admiral Soman not to recall the Fleet. He, however, called them back round about August 31, 1965. As I had predicted, by the time they came back to Bombay, around September 7, they needed a little more time for necessary repairs and replenishment and taking on ammunition, oil and other supplies and by the time they put to sea, the war had already progressed by over a week.

The Pros, Cons and Pinpricks

While analysing the causes of India's failure to achieve an outright victory and the Chairman of the Chiefs of Staff Committee's sidelining of the Navy and the Air Force, Air Chief Marshal P.C. Lal, in his *My Years with the IAF*, is fairly censorious of General Chaudhuri,

> I mention the Chhad Bett incident at some length because it was later said by General Chaudhuri that it had given him a clear indication of Pakistan's intentions in regard to Kashmir. If so, he did little to alert the other two Service Chiefs about the danger ahead. In the National

Security Lecture that he delivered in January 1971, he stated that, 'It was on the May 5, 1965 that the larger pattern of Pakistan's intentions to seize Kashmir . . . . became apparent.

He goes on to say that he discussed the pros and cons of this possibility with the Prime Minister and the Defence Minsiter (Chavan) and 'the necessary sanction was obtained', though precisely for what is not clear. Some time later, the Air Chief was also informed of what was going on. This was done through informal meetings from which the Naval Chief was excluded 'for the Navy's role did not look like being a very big one'. To ensure security, the General applied the 'need to know' yardstick so thoroughly that the Chiefs of Staff Committee and the joint intelligence and planning staff were completely bypassed. No contingency plans were drafted, nor were the three Services asked to define the parts that they would have to play in the event of a war.

Gen Chaudhuri speaks with satisfaction of the freedom with which views were expressed at his informal meetings with the Prime Minister and the Defence Ministeer, and the speed with which decisions were taken. It comes through clearly from his statements that he treated the whole business as his personal affair, or at any rate that of the Army's alone, with the Air Force as a passive spectator and the Navy out of it altogether. He ignored the basic concepts of our higher Defence organisation and displayed what may be called the 'supremo syndrome', a disease that grows out of the belief that one head is better than three. The origin of this disease can be traced to pre-independence days, when the Army Chief was also Commander-in-Chief of all Armed Forces in India.

As regards inter-service co-operation, especially at the level of the Chiefs of Staff Committee, Air Chief Marshal Lal says,

> But most of all it was shown that no matter how able or intelligent a senior commander might be - and General Chaudhuri was an outstanding person in all respects - he could not expect to fight a war on his own. Planning must be carried out through the Chiefs of Staff Committee, and the Navy and the Air Force must be taken into confidence. They must be given the opportunity to contribute their ideas and expertise to the development of contingency plans. Had General Chaudhuri done so as Chairman of the Chiefs of Staff Committee the outcome of the war might have been very different. As it was all three Services suffered, the Army perhaps most of all. However, the war marked a turning point in military thinking and

preparedness, for it brought out the shortages and deficiencies to be made good in organisation and procedures and in terms of equipment and resources.

As is well-known, Pakistan had been committing violations of the Indo-Pak border throughout the summer months of 1965 and the frequency of these violations had increased further during the first week of August culminating in a large number of armed infiltrators crossing the cease-fire line in Kashmir on August 5. In spite of continued peaceful efforts made by India, the situation soon aggravated and the Indian Army had to take preventive measures in Kashmir to plug the entry points of these in filtrators.

Not satisfied, however, with its subversive activities in Kashmir which failed to achieve the desired objective, Pakistan launched a massive attack with armour against India across the international border in the Chhamb Sector on September 1, with the Pakistan Air Force supporting its Army and carrying out strike missions against Indian Army units. The Indian Air Force had, therefore, to extend suitable air cover to the Army and launch operations to prevent Pak aircraft from intruding into our air space. Since Pakistan was likely to extend the war to the Arabian Sea as well, Karachi being its main naval base, the Indian Naval authorities decided to initiate necessary action to prepare against such an attack and ordered the Fleet home.

The Indian Fleet

At this time, consequent to the Government's decision not to commit the Navy to the conflict and its stated desire not to allow the land and air operations to escalate to a full-scale war, the Fleet was in a dispersed state all along the country's seaboard. At Vishakhapatnam on the east coast were the only capital ships in an operational state, *Mysore* (Captain, later Commodore, D.R. Mehta), along with the destroyer, *Ranjit* (Commander M.M. Johri), three antisubmarine frigates of the 14th Frigate Squadron, *Khukri* (Captain, later Vice Admiral, R.K.S. Ghandhi), *Kirpan* (Commander, later Rear Admiral, D.S. Paintal) and *Kuthar* (Commander, later Captain, B.D. Law), and the seaward defence boat, *Ajay* (Lieutenant, later Lieutenants Commander, S.J. Nagrani). The two antiaircraft frigates, *Brahmaputra* (Captain, later Rear Admiral, Kirpal Singh) and *Beas* (Commander R.N. Das Gupta), were at Calcutta. Bombay had the 'R' class destroyer, *Rajput* (Captain, later Commodore, B.R. Kapoor), the frigate, *Kistna* (Commander J.N. Maitra), the converted survey ship, *Sutlej* (Commander C.G. Francis), (all three of World War II vintage) and the helicopter-carrying survey ship,

Darshak (Captain, later Rear Admiral, D.C. Kapoor), all of which were nearing completion of their essential repairs. The two Hunt class destroyers, *Godavari* (Commander, later Vice Admiral, M.K. Roy) and *Gomati* (Lieutenant Commander, later Captain, C.L. Sachdev), had been positioned at Cochin for local naval defence while the two minesweepers, *Cannanore* (Lieutenant Commander B. Daniel) and *Kakinada* (Lieutenant Commander I.S. Lamba), were at Goa.

Five major ships including two capital ships, one general purpose frigate, one antiaircraft frigate and one destroyer - *Vikrant* (Captain, later Vice-Admiral, V.A. Kamath), *Delhi* (Captain, later Commodore, P.C. Andrews), *Trishul* (Captain, later Commodore, Inder Singh), *Betwa* (Commander G Nandy Singh) and *Rana* (Commander, later Captain, M.N. Mulla) - were undergoing extended refit at the Naval Dockyard, Bombay. *Talwar* (Commander, later Commodore, V.A. Dhareshwar), the other general purpose frigate, had been carrying out essential maintenance in Bombay during August 1965 but had to be hurriedly boxed up and sent for investigating the presence of possible enemy vessels in the Kori Creek, a few miles south-west of the Indo-Pak border in the Rann of Kachchh, first on August 12, when she remained on task for five days, and once again on August 24.

The Kori Creek report turned out to be a 'red herring' and prevented the *Talwar* from becoming a fully operational ship with well-honed sensors when she was required to carry out a barrier patrol off the north-west tip of the Kathiawar Coast (30 to 80 miles west of Okha) to provide advance warning of the approach of the Pak Fleet. She had been ordered to proceed to this station on September 2 but had to soon take shelter at Okha owing to a major breakdown. On the night of September 7/8, when some Pakistani warships, disguised as merchant ships, approached Dwarka, hurriedly bombarded the temple town and escaped, *Talwar*, which had far superior firepower than these ships and could have easily neutralised their nuisance potential, was only 30 miles away, carrying out essential repairs to her machinery and had virtually become *hors de combat*. Had the Navy received any prior intelligence on the Pak Navy's intentions and had the *Talwar* been operational, the Dwarka incident might have had a different ending.

When Pakistan launched a massive attack in the Chhamb sector on September 1, ships exercising in the Bay of Bengal were ordered to immediately return to Bombay. *Mysore*, *Ranjit*, *Khukri* and *Kuthar* sailed from Vishakhapatnam on September 2 with full despatch. *Kirpan* followed a day later after rectifying some defects in her propulsion machinery. On September 3 *Brahmaputra* and *Beas*, which were in Calcutta, also sailed for Bombay. All ships were to fuel at Cochin on September 5 and were

expected to reach Bombay by September 7.

Seahawk aircraft of the *No. 300* Naval Air Squadron were 'working up' at Jamnagar and were placed under the operational control of the Air Force on September 2 for offensive action against the enemy. All Naval air squadrons - the *No. 300* Seahawk fighter squadron, *No. 310* Alize antisubmarine aircraft squadron, *No. 550* Seahawk and Alize trainer squadron and *No. 551* Kiran jet trainer squadron - were made operational for reconnaissance and antishipping roles and for the air defence of Indian seaports.

Since a large number of ships were still to become operational, the Naval Dockyard authorities at Bombay were instructed to speed up the refit of *Vikrant, Delhi, Betwa,* Rana and *Trishul* while the Naval Commands initiated local defence measures for the ports in their areas.

Intelligence on the disposition of the Pak naval forces had indicated that the Pak submarine *Ghazi* was at sea and was likely to have been deployed off Bombay for antishipping operations and the Pak Fleet had been proceeding to sea every day for exercises and returning to its anchorage in the evening.

Return to the Arena

On September 5 *Mysore,* accompanied by the *Ranjit, Khukri* and Kuthar, reached Cochin, refuelled and sailed for Bombay. Since there was no likelihood of *Vikrant* being available for the operations, the *No. 310* Alize antisubmarine aircraft squadron was deployed at Bombay by the Flag Officer Commanding the Indian fleet. Although strict instructions had been received from the Government not to seek action at sea outside our territorial waters, all ships were directed to hunt and destroy Pak submarines whenever they were detected.

The Indian Army crossed the international border between India and Pakistan in the Lahore Sector in Punjab on September 6 to forestall further Pakistani intrusions into Indian territory and to destroy Pak concentrations in this area. The Indian Air Force was also fully committed to the operations in close co-operation with our Army and initiated action for raids on vital installations and targets in Pak territory. Vice Admiral B.S. Soman, Chief of the Naval Staff, consequently made a signal at 1030 hours on the same day, based on an Army Headquarters' directive to its Commands, to all naval units and formations stating that war had broken out with Pakistan and all measures were to be immediately adopted for neutralising any misadventure on the part of the Pak navy. A signal already issued by the Pakistan Naval Headquarters and intercepte by the Indian intelligence agencies, had ordered all Pakistan naval units to execute Operation *Response* which apparently referred to instructions and briefings previously

issued to the Pak units to commence hostilities against India. However, at 1040 hours, i.e., within 10 minutes of the Naval Headquarters issuing the earlier signal from Delhi, the Government of India directed the Naval Chief to withdraw the signal, causing considerable embarrassment to Vice Admiral Soman, stating that although hostilities had commenced with Pakistan and the Army and the Air Force had been fully committed to the operations, no declaration of war had taken place. It further said that the Indian Naval Fleet and all other units of the Indian Navy were not to seek action at sea and were to confine themselves to being prepared for action and to defend themselves if and when attacked by Pak naval units.

While the main body of the Fleet was on passage to Bombay with full despatch, four ships were on patrol off Bombay with Alizes from the Santa Cruz airport carrying out antisubamrine searches ahead of the Fleet with the Seahawks of the *No. 300* Squadron augmenting its offensive hunting power. Two ships each at Goa, Cochin and Vishakhapatnam, provided local naval defence. All Indian merchant ships were ordered to keep clear of the Pakistani coast and its territorial waters. Orders were issued for the detention of all Pakistani merchant ships in harbour in retaliation for the detention of Indian merchant ships in Pakistani ports by Pakistan.

On this day all units of the Pak Navy left Karachi harbour at 0900 hours and proceeded to sea. In the evening, the Pakistan Air Force launched a massive attack on Jamnagar airfield where, besides, IAF aircraft, a number of Seahawk aircraft of the *No. 300* squadron had been deployed. The naval base at Jamnagar, *Valsura*, was only a few kilometres away from the Pak attack approach line but did not suffer any damage. It was sheer ingenuity on the part of the Commanding Officer of the *No. 300* Naval Air Squadron, Lieutenant Commander (later Rear Admiral) R. V. Singh, his Senior Pilot, Lieutenant (later Captain) R.N. Ghosh and other pilots that saved the Seahawks from any damage though several IAF aircraft and the runway suffered severe damage. Pakistani B-57 bombers continued to bomb Jamnagar airport and the IAF station throughout the night of September 6/7 and withdrew only at dawn.

In fact the Seahawk aircraft of the Navy had been taken to Jamnagar with the specific purpose of putting the high-power radar installation at Badin in Pakistan, which is only 150 nautical miles away from Jamnagar, out of action. These aircraft, with their rockets and bombs, were best suited for the purpose.

Eight Seahawks and one aircraft had arrived in Jamnagar from Goa on September 1 and by September 3 had flown 27 sorties for their armament 'work-up' in preparation for the strike on Badin when they were placed under the operational control of the Western Air Command and

adopted the immediate state of readiness on September 5.

Jamnagar Attacked

The strike on the Badin radar installation had been scheduled to be launched at dawn on September 7. However, as mentioned earlier, at 1920 hours the previous evening, eight B-57 bombers of the Pakistan Air Force launched a sustained all-night attack on Jamnagar during which one B-57 bomber, while on a low run over the airfield was shot down, seconds after dropping several bombs. In its hurry to escape the ground flak it also dropped two seven shot US-made Honeycomb rocket launchers near the Seahawk aircraft parked on the tarmac. These have since been preserved as souvenirs of the Pak attack on targets of no military significance.

Since some of the ground installations including the air traffic control tower at Jamnagar had been damaged and the air defence of Bombay needed to be strengthened immediately, the strike on Badin on September 7 was abandoned and all nine aircraft returned to Bombay to provide dawn-to-dusk combat air patrol and operational sorties until the end of the hostilities. Night patrolling sorties were provided by Alize aicraft at Bombay, Jamnagar, Goa, Cochin and at some places in Punjab in support of the Army operations. To quote a senior pilot of one of the squadrons, 'While one of our aircraft was spiralling upwards over an undisclosed tactical area in Punjab to a height of over 15,000 feet in order to provoke the Pakistanis to use their height-finding radar, another aircraft was being rushed through an emergency inspection at the air work hangars at Bombay; while one of our young sailors at Goa was busy writing a letter home during a short respite, using only a penlight torch, to tell his mother how proud he felt to be an integral part of our defence apparatus, his Cochin counterpart was removing a set of aircraft batteries to despatch them to Bombay for immediate repairs; some of our pilots were awaiting their turn to take off at the briefing room at Bombay while others were taking off on a 'no-lights' runway at Jamnagar on reconnaissance and antisubmarine sorties. The cycle of briefing, the mission itself and debriefing continued ceaselessly and we carried on, flying through dusk and dawn, day and night, in a never-ending search for the enemy. The spirits were sky-high and any time any one felt sleepy, he snatched his forty winks under an aircraft fuselage and was soon back on the ball. The mission was clear and there was never any compromise on that - and we discharged our duties as best as we ever could. However, the Pakistanis, it seemed, preferred to remain within their territorial waters and the only time they dared choose to come out was when they undertook some *kabaddi*-type of bombardment on the temple town of Dwarka in which the

only casualty was a cow. By the time we reached there to arrange the cow's funeral, they had vanished and remained so, throughout.

On Task

Meanwhile the major units of the Fleet arrived in Bombay on September 7 and after they were fuelled and all operational defects were rectified, *Mysore*, with the Flag Officer Commanding the Indian Fleet on board and accompanied by the *Rajput*, *Ranjit*, *Rana* and *Betwa*, sailed out of Bombay before nightfall the same day for defensive patrol outside the harbour as a possible attack on Bombay that night had been indicated by intelligence.

By now 19 naval aircraft had been pressed into service for the air defence of three ports on the Western seaboard - six Seahawks and three Alize's at Cochin. Liberator and Super-constellation maritime reconnaissance aircraft of the Indian Air Force were also deployed for searches outside the limits of coverage of the Alize's in the sea areas off Bombay and the coasts of Maharashtra and Gujarat.

On September 8, *Kirpan*, which had had a breakdown on the East Coast, arrived in Bombay, followed a day later by *Brahmaputra* and Beas, which had sailed from Calcutta on September 3. While on passage to Bombay on September 9, *Beas* had picked up a submarine contact at 1230 hours about 45 miles south of Bombay. An urgent attack had been carried out, followed by a deliberate attack some 25 minutes later but soon thereafter the contact had been lost. The records and analysis subsequently carried out indicated that this may well have been a submarine, though no signs of damage to the submarine were visible on the surface after the attack. A merchant ship *SS Jalaveera*, also had a disappearing radar contact twice at 0500 hours and 0700 hours the same day at a position 40 miles west of the position of the *Beas*, thus confirming the presence of a submarine in the approaches to Bombay.

Talwar, which had been deployed for barrier patrol off the coast of Saurashtra in August 1965 and which had taken refuge at Okha after being virtually immobilised by certain major defects in her propulsion machinery, managed to carry out essential repairs and sailed from Okha on September 8 and reached Bombay on the morning of September 9. *Tir* which was on passage to Port Swettenham in Malaysia was directed to return to Port Blair and carry out patrols in the sea areas around the Andaman and Nicobar Islands. Two seaward defence boats, *Savitri* and *Sharayu*, were sailed from Bombay to Okha to be deployed for barrier patrolling at the entrance to the Gulf of Kachchh.

On September 8, a Paksitani merchant ship at Vishakhapatnam, *SS Al Ahsan*, was impounded and 51 persons, including the ship's crew' and the

Captain's wife and son, were interned. The ship, which had arrived a few days earlier for the ostensible purpose of loading manganese ore, had been making unpredictable movements in the harbour and even its crew's behaviour was suspicious. It had been appreciated that if the ship had any evil intent, she could have scuttled herself inside the harbour to block the turning basin or just outside the harbour to block the entrance channel and thus bottle up the ships inside. She could even damage vital harbour and naval installations and thus had considerable potential for sabotage.

Under the operational control of the Commodore East Coast, Commodore (later Rear Admiral) D. St. J. Cameron, a seaward defence boat, *Ajay*, was assigned the task of closely monitoring the activities of the 7,000-ton Pakistani merchantman which was soon moved to the outer harbour under the supervision of the *Ajay* and kept under surveillance until the disembarkation of the Pakistani crew.

During the first week of hostilities, the ships of the Indian Fleet had thus been somewhat exposed to Pak air, surface and subsurface threats with operational units trying to reach vantage points with full dispatch. Besides, having been away from the base ports for well over two months during which time the main bulk of the Fleet had been involved in sustained steaming in the Bay of Bengal, most of the ships had developed defects requiring urgent dockyard attention. To mention some of these defects, *Mysore*, with only half her boilers functioning, had her maximum speed reduced from 31 knots to 18 knots, *Brahmaputra, Beas and Betwa* could only do 15 knots while their rated speed was 25 knots, *Rajput and Rana*, which had been undergoing refit and had to be hurriedly brought out to sea, had only one boiler each operational, *Betwa* was at sea without any trials whatsoever after having undergone a long and extensive refit, and *Khukri* and *Kuthar* were unable to sail.

Sneak Pak Raid on Dwarka

As mentioned earlier, owing to the embargo on the ships of the Fleet not to move north of the latitude of Porbander and the immobilisation of *Talwar* at Okha due to engine trouble, Pakistan Naval forces had carried out a sneak raid on Dwarka on the night of September 7/8. This was a proverbial blot on the Indian Navy's escutcheon as such raids could never have been possible if the Navy had been permitted to operate according to its plans which, at that time, were, first, to carrying out sweeps off the west coast of Pakistan to disrupt the port of Karachi and inflict vital damage on port installaitons (as was done later in 1971), *if ordered*, next, the destruction of the Pakistan naval forces, *if ordered*, third provision of general support for the defence of the major ports on the west coast, and, fourth,

provision of general cover and protection to our merchant ships in the Arabian Sea, especially those plying to and from the Persian Gulf and the Red Sea. Had the Indian Fleet been deployed as it should have been, ships of the Pak Fleet would never have ventured out of Karachi harbour (as happened in 1971) and an attack, only for propaganda purposes, on a temple town with no defence establishment and of no strategic or tactical importance would never have taken place. It was not surprising, therefore, that while the only casualty of the attack on Dwarka by a Pakistani 'armada' was a cow which was grazing on the beach and which 'made the supreme sacrifice in defence of the temples'. Pakistan derived considerable propaganda leverage from the incident which was its very purpose.

Vice-Admiral N. Krishnan who, as the Flag Officer Commanding-in-Chief of the Eastern Naval Command, covered himself with glory during the 1971 Indo-Pak conflict, had this to say on the restrictions imposed on the Navy during the 1965 operations,

> Perhaps it was a political decision not to use the Navy in the war. But when an enemy said, 'Delhi chalo', the Fleet's answer should have been an unambiguous 'Karachi chalo'. I may be wrong, but if I have a weapon honed and ready and the political decision is that I should not use it against an enemy at war, my only conclusion would be that my Government has not enough confidence in that weapon for reasons not known. As it was, the Pakistanis bombarded Dwarka which was an undefended port and got away. One of our frigates, *Talwar*, was at Okha. It is unfortunate that she could not sally forth and seek battle. Even if there was a mandate against the Navy participating in the war, no Government would blame a man-of-war going into action, if attacked. An affront to our national prestige and honour is no joke and we cannot laugh it away by saying, 'All the Pakistanis did was to kill a cow'. Let us at least erect a memorial to the 'unknown cow' who died with her hooves on in a battle against the Pakistan Navy.

The Dwarka episode is best described in the words of Shri K.D. Kadawala, Senior Platoon Commander, Okha Home Guards who was a member of the Dwarka Lighthouse staff in 1965,

> On the evening of September 7, 1965 at around 1730 hours some Pak Navy ships, disguised as merchant ships, arrived at Dwarka and anchored south of the Dwarka Lighthouse, very close to the coastline and visible from the Dwarka town. At that time I was on messenger duty in the lighthouse which is close to the Air Force base, a small

observation post which had just been set up. A regular watch was maintained from the top of the lighthouse by the Air Force staff and I used to carry messages from the lighthouse to the Air Force base.

During the Indo-Pak conflict there was a complete black-out in the Dwarka town. There was no naval ship in port as a naval base was yet to be established at Okha. However, a small group of cadets from the Indian Navy were stationed at Okha, having accommodation in the town library building and the Commander in charge of the group was stationed at the European Guest House.

At this time, men from the Air Force, Home Guards and the local police used to maintain regular patrolling on the beach. As already stated, the 'merchant' ships arrived at low tide in the evening and it was difficult to identify the nationality of the vessel. However, the matter was immediately reported to the Air Force base at Dwarka.

At around 2355 hours, during high tide, the vessels suddenly started firing over the main temple of Dwarka which lasted for more than 20 minutes. During this period the ship fired around 50 shells which included some 5.25-inch rounds fired by the Pak cruiser *Babur*. But, due to unknown reasons, most of the shells fell between the temple and the railway station, which is around three kilometres away from the lighthouse. There was no damage to any building, though there was some damage to the Railway Guest House situated near the railway station. The twentieth-century *avatars* of Mahmud of Ghazni had failed in their mission.

Nearly all the shells fell where the soil was soft and they remained unexploded. These shells were later collected by the Home Guards, the local police and Air Force men and brought to the Air Force base. Out of them about 35 to 40 were unexploded live shells.

The Pakistani naval authorities must have undertaken this operation with full knowledge of the Indian Government's embargo on the Indian Navy's operations north of Porbandar's latitude and attacking Pakistani naval units if encountered at sea. They were aware of *Talwar's* presence at Okha, the lethality of her firepower and the proximity of some Indian naval units patrolling the seas off the West Coast and yet they ventured to carry out a sneak raid so close to Okha.

Had *Talwar*, which was carrying out essential repairs on the night of September 7/8, at Okha, 30 kilometres north of Dwarka, been operational, she could easily have steamed out of Okha and put paid to the Pak Fleet's wild adventure. The *Talwar's* radar-controlled automatic gunnery control system operating two rapid-fire guns, each capable of firing 15 long-range high-explosive 4.5-inch shells per minute and her speed

of over 30 knots would have easily neutralised the threat from the Pak warships all of which were of World War II vintage and had inferior speed and firepower. Recalls Commodore Y.P. Malik, who was serving on board the *Talwar* as a Lieutenant during the 1965 conflict,

> Prior to the outbreak of hostilities, *Talwar*, a newly acquired multi-purpose frigate, was deployed on barrier patrol off the Indo-Pak maritime boundary. The basic purpose of the patrol was to detect the movement of Pakistani Naval units and report it to the Indian Naval Command. It was also intended to investigate Pakistani trawlers found fishing in our waters to find out if any of them were engaged in espionage or were operating as saboteurs. The ship carried out this patrol on two occasions for a few days each, and it was during the second period that the ship developed major defects in its boilers and started running out of feed water. She, therefore, entered Okha harbour to rectify these defects and to embark feed water for further deployment. The rectification of these defects was attended to both by the ship's staff and by some local ship repair agencies with the assistance of the Okha Port Authority. Some of these civilians who attended to this work on board were believed to have extra-territorial sympathies.
>
> It was at this juncture that a flash signal from Naval Headquarters was received stating that Pakistan had declared hostilities against India. On receipt of this signal immediate screening of personnel working on board was started to prevent any attempted sabotage on board. Although no orders were received by the ship, an all out effort was made to make the ship operational by the ship's staff. There was a kind of anxiety in the mind of the ship's Commanding Officer, Captain (later Commodore) V.A. Dhareshwar, due to the fact that the *Talwar* was the only fighting unit left on the West Coast, all other Indian Naval units which were operational having just returned to Bombay after long periods of steaming in the Bay of Bengal. The ship was also experiencing tremendous difficulty in communicating with other naval authorities during the nights due to anamalous electromagnetic wave propagation conditions prevailing in that area. The ship could thus receive and transmit signals only during daylight hours and communication at night had to be invariably resorted to with the help of land lines. Under these circumstances there was a certain amount of apprehension in the mind of the Commanding Officer as the ship's position was considered compromised and she was very close to the Pakistani waters and totally isolated from the rest of the Navy.

At about 1700 hours on September 7, the ship intercepted a message on Pakistan Navy broadcast addressed to four indefinite call-signs. Thereafter a regular signal traffic between these four units and the Pakistan Navy broadcast was intercepted. At times the ships were heard communicating in plain launguage saying, 'Do not ask for repetitions. I shall pass you by light'. this clearly brought home that four Pakistani naval ships had been put to sea. Intercept bearings (directions from which these signals were being received) of these vessels indicated that they were drawing left. However, at about 1900 hours, the bearings started drawing right. This indicated that the units were carrying out patrolling outside Karachi. At about 2030 hours the intercept bearings of these ships rapidly drew left. At about 2200 hours they were found to be abeam of Okha. 'Action Stations' was sounded on board the *Talwar at* this juncture as it was concluded that the attack may well be aimed at the *Talwar* and the presence of the ship known to the enemy. However, no effort to leave harbour and engage these ships could be made by Captain Dhareshwar due to the material state of the ship. To our surprise the intercept bearings continued to draw left and we knew that Okha was not the target of the Pak Fleet. However, an hour later the ship received a message from the Okha Port authorities that Dwarka was being shelled by Pakistani naval vessels. A few seconds' silence on board confirmed the same as the sound of the guns could be clearly heard. The Gunnery Officer also claimed that the 4.5 inch mounting on board could effectively engage the four Pakistan Navy ships due to her superior weapon control system but the *Talwar* was in no state to do so. As a result, the four Pakistani units had a free hand in choosing their targets.

On the morning of September 8 a signal from Naval Headquarters directed the *Talwar* to investigate the damage done to Dwarka by the Pakistani vessels. I, accompanied by another officer of the ship, Lieutenant (later Captain) J.P. Agha, proceeded to Dwarka to assess the possible damage to Indian property and the tactics used by the Pakistani warships. After speaking to various people at Dwarka we learnt that the Pakistani vessels had approached the lighthouse at Dwarka disguised as merchant ships before night-fall, dropped their anchor within about 1.5 nautical miles from the lighthouse and had opened fire at midnight under cover of darkness on whatever possible target they could aim at. After an interval of about half an hour, one ship was seen to have fired green flares in the air which was a signal for the waiting Pakistani aircraft to commence their attacks. The ships held their fire while the Pakistani aircraft attacked the

Dwarka railway station where an engine was carrying out loose-shunting of various railway wagons. The air attack resulted in slight damage to the railway engine and a small portion of the roof of the Railway Guest House was blown off. No substantial damage was caused by the ships as Dwarka town was darkened at that moment and most of the shells from the ships, which strangely failed to explode, landed in an open space on the beach. The only casuality of this shelling was an old woman who lost a finger due to a hit by a shrapnel.

The ship in the meantime received orders to return to Bombay. However, in the morning, a number of telephone calls and a couple of telegrams were received by the ship, warning the ship that the Pakistani submarine *Ghazi* was waiting outside Okha harbour for a possible attack on the *Talwar*. These calls were obviously a hoax engineered by the enemy's departure so that a Pak submarine could take up an advantageous position for a possible attack on the ship. The ship left harbour at about 1200 hours and headed for Bombay. On arrival the ship joined the rest of the Fleet units and further operations off the coast of Pakistan were accordingly executed.

Pakistan's Nautical Phantasmagoria

While the Pakistan Fleet based at Karachi never stirred out of her territorial waters during the operations except for the '*Kabaddi*-type' attack on Dwarka, whose only *raison d'etre* had been the Krishna temple known the world over, the landing of a few Pak Navy shells on the shores of Kathiawar provided a golden opportunity to the Pak war machine to launch a propaganda war against India *a la* Goebbels who believed that 'a spoonful of fact added to a panful of fiction helps lend credibility to all the false claims and helps the jingoistic utterances go down in a more delightful way, 'if one were permitted to take liberties with Maurice Chevalier. Writes the Pakistani columnist Aziz Beg, in typical medieval naval history style, in his *Seventeen September Days*,

> Within hours of the treacherous attack on Lahore on September 6 (presumably by the IAF - author) the Fleet was ready in all respects and put to sea to take on the enemy. Such a high state of combat-readiness in (the) case of the Navy, a highly complex war machine, jam-packed with military hardware, honeycombed with electric and electronic devices within its narrow confines, is extremely creditable.
>
> Soon the ships were at sea, riding the waves, pounding the sea,

carrying out their many tasks. The Navy was to guard the shores and keep the sealanes of shipping free of enemy interference. This was done with grim determination and remarkable efficiency. The alertness, efficiency and high state of preparedness was an effective deterrent to the enemy. Five times our size, the Indian Navy apparently could not venture beyond their safety limits. According to stray reports many of the Indian Navy ships, during this period, managed to spend their time in repair docks or harbours - refitting. This inactivity on the part of the Indian Navy was even questioned in the Lok Sabha later when a member acidly enquired, 'What was the Indian Navy doing when the Pakistan Navy bombarded Dwarka?'

And so round the clock, Pakistan Navy ships churned the seas and kept the watch. The enemy hid himself out of our reach. Then our bold sailors added a dash of daring and adventure to the otherwise unspectacular patrolling and smashed the fortress of Dwarka (the temple walls of Dwarka must have been misconstrued by the Pak Navy as fortress walls).

Situated a little over two hundred miles south-west of Karachi, the fortress of Dwarka occupied a strategic position. With powerful radar installations the enemy kept watch both on aircraft flight and ship movements. It was of value to the enemy for providing protection to Jamnagar and Bombay agaist possible attack from air and sea. Moreover, it directed its own aircraft to attack the south-east parts of West Pakistan. After the initial unsuccessful attempts by enemy aircraft against Karachi, it was decided to silence this enemy post (Other than an Air Force observation post set up during the operations, Dwarka had no defence establishment or installations and hence had no strategic or tactical importance - author).

It was midday on September 7 when orders were flashed to the Pakistan Naval Flotilla to bombard Dwarka. Within minutes the news flashed through the wardrooms (officers' messes) and the lower decks. There was excitement and the flurry of preparation. Grizzled sailors, who had sailed the wide oceans, seen strange lands, exercised with mighty navies of the world, knew perfectly well the task assigned to them. None underestimated the enemy who, by any standards, had formidable offensive force, consisting of an aircraft carrier, a heavy cruiser, one light cruiser and a number of destroyers. Yet there were no faint hearts, no fear and no false bravado. Every face was grim, every heart stout and determined. The threat to the sacred land of Pakistan was fully understood. Only one thought was uppermost in everybody's mind: to crush the enemy who had dared

to defile the sacred land of Pakistan.

During the dark night ships taking part in the operation closed up at 'action-stations'. The 'Operation Rooms', the nerve centres of the ships, were fully manned. The eyes of the navigating officers were glued to their respective radar screens. There was a low throbbing hum in all the ships, the confident hum of the mighty turbines. All eyes were vigilant, all ears intent. The radar screens were clear, reports were being passed to the flagship where they were sifted, filtered and finally evaluated for dissemination to the ships in company. By 2200 hours all were set to go. Now and then the air crackled by sharp orders passed from the flagship. The fleet raced towards its destination, *Alamgir* leading and *Tippu Sultan* bringing up the rear. Precisely at midnight all guns were bearing at Dwarka.

Fifteen minutes past midnight the guns boomed as if fired by one trigger. The still air was rent by deafening thunder. A red flame, a little smoke and the majestic recoil of 4.5-inch guns and then shells would hurtle through the air every few seconds to bring destruction to the target. Soon the air was filled with the acrid smell of cordite. And then as the clock-hands moved to 30 minutes past midnight all guns ceased fire and a silence fell over the sea. Smoke could be seen over Dwarka.

The ships moved into their new stations. The sky was pitch dark; clouds hung over the sea. Northward the fleet moved; silent, majestic and defiant. Swiftly and silently the grey hulls cut their path. Their mission accomplished, their blows delivered, the proud men of the Pakistan Navy stood at their 'action-stations.' In that dark night, the brave sailors of the Pakistan Navy accomplished their task with triumph.

After Dwarka was razed to the ground, it was expected that the enemy, wounded physically and his pride hurt, would come out of his lair. The ships, therefore, remained more alert and more vigilant.

The sailors kept unceasing watch for many days, most of the time at 'action-stations'. They were at 'action-stations' when the pale sun rose from the sea, turning it into gold. They were at 'action-stations' at noon hours in scorching heat and humidity. They remained alert in cool, soothing evenings when a gentle breeze tried to lull them to sleep after the day's fatigue. They remained awake during cloudy nights with not a single star to cheer them. At last the Indians reacted, but with characteristic treachery.

It was September 22. India had already sought the postponement of cease-fire from midday to the following morning. A Pakistan Navy unit was attacked on the high seas by the Indian warships. The

Pakistan Navy unit carried out a successful counterattack and sank one enemy frigate, worth about six crores of rupess. Pakistan Navy suffered no damage or casualities. This heroic action of the sailors of Pakistan Navy is yet another saga enacted during this war. It thus added another glorious chapter to the annals of their Service.

Faced with an enemy which possessed a formidable striking force consisting of most modern warships and supported by a powerful aircraft carrier, the officers and men of the Pakistan Navy never faltered in their arduous, hazardous and hair-raising tasks. With cool courage and selfless dedication to duty they carried out their assignment and successfully defended the coast.

Brahmaputra 'Sunk'

As is well-known, on September 22, in a panic reaction to the sighting of a few unidentified naval ships near the Pakistan coast north-west of Karachi, a Pak Naval unit opened fire and damaged a frigate before realising that the 'enemy' ships, which managed to limp back to their home port, belonged to Iran and not India. Despite the embarrassing fiasco, Pakistani authorities lost no time in claiming that the Pak Navy had attacked an Indian Naval unit and sunk the antiaircraft frigate, *Brahmaputra*. The Indian Navy had, therefore, to parade all three antiaircraft frigates of the Whitby class, *Brahmaputra, Beas and Betwa*, to convince the world press that had flocked to Bombay that Pakistan's claim was blatantly false.

However, for having 'sunk' the *Brahmaputra* and 'razed the fortress at Dwarka to the ground', three 'heroes' of the Pak Navy were decorated soon after the operations were over. They were Commander K.R. Niazi and Lieutenant A. Tasneem receiving the Sitara-i-Jur' at (Star of Valour) and Engine Room Artificer G. Nabi honoured with a Tamgha-i-Jur' at (Medal of Valour).

Though Aziz Beg's saga reads very well and would impress the reader with the facility of his chimerical imagination, the fact that the raid on Dwarka was merely a *kabaddi*-type attack on a 'safe' target and not a major naval operation like Pearl Harbour as depicted in Beg's piece of fiction was realised soon after the conflict was over though, to this day, Pakistan has persisted with its claim of having emasculated the Indian Navy with 'a single shot'.

On September 23 a press report from Cairo gave out the facts about the 'sinking' of the *Brahmaputra* - it had been realised that a case of mistaken identity had led to an encounter between the naval units of Pakistan and Iran in which two Iranian ships had been damaged. This had immediately been followed by the President of Pakistan announcing gallantry awards

to the second-in-command and an engine room artificer of the *Ghazi* for having 'sunk' the *Brahmaputra*. As mentioned earlier, the world press and naval attaches of all countries accredited to India were invited to have a cup of tea on board the *Brahmaputra* at the Naval Dockyard, Bombay by the Fleet Commander, Rear Admiral (later Vice Admiral) B.A. Samson who told them, 'Here you are on board a sunken vessel. Now you know that it has not become a submarine!'

Material Support

As regards the operations in the Arabian Sea, it goes to the credit of the Naval Dockyard at Bombay that it rose to the occasion and by September 10, through its magnificent efforts, removed nearly all the major defects in the ships which had limped back from the East Coast between September 7 and 9, after an absence of well over two months. By the evening of September 10, when the Fleet sailed out of Bombay for the first offensive sweep off the Kathiawar coast, its material state had improved considerably. The *Mysore* had all her four boilers operational, the *Talwar* had rejoined the Fleet after her uneasy stay at Okha and a quick overhaul at Bombay and the other ships were in far better shape after the emergency repairs.

Fleet Operations

As of September 10 the Fleet, having regained about three-quarters of its strength, comprised the cruiser, *Mysore*, the three antiaircraft frigates of the 16th Frigate Squadron, *Brahmaputra*, *Beas* and *Betwa*, the three ships of the 14th Frigate Squadron, *Khukri*, *Kirpan* and *Kuthar*, the general-purpose frigate *Talwar*, the two 'R' class destroyers, *Rajput* and *Ranjit*, and the tanker *Shakti*. Maritime reconnaissance aircraft of the Indian Air Force were also made available, their operations being limited to one sortie per day for searches in the sea area south of the latitude of 21 degrees 30 minutes north, i.e., the latitude of Porbandar. A few Alizes and Seahawks had also been positioned at Bombay which, besides the air defence of Bombay, were to carry out searches at sea and to launch antiship and antiaircraft strikes in support of the Fleet, though their operating range was limited by the fact that these aircraft did not have any strategic capability.

At this time the Pak submarine, *Ghazi*, was known to have been at sea since September 3 and was suspected to be operating in the waters west of Bombay. The Pakistani Fleet consisting of one cruiser, six destroyers and the tanker, *Dacca*, had infrequently been venturing out to sea for short periods of patrolling within the air cover of PAF aircraft and had only succeeded in landing a few shells at Dwarka and scooting back to the safety of Karachi Harbour. Air cover to the Pak Fleet was provided by four to six

long range reconnaissance aircraft of the Pak Air Force fitted with long-range radar and homing equipment. The air strike capability was provided from Karachi by Sabres with an operating radius of 300 miles and B-57 bombers with an operating radius of 650 miles. These aircraft had already exercised with the Pak Navy and had acquired adequate experience in combined and co-ordinated maritime operations.

A comparison of the capabilities and limitations of the two Fleets indicated that while the Indian Fleet was superior to the Pak Fleet in antiaircraft and antiship fire power (all Pak ships, at this time were of World War II vintage while nine out of the 11 ships of the Indian Fleet had been acquired during the 1950s and early 1960s), the Pak ships had greater advantage in torpedo fire power (42 torpedo tubes against 8) though some of the Indian ships were equipped with the latest antisubmarine weapons such as Squid and Limbo mortars which fired projectiles in a pattern to achieve a much higher probability of a kill than conventional depth-charges launched by depth-charge throwers. The Pak Fleet had an average speed capability of over 22 knots while the Indian ships averaged only 15 knots, because of her superior material state, and also had better maritime reconnaissance and strike capability than the Indian Fleet.

It was, however, appreciated that though the strike range of the B-57 bombers was 650 miles, only a few of these aircraft and Sabres at Karachi were likely to be committed to maritime reconnaissance and air strike at sea in view of the PAF's commitments to the Pak Army. It would, therefore, be possible for the Indian Fleet to operate up to a range of 200 miles from Karachi or Badin by day and get as close to Karachi as possible by night accepting the risk of air strikes which during the dark hours were not likely to be very effective. It was also realised that the Pak reconnaissance aircraft would be able to track the Indian Fleet with impunity as the latter had no 'integral' air element to provide a combat air patrol or to sanitise the skies. Besides, the Pak Fleet, if located and challenged. could refuse battle because of its superior speed and even attempt another bombardment of an Indian port, however insignificant its tactical importance, for political mileage and as a diversionary measure.

Rear Admiral (later Vice Admiral) B.A. Samson, who was the Flag Officer Commanding the Indian Fleet, relives the days when he led the Indian Fleet into the enemy-infested waters to seek and destroy the Pak Fleet,

> Earlier my assumption was that I would have adequate air search capability to provide a reasonable chance of locating the enemy, and on this basis I would have deployed the Fleet to a position which would

enable me to meet as much as possible the tasks of bringing the enemy to action, to afford protection to our major ports on the West Coast and to provide cover to our merchant ships from the Persian Gulf and the Red Sea. But with the very limited availability of reconnaissance aircraft, I had to revise my plan. The problem really was to find the enemy.

I decided to sail on the night of September 10/11 and probe as far north and north-west as possible, not forgetting the possibility of another Pak raid on one of the ports in Saurashtra. I hoped I would find the enemy and I decided also to remain at sea as long as possible, refuelling from the tanker, *Shakti*. This ship, having only one engine operational, was partially disabled and could not replenish me at sea and so I planned for her to sail independently to be anchored at Diu for refuelling the Fleet on September 13 and 14. In the event, her second engine also packed up and she did not sail at all, thus limiting my period of stay at sea. *Rajput*, one of the two destroyers, also packed up and returned to Bombay.

As regards air cover, I decided to stage two Alizes from Jamnagar and to carry out searches north of latitude 21 degrees 30 minutes north from 2000 hours on September 11 onwards and to arrange for six to eight Seahawks to be available at Jamnagar from 0600 hours on September 12 for launching strikes on Pak ships or the submarine up to a range of 150 miles from Jamnagar. The IAF Liberators would carry out searches in areas south of 21 degrees 30 minutes north.

Flying my flag on board the *Mysore* and with the *Brahmaputra*, *Beas*, *Betwa*, *Khukri*, *Kirpan*, *Kuthar* and *Talwar* in company, I sailed out of Bombay on our first sweep on the night of September 10/11. On the morning of September 11, within hours of our departure from Bombay, *Beas reported* an unidentified aircraft at a range of 42 miles. This aircraft appeared to have been shadowing our forces and was evaluated as a 'snooper'. Two Seahawk aircraft were scrambled from Bombay but could not intercept the unidentified aircraft as it had disappeared by the time the Seahawks arrived on the scene. Our position was thus likely to have been compromised.

An Alize's search was launched from Jamnagar at 2000 hours on the evening of September 11 and within half an hour picked up a number of contacts confirming the presence of two groups of Pak ships only 50 miles west of Okha and soon made a detailed wireless report on the disposition of the contacts to me and repeated it a few minutes later. Unfortunately, however, due to freak anomalous wireless propagation conditions prevailing in the area on that night, the wireless beam from the aircraft suffered unusually high

attenuation by the atmosphere and multiple reflection and refraction at varying levels as a result of which the signal did not reach the flagship or any other ship of the Fleet nor was it picked up by Jamnagar. At midnight the Alize aircraft landed at Jamnagar and transmitted the report to the Maritime Operations Room at Bombay on land line but even the rebroadcast of the report by the Naval Signal Centre, Bombay at 0200 hours did not reach the Fleet owing to the 'anaprop' conditions still prevailing west of Saurashtra on that night.

At 0300 hours on September 12 another Alize took off from Jamnagar, established wireless contact with the flagship and, after carrying out a search, picked up a few surface contacts about 90 miles north of the Fleet but, not being able to investigate them further because of lack of endurance, returned to base. A third Alize was airborne at 0400 hours on September 12 and searched the area without success as by this time the Pak warships had retreated to their own waters.

There was no doubt about the identity of these ships as when the first Alize was flying over them, they had switched their lights on and fired green Very's flares for purposes of identification but when the Alize did not respond with light signals, they had quickly realised that the aircraft was not their own and had then quickly switched off their lights and steamed towards the Pakistan coast at full speed to be in safe waters before daybreak. Thus 'anaprop' conditions had deprived the Indian Fleet of a rich haul that was there for the asking. By 0700 hours on September 12 the Pak warships, whose presence within 90 miles of our Fleet had been detected and reported at 2030 hours the previous night, had disappeared.

The failure of the flagship to receive the wireless message from the Alize aircraft appeared to be a re-enactment of a similar incident during the Battle of Jutland when, on May 31, 1916, the British Grand Fleet did not receive a similar signal on the location and disposition of the German High Seas Fleet from a Short 184 spotter seaplane piloted by Flight Lieutenant Rutland, which had been launched for the purpose by the aircraft carrier, *Engadine*. Two very similar but significant incidents separated by half a century!

The Indian Fleet was then ordered to proceed north with full despatch but had to soon turn south-west when it reached the northern limit of its search. Eight Seahawks which had come from Bombay to Jamnagar and two Toofanis (erstwhile Ouragons) of the Indian Air Force also carried out a sweep in the area after refuelling but without success.

On the morning of September 12, *Talwar* had another machinery breakdown and when efforts to rectify the defects failed, she was detached

from the Fleet to limp back to Bombay.

Towards sunset on the same day the remaining force proceeded northwards once again and continued its sweep till the early hours of September 13 when it intercepted two merchant ships laden with arms bound for Pakistan, *SS Steel Vendor* and *SS Steel Protractor*. The ships had to be forced to stop under threat of fire but could not be captured in the absence of clearance from higher authorities as it had been made very clear that the Indian Fleet was not to seek action though it was permitted to open fire in self-defence. And so the *Steel Vendor* and *Steel Protractor* continued to cruise towards Karachi, 'escorted' by the Indian Fleet at a distance of only two cables, until they reached the northern limit of the Fleet's sweep when the merchant ships, after bidding adieu to the Indian Fleet Commander, disappeared over the horizon!

At about 1000 hours on September 13, *Kuthar* picked up an underwater 'sonar' contact of a possible submarine and soon *Khukri* joined in the hunt. The contact was held intermittently until 1100 hours during which time the *Kuthar* launched deliberate attacks with full salvos from her antisubmarine mortar. The contact was, however, lost and the antisubmarine action terminated. The contact was assessed to be tracking at seven knots for a fairly long period and subsequent analysis led to the conclusion that it may well have been a submarine.

Ships were now beginning to run short of fuel and the only tanker, *Shakti*, not being available, the three ships of the 14th Frigate Squadron, *Khukri*, *Kirpan* and *Kuthar*, and the destroyer *Ranjit*, were detached on the afternoon of September 13 to carry out an offensive antisubmarine sweep off the approaches to Bombay and after an uneventful night, the Fleet returned to Bombay on the morning of September 14.

On September 17 *Khukri, Kirpan and Kuthar*, with gunfire support provided by *Rana* and *Ganga*, launched a thorough search of an area of about 5,000 square miles off Bombay as the *Ghazi* was believed to be operating in the southern approaches to Bombay. On September 21 and 23 'sonar' contacts were picked up and attacks launched by these ships but the contacts were soon lost. The ships continued on their antisubmarine patrol until September 24, one day after the implementation of cease-fire.

The main body of the Fleet comprising the *Mysore, Beas, Betwa, Rajput* and *Ranjit* (*the Brahmaputra* and *Talwar* had by now developed major defects and could not sail) carried out a sweep in the Arabian Sea from September 18 to September 23. This was originally planned to be carried out in the general direction of the Gulf of Aden to provide support for a number o

merchant ships bringing vital defence cargo from the UK. It was known that Pakistan was aware of the nature of cargo in these ships and their shipping programme and hence there was a distinct possibility of these ships being intercepted and either captured or destroyed. The distance from Bombay to Aden is 1650 miles and thus this sweep would entail operations far away from our shores but it was considered well within the capability of our whittled-down Fleet. Reports indicating likely Pakistani sea-borne landings on the Kathiawar Coast, however, put paid to the sweep and the Fleet was promptly sailed to intercept the Pak Fleet off Kathiawar.

Recalls Admiral Samson,

I sailed in *Mysore* with *Rajput, Ranjit, Beas, and Betwa* on the morning of September 18. My intention was to reach the Kathiawar Coast as early as possible to counter the landings and so proceeded at my best speed of 22 knots. I had to leave *Beas* behind to follow as she could do only 19 knots.

That evening at about 2015 hours, while I was on my northerly leg, an aircraft contact was picked up some six miles away. This aircraft was sighted by the *Beas* and was heard to be reporting to the Karachi transmitting station the position and disposition of our ships most accurately. The aircraft continued to shadow us and finally faded out at 2130 hours. I continued north till after midnight and then turned south-west. No enemy ships were sighted and it was evident that no landing was being attempted by the enemy on our coast. It is probable that the sea-borne landing operation was cancelled by the Pak Fleet when our presence near the Kathiawar coast was compromised.

Nevertheless, I continued to carry out sweeps in the same area on September 20, 21 and 22. On the evening of the 20th we intercepted wireless transmissions which were obviously from Pak ships and indicated that they had a contact of an 'enemy' on a south-westerly course at 10 knots. These transmissions were picked up by several of our ships and we were convinced that we were in close proximity of the enemy. However, it was not possible without direction-finding equipment to gauge the direction of these transmissions but they appeared to be northerly and so we continued in this direction. Despite the fact, however, that we continued in this direction for several hours at our best speed, we did not make any contact with the enemy. Bearing in mind that the intercepted message indicated that the contact they had was proceeding in a south-westerly direction, it was obvious that this contact could not be the Indian Fleet and in all

probability was some merchant ship proceeding either out of Karachi or the Gulf of Kachchh. I, therefore, turned towards the Gulf in case the enemy was attempting to intercept one of our merchant ships from this area. I found nothing and it was clear that this was another incidence of 'anaprop' electromagnetic condition and that these intercepted messages were being transmitted by local patrol vessels just outside Karachi Harbour. Thereafter, despite repeated high-speed sweeps as far north as Mandvi, no contact of any Pak ships was gained.

However, we continued to intercept Pak wireless transmissions and it was clear that our forces were being continuously shadowed more or less throughout this particular operation. It was also clear from these transmissions that air strikes were on call for Pak surface ships. Unfortunately our Alizes or Seahawks could not operate from Jamnagar after September 12 as repeated air attacks had rendered the airfield untenable. The Liberator maritime reconnaissance aircraft of the IAF, however, continued to carry out reconnaissance sweeps of the northern part of the Arabian Sea but failed to pick up any Pak surface or air contacts. In fact, on two occasions our forces were reported by them as the enemy and on one occasion the position of our force was reported in plain language!

On the morning of September 22, I had to detach the *Rajput* and Ranjit as they were running short of fuel. Meanwhile I had received a further signal concerning the merchant ships arriving from the Gulf of Aden bringing vital defence cargo and so I altered course with the *Mysore, Beas and Betwa* towards the central Arabian Sea to try and escort them to safety. But within a few hours of our sailing on our new mission we received a message from Naval Headquarters conveying our Government's acceptance of a cease-fire from 0330 hours on September 23 and so I decided to return to the Kathiawar Coast to forestall any attempt by the Pakistan Navy to create mischief in that area in a last-minute bid to gain propaganda value. I returned to Bombay with the regret that I had missed an opportunity to try and engage the Pakistan Navy in battle despite waiting just outside its lair for nearly two weeks.

Lessons Learnt

It is evident from this narrative that the war at sea could have had a different ending if the various 'chinks in the armour' of our Navy and the national policy on the Navy had been plugged and reinforced well in time. Some of these chinks were:

One, the Arabian Sea is a vast area and pinpointing the enemy on such a wide expanse was of vital importance for which the maritime reconnaissance efforts were totally inadequate, especially because the approaches to our West Coast ports from the Persian Gulf and the Gulf of Aden had to be placed under surveillance. Besides, while the Pak Navy continued to operate off the Pak Coast and the Kathiawar Coast, at no time did our maritime reconnaissance aircraft detect Pak ships while at the same time Pak maritime reconnaissance aircraft were more or less continuously shadowing our Fleet. In addition, the absence of staging facilities for naval aircraft in Saurashtra considerably hampered the Fleet's operations. This was considered necessary not only for increasing the strike and search range for our Naval aircraft but also for using them as diversionary airfields had our carrier been required to operate in the northern waters when they could have been required to divert to these airports owing to lack of fuel, damage or tactical reasons.

Two, intelligence was most inadequate. As is well known, it is not possible to carry out any worthwhile realistic operations if the intelligence-gathering machinery is not geared up to provide timely and accurate information on the enemy.

Three, the operations at sea were considerably hampered by the absence of reliable fleet tankers, especially because the Indian Fleet was not only required to carry out sustained operations in the northern waters but was also assigned the task of escorting our merchant ships from the Persian Gulf and the Gulf of Aden to our West Coast ports.

Four, anomalous electromagnetic propagation conditions had deprived the Indian Fleet of neutralising the Pak Fleet when it was out of its 'depth' and within 90 miles of our area of operations. Since the Pak ships had identified our reconnaissance aircraft and were aware of the presence of our Fleet, an alternative mode of communication such as visual signalling could have been used. Had that been done, the Fleet Commander would not have had to wait till morning of September 12 to receive the report on contacts which had been picked up at 2030 hours the previous night and which had disappeared by the time the report was actually received.

Five, far from being able to deploy some warships in the Bay of Bengal for the defence of our ports on the eastern seabord, the strength of the Fleet fell far short of the requirements of even the West Coast as a result of which Cochin had only two ancient escort destroyers

with obsolete weaponry, one diving tender, one seaward defence boat and one coastal minesweeper, viz.,*Godavari, Gomati, Konkan, Abhay* and *Kakinda*. Goa had only one coastal minesweepers, *Cannanore*, for their naval defence. The only ships and craft available for the defence of the East Coast and the Andaman and Nicobar Islands were two converted training frigates of World War II vintage, *Kistna* and *Tir*, and the seaward defence boat, *Ajay*. Hence, had the Pak Navy decided to deploy a few of their warships off East Pakistan, the Indian Fleet would have been hard put to contain them. To quote Admiral Soman, 'The deployment of the main bulk of the Indian Fleet on the West Coast meant that, had a gunship or two of the Pakistan Navy slipped out into the Bay of Bengal and operated there raiding our ports or sea lanes, we would, in the initial stages, with our small fleet, have been able to do nothing more than what opposition the coast batteries, where they existed, could offer with such assistance as ships like the *Kistna* and *Tir* and one seaward defence boat, *Ajay*, could render; which obviously would not have been much, in the absence of any radar linked to the coast battery guns. With our limited resources, there was no alternative to this but to accept this state of affairs, hoping that, once any of the Pakistan ships showed its hands on the East Coast, we could bring it to book, subject only to maritime reconnaissance which unfortunately was most inadequate.

As regards the West Coast it was appreciated that in making our deployment we must ensure that the Fleet Commander should have adequate ships to deal with the entire Pakistan Fleet at least on even terms in gunpower, and only the balance should be deployed to give seaward patrol and defence capability to the major ports on the West Coast. These ships, with the coast batteries, wherever they were in existence, and the fortuitous availability of Seahawks and Alizes of the disembarked squadrons on the carrier, were to provide the defence for these ports. I must emphasise that the availability of carrier aircraft was a bonus, as fighter cover for the defence of ports was, as matters stood at that time, essentially on Air Force commitment.

Six, though live antisubmarine training with a British submarine had improved the antisubmarine capability of our Fleet, the absence of a submarine wing in the Indian Fleet put the Pak Fleet in a position of considerable tactical and psychological advantage. If India had even one subamrine at sea, its presence would have been an effective deterrent against any Pakistani misadventure and would have kept the Pak Fleet far away from India's shores.

Seven, had the eight Seahawk aircraft at Jamnagar been allowed

to bomb the 'seeing eye' of the Pak Air Force and its air defence establishment at Badin, only 135 miles away from Jamnagar as the crow flies, on the morning of September 8 as had been scheduled, the war would have been over much earlier than it did and our aircraft losses would have been minimised. Commander P.N. Parashar, one of the pioneers of our naval aviation and a distinguished pilot, feels that a golden opportunity to cut Pakistan down to size was thus lost. He says, 'At the time of the 1965 Indo-Pak conflict, the *No. 300* Seahawk Squadron, with Lieutenant Commander (later Rear Admiral) R.V. Singh as its Commanding Officer, was at the IAF Station at Jamnagar for armament training when the Pakistan Air Force attacked the airfield. The Navy missed an ideal opportunity to prove the worth of naval aviation and the country was deprived of an opportunity to deal an effective blow to Pakistan. Across the border from Jamnagar, Pakistan had its major radar installation at Badin. Eight Seahawks of the *300* Squadron were available to attack and destroy it on September 8, 1965. We would have had a few losses. But it was a worthwhile target. I understand our aircrew were standing by and briefed and ready when the permission to launch the attack was denied by higher authorities.

But the three crucial factors that, far from enabling the Navy to carry out its task effectively, became virtual millstones around the Navy's metaphorical neck, were, first, not permitting the Navy to bring the more important components of its Fleet back to Bombay from the East Coast in August 1965 when it was well-known that Pakistan was preparing for a full-scale war; second, confining the Navy to the sea area south of the latitude of Porbandar, and third, not permitting the Navy to seek action against Pak naval units and to capture Pak merchant ships because of a spurious convenance - a war had not been *formally* declared!

The Navy Supplements IAF Surveillance

Another factor that needs to be taken into account is the role played by the Navy's surveillance aircraft. Lieutenant (now Rear Admiral) S. Ramsagar, an Alize pilot and a qualified flying instructor, had the distinction of being selected for piloting and captaining an Alize aircraft which was attached to the IAF for night surveillance and location of Pak airfields and radar installations during the 1965 conflict. He recalls,

On September 11, when the war had reached a crescendo, I, along with Lieutenant (later Commander) D.N. Rao, an Observer, and

Lieutenant Commander (later Commander) Dilip Chowdhury, another Observer who was the Captain of the Mission (I was the Captain of the aircraft, being a pilot), were briefed by Commander (later Captain) P.I. Telles, Commanding Officer of *Garuda* at Cochin. During the briefing he said that an aircraft was urgently required to assist the Indian Air Force in locating enemy radars on the Western border so that the Air Force could destroy the troublesome surveillance units which were detecting our own aircraft and alerting their air stations of the impending raids.

Commander (later Commodore) R.A.J. Anderson, who was the Commander (Air) of *Garuda*, warned us that the aircraft of the Navy had not been camouflaged for wartime operations overland and that the Indian Army and the Indian Air Force were not at all familiar with an Alize aircraft and were likely to mistake it for an enemy aircraft. Further, the Alize being basically an antisubmarine and reconnaissance aircraft over the sea, it has very poor all-round visibility, especially rearwards; besides, being an unarmed aircraft, except for rockets, bombs and depth charges, it would be an easy target for enemy fighters. He, therefore, emphasised that extreme care, vigilance and alertness would be required to ensure successful completion of this mission.

The main problem the IAF wanted us to solve was the pinpointing of enemy radar stations that were alerting its air stations of our air raids. The India Air Force was very keen to neutralise these surveillance units and regain the element of surprise during strikes. For this purpose it was decided that the Alize would operate from Ambala under the aegis of Air Commodore Randhir Singh, Western Air Defence Commander, operating from Ambala. The aircraft was to fly ten miles within the Indian territory along the Western border and establish the positions of enemy radar stations. The method proposed by them was that the Alizes would fly at night and would transmit the positions of Pak ground radars detected.

However, in 1965 the Indian Air Force fighter squadrons, as a practice, had not done much night-flying. Therefore, Air Commodore Singh was apprehensive of the naval crew being able to cope with this task at night. On seeing my flying log-book, he was pleasantly surprised to find that I had done over 200 hours of night-flying from the carrier, whereas at that time an average pilot of the same experience in the Air Force had done less than 25 hours of night-flying.

After our briefing we got airborne on a pre-determined triangular route at dusk and set course for Fazilka. Unfortunately, Punjab was covered that day with dust-haze up to a height of 300 feet and the

whole of Punjab was observing a black-out during the war. With the maps that we had and the strong winds drifting us off course, we realised that Lieutenant Commander Chowdhury, our Observer and Navigator, had lost track of our position. Map reading was not possible due to dark-night conditions and total black-out. Within 20 minutes of flying, I realised that we had already crossed the international boundary and had exposed ourselves to enemy radar detection. Therefore, we were forced to turn in the approximate general direction of Pathankot and continue climbing parallel to the Indo-Pak border. within a few minutes, on climbing beyond 1,500 feet, the rear-seat observer, Lieutenant D.N. Rao, detected the Lahore radar and also two other radars from a bearing of the Sargodha-Peshawar area. There was no method of plotting these bearings accurately as our own aircraft's position was not known. Rao then took their signatures (recorded the distinctive features of the transmission). Within seconds the enemy radar locked on the aircraft and commenced height assessment. Realising that Pakistan's F 104 Starfighters were fitted with air-to-air missiles with night capability and that no useful purpose would be served by further continuing the sortie, the aircraft returned to Ambala.

As we approached Ambala we found that the whole of Ambala, including the runway, had been totally blacked out and the marshaller was continuing to take me down up to a height of 100 feet. When he said that the runway was one mile ahead of me, I saw goose-neck flares being lit one by one on either side of the runway by airmen commencing from the runway threshold. As I landed, the airmen extinguished these goose-neck flares and, within minutes of the aircraft rolling on the runway, the airfield was again in total darkness.

We took off at 1000 hours the next morning on the same route and proceeded towards Fazilka and Ferozepur. The Air Defence Commander provided a Gnat combat patrol cover to keep the area clear of all enemy fighters. On climbing over Ferozepur, we did obtain enemy radar transmissions from Lahore and also from the direction of Sargodha. We were able to get the bearings and the bearing lines within a few seconds. After some time we were picked up by the enemy radar and my rear operator indicated that the transmissions were now steady and continuous and that the enemy radar was carrying out height estimation. After positively establishing the radar bearings from this location, we proceeded northwards along the border for establishing a cross-bearing. Unfortunately, this resulted in our aircraft going beyond its intended track. On reaching the Pathankot area, we started climbing the aircraft and picked up a second

bearing cut on both the radar transmissions. It was apparent to the rear radar operator, Lieutenant D.N. Rao, that the transmission from Sargodha indicated more than one radar. He quickly analysed and positively established that Sargodha had more than one radar. As we had completed more than three hours of flying in the area and had crossed the tracks beyond our intended area, we set course back towards Ambala.

At this time, as we were proceeding towards Ambala, we were informed by our ground station at Ambala that since Pathankot could not recognize an Alize, several IAF aircraft had been scrambled from the Pathankot Air Force Base and were shortly going to intercept us but assured that we were not to worry, as Ambala had already informed them that the IAF was using a naval aircraft. At this particular movement, I saw a Gnat fighter, with its undercarriage and flaps down, on my port side and the pilot waving to me. Once he identified the Alize as a friendly aircraft, he promptly housed his undercarriage and flaps, pulled up from underneath in front of us and proceeded back to his base. Later, on landing, we were told that we had nearly created a panic as we had penetrated deep into the adjacent air defence sector and the Air Force stations had gone on the alert to shoot down the intruder. They had launched the Gnats for interception and in passing had reported the matter to Ambala on the approaching intruder to warn them on the likely air-raid. It was at this time that Air Commododre Randhir Singh, realising that it could be the naval aircraft, warned all units in plain language to look out for an unarmed naval Alize aircraft with the marking of the Indian Navy on it. Luckily for us, we were intercepted by the controlling aircraft of the squadron and also the leader of the strike force. Otherwise we could have been shot of the sky as very few Air Force officers had seen an Alize before.

As the sortie was very effective and the locations of Pak radar installations had been accurately indicated, Air Commodore Randhir Singh directed us to proceed to Palam for further briefing and detection of enemy radars in other sectors. It is understood that based on the locations given by us on these radar stations, the Air Force launched Canberra photo reconnaissance sorties and thereafter carried out strikes on these radars.

As we had started flying operatons late, i.e., after the start of the conflict, on our return to Palam we realised that the ceasefire had already been announced. The IAF, however, wanted us to establish all radar stations located along the border without crossing the border and creating any air violations. We were requested to go back

to Ambala and operate there to ascertain whether the radar stations struck by the IAF were still functioning. We were ordered to operate from Ambala, Jodhpur and Jamnagar. With these instructions, we proceeded again to Ambala and reported to Air Commodore Randhir Singh. We soon located five enemy radar stations, two at and around Lahore and three around the Sargodha Area. Many a time we were required to operate at the ceiling heights of Alizes, such as altitudes between 19,500 and 21,000 feet. It was a very satisfying operation at this period except for one report that came from the Air Headquarters that we had inadvertantly closed the border so much that the Pakistanis had lodged a protest.

'On successful completion of these sorties at Ambala, we flew over and landed at Jodhpur, my alma mater air station. From Jodhpur we flew all along the Jaisalmer area and confirmed to the Air Force that the radar station located at Badin, which had been attacked by Hunters of the IAF, though successfully neutralised for a few days during the conflict, had again become operational. At this time, during one of our sorties over Jaisalmer, we had a fire in the rear cockpit which damaged our radar detector. We, therefore, returned to Palam and proceeded to Bombay for replacing the radar detector.

Within a day the set was made serviceable, test-flown and cleared and so we took off in the same aircraft and returned to Palam by night. We were now instructed to proceed to Jamnagar and establish positively that the Badin Airfield radar of the Pakistanis was operational and also locate any other radar installations operating around Karachi. The IAF Station Commander at Jamnagar was rather reluctant to send naval aircraft to the high seas as, so he thought, if there were to be any 'incidents' on the high seas, as he put it, the sea would swallow the evidence. We, however, convinced him that our element was the sea and we were most comfortable in that environment. So, in one sortie, we were able to identify the Badin radar and also establish one more radar, seven miles north of Karachi. The Station Commander and his team were reluctant to operate the aircraft in this area any loger as there had already been two protests from the Pakistanis on air violations during ceasefire. Further he stated that there were many spies in the Saurashtra area around Jamnagar who reported all movements of aircraft from Jamnagar. Still we completed our task in a record time and returned to Bombay.

So far as these operations were concerned, my only regret is that instead of being directed to operate at high altitudes, had we been permitted to penetrate into the enemy territory at low level by night, as we normally do for radar detection at sea, we could have pin-

pointed the enemy radar stations in one sortie, and dropped a 'marker' within 100 yards of the target. The targets could have been easily destroyed by the Indian Air Force using bombs and rockets. It would have been cost-effective and very successful. With my experience of over 200 hours of night-flying, this exercise could have been easily carried out at night with minimum danger to the aircraft.

To sum up, in less than 15 days of flying operations over totally unfamiliar territory, an unarmed naval aircraft had done 63 hours of night-flying in the face of grave danger and had accurately located eight Pak radar stations for the IAF. But these exploits of the only Naval unit in the Western Sector remained unreported and unsung because the IAF signals specialist accompanying our mission had offered to carry all the records pertaining to the sorties carried out by the Alizes to Air Headquarters and Naval Headquarters but, for reasons not known, 'failed' to do so.'

Cramping the Navy's Style

Admiral B.S. Soman feels that the Navy should have been permitted to deploy its ships well in time after being refurbished for sustained operations at sea as it was apparent as early as the first week of August 1965 that a major armed conflict with Pakistan was imminent and that Pakistan was preparing for a major naval offensive in support of its pre-planned invasion of Kashmir and the other northern states contiguous to Pakistan. He recalls.

> After the Indo-Chinese conflict, the defence of the Andaman and Nicobar Islands was left entirely to me. The army refused to even send a platoon there and we had to raise our own land force with sailors in *khaki* uniform to man the various stations in these islands. So far as the navy was concerned, as soon as Pakistan started the trouble in Kachchh, I had felt that my first priority would be these islands because while talking to various people during my visit to Indonesia as the Fleet Commander a few years earlier and subsequently having managed to send Captain (later Vice Admiral) V.E.C. Barboza to Jakarta as the Naval Attache and having been briefed on the latest developments, I felt a little nervous about these islands. This was because when the Army refused to send any units for their defence, I had taken on the responsibility of doing so with sailors with no experience in land-fighting. But I had also placed *Mysore* and two major ships in the area till the very last minute. It was only after the war had started and I was permitted to bring the Fleet back to the West

Coast that I brought the ships across to the Western theatre because I wanted to ensurre that no opportunity was given to Indonesia to start anything at the same time. Whether eventually it proved itself I do not know but prior to that Soekarno was reported to have been keeping an eye on the Bay Islands.

The Fleet, when it reached Bombay, had to be given this thoughtless order from the 'higher authorities' of not operating north of the latitude of Porbandar. Nothing else could be done by these ships except to try and see that the Pakistani ships did not move towards the Andaman and Nicobar Islands to hold hands with the Indonesians.

I also had some intelligence on the presence of some Indonesian ships at Karachi and knew that any operation undertaken by the combined naval forces of Paksitan and Indonesia would neither be against the Indian Fleet nor the Indian mainland. It was most likely to be for the capture of the Andaman and Nicobar Islands. I was quite convinced in my mind that the Indonesian Navy, knowing full well that only a small force of sailors in *khaki* uniform was present on these islands, could make an attempt to capture the Nicobar Island despite the then pretty poor state of Indonesia's Navy.

I may be repeating myself but I must emphasize that the one single aspect of the operation that upset me most was that even after the entire Fleet was made operative off Bombay by the first week of September 1965, not much could be done because of the unwise geographical limitations imposed on the Navy.

As to the details of the constraints placed on the Navy and what I did about it, I can perhaps expand somewhat on what is generally known already.

One morning I received a file signed by Sarin (H.C. Sarin, ICS, then Additional Defence Secretary, later Defence Secretary and Ambassador to Nepal) saying, 'The Navy is not to operate north of the latitude of Porbandar, and is also not to take or initiate offensive action at sea against Pakistan unless forced to do so by offensive action by the Pak forces.' If I remember correctly both the Defence Secretary, Shri P.V.R. Rao, ICS, and the Defence Minister, Shri Y.B. Chavan, were out of India at that time. I rang up Sarin and told him that I could not accept that order and was seeing the Defence Minister as soon as he returned which was the very next day.

When I saw Chavan he said that he was sorry that even after the Chinese debacle in 1962, the Navy had continued to be overlooked and as such it would perhaps be better if the navy did not go looking for trouble. I said that while I was most grateful to him for having appre-

ciated that we were at that time the stepchild of the Government, non-participation by us in an aggressive manner in this war would not only adversely affect the morale of the Service but the Navy's image in the public would go down the drain. He mentioned the fact of the aircraft carrier being in the dock and of the responsibilities assigned to the Navy for the defence of the Andaman and Nicobar Islands from a possible and probable attack from Indonesia which, in the Government's order of priorities, was more crucial than naval operations against Pakistan.

I assured him that I was fully aware of these implications of the Navy's operations and responsibilities. *Mysore* had already been deployed in that area and all that I was asking for was to leave the Navy to plan and do what it can in an active manner instead of remaining passive. Finally the Defence Minister said that even the Prime Minister, Shri Lal Bahadur Shastri, did not want the conflict to escalate at sea and that was that. I requested him for permission to see the Prime Minister so that I could convince him of what I felt strongly about and he readily agreed.

I do not now remember whether there was any one else in the room when I called on the Prime Minister. He started by saying that he remembered my late father (who was a colleague of Gandhiji during the Champaran struggle) and that he was glad to see me now as the Naval Chief. I told him that at this particular moment I was not at all glad to be the Naval Chief, what with the Government ordering me not to do what I honestly considered was my duty and of course that of the Navy. Chavan must have already spoken to him about my talk with him, as Shri Shastri brought up the same two points - the Navy had not been strengthened since the Sino-Indian conflict and its responsibilities in the Andaman and Nicobar area were more important than in the Arabian Sea. I told him that it was wrong in principle to tie down one arm of the Defence Services to passive action in a war situation. It should have had the freedom to act offensively so long as it did not bite off more than it could chew. When he brought up the question of the undesirability of any escalation of the war at sea, I reminded him of what happened to Germany on a few occasions in the two World Wars when they kept their fleets bottled up. I added that I was sure that had they used their navy fully, from the start of the wars, the history of the world would have been different, however much the rest of the world disliked this possibility. On this he seemed to be annoyed and told me, 'You have no choice'. I then asked him whether he had any objection to my seeing the Supreme Commander of the Armed Forces meaning the President. He smiled and politely

said, 'No, you do not have to see him'.

Vice Admiral N.P. Datta holds the same view. He says,

Another constraint imposed on the Navy, which we came to know of later, was that we were told not to operate north of the latitude of Porbandar in the Arabian sea. The main objective of our naval force operating at sea at that time should have been and was the interdiction of supplies and reinforcements to Pakistan coming by sea. Pakistan knew as well as we knew that all her oil, all her military purchases had to reach Pakistan via the port of Karachi. So a very useful attempt on the part of the Navy to make a significant contribution to the war effort would be to put a stop to these supplies and we could only do so if we operated right up to the Makran Coast west of Karachi. At that time we were in a position to do so because Pakistan's air force was already fully committed on West Pakistan's western and eastern frontiers. Secondly, the PAF did not have any aircraft especially trained or equipped for maritime operations - they had minimal maritime reconnaissance and strike capability at that time - and so it really would have been quite a safe operation for us. The artificial limit placed on the Indian Navy's operations thus prevented it from contributing much more than it could actually do. However, the very fact that the Indian Fleet had put to sea had imposed a natural restriction on neutral countries planning to send ships to Karachi. It was a natural discretion on the part of oil tanker companies not to send tankers to war-affected areas.

If the Navy had interdicted Pakistani maritime trade from the word 'go', i.e., from September 2, 1965, the Pakistani situation regarding oil and munitions which became critical two or three weeks after the commencement of hostilities, would have become critical even earlier and they would have sued for peace even earlier.

At the same time, in order to prevent the Pak Navy from harassing tankers coming to Bombay, the Indian Navy had taken special steps to escort our tankers and thus the flow of crude to our refineries in Bombay continued uninterrupted.

Rear Admiral Kirpal Singh, who was in command of one of the ships ng the war as a Captain, is equally flummoxed by the Government sion not to use the Navy.

It was a mystery to most of us who were at sea as to how the Indian Navy could allow itself to get caught with the bulk of the operational

Fleet in the Andaman Islands and Bay of Bengal area. It is surprising that when operations had already started in Jammu and Kashmir, our ships were leisurely steaming from Port Blair to Calcutta! It was only at the last moment that the *Mysore* was diverted from near Sandheads to Vishakhapatnam while the *Brahmaputra* and one of her sister ships were allowed to proceed up the Hooghly to Calcutta. Four or five valuable days were unnecessarily wasted in the process. We then made a dash for Bombay.

Also, for some inexplicable reason we were not allowed to proceed north of a certain area, presumably because the Air Force could not provide any cover to us. Pakistan Navy did bombard Dwarka and got away with it, but its other claim of having sunk the *Brahmaputra* caused acute embarrassment to the Pak submarine Captain. He received a gallantry award with much fanfare while we paraded the three B's - *Brahmaputra, Beas* and *Betwa* - in Bombay harbour for the benefit of all the Naval Attaches!

L.K. Jha Reminisces

Even Shri L.K. Jha was considerably circumspect while discussing the factors that prevented the Government from committing the Navy to full-scale operations instead of confining it to a coastal defence role. He said,

> As it happened, the Rann of Kachchh went for amicable settlement but the paper plan for the operation was fortunately worked out in fairly full detail even at that time. Then, when the conflict started in Kashmir, rather in the Jammu area of Kashmir and their tanks came into our territory where our tanks could not easily go because the bridges were not strong enough, there was a real dilemma. Air Marshal (later Air Chief Marshal) Arjan Singh, the Chief of the Air Staff, and General J.N. Chaudhuri, the Chief of the Army Staff, were present at a meeting to discuss things where we all turned to Arjan and asked him whether he could take on the Pak tanks from the air. Now there was a great deal of hesitation, again on the basic policy of keeping the conflict as narrow-based as possible and in not involving the Air Force. Whether to bring in the Air Force was a matter where a very crucial decision was involved but there seemed to be no other alternative. Arjan agreed to take the Pak tanks on at very short notice without any prior preparation and even in the late afternoon. I think he was able to employ his Air Force to attack the tanks. But still it was being thought as a local battle. But we realised that the terrain where we were fighting was one where we were much more vulnerable and

communication depended on a couple of bridges - if they were blown up, we just would be completely cut off. And, therefore, thought turned to using the plan which had been earlier evolved for marching into Lahore. But even then it was a very firm decision that we would not allow the things to escalate into a full-scale war - I mean war in the legal sense - between India and Pakistan. Admiral Soman had in the meantime - ever since the involvement of the Air Force - been straining at the leash, saying, 'look, let me go into action'. But again the same consideration which was acting as a restraint - on using the Air Force or going into Lahore - prevailed. It was felt that if we now opened up another front off Karachi, it would become a major engagement and would no longer be a matter of localised conflict. So the decision was taken that the operation to march to Lahore would be launched but that the Navy would not be involved. And then the news that the Indian Army had crossed the Wagah border and was heading for Lahore, came over the radio and President Ayub went on the air.

It was a very, very strong and angry broadcast. Admiral Soman thought that the opening of the Lahore front meant that a no-holds-barred situation had come and he, I think relayed the signal on the air that we were at war with Pakistan. This had to be countermanded later becuase we did not want to go to that stage so soon. But still we realised that the Navy had the capability and if the events so necessitated, I don't think there would have been too long a hesitation to use it. But the feeling was strong that if we could contain the Pakistani forces and hold them on land, then perhaps it would be wiser not to get the Navy involved. I knew that the Navy was not happy with this decision because they were very anxious to go into action.

I must add here that there was that fateful evening - I remember it very clearly - when the Pakistanis bombed Amritsar. As that news came Shastriji rang me up to say, 'Let us inform the various ambassadors - the most important ones - that this is a very major change in the situation.' We were fighting in Kashmir in spite of our handicap but now Amritsar had been attacked and that altered the position totally. I, of course, knew that our forces were poised to move towards Lahore at the word 'go'. One factor was the inclement weather. Now that evening I rang up the Secretary in the Ministry of External Affairs, Shri Balraj Kapoor, and asked him to send for a few of the ambassadors and talk to them. He said, 'My dear L.K., have a heart, at this hour of the night who is going to come?' But I knew the significance of what was happening and so I myself began to send for them. I sent for two people I personally knew well. One was John Freeman, British High Commissioner, and the other was Chester Bowles, the American

Ambassador. I told them that the bombing of Amritsar had altered the whole scenario and even while sitting in the lawn of my house where I was talking to them, I saw the clouds lifting and a bright moon shining. So I said to myself that now probably the weather also was giving us the green signal to proceed. And so the next morning the move was started and the rest of it is now history.

Jha adds,

I am not ruling out the possibility of the Navy being involved if the situation so warranted. But the turn of tide in the fighting on the ground between Akhnoor and Lahore was such that it did not really warrant it. In the meantime the UN's efforts to stop the conflict got under way and soon a simple ceasefire was announced. So the Navy was in the reserve no doubt. But a decision to deploy the Navy was not taken - if anything, the decision was not to involve it prematurely.

As my own judgement and not based on what was actually discussed - one of the factors to be taken into account was that the excitement over Kashmir was much more a phenomenon with Punjabis in Pakistan than with the Sindhis and the Sindhi population generally was not worked up on it. No doubt Bhutto was in the way but he was playing the power game to get Punjab support - it was quite a different thing. Now, involving the Navy would have definitely meant Karachi and the Sind area being the main target though, as I said, I can't recall that it was stated in these terms. It may well have been a factor in the minds of the political leaders that Sind was not to be brought in - the feeling it would create would be that India was attacking Sind. So that could well have been an additional factor of restraint, quite apart from the general concern that the war should not be allowed to become too widespread.

The Indonesian Hand

As regards the likelihood of Indonesia joining hands with Pakistan or making an attempt to capture some of the Bay islands which it had been claiming for some time, Vice-Admiral V.E.C. Barboza, who was the Naval Attache at the Indian Embassy at Jakarta at that time, recalls,

The Indonesian Government declared its support for Pakistan in the 1965 Indo-Pak conflict and extended naval assistance which included the despatch of the submarine *Bramasta* to Karachi. she, however, got there when the conflict had all but ended and stayed on

till the Tashkent agreement was signed.

Indo-Indonesian relations improved after a new regime gained power in Indonesia in the wake of an abortive *coup d'etat.*

An emissary of our Government privately visited Indonesia shortly after the commencement of the conflict. He claimed that Shastriji had given the nod to the visit, its purpose being to persuade Indonesia to at least not take sides in the conflict. He said that he was armed with an old letter of recognition signed by the Indonesian President granting him what may be described as privileged status to visit Indonesia, meet people, etc., freely.

It got him nowhere. The Indonesian President ignored him, as did others of any importance, and he was quite unable to influence events in any way. He left after a few days' stay.

We later learnt, from private sources, that when deciding to give this gentleman the cold shoulder, the President had remarked that whereas he had been of some help earlier, he had also filled his pockets with much precious metal - which was compensation enough for his services! True? False? I do not know, but I wonder what story this emissary had to tell when he returned from his futile visit in 1965.

During the conflict with Pakistan there were also reports about the shipping of two Indonesian missile boats in a Pak vessel called *Anwar Baksh* and the despatch of a company of Indonesian Marines with their PT 76 amphibious tanks to East Pakistan.

The Blunted Scimitar

It was an embittered Admiral Soman who, after the 1965 operations were over and the Navy criticised by the press for not having gone into action, said while addressing senior officers of the Navy,

> Notwithstanding our initial disadvantage of the location of the Fleet on the East Coast at the time of the commencement of the undeclared war, and the material limitations of the ships after three months of exercises away from base, the Fleet, with the help of the valiant efforts of the dockyard, took the initiative to seek the enemy and bring him to battle. Although this was not achieved, I am sure it had placed itself in a position to contain the enemy in his waters if he had ventured out; which, I know, was all that was expected of the Fleet.
>
> It is indeed a great pity that the role assigned to the Navy was mainly a defensive one. History has proved over and over again that at sea, more than perhaps on land and in the air, offence is the best form of defence. In the days of old, when there was no wireless

communication, Nelsons could put their telescopes to their blind eyes and get away with it as heroes on top of their respective columns. It indeed took courage to put the telescope to the blind eye and win laurels! But it takes equal, if not greater, courage (perhaps of a different kind) to play the tethered role and curb the offensive spirit of a fighting force in the greater national interest as claimed by the authorities.

The implications of a war at sea did not seem to have been fully understood in the Government agencies at many levels, but when some of these agencies talked glibly of blockade, contraband control, seizing enemy merchant ships and attacking enemy warships at sea and their ports without a proper formal declaration of war, one wondered whether they realised that any such action on the high seas without the declaration of a war was liable to be branded as piracy, especially if any neutral ships became involved.

The need for a 'rethink' on the question of operation and control of maritime reconnaissance had also become apparent. Intelligence is vital for the Navy in planning its operations and executing them. While the Air Force, with their meagre resources and preoccupations with other commitments, valiantly tried to give the limited cover agreed upon, it was disconcerting to comprehend the fact that of the 13.5 lakh square miles of coverage required for the operations undertaken by the Fleet, a bare one lakh square miles could actually be covered. This too was achieved in 24 sorties of 188 hours by the IAF with its Liberators and Superconstellations, augmented by 60 sorties of 160 flying hours of the Alizes. This meant that the Fleet ships' endurance, limited as it was due to the lack of a replenishment tanker, had to be devoted to searching for enemy ships, hoping for a chance contact, which was a terrible waste, quite apart from its ineffectiveness, particularly with our meagre ship resources.

As regards his inability to obtain Government approval or funds for rectifying the inadequacies in the Navy's size, operational dimensions, levels of sophistication of weapons, weapon control systems, sensors and other equipment because of the low priority assigned to the Navy and its expansion plans, despite vigorous efforts having been made for over three years, Admiral Soman said,

> When I came to Naval Headquarters, I thought my task was to continue the good work of my predecessors, which was to prepare the Navy for war, should it ever come. I had not bargained to have to fight with no enemy to fight with in peace, emergency or war. I have since

learnt that the Defence Services are always at war, fighting for their existence. In peace time they must fight with their Government, and in war for their Government.

I must admit frankly that the strength of the navy and its material state was appreciably lower in 1965 than what it was three years earlier due mainly to the devil of 'no or low priority' on the one hand, and the nation's foreign exchange difficulties on the other. We could make no claims on the indigenous production on account of overriding priorities for the Army and the Air Force and were required to get what we needed from abroad. But when we sought foreign exchange for the purpose, it was not available due to the same Army and Air Force priorities for importing their hardware, which was further aggravated by the tight situation of this commodity. It very much reminds me of the mythological story of Trishanku who even today hangs between Heaven and Hell!

Trade Warfare

As regards trade warfare, in conformity with her policy in other fields, India did not initiate any war-like measures in the sphere of shipping as well. However, when Pakistan started impounding Indian vessels and cargo without a regular declaration of war, India and no alternative but to retaliate. On September 6, 1965 Pakistan started the process by detaining three of our ships which happened to be in Pakistani ports. So far as these vessels were concerned, Pakistan held 13,980 DWT (dead weight tons) of Indian shipping tonnage with 2,407 tons of Indian import cargo and India held 30,058 DWT of Pakistani shipping tonnage with 4,238 tons of Pakistani export cargo for other countries. In addition, two Indian sailing vessels, *Khatau Pasa* and *Nirnaya Sagar*, were detained in Karachi and a third sailing vessel, *Siddiqui*, was missing and there was a possibility that this vessel too might have been impounded by Pakistan. There were two sailing vessels, *Al Razak* and *Madat Rehmani*, registered in Pakistan which had earlier been operating in India. But the first one was lying submerged in Mangalore since May 1965 and the second one was not traceable.

This was followed by Pakistan enforcing contraband control under which it started off-loading import cargo of India from neutral country flag vessels touching its ports. On September 8, 1965 the Detaining Officer at Chittagong issued a notice to the master of a Philippine ship, *Leonor* asking him to unship any article of contraband or war carried on that ship with the warning that 'neutral vessels are liable to capture and condemnation by a prize court of any offence coming under the head of

unneutral service.' The list of articles of contraband which was notified on September 9 included not only the items of absolute contraband but even conditional contraband such as 'all kinds of food, foodstuffs, feed, forage and clothing and manufactured textile products, tobacco articles and materials necessary or convenient or their production, manufacture or use.'

India was thus left with no option but to take similar measures. But in doing so, the Indian authorities decided to avoid the procedures prescribed to be taken during a regular war. Thus, instead of issuing a list of articles considered as contraband of war, they issued a notification under the Customs Act on September 14 prohibiting the entry into India of certain classes of goods if intended to be carried to Pakistan. The list of items did not include any of the items of 'conditional contraband' like food, feed, forage, etc., included in the Pakistani list. While Pakistan had offloaded articles like sculptures, fertilizers, books, personal effects, etc., which cannot, by any stretch of imagination, be treated as contraband, India had taken care to avoid off-loading such articles.

As regards offloading of cargoes from neutral ships, while Pakistan had offloaded 24,187 tons of Indian cargo from 19 neutral vessels, India had off-loaded 9,789 tons of Pakistani cargo from 23 neutral vessels. This disparity was due to certain facts over which Indian had no control: first, because of India's geographical position, all ships coming from the West with cargo for both countries first went to Karachi before coming to an Indian port and most of the ships coming from the East first went to Chittagong and Chalna before coming to India, and out of the 19 neutral vessels in Pakistan, six were in Pakistani ports on September 6 and 11 more reached there by September 14; next, India's volume of overseas trade was much larger than that of Pakistan - the ratio of Indian and Pakistani cargoes was about 3:1 in the case of imports from the UK and Europe and about 5:1 in the case of imports from the USA and hence it was inevitable that Pakistan would have a much larger quantity of Indian import cargo than India had; third, whereas most of Pakistani cargo was carried on neutral 'bottoms', India's cargo, both for export and import, was largely borne by Indian merchant ships - 250 of them were owned by India while Pakistan owned only 30 merchant ships; and, fourth, the Indian authorities were more concerned about saving India-bound cargo from falling into Pakistani hands than off-loading Pakistan-bound cargo because of the importance of our cargo and the uncertainty of ownership and other legal complications involved in seizing Pakistan-bound cargo.

As a result of efforts made as well as persuasion, the Indian authorities succeeded in saving about 150,000 tons of import cargo from falling into Pakistani hands. If this aspect is taken into account, it would be evident that India had fared better in trade warfare than Pakistan,

considering the disadvantages arising out of India's geographical position and our much larger trade.

In addition to the cargo mentioned above, Pakistan had detained about 5,800 tons of Indian import cargo carried in its two vessels, *Sutlej* (1,500 tons) and *Bagh-e-Karachi* (4,300 tons) and India had seized 7,400 tons of Pakistani import cargo from six Indian vessels in Indian ports.

Thus 21,443 tons of Pakistani cargo was detained by India - 4,238 tons off-loaded from Pak vessels detained at Indian ports, 7,416 tons off-loaded from Indian vessels in Indian ports and 9,789 tons off-loaded from 23 neutral vessels in Indian ports, while 32,394 tons of Indian cargo was detained by Pakistan - 2,407 tons off-loaded from Indian vessels detained at Pakistani ports, 5,800 tons off-loaded from Pak vessels *Bagh-e-Karachi* and *Sutlej*, and 24,187 tons off-loaded from 19 neutral vessels in Pakistani ports.

As regards inland water transport between West Bengal and Assam, although both Government and private companies operating such transport had halted their operations on September 5, 1965, nineteen steamers and 37 flats of the River Steam Navigation Company and 22 steamers and 89 flats of private companies were impounded in the then East Pakistan with tea, jute and other cargo worth Rs. 5 crore.

A total of 400 personnel of Indian ships, sailing vessels and inland water transport were interned in Pakistan while India had interned 4,747 Pakistani personnel from Pakistani ships and inland water transport.

In his treatise, *The Indo-Pakistani Maritime Conflict, 1965 - A Legal Appraisal*, Dr. Surya P. Sharma, an authority on international law, while discussing the legal status of the 1965 conflict between India and Pakistan and the latter's seizing Indian ships and off-loading Indian cargo as prize, says that Pakistan's action was a flagrant violation of the tenets of international law regulating the freedom of navigation and the free flow of world trade and commerce. He says,

> Acts of seizing Indian ships and cargoes and institution of prize proceedings are, by any measure, the exercise of belligerent rights which, in the absence of a formal state of war, could not legally be resorted to by Pakistan . . . . If she had declared war on India, it would have made her *ipso facto* a violator of public order under the UN Charter. And if Pakistan chose not to declare war, as it actually happened, her coercive activities of the nature and scale, in the present case, would be illegal . . . the nature of hostilities did not justify escalation by Pakistan to the point of issuing orders of contraband of war, seizing ships and cargoes, establishment of prize courts and their continuation after ceasefire.

Notwithstanding the claims made by the Pakistani junta after the cessation of hostilities, the Indian Navy, despite having been kept away from its 'killing fields' for an unconscionably long period and despite the restrictions on its deployment imposed by the Government, had acquitted itself in the conflict creditably. Besides, had the 'cut and thrust' strategy of the authorities in preventing the Navy from expanding to the required size, not permitting the acquisition of submarines, maritime reconnaissance aircraft and additional surface vessels and the establishment of a second Fleet in the Bay of Bengal, not continued till the middle of the 1960s, the Navy could easily have bottled up the Pak Fleet as was done in 1971 when the entire Pak surface force was confined to Karachi Harbour and reduced to the state of a fleet-in-being. As Lorne J. Kavic, author of *India's Quest for Security: Defence Policies 1947-1965*, says,

> The Indian Navy (of the 1960s) represented a compromise between self-reliance and explicit dependence upon friendly powers. A navy powerful enough to dominate the Indian Ocean against a major power was beyond India's financial capacities, but her continued explicit reliance upon the Royal Navy for naval defence was neither politically possible nor wise as India and Australia both learned to their regret at the fall of Singapore in 1942. Independent India developed a small task force large enough to give her local superiority against any neighbouring country in the strategic arc from Suez to Singapore and so continued as to facilitate cooperation with Western navies to defend their mutual interests in the Indian Ocean against Soviet bloc submarines in any general war. To some extent, the Indian Navy assumed the functions of the former East Indies Squadron of the Royal Navy. Its development programme was considerably affected by financial stringency, but to no apparent extent by Pakistani or Chinese postures.

The Post-War Developments

While financial stringencies and priorities had largely limited the Navy's modernisation plans and programmes for the replacement of obsolete warships only through the process of acquisition from foreign countries, until the Indo-Pak conflict, the Government of India evinced greater keenness after the conflict in improving the Navy's firepower and mobility and enlarging its area of influence. While the British Government's offer of a special defence credit totalling £4,700,000 (Rs 62,670,000) to cover the external costs over the next four years of the construction of three Leander

class frigates in India had been accepted in November 1964 with plans to lay down the keel of the first frigate in mid-1966 and to complete the first vessel by 1971, a request from the Government of India for the loan of three modern destroyers or frigates was turned down by both the UK and the USA. Hence India accepted a Soviet offer of antisubmarine vessels of the Petya class in an agreement signed in 1965. In addition, the Government of India soon accepted the long-standing proposal for setting up a submarine arm by initially acquiring a training submarine from the UK. Once again, a World War II model submarine was offered to India against the requirement of a modern submarine and hence was not acceptable. An agreement was thus concluded with the Soviet Union for the supply of four F class submarines.

Three seaward defence boats and two minesweepers were nearing completion and a decision had been taken to acquire a tanker for the Fleet; a squadron of Seahawk aircraft and some Alouette III helicopters had been ordered, major operational bases and maintenance facilities began to be developed at Marmagao (including an air station at Dabolim), Vishakhapatnam and Port Blair with provision for developing a naval base in the Nicobar group of islands as well.

The process of expansion of the Fleet, creation of a second Fleet for the Bay of Bengal, indigenisation of the construction of warships and shipboard weapon systems and equipment, creation of a submarine arm, acquisition of surface-to-surface and surface-to-air missiles, establishment of a large number of training and operational naval bases, augmentation of the versatility and firepower of the fleet air arm and acquisition of long-range maritime reconnaissance aircraft during the years that followed the 1965 Indo-Pak conflict (a 'war that never was' so far as the Indian Navy was concerned), considerably enhanced the Navy's three-dimensional operational capability, reach and lethality which was amply demonstrated during the 1971 operations against the Pak Navy.

A Retrospect

As can be appreciated from the whys and wherefores of the Indian Navy's involuntary non-participation in the 1965 War delineated in these pages, the Pak military junta could easily have been brought to its knees within a week or 10 days of the commencement of hostilities had the Indian Navy been allowed to operate according to its plans. This would have enabled it to not only deploy the Fleet in theatres of operations close to the Pak Coast but also capture or sink Pak naval units venturing out of Karachi harbour, neutralise the offence potential of the lone Pak submarine, the *Ghazi*, and what was vital to the Pak armed forces, intercept and cut off all seaborne

supplies of fuel and munitions of war to Pakistan from the West. Because of three important deleterious factors - the limited task of coastal defence in the Arabian Sea forced on the Navy, a whole week after the Pak land offensive had been launched, the considerably deficient material state of the ships caused by the Fleet's prolonged deployment in the Bay of Bengal and the embargo on its area of operations - the role of the service had been reduced to that of a coast guard resulting in considerable post-war public and media vituperative accusations of non-performance, parasite existence, fair-weather propensity, goodwill-cruise addiction, etc., rebounding to the discredit of the Service.

From these pages it would also be apparent that far from being unwilling to take on the task (formidable but well within its capabilities) of containing the enemy at sea, the Indian Navy had been 'straining at the leash' to go into action from the very beginning but had been rendered *hors de combat* even before the commencement of the operations by, first, the preponence of the Chairman of the Chiefs of Staff Committee on naval strategic planning and, later, by the authorities themselves. What was gained by assigning such a 'tethered' role to the Navy and thus preventing it from carrying out its tasks, for which it had been honing its weapons and skills for years, has remained indiscernible to this day.

14

CHARTING THE OCEANS

The maritime interests of the country demand that its coast and the seas around are systematically surveyed and that accurate nautical charts are readily available for facilitating navigation. Navigators need charts for conducting their ships by the shortest and safest route, in most suitable direction. Nautical charts are also required for port development schemes, coast erosion and oceanographic research.

Probing unknown depths has been the mission of hydrographers for centuries so that every hidden danger lurking beneath the surface of the sea could be revealed and navigation made safer. All information laboriously and systematically collected by the surveyor is continuously published in the form of navigational charts and nautical publications available for mariners, so that they may sail the seas with confidence.

Hydrographic charting, i.e., charting of lakes, rivers and seas is the art of science of compiling and producing charts of the water-covered areas of the earth's surface, whereas hydrography itself is the science dealing with all the waters of the earth's surface, including the description of their physical features and conditions. Hydrographic charting thus involves the vital task of praparing charts showing positions of lakes, rivers and seas, the contours of the seabed, the positions of shallows, deeps and reefs and the direction and volume of currents, whereas hydrography is confined to a scientific description of the position, volume, configuration, motion and condition of all the waters of the earth. The word *chart*, as is known, has been derived from the French *Charte* and the Latin *Charta*, meaning a card.

The Indian Hydrographic Department is as old as the Navy itself. It has its roots deep into the past. It is one of the oldest surveying and mapping or-

ganisations of the country and has worked under different names in different periods. One of the earliest of the famous race of Indian Marine Surveyors was Captain John McCluer. The general accuracy with which he surveyed a considerable part of the coast of India, entitles his work to be regarded as amongst the best charting undertaken in these waters. In the year 1787, McCluer commenced systematic surveys of the west coast of India. In the conduct of these surveys he was guided by the following instructions issued by the East India Company: 'Let what is done be done completely and nothing left undetermined in this space; if any doubt arises, let the observations be repeated in such part, that an implicit confidence may be placed in the work when finished'.

Captain Daniel Ross, the well known hydrographer of the Indian Navy, is called the father of the Indian surveys. He, indeed, introduced scientific methods of surveying. Ross commenced surveys in the China seas in 1806. He surveyed the Paracel Islands and the nearby shoals, the coast of Canton Province, the Islands of Formosa and Borneo, the Straits of Malacca and a portion of the Philippines. He did his work with great care and regard to scientific accuracy and based his surveys on trigonometric control. His triangulation was often verified by astronomical observations. These surveys, though made more than a century and a half ago, with inferior instruments, and at a time when the science of hydrography was in its infancy, show surprising accuracy and attention to detail.

Till the early fifties, results of hydrographic surveys carried out by the surveying ships were forwarded to the British Hydrographic Department (Admiralty), the then pioneer institution in the science of hydrography, which undertook responsibility for the production of nautical charts and ancillary publications for the Indian waters. Experience showed that this arrangement was unsatisfactory particularly keeping in view the overall maritime interests of the nation. It was, therefore, decided to establish the Hydrographic Office in India for undertaking these tasks. This office is a technical establishment and is staffed by professional hydrographic surveyors, nautical cartographers and printing personnel, all of whom are qualiied in the special skills required of them.

After considering many sites, it was decided to establish the office at Dehradun, where the printing facilities of the Survey of India could be utilised and close liaison between the two premier survey departments maintained, for exchange of survey data. The proximity of Survey of India also proved useful in obtaining services of experienced cartographic officers and draughtsmen on deputation to meet the immediate requirement. The Naval Hydrographic Office was established at Birpur, Dehradun on June 01, 1954 and shifted to its present location on Rajpur Road, Dehradun on March 29, 1957.

Meanwhile, the Hydrographic Surveying Service which in the beginning of 1950 was known as the Marine Survey of India and was headed by a hydrographic surveyor designated as 'Surveyor-in-Charge', Marine Survey of India was changed to Naval Hydrographic Office on August 15, 1954 and the designation to The Chief Hydrographer. Later, the post of Chief Hydrographer was redesignated as The Chief Hydrographer to the Government of India, as the Hydrographic Branch was not only working for the Navy but was also the sole national authority for the production of nautical charts and publications essential for the development of the country. The Naval Hydrographic Department was fully nationalised in 1955 with the appointment of Captain (later Admiral and the Chief of the Naval Staff) J. Cursetji as Chief Hydrographer to the Government of India.

Acquisition of Surveying Ships/Equipments

The most famous name of a Survey Ship in Indian Hydrographic history is that of the ship *Investigator*. The fifth successive *Investigator* converted from a River class Frigate *Kukri*, carried out the major surveying duties in the post independence period. However, keeping in view, the task that lay ahead for revision of surveys of the entire Indian coastline, measuring approximately 6000 nautical miles, several major and minor ports and to meet the urgent requirement of shipping, *Rohilkhand*, a minesweeper, was converted to carry out surveying duties from 1952-54. In 1953, the frigate *Sutlej* (1300 tons) was converted into a surveying ship and joined the surveying service in place of *Rohilkhand*. Another frigate *Jumna* (1300 tons), later spelt as *Jamuna*, was also converted and commissioned as a surveying ship on November 15, 1956. The first Indian-built hydrographic ship *Darshak*, fully air-conditioned and with accommodation for 22 officers and 272 sailors, equipped with two 35 feet survey launches, three motor boats fitted with echo-sounders for sounding and a helicopter for aerial photography and survey reconnaissance, was commissioned by Vice Admiral B.S. Soman, the then Chief of the Naval Staff, on December 28, 1964. The techniques of surveying took a quantum leap with the advent of electronics in the surveying service during 1962 when Tellurometers were introduced for distance measurements. In 1963, electronic position fixing system (Hi-Fix equipment) was acquired to increase efficiency and positional accuracy in surveying. This system, to a large extent, replaced the conventional position-fixing method.

Hydrographic Training

Since no specialised training facilities were available in India till the late 1950s, personnel were deputed to foreign hydrographic offices for training. In order to attain proficiency in hydrography however, an extensive, sys-

tematic and planned training in various facets was essential. Keeping this in view, a Hydrographic Training Unit was set up at the Naval Chart Depot, (*Angre*) Bombay, in 1959 under the administrative control of the Commodore-in-Charge, Bombay. This Unit was primarily meant for training junior officers and sailors as well as a few civilians of hydrographic organisations of maritime states and ports of India. However, the Naval Hydrographic School was sanctioned and established in the premises of the Navigational & Directional School, *Venduruthy*, Cochin and commenced functioning from September 21, 1961. The number of surveying offices was 19 in 1954, 27 in 1959 and rose to 32 in 1965.

Cartographic Training

As in the case with any new scheme, it was difficult to get trained technical personnel for the Naval Hydrographic Office, Dehradun. To overcome the situation, one Chief Instructor Officer, who volunteered to become a Civilian Hydrographic Officer (CHO) was trained for a year at the British Hydrographic Department. On his return to India in 1956, he was appointed as the first Principal Civil Hydrographic Officer (PCHO). The services of two surveyors were requisitioned from the Survey of India in 1957 and appointed as Civilian Hydrographic Officers. These personnel were organised on the same model as the British Hydrographic Department. Three Civil Hydrographic Assistants were recruited in 1959 and were imparted training at Dehradun, in the production of nautical charts and on board the surveying ships in the conduct of hydrographic surveys. On December 31, 1965, a total of nine civilian Hydrographic Officers and civilian Hydrographic Assistants were available in the Naval Hydrographic Office, Dehradun.

National and International Activities

On April 01, 1956 India became a member of the International Hydrographic Organisation (IHO), an intergovernmental body of hydrographers, which has its Headquarters at Monaco (Monte Carlo). The IHO endeavours to standardise navigational charts and publications on a common format so that mariners of the world can use the charts without doubts or ambiguity. IHO holds its conferences every five years. Captain J. Cursetji attended the 7th International Hydrographic Conference in 1957.

Two of our Chief Hydrographers. have had the distinction of holding the following appointments at Monte Carlo:

(a) Rear Admiral D.C. Kapoor, Director, International Hydrographic Bureau - 1972 to 1982

(b) Rear Admiral F.L. Fraser, President Director Committee, Interna-

tional Hydrographic Bureau - 1982-87.

Hydrographic Surveys

Hydrographic surveys for the purpose of charting Indian and adjoining waters include areas not only in the coastal belt along peninsular India but also the waters in and around the Laccadives and the Andaman and Nicobar group of islands.

During the period 1950-65 about 5000 Square Sea Miles of soundings and about 1500 miles of coastlining were carried out by the surveying ships operating around the Indian peninsula. The following is the chronological list of hydrographic surveys carried out during this period.

1951-52

(a) Gulf of Kachchh - Mandvi and Ranwara shoals

1952-53

(a) Gulf of Kachchh - Mandvi to Navinar
(b) Gujarat Coast - Godia Creek
(c) Maharashtra Coast - Karanja Island
(d) Orissa Coast - False Point (Approaches to Mahanadi river)
(e) Orissa Coast - Mahanadi River - Northern Entrance
(f) Orissa Coast - Mahanadi River - Southern Entrance
(g) Bombay Harbour
(h) Andaman Island - Port Blair

1953-54

(a) Gujarat Coast - Kori Creek

1954-55

(a) Port of Bombay
(b) Approaches to Bombay Harbour - Elphinstone Harbour
(c) Andaman Islands - Rongat Bay
(d) Andaman Islands

1955-56

(a) Port of Bombay - Southern & Northern portion
(b) Tuticorin Roadstead & Harbour
(c) Pondicherry
(d) Approaches to Madras
(e) Madras Roadstead

(f) Andaman Islands - Stewart Sound, Maya Bundar
(g) Nicobar Islands - Nancowry Harbour
(h) Gulf of Cambay - Gopnath Point to Southern Portion

1956-57

(a) Gulf of Kachchh - Navinar to Tekra
(b) Gujarat Coast - Approaches to Godia Creek
(c) Kerala Coast - Beypore Roads
(d) Kerala Coast - Badagara Roads
(e) Kerala Coast - Azhikal Roads
(f) Tamil Nadu Coast - Cuddalore
(g) Andhra Coast - Kistnapatnam Road (Krishnapatnam Road)
(h) Andhra Coast - Nagapatnam (Nagappatinam)
(i) Andhra Coast - Cocanada (Kakinada)
(j) Approaches to Vizagapatnam - (Vishakhapatnam)
(k) Vizagapatnam (Vishakhapatnam) Harbour
(l) Andaman Islands - Middle Strait to Shoal Bay

1957-58

(a) Gulf of Kachchh - Kankavati River to Asar Mata
(b) Andaman Islands - Port Cornwallis

1958-59

(a) Gulf of Kachchh - Sultanpur to Kanakavati River
(b) Kerala Coast - Alleppey Road
(c) Port of Cochin - Ernakulam Channel
(d) Port of Cochin - Southern Approaches
(e) Approaches to Cochin
(f) Andhra Coast - Masulipatnam (Machilipatnam) Roads
(g) Andaman Islands - Port Meadows

1959-60

(a) Gujarat Coast - Tadgaon
(b) Gujarat Coast - Wausi Borsi
(c) Maharashtra Coast - Tarapur
(d) Kerala Coast - Belekeri Roads
(e) Karnataka Coast - Honavar
(f) Karnataka Coast - Karwar
(g) Lakshdweep - Minicoy Islands
(h) Andhra Coast - Bimlipatnam to Agra Rock

1960-61

(a) Gulf of Kachchh - Port of Okha
(b) Kerala Coast - Cannanore
(c) Gulf of Mannar - Sathusamudram Canal
(d) Gulf of Mannar - Sathusamudram Project
(e) Kerala Coast - Vilinjam
(f) Palk Strait - Middle Channel
(g) Pamban Pass to Kundagol Channel
(h) Andhra Coast - Vadarevu Roadstead
(i) Andaman Islands - Coco Channel
(j) Car Nicobar - Sawai Bay
(k) Car Nicobar - Malacca Anchorage
(l) Lakshdweep - Androth Island

1961-62

(a) Gulf of Kachchh - Approaches to Okha
(b) Karnataka Coast - Coondapur Roadstead
(c) Maharashtra Coast - Port Dabhol

1962-63

(a) Maharashtra Coast - Jaigarh Harbour
(b) Approaches to Mormugao and Panjim
(c) Mormugao and Panjim
(d) Tamil Nadu Coast - Kolachel
(e) Masulipatnam
(f) Krishnapatnam

1963-64

(a) Lakshadweep - Kiltan Island
(b) Gulf of Kachchh - Rozi

1964-65

(a) Gujarat Coast - Approaches to Bhavnagar
(b) Gujarat Coast - Gulf of Cambay - Southern Portion
(c) Maharashtra Coast - Srivardhan to Bankot
(d) Kerala Coast - Nindakara to Quilon
(e) Andaman Islands - Jackson Creek
(f) Nicobar Islands - Batti Malv
(g) Maharashtra Coast - Ratnagiri
(h) Diu Head to Gopnath Point
(i) Little Andaman - Dugong Creek

The first navigational chart of Elphinstone harbour and Approaches was published by the Naval Hydrographic Office on January 15, 1959 based on data collected by our ships in the Andamans; 28 other navigational charts were published untill 1965.

The Hydrographic Department of the Indian Navy essentially serves the needs of mariners and defence but in no less a measure, the interests of agencies engaged in the exploration and exploitation of the marine resources in our ocean zone. As time goes on, the responsibilities of surveyors will increase with the developing emphasis on oceanographic science. Personnel engaged on survey duties invariably spend nearly eight months of the year at sea, working on many occasions in unhabitable environments for long periods. Theirs is a specialisation requiring considerable perseverence and dedication in an unobtrusive manner.

The three arms of the Indian Navy, the surface, the naval air and submarine are quite well known; the fourth, 'hydrographic dimension' though as old as the Navy itself, keeps a low profile but a continuous silent activity of the silent service.

15

THE NAVY'S VARIEGATED PEACETIME ACTIVITIES

Goodwill Visits, Exercises, Rescue at Sea, Aid to Civil Authorities, Disaster Relief, Events at Sea Reviews of the Fleet and Adventure Activities

Life at sea has always been a rewarding experience for the Navy's mariners. Their variegated peacetime roles at sea include crossing-the-line ceremonies with Lord Varuna holding court on the ship's quarterdeck, keeping vigil on the high seas as the country's off-shore sentinels, rushing to the rescue of vessels in distress or their crews or passengers, fighting a shipboard fire at sea, conducting search and rescue operations for pilots of ditched aircraft or survivors of natural disasters, collisions or sinking, paying goodwill visits to foreign countries, participating in exercises or actual operations, accepting the challenge of the capricious oceans, handling the kaleidoscopic human element conducting oceanographic research and many other facets of ship-borne activities. These often lead to interesting events and developments which would bear recapitulation and

over a period of time, evolve hoary customs and traditions that sometimes defy logic.

Showing the Flag

While taking part in various types of exercises at sea, ships of the Indian Navy participated in goodwill cruises to Australian, New Zealand, Indonesian, Malaysian, Thai, Vietnamese, Cambodian, Burmese, Japanese and Chinese ports and Singapore in the East and East African, West Asian, Mediterreanean and European ports in the West. Besides these, the other cruises undertaken were the National Defence Academy cruises and Cadets' and Midshipmen's training cruises, the main objects of which were imparting sea training to Naval Cadets and Midshipmen, exposing Cadets of the other two Services to life at sea and improving the sea-going and fighting efficiency of Naval personnel.

A word about these goodwill visits to foreign ports would not be out of place. There is a popular misconception in some quarters that these visits basically constitute a recreational outlet for the officers and men. Receptions and parties on board there undoubtedly are but, as a senior Indian Naval Officer avers,

> Few realise the discipline that our Naval personnel have to impose on themselves in order to present a favourable picture of our country and its people to those in the countries visited. It is no exaggeration to say that a single such visit, making an impact as it does on a very much larger section of the country's citizens, does as much good or more as our missions can do over a much longer period, no matter how devoted and motivated these missions may be. It is simply that those citizens are enabled to see India more vividly than any number of lectures, displays or exhibitions that our missions can put up. Our naval personnel also come away from these visits richer for the experience and with a broader outlook, thus adding to the quality of the human assets of the nation. There is also an invisible benefit from such forays into foreign waters. It enables our Naval personnel to become familiar with those waters - knowledge which could turn out to be useful under certain circumstances. And where there are sizeable sections of Indian nationals in the places visited, they help to infuse a sense of pride and confidence in them. I recall an incident in Mombasa, when *Delhi* was open to visitors. An old Indian gentleman was seen sitting on a wooden grating on the upper deck. Thinking that he might perhaps be feeling unwell, an officer asked him if he could be of any help. The old gentlemen said, 'No, Sir, I am just enjoying being on a little bit of India.

In 1953 IN ships *Delhi*, *Ranjit* and *Tir* participated in the Coronation Naval Review held at Spithead, Portsmouth on June 10, which has been dealt with in detail later in this chapter. Present on board on the occasion were Prime Minister Jawaharlal Nehru, Shrimati Indira Gandhi, Shri G.V. Mavlankar, the then Indian High Commissioner in the UK, and Vice Admiral (later Admiral) Sir Edward Parry, the erstwhile Commander-in-Chief of the Indian Navy.

Goodwill cruises, besides providing an opportunity to the ship's company to visit foreign lands, also helped to create a favourable impression on the host country's naval personnel as well as the general public. During one such visit the Navy's training squadron comprised the *Kistna*, with Commander (later Commodore) V.J.A. Valladares in command, carrying cadets under training and the *Tir*, with Commander (later Commodore) D.R. Mehta as her Commanding officer and Lieutenant Commander V.E.C. Barobaza (later Vice Admiral) as the Executive Officer, carrying midshipmen to Muscat, Iran, Kuwait and Saudi Arabia.Barboza recalls,

> Customarily, warships and merchant vessels visiting Muscat painted their ships' names on the bare, rocky slopes of the hills surrounding the harbour. Within a short time of our arrival, our high-spirited trainees scrambled up the hills to paint their ships' names higher than all the others.
>
> The Sultan of Muscat's palace overlooked the harbour. Having observed the care and courtesy shown towards the citizens of his Sultanate when our ships were open to visitors, he made an impromptu decision to visit our ship, bestowing a rare honour on us. When signing our visitor's book he pointed to the surrounding name-covered hills and said, 'They are my visitor's book.'
>
> Our first Iranian port of call was Bushire. We entered harbour in mid-afternoon and were disconcerted to find that our anchor berths were over ten kilometres from the landing place. On anchoring, the two Commanding Officers set out to call on the local Naval Officer-in-Charge. When they did not return by dusk, or even by dinner time, we grew anxious particularly since the landing place was out of sight and there were no arrangements for contacting the shore by wireless. When the Commanding Officers finally returned, nearer the midnight hour, they blithely recounted how their protocol call had smoothly, almost imperceptibly, telescoped into a tea party, followed by a dinner party, all conducted with folksy, easy-paced conviviality.
>
> The Naval Officer-in-Charge returned the call the next day. He was a middle-aged officer, bearing all the marks of the weather-beaten

seafarer. To our astonishment, he was accompanied by his chic young wife and a couple of staff officers and their ladies, all bearing posies of fresh narcissus. As she stepped on board, the stiletto heel of one of the First Lady's shoes got wedged in our wooden gangway platform - but only momentarily, for there were a dozen willing hands to extricate it. The Naval Officer-in-Charge presented our Captain with a slightly tarnished metal pen rack which the members of his party took turns in vigorously polishing on the way to our ship.

A small Iranian naval vessel anchored near us on return from a routine patrol. Her Commmanding Officer, a Lieutenant, accepted our invitation to breakfast and impressed us very favourably. His dress and deportment were faultless, his self-assurance and sound professional knowledge would have earned him high marks in any modern navy. We met a few more like him at our next port of call, Abadan, and felt that the calibre of these young officers, cast in a better professional mould than those of the older generation, presaged a good future for the navy Iran was developing.

When the first cruiser for the Indian navy, *Delhi*, was acquired, Admiral (then Commander) R.D. Katari was appointed her first Executive Officer (second-in-command). He takes a journey down memory lane and relates his experience of preparing the ship for her 'shake-down' cruise and, later, her visit to an Indian port:

Returning to our work-up programme, the most amusing item was to get the ship's band to march on to the quarterdeck with the guard and march off for the ceremony of 'colours', i.e., hoisting the Naval ensign in the morning. Our Chief Bandmanster, Pereira, was a good musician but not exactly smart with his drill. Many were the frustrations encountered by Lieutenant (later Rear Admiral) Kirpal Singh, our second Gunnery Officer, in getting Pereira and his band to do their act smartly. In addition, Pereira could not read (except music of course) and this led to an amusing *faux pas* when Rear Admiral Lord Mountbatten, recently returned from India, visited the ship in Portsmouth Harbour. Pereira had been given a 'memory card' with the musical scores for the various salutes all serially numbered. He was also shown the number which had to be played for Lord Mountbatten, *Garb of Old Gaul*. When, however, the guard presented arms as Mountbatten stepped on board, I heard, to my utter horror, the strains of *Rule Britannia* beautifully rendered by Pereira and his boys! At the first opportunity, I whispered an apology to the Lord's Flag Lieutenant, explaining the reason for the *faux pas*. Much to my relief, his reply was 'Please don't worry yourself,

sir, the Lord hasn't a note of music in his head!' I cannot believe that is true, but it was a great comfort at the time!

One incident in Vishakhapatnam is worth relating if only because it was provoked by a section of people who should have known better and also, hopefully, the action we took had a salutary effect on them, at least for a while. One morning on which the ship was open to visitors, the crowds on the jetty got out of hand mainly because of a totally disorderly scramble by University students. The police threw in their hand quite early in the proceedings. A group of boy scouts strove manfully for a while longer but they were fighting a losing battle. There was real danger of people, women and children among them, being pushed into the water from the edge of the jetty. We had to have recourse to playing water hoses at the people to force them back. While this was successful, it provoked a group of students, union leaders perhaps, to hurl abuses and footwear at us. It seemed prudent at that stage to haul in the brows (gangways). The most vociferous of the students, in his frenzy, tried to hold the brow back. In the process, he found himself hanging in mid-air on the end of the brow! He was duly assisted on board and asked to explain what was troubling him. He was too scared even to reply - a remarkable change from the violent, fist-shaking belligerent fighter he was a little earlier! After the crowd dispersed, we put him ashore, a much relieved man.

The following day a deputation from the University visited us with apologies and a request that the students should be given another opportunity to go around the ship. We agreed, provided they assembled outside the dockgates, entered, walked round the ship and out again in single file. They did this, and I had never before seen college students conduct themselves in such remarkable order. Nor since! An amusing postscript to this was the invitation for Captain H.N.S. Brown, *Delhi's* Commanding Officer, to address the university students. He agreed, provided slippers and tomatoes were proscribed from the premises.

It was in 1953 that three ships of the Indian Navy took part in the Coronation Review of the Royal Naval Feet by the British Queen. Vice Admiral N. Krishnan, then a Commander, was in command of one of these three Indian Navy ships, *Tir*. He describes his experience of the Review in these words:

> The highlight, of course, was our participation in Queen Elizabeth II's Coronation Review of the Fleet at Portsmouth, England in June 1953. It is a part of their tradition that the ruler of Britannia reviews the Fleet

every now and then. Soon after her coronation as the Queen of England, Queen Elizabeth II decided on such a review to be held at Spithead, Portsmouth. Amassed there would be the warships of the Royal Navy and some selected merchantmen. The Commonwealth countries would also contribute their share for this pageantry by sending some units from their respective navies. Some non-commonwealth countries including, this time, surprisingly, the USSR, would also be represented.

From India, the flagship, *Delhi*, with Captain (later Admiral) A.K. Chatterji as the Commanding Officer, was the obvious choice. Her consorts from the Indian Fleet were to be the destroyer, *Ranjit*, with Commander (later Admiral) S.M. Nanda in command, and my ship, the *Tir*. (The author was then serving on board the *Delhi*).

After a brief fuelling halt at Aden and passage through the Suez Canal and further halts at Malta and Gibraltar, we made it to Portsmouth with just two days to spare before the Review. A vast armada had already gathered there with ships of various categories and sizes drawn up line upon line. The Review would be in the form of Her Majesty the Queen and the Duke of Edinburgh passing between the columns reviewing each ship with the ship's company (crew) lining the decks and superstructure and cheering them as the Royal Yacht, *Surprise*, passed by. Having had the time to do so, all the ships assembled there were gleaming. After our long voyage, buffeted by heavy seas, which we had encountered in the Bay of Biscay, we must have looked like what the cat had brought in - but not for long. Every man-jack on board, including officers, the Captain and the Admiral, fell to with a vengeance and soon had the Indian trio outshining many of the rest.

On the morning of the Review, the Queen invited all the Commonwealth Captains to a sherry party on board the Royal Yacht. The Queen looked as though she had stepped out of a fairy tale, whilst Prince Philip was in his element with the Navy, but Princess Margaret was the eye-catcher and stunning, especially as she seemed to be in somewhat of a temper. But she was pleasant enough to us in our conversation.

All the ships on review looked spick and span. But the cynosure of all eyes was, of course, the then modern Soviet cruiser *Sverdlov*. I wonder how many people realised at that time that this ship was the first harbinger of the Soviet decision to cease to be a 'land animal' and become a major seapower and one day the Soviet Navy would become the world's largest.

The Review went off with punctilious perfection, with ship after

ship 'manning ship' (a special evolution meant for honouring the reviewing authority whereby all the ship's company line up along the superstructure) and the sailors' 'hurrahs' rending the air as the Royal Yacht slowly steamed past between the lines.

On completion of the attendant ceremonies, the Indian trio sailed eastwards once more, this time to join the Mediterranean Fleet for exercises where Lord Louis Mountbatten was the Commander-in-Chief.

The visit of *Delhi* to Australia under the command of Vice Admiral Barboza (then a Captain) evoked considerable nostalgia in some Australians who had served on board the *Achilles* during the Battle of the River Plate and a visit to New Zealand revealed the existence of a ship's bell that had been cast ashore when an ancient Tamil ship was wrecked in a storm off the New Zealand Coast a few millennia ago. Recalls Admiral Barboza:

Perth, the capital of Western Australia, is located on the banks of the Swan River, not far from the port of Fremantle. It is a clean picturesque and uncrowded city, with a multiplicity of gardens and lawns and an air of modern planning in its layout and buildings.

Apart from the thousands who visited the ships when she was open to the public, there were several others who called, individually or in groups. One morning, a sprightly old gentleman walked on board and requested to meet me personally to make a presentation. On being ushered into my cabin, he unwrapped a large framed photograph of the battle-scarred British cruiser *Exeter*, taken from the quarterdeck of the cruiser *Achilles*, in the midst of the famous Battle of the River Plate, fought between the German pocket battleship, *Graf Spee*, and a British cruiser squadron during the Second World War. He explained that he had retrieved this historic action photograph from a junk heap, in the nick of time.

Our welcome at Auckland surpassed our expectation. The wharf at which we berthed was crowded with men and women, some in wheelchairs, all from the *Achilles* and River Plate Veteran's Associations, cheering and waving us alongside. It was a strong, intoxicatingly sentimental occasion. 'Emotion', said a New Zealand newspaper, 'was as thick as treacle'.

I hinted that I could take some of the veterans to sea to a point just outside the harbour, on the day of our departure. Many of them jumped at the offer and we had 95 of them on board for the short passage during which, to their immense joy and surprise, we quickly worked up to 22 knots.

When they disembarked, with lingering handshakes and misty eyes, they tremulously sang *Auld Lang Syne*, to the accompaniment of my band.

When I visited the Dominion Museum at Welligton I was surprised to see, displayed prominently in a glass case, an exquisitely fashioned metal bell. On closer inspection I discovered that it was called the 'Tamil Bell', because it had been recovered from a ship owned by one Mookkayya Kunavakku centuries ago.

Suggestions have been made that the bell may have been recovered by the Maoris from a vessel which was wrecked between Raglan and Kashia. The curator's write-up said: ' There is no official record of the wreck having taken place in modern times and it may have come ashore about the time of Cook, or even earlier'. It went on to say that the wreck was periodically buried in the sand and, up to 1940, was exposed on three occasions. A bolt from this ship was also in the Dominion Museum and an analysis of it showed that it was composed of Muntz metal, 60 per cent copper and 40 per cent zinc, used for sheathing ships in the olden days. This could be a 'vengalan', a type of ship used in Tamil Nadu in ancient days.

There were occasions when goodwill visits were exploited by the host countries to sow the seeds of discontent in our men or to make attempts to indulge in unscrupulous activities. Admiral Katari writes about one such visit:

> Within weeks of my taking over as the Chief of the Naval Staff in 1958, an incident occurred which generated flutter in the dovecotes of the External Affairs Ministry, a 'Naval' incident mischievously fabricated by our good friend and neighbour, the Peoples' Republic of China. It was arranged that *Mysore* would pay a goodwill visit to China, the first such Naval visit since Independence. She was to call at Shanghai and Nanking. En route she called at Hong Kong - a call of convenience for fuelling. To enter Hong Kong, she had to pass within twelve miles of the coastline of the Chinese mainland, but well outside the then internationally accepted three-mile territorial limit. The twelve-mile limit demand by some countries was still of doubtful validity at that point in history. But, neither this fact nor the more important fact that the *Mysore* was on the point of paying a goodwill visit to their country deterred the Chinese from lodging a formal protest against an Indian warship violating their territorial waters. After some frantic exchange of visits between Shri Subimal Dutt, the Foreign Secretary, and myself, and much poring over charts, it was decided to send a suitable reply

denying the charge. I naturally did not see the reply that was sent, but I suspect it fell short of the outright rejection that was deserved. I suppose the desire to avoid unpleasantness on the eve of the forthcoming visits of the *Mysore* to Chinese ports must have weighed with the ministry. Nevertheless, the effrontery of making such a flimsy protest on the eve of receiving a goodwill visit is difficult to credit. Did we, I wonder, see it then as a sign of the estrangement that was building up in that country against India? If we did, would we have been better prepared to meet the physical aggression that country perpetrated on us in 1962? In retrospect, one cannot escape the conviction that we should have been forewarned. Even as far back as a decade ago at least one person in the Government had serious misgivings about China's bona fides in the matter of her declared friendship towards us. That was Sardar Vallabhbhai Patel. Also as I mentioned earlier, there was reason to believe that we were aware, though indirectly, about her activities in Aksai Chin. Was our apparent inaction at that time, and subsequent to it, deliberate or were we just too helpless to do anything about it?

Not being satisfied with this perfidy, the Chinese did their best to sow, subtly and insidiously, seeds of discontent among the visiting sailors. On the very day of her arrival in Shanghai, the Chinese authorities sent cases of beer on board the *Mysore* specifically meant for the Indian sailors. They might or might not have known, though I choose to believe that they did, that our sailors were not permitted to drink on board. The Captain naturally accepted the gift and put it away, intending to issue it to the sailors on appropriate occasions like organised picnics and the like. The very next day, however, when our sailors landed on shore leave, they were met by Chinese sailors who put their arms around the shoulders of their 'Indian brethren' and wanted to know if they liked the beer. The response naturally was, 'What beer?' The Chinese patiently explained to them that they had presented cases of beer specially for the sailors and that it was surprising that their officers did not serve it to them. During the rest of the visit many more such innuendoes were dropped, all calculated to bring out the vast difference supposedly existing in the officer-man relationship between the two Navies, attempting, of course, to show the Chinese as being much more enlightened in this matter. It would have been surprising if at least some of our sailors were not contaminated by these ideas, and it took us several months to repair the damage, slight as it was, caused by such propaganda. I had no illusions that, in our Navy, the officer-man relationship and the practical leadership exercised by our officers were ideal. Indeed, I feel that they called for a great deal of overhauling

and this was one of my major preoccupations during my tenure of appointment as the Chief. But I was not prepared to introduce radical changes in the prevailing pattern on the lines apparently practised elsewhere unless it was proved to me beyond doubt that such practices made for a more efficient service or a better fighting unit. This is the view I still hold, although I know that with changing social patterns some revision of attitudes is called for and I hope is taking place.

Honing the Tactical Skills

As in the rest, the operational efficiency of the Fleet, the sword-arm of the Navy, needed to be kept in proper trim by holding regular exercises, with as many units as could be made available for the purpose, and, whenever possible, with ships, aircraft and submarines of foreign navies, especially those of Commonwealth nations. The most important evolutions during the 1950s and until the middle of the 1960s were the Joint Exercises held off Trincomalee (JET) in which ships from the Royal Navy, Indian Navy, Pakistan Navy, Sri Lankan Navy and the Australian Navy took part. The other important exercises were the Staff College Exercises, Antisubmarine Exerises with ships and submarines of the Royal Navy in the Bay of Bengal, Mine counter measure Exercises, Air Sea Exercises with the Indian Air Force, Gunnery Exercises off Pigeon Island near Bombay and Tactical Exercises. Ships of the Navy were also used to make the country's presence felt in our territorial waters whenever the occasion demanded such as the deployment of *Godavari*, *Gomati* and *Ganga* in December 1959, for patrolling the demarcation line between the Indian and Portuguese-controlled sea areas in the vicinity of Kolak village near Daman to indicate the extent of Indian waters to the local fishermen and to prevent Portuguese vessels from capturing Indian fishing boats.

Going full steam ahead at 20 knots during pitch-dark nights with the ships in close formation and all lights blacked out and then changing the formation using only the radar is often an extremely hazardous operation as was experienced by Admiral S.N. Kohli when he was in command of *Mysore* nearly three decades ago. He recalls:

> During one of the JET exercises, one task force under the command of Rear Admiral A. Chakraverti in the *Mysore* with a screen of destroyers was steaming at night at 20 knots for a particular operation. At one stage the disposition of the circular screen was ordered to be changed and *Hogue*, a Royal Navy ship, was to move from the port side to the starboard of the *Mysore*. It was a black night and ships were darkened. I suddenly noticed on the radar scan that a ship was approaching very

fast on a collision course with the *Mysore*. I ordered navigation lights to be switched on and went hard-a-starboard. The *Hogue*, which was being conned from the plot, came straight into the *Mysore*, who was the guide. The *Hogue*, would have been cut into two if I hadn't taken avoiding action. Both bows crashed into each other with a resounding noise and tearing of steel. Both ships were brought to a standstill. The *Mysore* had a gaping hole in her forepeak (forward part of a ship's bows) and the portion of the *Hogue* forward of the bridge was stove in (crushed out of shape) and a write-off. We steamed into Trincomalee Harbour and the *Hogue* was towed there stern first.

It was established at the ensuing court martial that a defect in the navigational radar on board the *Hogue* had given an incorrect picture and had led to the major collision. The Commanding Officer of the *Mysore* was, therefore, exonerated. *Hogue's* damages were beyond what are termed 'economical repairs' and the ship had to be written off but the Royal Navy transferred her entire ship's company to another ship in order to enable them to complete their sea time.

Rear Admiral K.R. Nair, who retired as the Flag Officer Commanding-in-Chief, Eastern Naval Command in 1970, was witness to another collision in 1953, as a Commander, when he was the Commanding Officer of *Rana*. He recapitulates the incident in his vivid reminiscence.

The Staff College exercises off the Mangalore Coast in 1953 were marred by a collision between the cruiser *Delhi* and the 'R' class destroyer *Rana*.

Collisions are made in heaven - most of them anyway. It is seldom that just one rash or stupid act of a single person can be blamed. For a really good collision, errors of judgement have to coincide with varying degrees of other factors such as misunderstandings, incorrect radar pictures, signalling errors or material breakdowns, to mention just a few. There is something definitely preordained. The *Delhi-Rana* incident is an illustration.

During the exercises, in what is known as single line ahead, weaving at high speed, the 'attacking' ships *Ranjit*, *Rana* and *Delhi* closed the target when, at about 6,000 yards range, the *Delhi*, who was the Senior Officer, ordered, 'Act independently'. This was quite unexpected. When attacking in close formation it is normal for the formation to be controlled by the Senior Officer until the time torpedoes are fired. So the first in the chain of mistakes had been made. As a long-time instructor in torpedo tactics in the Antisubmarine School, I knew that the correct action for the *Rana* at that juncture would be to close rapidly

to about 3,000 yards of the target, turn to port and fire torpedoes on the starboard. I ordered the torpedo tubes to be trained for such an attack. Then it occured to me that if the *Ranjit* ahead of me turned to starboard the attack would look ragged. So I signalled *Ranjit* by light, 'Which way are you turning?' The second big mistake! Why did I not mind my business regardless of the *Ranjit's* intentions? The reply to my signal came, 'To starboard'. As it transpired subsequently, this was a signalling error. What an unlucky coincidence! However, cursing the *Ranjit* I had the torpedo tubes retrained and started to wing to starboard to conform. Just then I noticed the *Ranjit* turn to port! It was too late to emulate her and so I continued my swing to starboard and fired my salvo of torpedoes.

Just as my last torpedo was fired, I heard a 'whoosh' from astern and someone shouted, 'Sir, the *Delhi*!' Looking aft, I saw the *Delhi's* bow virtually on top of me just abaft (behind) my funnel. It was obvious that I had only a few seconds before the *Rana* would be cut in two. Going full astern on both engines and putting the helm hard to port while the *Delhi* also took emergency action, the bows swung apart. Saved! But the sterns came together with a resounding crash sending up a column of water masthead high. A highly satisfactory glancing collision which had the Staff College student officers cheering! What had happened was that the *Delhi* had not swung at all but had steered straight on and fired at the target by angling the torpedoes. The 'whoosh' I had heard was her torpedoes being fired just astern of me. This method of angling torpedoes is very unusual and to my knowledge had not been used in any exercise in the Indian Navy before. If the *Delhi* intended to use this method the other ships should have been informed earlier. This was the last mistake. Luckily for the *Rana* it was not her last day. So there you can see the fateful chain of events.

In 1955 the Indian Fleet paid a business-cum-pleasure visit to the ports of the Mediterranean flying the flag of Rear Admiral Sir St.J.R.J. Tyrwhitt on board the *Delhi* which was under the command of Captain (later Vice Admiral) B.A. Samson. Admiral Samson recalls the cruise with considerable nostalgia:

The first foreign cruise in 1955 was to the Mediterranean for exercises with the Mediterranean Fleet, and this was also Admiral Tyrwhitt's first experience of the Indian Navy; he had never had anything to do with Indian officers or sailors ever before. One can well imagine his

sense of deep shock and despair when, soon after sailing from Bombay to Aden, our first port of call *en route* to the Mediterranean, was the collision between the *Rajput* and the *Ranjit* during manoeuvres. The *Ranjit* 'warmed the bell' and hit the stern of the *Rajput* with her bows at high speed. She was badly damaged and had to return to Bombay for repairs and, unfortunately, was unable to rejoin.

A couple of days later, first thing in the morning before the Admiral and I were on the bridge, the 22nd Destroyer Squadron (*Godavari, Gomati* and *Ganga*), which had been placed on the screen on the port bow for the night, was ordered by D22 (Senior Officer of the destroyer squadron) to take up station at high speed in line ahead, astern of the *Delhi* by a manoeuvre ordered by him. A good manoeuvre it was too, except that D22 had cut it rather fine and instead of bringing his ships three cables (a cable is a distance of 200 yards) astern of the *Delhi*, he found to his horror - as indeed to ours - that he had committed the 22nd Destroyer Squadron on a collision course with the *Delhi*. I was shaving in my sea cabin when the Officer of the Watch called me frantically on the voice pipe, 'Sir, sir, 22 Ds--22DS....' I rushed up to the bridge and there on the port bow, some three cables (600 yards) away, tearing down at high speed, was the 22nd DS in line abreast, and it was clear that one of these ships would run into the side of the *Delhi*, unless D22 did something immediately - but what?

I realised there was little I could do except to order 'stop all engines, full speed astern, close all watertight doors' and waited for what seemed to be the inevitable! Fortunately, D22 did something at the very last moment. The two leading ships turned hard-a-port and just cleared the *Delhi* ahead, but the last ship realising that this manoeuvre would be disastrous, turned hard to starboard and though this may seem unbelievable, went down our port side at a distance which appeared to be no more than 6 to 10 feet!!

I believe that most of us on the bridge had stopped breathing and, looking back, I recollect how calm and still everything was on the bridge. Later, we heard of the hilarious chaos in the officers' bathroom on the port side aft. The scuttles (port-holes were open and there were several officers merrily soaping themselves under the showers when, to their amazement, they suddenly saw the grey hull of a ship whiz past! All of them scrambled out as they were - wet, soapy and naked - and ran upon the deck. It is a pity a photograph of them at that moment was not taken!

Admiral Tyrwhitt - and indeed, all of us - were somewhat shaken and he probably wondered about the capability of our Fleet. He had, two days earlier, when the *Ranjit* and the *Rajput* had collided, re-

marked, 'You cannot make an omelette without cracking eggs'; however, after the second incident, we were all agreed that if this went on, there would be very few eggs left in the basket! Perhaps this did us all a lot of good and by the time we reached Cyprus, the Fleet had settled down and had become business like and efficient. Nevertheless, Admiral Tyrwhitt was still anxious how we would perform when we met up with the Mediterranean Fleet, which we did at Marmarice in Turkey. At the end of several weeks' intensive exercises, the Admiral was more than satisfied, the Indian Fleet having received many kudos from the Commander-in-Chief, Mediterranean.

The Joint Exercises held at Trincomalee also provided an opportunity to the Commonwealth navies to hold regattas and sports tournaments in which the Indian naval personnel generally excelled. Vice Admiral Ghandhi relates his experience of the 1958 Joint Exercises:

In 1958, *Cauvery* had an extremely good whaler crew which, somehow or the other, was totally manned by Sikh sailors. It was a champion crew, with which I had challenged all and sundry and my boys never let me down. We won the annual pulling (rowing) regatta hands down that year also.

During the Joint Exercises that year at Trincomalee, there was a British cruiser, whose name I forget now, but possibly *Gambia*, the same class as the *Mysore*, which was also present for the Exercises and flew the flag of Rear Admiral A. Chakravarti, with Captain S.M. Nanda in command and Commander Kawas Nanavati as the Commander.

Gambia challenged *Mysore* to a whaler race in Trincomalee during one of the weekends when all ships were in harbour. Nanavati knew that *Mysore's* team was not a patch on *Cauvery's*; so being a very good organiser, he asked me to transfer my crew with my boat to *Mysore* on loan. So, as far as everyone else was concerned, it was the *Mysore* team versus the *Gambia's*. On the day of the race, Commander D.R. Mehta, who was then the Commanding Officer of the *Tir*, and I got into my motorboat to follow the most exciting race.

The race was duly flagged off and both boats were practically parallel throughout the race, but slowly were converging towards each other and, after about three quarters of the distnace, the two boats collided. My Sikh sailors were irate because, I think, they felt that they were slightly ahead and the Britishers had purposely caused this collision. To one man, the entire boat's crew got up, used the choicest abusive language on the Britishers, got out their oars and started belabouring the British crew.

When we moved alongside and, after much howling and shouting by us, the battle of oars - because by this time, even the British had started to retaliate - was stopped and both boats separated. I thereafter towed away my boat to *Cauvery*.

My sailors were still very upset and, in order to calm them down, I said, 'All right, now we shall challenge the *Gambia* to another race next Sunday, even if it means letting the cat out of the bag that it was *Cauvery's* boat.'

I am sorry to say that this time, though we kept the boats well separated, the *Gambia* won. My sailors were very sporting and invited the Britishers on board for lunch and the latter were stunned that it was only a small frigate's crew that they had to fight so hard to beat .

But there were occasions when sporting events led to considerable bitterness if victory was not accepted with grace and defeat was considered worse then an insult to the country's flag. Such was the case when the Pakistan Navy team won a hockey match against the Indian Navy team through a solitary goal which should not have been allowed and gave the impression to all present that they had avenged their defeat in the Kashmir war. Commander Hugh Gantzer, who was serving in *Delhi* at that period and has since distinguished himself as a travel writer of national repute, describes the episode, 'Every year after the monsoons, ships of the Royal Navy, the Pakistan Navy, the Royal Ceylon Navy and the Indian Navy used to meet in Trincomalee. There, under the watchful eye of a British Admiral we exercised for a week. We got to know each other's strengths and weaknesses, matched our performance against our neighbour's and those of the Royal Navy and renewed old acquaintances. Fighting men generally have a strange empathy that crosses international borders. Or rather, that is the theory. But even well-established theories erode with time.

The exercises concluded without any mishaps or frayed tempers and all we had to look forward to was the JET hockey match. As usual we were pitted against Pakistan. And, as usual, we expected to win.

I remember that it was a sultry evening on the JET grounds: our boys and the Paks had turned out in full force. There were a few enthusiasts from the Ceylon Navy and a scattering of Britons. But, from the very beginning, there was tension in the air. Perhaps it was the thundery weather; or it might have been something else. It certainly wasn't an exciting match. From the very beginning the Paks played a defensive game and the Royal Navy referee just stood and sweated in his white shirt and trousers leaving most of the work to his Ceylonese counterpart.

The clock moved towards halftime and no goal had been scored.

We began to get bored.

And then, quite unexpectedly, one of the Paks rushed forward with the ball almost glued to his stick.

Terence Duckworth, our star player, was taken by surprise and rushed the Pak player.

The man had just crossed the half line when he saw Duckworth bearing down on him. He stopped, looked around for a team mate to pass the ball to and finding no one, took an almighty swipe that sent the ball racing down the field towards our goal.

Terence Duckworth, amused at the man's panicked reaction, turned round and called out. 'Leave it!' he yelled.

The back stepped aside, grinning, letting the ball roll past.

The ball's speed fell over the uneven field and we watched it trickle slowly towards our goal.

Gracefully, and with mock courtesy, our goalie moved out and bowed the ball in, showing his contempt for the player who had shot from outside the 'D'.

The ball, its force almost spent, rolled very, very slowly into the goal.

We filled the air with our derisive laughter but our laughter turned to abject dismay when the soccer-trained Royal Navy referee blew a shrill, sharp, goal!

Well, I need hardly describe what happened after that. The Paks went wild and their players jammed the goalmouth for the rest of the game: you couldn't have slid a greased needle between them. And we, in the stiff-upper-lip spirit of sportsmen that we were, refused to challenge the referee's obviously ignorant decision (I did say times have changed, didn't I?).

So when the match was over, we trooped back to our ships but the Paks took out a triumphant procession through the streets of Trincomalee. And, that night, they circled our ships with their boats, and, blaring through their loudhailers, hurled the choicest Punjabi abuses at us. And from their ships, searchlights lanced out and criss-crossed us in searing contempt while more abuses thundered and boomed across Trincomalee Bay.

At about midnight the Sikh sailors in *Delhi* came in a delegation to their Captain. They wanted to lower boats and tackle the Pakistanis. I saw them approaching and I knew that they meant business.

But the moment they reached the Commanding Officer's door, it opened, and Captain (later Rear Admiral) Pritam Singh Mahindroo stood before them. He was dressed in shorts and a shirt and his hair was tied in a knot at the top of his head.

A Sikh sailor who worked in my office said: 'They are humiliating us, sir. This is war!'.

Captain Mahindroo looked at his men, listened to the yowling invective of the Pakistani sailors. And then he said: 'Dogs do not humiliate men'. He paused, smiling grimly, 'when the time comes to fight as warriors, I will lead you.' And then his lip curled in contempt, 'For tonight', he said softly, 'let the dogs bark'.

So there was no war. And the Pakistani Commodore apologised, very shamefacedly, the next morning. We learnt later that in every Pakistani ship, the sailors had locked their officers below decks and taken the law into their own hands.

The incident was never repeated, but JET was never the same again.

Admiral Katari too recalls the unsavoury incident:

First they took out a victory procession through the streets of Trincomalee, shouting slogans and beating drums. But more was to follow during the night when the Pak sailors went quite berserk. They took to their boats and circled our ships shouting lewd slogans and hurling filthy abuses in choicest Punjabi at every body from the Indian Prime Minister downwards. At the same time, the Pak ships took to firing rockets and Very's lights (coloured flares projected from a pistol) and shining searchlights into the sky. The Commodore of the Pakistan Squadron, a Royal Navy Officer on loan, was ashore and discreetly kept out of the picture. What the senior Pakistani Officer, Captain Akram Khan, was up to during all this nobody knew. Rumour had it that all Pak officers were forcibly confined to their cabins while the sailors ran wild. But the biggest question of all, a question which the British Admiralty should have asked but apparently did not, was what the Commander-in-Chief of the British Fleet, a Vice Admiral of the Royal Navy, was doing during all those deplorable, undisciplined goings-on. No Commander worth his salt would permit such unauthorised demonstrations in a fleet anchorage under his command. Next morning I called on Admiral Biggs and told him precisely that. I also told him that unless more discipline and decorum could be enforced, the Indian Navy would have to consider very seriously whether it would take part in any such future exercises. The astonishing thing was that it did not occur to Biggs to at least express appreciation of the restraint the Indian Fleet showed in the face of such vulgar provocation. Indeed, both Flag Captain Mahindroo and I had to exercise considerable restraint over some very angry Indian sailors who were

all for putting out in boats and show that 'rabble where they got off'.

I suppose such unreasonable and unbridled exuberance was to be expected, given the known propensity of Pakistan to score a point off India whenever possible and miss no opportunity to cause embarrassment to the latter. In the political field we had had several such instances and several more were to follow. We, who followed the profession of the sea, took a justifiable pride in the fact that the brotherhood of the sea transcended all barriers of nationality, race or colour. But the bitter hostility of Pakistan towards us was so overpowering as to flout even such a time honoured tradition. Whatever the official attitude, they did not come out of the incident with any reputation for maturity. It was merely a reflection of the malady of the nation as a whole and also of it its successive leaders.

Commodore K.K. Sanjana was in command of *Mysore* in 1963 when the cruiser took part in joint exercises with the other commonwealth navies. He recalls:

We sailed for Singapore to take part in joint exercises with other commonwealth navies. The Indian Fleet comprised the *Vikrant* (with Captain N. Krishnan in Command, flying the flag of Rear Admiral B.A. Samson, Flag Officer Commanding the Indian Fleet), the *Mysore* and some of our destroyers, frigates, tankers and supply ships. The British Fleet, consisting of the *Victorious*, their aircraft carrier, with some destroyers, frigates and many submarines, met us at the entrance to the Malacca Strait.

The war game at sea was planned by Admiral Sir Desmond Dreyer, The Flag Officer Commanding-in-Chief, Far Eastern Fleet and his staff. As is normal, the game was planned to be between the 'Blue' and 'Red' Forces. The Blue Force consisted of the British and Indian ships and was under the command of Rear Admiral B.A. Samson, flying his flag in the *Vikrant*. The Red Force comprised the *Mysore* (Senior Officer of the Force), acting as a missile cruiser, with two destroyers as escorts and one British submarine. The destroyers were *Diana* and *Rana*, the latter under the command of Lieutenant Commander (later Captain) M.N. Mulla who gallantly went down with his ship, *Khukri*, in the 1971 conflict with Pakistan. I got the submarine to shadow the convoy (the Blue Force) on its passage to the Malacca Strait and then on to Singapore. The time allotted for the separation of the forces was about 48 hours.

Both forces parted company that evening at about 1900 hours and *the Mysore*, with the destroyers initially set course almost due north.

Within half an hour, the *Diana* was ordered to proceed to Australia to replace an Australian destroyer, accidentally sunk by *Melbourne* (a sister ship of the *Vikrant)* earlier that day. I was then left with the *Rana* and the submarine. The same moonless night, at about 2000 hours, the *Rana* reported a man overboard. I ordered her to act independently and search for the missing man. She was also ordered not to try to rejoin me thereafter. I was now 'rid' of both destroyers and fortunately so, as they would not have been able to maintain the speed I had in mind.

I sent for my Engineer Officer, Commander (later Rear Admiral) A.G. Dastidar, his Senior Engineer and other engineer officers and Engine Room Artificers. I questioned 'Dusty' on the maximum sustained speed he could conveniently give me. After some hesitation, he asked me what speed I desired. My reply was short and curt - 28 knots for the next 24 hours or so! He readily agreed and I then warned the Engine Room Artificers manning the throttles to be extra alert and vigilant as the *Mysore* would be steaming at high speed, completely darkened and without radar cover.

By the next morning, we were almost beyond Rangoon. I then altered course to south-east with the intention of intercepting the convoy early next morning. I was receiving excellently accurate reports from my submarine, indicating the position, course and speed of the convoy. My navigator then was Lieutenant Commander (later Vice Admiral) I.J.S. Khurana. I apprised Inderjit about my intention to attack the convoy at about 0300 hours the following morning. With his magic touch, Inderjit worked out, almost to within 50 yards, the position where we would intercept the 'enemy' convoy. I reduced speed to 20 knots when I reckoned that we were about 30 miles away from the convoy's anticipated position.

After a brief interval, I ordered the navigatin radar to be switched on. As the picture appeared on the radar scan, we found the two carriers barely 25 to 30,000 yards away! I immediately reduced speed further to 10 knots, simultaneously putting the wheel over to port to place the *Mysore* heading in the same direction as the convoy and to give my guns a 'broadside'. By the time we achieved this, we were hardly eight to ten thousand yards away from the Blue Force! The *Mysore* was at 'action stations' since midnight and, within seconds, her projectors flashed to indicate gun-fire. Concurrently, I signalled the umpire, Admiral Jack Scatchard, popularly known in the Royal Navy as 'Black Jack', to say, 'Intend to let off the enemy lightly, using six-inch main armament in preference to missiles.'

After a short while, Admiral Scatchard signalled to the forces that both the *Vikrant* and the *Victorious* and had badly damaged and the

Vikrant was sinking! I immediatey ordered my navigation lights to be switched on to avoid any mishap. At the same time, I said a silent prayer for Admiral Samson and my old friend, the late Admiral N. Krishnan who were supposed to be going down with their ships.

Next day, we entered the Royal Naval Dockyard, Singapore, triumphantly displaying mock missiles on the *Mysore's* 'B' turret, which were very cleverly rigged by my shipwrights.

During the debrief, Admiral Sir Desmond Dreyer presided. Some excuses were put forth by the Commanders (Air) of the *Vikrant* and the *Victorious*. Admiral Dreyer, visibly annoyed at these excuses, said, 'Gentlemen, I am not interested in excuses. Why could you not find the *Mysore* with all the air surveillance available to you?' There was no answer to that, because to look for a lone cruiser in that vast expanse of the Bay of Bengal was akin to looking for a needle in a haystack!

The same evening, at a cocktail party, Admiral Scatchard asked me, 'Tell me, what made you attack from the port quarter, because the Blue Force was anticipating that you would try to bring in an attack from somewhere off their bows.' I replied, 'Sir, I am a *shikari* and whenever I have to follow a wounded tiger, I particularly guard my quarters, because that is where, normally tigers bring home an attack. I have only followed the same tactics and have succeeded!' The next day, I received a photograph from 'Black Jack' congratulating me with a brief inscription on it - to Tiger from JPS!

That was the saga of the Commonwealth Joint Exercises of 1964. It did prove that a lone and independent cruiser could be a formidable force, whether armed with missiles or with conventional weapons'.

Dignitaries on Board

From time to time Indian and foreign dignitaries visit naval ships to familiarise themselves with life at sea, meet members of the naval fraternity, witness exercises and other events at sea, review the fleet or take passage on important occasions. This also provides unique opportunity to the men on board to see their haloed heroes from close quarters.

In May 1950, the first Deputy Prime Minister of India, Sardar Vallabhbhai Patel who was honoured with the nation's highest award 'Bharat Ratna' on July 12, 1991, took passage on board *Delhi* from Bombay to Cochin. He was accompanied by Maniben and his Secretary Shri V. Shankar and his family. Admiral Sir Edward Parry, the then Commander-in-Chief of our Navy had most reluctantly agreed to accommodate ladies on board for this was against all conventions.

Life at sea was quiet, restful and enjoyable for the Sardar who had

passed through considerable tension in the wake of the Nehru-Liaquat Ali Pact and the East Bengal refugee crisis. The Sardar evinced considerable interest in an exercise at sea in which two destroyers and some other ships also took part. During the day the party used to identify the town on land. As the ship passed Goa, the Sardar asked the then British Commodore (later to be elevated to Admiral Sir Geoffrey Barnard) commanding the cruiser and the Indian naval squadron, to take the ship as near the coast as he could and he did. When they were just opposite Goa, he asked Barnard how long it would take to effect a landing on Goanese shores and he said, a matter of a few hours describing the guns and fortifications he would have to contend with. Sardar turned to him and said: 'I wish I could ask you to do it at once.'

In January 1951, Prime Minister Jawaharlal Nehru took passage on board *Rajput*, escorted by *Rana* and *Ranjit*, from Jamnagar to Kandla. Recalls Admiral R.D. Katari who was at that time the Commanding Officer of the *Rajput*,

> Almost the first task that the squadron had to undertake was to transport Prime Minister Nehru and his party from Jamnagar to Kandla Port for the foundation-stone-laying ceremony of the port. Among his party were Gopalaswamy Ayyangar (Cabinet Minister) and Mridula Sarabhai (renowned social worker). We tried to dissuade the latter from making the trip on the ground that ladies were not ordinarily taken to sea in a warship, but she was not having any of it. What was more, she would travel in the same ship as Panditji. This, of course, was out of the question as, on these destroyers, the only cabin suitable for a V.I.P. was that of the Captain. Pandit Nehru was to occupy mine and so Mridulaji had to be accommodated in (Commander, later Admiral) S.M. Nanda's cabin in *Ranjit* and Mr Ayyangar in the third ship. The rest of the entourage was distributed in cabins below decks in the three ships. They embarked about midnight and we made the quick trip across the gulf early next morning. Soon after we anchored, the Prime Minister, Mr. Ayyangar and their immediate entourage were sent ashore in our motorboats. The three Commanding Officers, who were also invited to the function waited for the boats to return before they could land. Miss Sarabhai, who somehow seemed to have missed the message, was also left behind and only managed to go ashore with us. When we landed, we found that the main party had already left and there was no transport available to take us to the scene of the ceremony about eight miles away. Clearly there was some failure in the organization somewhere. I have seldom seen a lady so frustrated and angry as Miss Sarabhai was. But she was nothing if not resourceful. She spotted a station wagon belonging to somebody, and by dint of a

combination of persuasion and bluster, commandeered it; and with a 'hop in, boys', jumped aboard, and off we went. The ceremony was half way through when we arrived at Gandhidham and, on its conclusion, we returned to our ships to set sail for Bombay. How the contretemps was explained away and whether it satisfied Mridulaji, we were never to know.'

In March 1954 Dr Rajendra Prasad took passage on board *Delhi*, the flagship, to the Andamans and was escorted by the three destroyers of the 22nd Destroyer Squadron, *Godavari*, *Gomati* and *Ganga*.

Queen Elizabeth, on board her Royal Yacht, *Gothic*, was escorted from Colombo to Aden by *Rajput* and *Rana* in April 1954 in company with some ships of the Royal Navy and Pakistan Navy.

Godavari, *Gomati* and *Ganga* also ceremonially escorted the Yugoslav President, Marshal Joseph Broz Tito's Yacht, the *Galeb*, and a few Yugoslav Navy destroyers into Bombay on December 16, 1954. The three destroyers later escorted the President's Yacht and the Yugoslav destroyers to Calcutta to embark the Marshal on his way to Burma. In January 1955, Marshal Tito, who had returned to India, embarked the *Galeb* at Cochin and was formally escorted out of Cochin Harbour by *Jumna*, *Bombay* and *Madras*. Admiral Sir Mark Pizey, the Indian Naval Chief, who accompanied the Marshal, disembarked from the *Galeb* at the fairway buoy outside Cochin Harbour and the Indian escorting ships, after firing a gun salute to the Yugoslav President, took part in a formal farewell steam-past when the Marshal took the salute.

Cauvery had the honour of carrying the President of India to the Lakshadweep Islands in February 1956 and was escorted by *Godavari* and *Ganga*.

During the visit of His Imperial Majesty Haile Selassie, Emperor of Ethiopia, to India in October 1956, *Rajput* and *Ranjit* escorted the Emperor's ship to Bombay. This was followed by the visit of Zhou Enlai, Prime Minister of the People's Republic of China, to the Fleet at Bombay during his short tour of the country in December 1956.

Reminisces Admiral Katari who was the Fleet Commander at that time:

> During my time of command of the Fleet, I had the privilege of entertaining two foreign dignitaries. The contrast in their styles and in the impact they made on us was quite remarkable. The first was Chou En-lai whom, along with his entourage, I was told to entertain to lunch on board the flagship in Bombay. It will be recalled that this was the period of the much-made-of fraternal relations between our two countries. Whether it was to illustrate this in action, or the pervasive friendship

that any warship exudes, or the fact that Chou was naturally a gregarious person I wouldn't know, but from the moment he stepped on board, he set the tone for informality. Within a few minutes on board, he was in animated conversation in fluent English with the young officers. The official interpreter was ignored. Every so often, loud guffaws of laughter emanated from the group where Chou En-lai held the stage with his witticisms and sallies. So much so that Mrs. Rajan Nehru, the wife of our Ambassador to China, R.K. Nehru who was accompanying the party, thought it necessary to take me aside to suggest that I did something to restrain my young officers and make them understand that they were entertaining a very important Head of Government. I reassured her that my officers could be relied upon not to exceed the bounds of propriety and decorum. I also added that they, Mr. Chou En-lai included, appeared to be enjoying themselves and suggested that it was best to leave them alone. I believe that the occasion turned out to be an outstanding success. I certainly found him to be one of the easiest of high dignitaries to entertain.

I should mention that a few weeks earlier, we had taken a Chinese military delegation headed by a General (I think his name was Yeh) for a day's exercises at sea off Cochin. They enjoyed themselves and applauded loudly every item of exercise that we carried out, even those which I thought were indifferently executed.

The other V.I.P. I had to entertain was the Russian dignitary, Marshal Zukhov. He was to be given a banquet on board the flagship in Cochin. This turned out to be as much of a strain as the earlier occasion with Chou En-lai was a pleasure, and I am clear in mind that it was not of my making. I suspect that, by the time he arrived in Cochin, he had developed a 'chip on his shoulder' because he did not receive either the official or popular reception in the same degree that had been accorded to Bulganin and Khrushchev who had visited India only a little while before. Indeed, I understood that earlier that very day, when he was moving around the town of Cochin in an open car which he insisted on having in place of the originally allocated limousine, he did not find the crowds as widely enthusiastic in their applause as he had hoped. Whatever the reason, the moment he stepped on board, he virtually impaled me against the centre-line capstan and demanded to know why we were acquiring an aircraft carrier. Resisting the temptation to tell him that it was none of his business, I tried to explain to him the reasons which induced us to do so, but he could not, or would not, accept them. At one stage during the discussion, I looked at the Vice Admiral who was part of his entourage and was standing behind him, and asked what he thought about it. Before the poor man

could reply, Zukhov chipped in with, 'My staff think as I do'. The discussion was obviously reaching a point of exasperation to both sides but the climax came when Zukhov made the provocative observation that we were buying the carrier at the behest of the British and to please them. That was too much to accept, and I was provoked into saying, 'Marshal Zukhov, you are a renowned military leader and one of Russia's heroes in the last war. I, therefore, consider it a great honour that you should have deigned to discuss military matters which humble me. But you must concede that I would advise my government in a manner that I feel is best for my country and not at the behest of any foreign power.' That, regrettably, brought the conversation to an abrupt halt. Zukhov marched straight to his place at the dinner table (the dinner itself was not quite ready to be served). The meal was a near silent affair with the silence of tension. Immediately after dinner he begged to be put ashore, not even waiting to participate in the customary exchange of gifts. He left his staff to do the necessary honours.

When it was all over, we all, including our Military Attache in Moscow, Brigadier Nanavati, sat down to hold the inevitable post-mortem. Nanavati related how the Marshal, throughout his tour, was offensively critical of everything he saw and offered advice on everything under the sun, from agriculture and animal husbandry to industrial production. Nanavati concluded by saying that he was happy that some one had the courage to let Zukhov know that he could not expect to get away with such offensive behaviour all the time.

President Tito of Yugoslavia paid another state visit to India in January 1959. He arrived at Madras on board his yacht *Galeb*, escorted by the Yugoslav destroyers *Split* and *Lovecen*, and six Indian destroyers, *Rajput*, *Ranjit*, *Rana*, *Godavari*, *Gomati* and *Ganga*.

Earl Mountbatten of Burma, the then Admiral of the Fleet of the Royal Navy, paid a visit to the Indian Fleet at Bombay and boarded *Vikrant* during his stay in India in April-May 1963.

The then Vice-President of India, Dr. Zakir Hussain, embarked *Cauvery* at Cochin on March 24, 1964 for a cruise to the Lakshadweep Islands. After the visit, he returned to Cochin and disembarked on March 29.

Rear Admiral S.G. Karmarkar takes us back to the early 1950s when the Indian Fleet, commanded by Rear Admiral G. Barnard, was on a goodwill cruise to the major ports of East Africa and he was commanding the *Delhi*:

> During an East African cruise in the summer of 1951, Admiral Barnard was made an honorary member of numerous European Clubs. He declined all the memberships informing the clubs that if his Indian

officers were welcomed at these institutions he would be pleased to accept their invitations; otherwise he was not interested.

At a conversation in Nairobi the name of Jomo Kenyatta came up. At my request a special first class compartment was booked in the train to bring Mr Kenyatta to Mombasa. I was pleased when the Royal Naval Gunner on board the *Delhi*, an Englishman, offered to go to Mombasa Station, along with one of my Indian officers, to receive Jomo Kenyatta. This caused some consternation at the station.

Jomo Kenyatta attended our party on board and lived in my cabin for some days because no suitable hotel would accommodate him in that city.

I will always remember the look on Jomo Kenyatta's face when he boarded the flagship. He said: 'Captain, the last time I boarded a British cruiser it was as part of the chipping party (sailors removing paint from a ship's side with a blunt instrument). Thank you for all your kindness.

Knowledge of protocol and skill in the application of diplomatic prudence are useful tools during goodwill visits, negotiations or discussions with foreigners and ceremonials abroad, ashore and afloat. But there are occasions when national prestige has to be protected with firm resolve and obsequious members of the Indian diplomatic staff adequately reproved they kowtow to the whims of the local bureaucrats. Vice Admiral R.K.S. Ghandhi recalls an incident at Saigon when Commander (later Commodore) D.R. Mehta politely and firmly ensured the observance of protocol and prevented any dishonour being brought to the flag that bedecked the ship's forecastle, the tricolour:

> After the Joint Exercises of Trincomalee in 1958, *Tir*, with Commander (later Commodore) D.R. Mehta as her Commanding Officer and *Cauvery* with me (as a Lieutenant Commander) in command proceeded on a cruise to Malaysia, Singapore and Vietnam. At Saigon, the two ships got a rousing reception and the President did us the unique honour of returning our call. The President of Vietnam at that time was Diem.
>
> As the President was due to come on board, there was a conference held in Commander Mehta's cabin in the *Tir*, where the Vietnam Protocol Officer, our Ambassador to Vietnam at that time (I think a gentleman called Mr Gupta), Commander Mehta and I were present. The Vietnamese Protocol Officer wanted to know what would be the drill on board the ships for the President's call, and Commander Mehta explained to him that when the President arrived in the *Tir*, he would be received with a guard of honour and would then proceed to the *Cauvery*, which was alongside, witness a gunloading competition,

thereafter proceed to the bridge of the *Cauvery* and then come back to the Captain's cabin in the *Tir*.

Commander Mehta then said that President Diem would sit in the armed chair in his cabin and that other persons would sit on the settee and other chairs and that he would open a bottle of champagne to drink to the President's health. When Commander Mehta mentioned that we would all be sitting down, the Vietnamese Protocol Officer was quite horrified and said that, in the presence of President Diem, everyone would have to stand. Commander Mehta stated quite firmly that it was his cabin and that President Diem would sit, adding that he, Commander Mehta, would sit on the chair next to Diem and that Lieutenant Commander Ghandhi, his brother officer, would sit on the other chair and, if the others wished to stand, they could do so; but the two Indian Commanding Officers would sit down.

Our Ambassador tried to persuade Commander Mehta and spoke to him in Hindi and pleaded, 'Please agree with the instructions of the Protocol Officer.' This only made Commander Mehta more firm in his resolve that the two Commanding Officers would be seated and he said to the Ambassador and the Protocol Officer in English that he could not shift his stand.

Whereupon I tried to have a compromise solution and spoke to Commander Mehta in Gujarati and said, 'All right, you sit with Diem and I will stand.' I must give commander Mehta full marks; he turned round to me quite sharply and, once again speaking in English, said, 'No both you and I will sit. There are places for other officers also to sit, but if they wish to stand, they could stand.'

On the appointed day, President Diem arrived and everything went off like clockwork, including the fact that both Commander Mehta and I sat on either side of Diem and sipped our champagne; whilst our Ambassador, the Vietnamese Protocol Officer and others stood watching us.

I am not very sure whether this was reported by our Ambassador to the Ministry of External Affairs, but I certainly did not hear anything more about it.

Now, looking back at things which happened about 30 years ago, I am more than happy that Commander Mehta took this firm and quite correct stand.

Rescue at Sea

One of the tasks traditionally assignated to the Navy is the rescue of ships, passengers and crew in times of natural disasters, collisions, sinking,

disability due to engine failure, ships running aground and providing assistance to civil authorities during strikes, riots, epidemics and other calamities. In 1952, *Tir* rendered towing assistance to a disabled Singapore vessel. In July 1958 *Kistna*, along with the Cochin Port Trust Tug *Cochin*, was sent to the assistance of *Caney*, a 10,700-ton American tanker which had been disabled due to a major electrical breakdown 300 miles south of Bombay.

The aid and assistance provided to the civil authorities during the period included air and sea search for the recovery of fisherman reported adrift off the Kerala Coast after a storm in January 1954, transporting a medical team on board *Rana* to the Lakshadweep Islands in April 1954 to combat an epidemic of dysentry which had broken out in these islands and manning the Cochin Port offices and docking organisations during a dock workers' strike in 1954. The Navy's diving teams conducted diving operations to repair submarine water pipelines at Cochin for the development of the nuclear power station at Bombay, undertook a survey of the wreck of *Galathia* in Tuticorin, carried out an inspection of the left diversion tunnel of the Bhakra Dam and clearing debris in 1957, and recovered gold worth Rs 16 lakh from the sea off Mangalore in 1958. In the same year the Navy moved *Bengal*, *Madras*, *Bombay* and *Konkan* to Calcutta for rendering assistance to the port authorities during a strike of the port workers in June 1958.

An American tanker, *National Peace*, had run aground on Kiltan Island in the Lakshadweep group on August 11, 1959. *Rana*, which was then exercising in the vicinity of Cochin, was rushed to the scene of the grounding and succeeded in rescuing the entire crew of 37 officers and sailors of the stricken tanker and bringing them to Cochin.

Dharini rushed to the aid of a merchant ship, *Wellington*, whose machinery had broken down 265 miles off Bombay on March 27, 1960 and rendered suitable assistance including transferring 120 tons of fresh water. On May 16, 1960 an American tanker, *Atlantic States* which was in distress about 85 miles off Bombay, was taken in tow by *Kistna* and brought to Bombay on May 18. A month later *Rana*, with a medical team on board, was rushed to the rescue of *Scamthoid* in the Arabian Sea, to render medical aid to some accident victims; the injured members of the merchant ship's crew were then transferred to the *Rana* and brought to Bombay.

On June 26, 1961 a merchant ship, *Diloronia* which was in difficulty in the Arabian Sea, was taken in tow by *Kistna* and brought to Bombay on June 28. Another merchant ship, *Maharashmi*, had an engine breakdown off Salbot, 195 miles off Bombay, on July 19, 1961. *Betwa* was immediately sailed from Bombay and, after taking the merchant ship in tow, returned to Bombay on July 21. *Konkan* was rushed to the Minicoy and Androth islands on June 18, 1961 to help fight a dysentry epidemic and rescuing a large

number of visitors stranded in the islands.

A Pakistan merchant ship, *Chittagong City*, while on passage in the Arabian Sea, had an outbreak of fire on board on March 22, 1962. *Tir*, which was in the vicinity, rushed to the ship in distress, went alongside and brought the fire under control. In June 1962 *Beas* was rushed from Cochin to rescue fishermen caught in a storm off the Kerala Coast and in August 1962 *Abhay* and *Hathi* sailed from Cochin and located a missing fishing craft off Colachel.

A motor vessel, *MV Greta*, which was adrift in the Arabian Sea after losing her propellers, was towed to Bombay by *Kistna* on January 5, 1963. An Indian ship, *Indian Pioneer*, which had run aground at the entrance to Vishakhapatnam Harbour, sought naval assistance and a diving team succeeded in refloating her after locating and patching up three holes in the ship's shaft tunnel.

Four ships of the Indian Navy, *Tir*, *Cauvery*, *Subhadra* and *Savitri*, assisted by IAF maritime aircraft from Pune, carried out a thorough search for possible survivors from a United Arab Airlines Comet passenger airliner which had crashed off Madh Island on July 27, 1963. The search which commenced on July 28 was considerably hampered by severe monsoon weather but no survivor or debris of the airliner could be located till August 2 when several dead bodies were picked up and brought to Bombay. On August 4, members of the diplomatic corps and press representatives embarked on *Kirpan*, proceeded to the site of the aircrash and conducted the last rites of the deceased.

Magar, in collaboration with IAF aircraft, carried out a search in the sea area off Kakinada for the recovery of 75 fishing boats and 450 fishermen, who had been reported missing after a severe cyclone, and rescued a number of fishermen. *Rajput* and *Investigator* located the wreckage of a Piper Cub aircraft which had crashed at sea off the Maharashtra Coast and the body of one of the occupants of the aircraft was recovered and brought to Bombay. After a tidal wave had washed away the rail link between Mandapam and Dhanushkodi and inundated the area in December 1964, *Magar* and *Sharda* picked up a total of 1453 persons stranded at Dhanushkodi and evacuated them to Mandapam during the period from December 24 to 29, 1964.

The Naval Fleet carried out three rescue operations during 1965. *Sharda* rescued a motor launch belonging to the Customs department which was in distress between Porto Novo and Cuddalore on August 28; *Beas*, during her passage from Bombay to Madras, rescued the crew of the Greek ship, *Avra*, before the later sank at sea on July 11, 1965; *Dharini* and *Karwar* rescued the crew of *Marviki* which was in distress and had beached in Kola Bay near Goa.

Aid to Civil Authorities

In July 1960 the Indian Navy, along with the Army and the Air Force, undertook the maintenance of essential services during a Central Government employees strike; Naval personnel assisted in manning the important shore installations and *Delhi*, *Ranjit* and *Rana* stood by at Calcutta during the strike.

In 1964, Naval personnel manned the ports and vessels at Bombay, Marmagao, Vishakhapatnam and Cochin when the port workers went on strike between May and July. During June 1964 *Investigator* was at Mangalore to assist the civil authorities in radioactive tracer studies in the dredged outer channel.

In January 1965, when the assistant harbour masters of Calcutta Port struck work, 11 officers of the Navy were deputed to assist the Port Commissioners in piloting and berthing ships in the harbour. Thus recalls Vice Admiral V.E.C. Barboza,

> During the British regime, the Lighthouse on Minicoy Island in the Lakshadweep Group was manned by personnel of the Ceylon Lighthouse Service, though the island itself was administered by the Collector of Malabar in British India. Post-Independence parleys between the Governments of India and Sri Lanka resulted in a decision to transfer all responsibility for the Lighthouse to India and *Tir* was despatched to participate in the handing-over ceremony. I remember the Sri Lankans telling me that every British merchant vessel sailing past the Lighthouse had to pay a toll based on the ship's draught at the time of passing it. A notation was to be made in the ship's log, the ship's owners informed and they were to make the payment. Oddly enough, the money so earned went straight into the British Monarch's Privy Purse!

Once in a while, ships is the Navy encounter developments with political overtones while carrying out their traditional tasks. Admiral Barboza recalls three such incidents that took place in 1962,

> I can call to mind a few incidents during my command of the *Tir* but my memory is hazy about dates and some other details. During a visit to Port Blair, the Harbour Master, Commander C.M. Reilly, expressed his concern about the untrammelled poaching by foreign fishing vessels in the waters around the islands and wanted to apprehend some of them. *Trishul* had earlier seen some Chinese fishing vessels in the area and had warned them not to poach in our waters. I agreed to carry out a

sweep off the west coast of Great Andaman on my return passage to the mainland. If poachers were found, Reilly would send his patrol vessel, with police personnel, to apprehend them. Shortly after we began our search we came upon a group of modern trawlers with their nets out. On our approach they hoisted the Taiwanese flag and behaved as if they had a proprietary right to fish in our waters. We stood guard over them till the Harbour Master's vessel arrived to apprehend them and take them to Port Blair. I think it was the first apprehension of modern Chinese vessels found fishing in our waters.

On another occasion, when we were in Lakshadweep waters, we picked up an SOS message from a Pakistani merchant ship *Chittagong City*. She had a fire on board and, unable to use her engines, was adrift about 300 miles to the west of Goa. I went to her rescue and, after securing alongside her, we put out the fire after about twelve hours of strenuous effort by my crew. It was a fire in the holds carrying coir; and the adjacent machinery spaces had become too hot and suffocating for the crew to operate in for even a few minutes. The ship's master, an Englishman, was the spitting image of the wellknown British actor Charles Laughton. When I asked him to come on board to discuss the legal aspects of the rescue, he cried off saying that his corpulence prevented him from negotiating the Jacob's ladder (a rope ladder with wooden rungs) from his ship to mine. Later, his Pakistani Chief Officer told us that the Master had never visited the scene of the fire and had contented himself with remaining on the Bridge or in his cabin. However, he finally signed the standard documents concerning the rescue (we should have received a goodly sum of salvage money for the rescue, but none ever came our way).

We paid a goodwill visit to Colombo, also in 1962. We had a few Sri Lankan cadets on board and I used the opportunity to hold meetings with the Sri Lankan Naval Headquarters and Defence Ministry to sort out some administrative problems these cadets were experiencing. Shortly after we left Colombo, a local newspaper published a report saying that the real purpose of our visit was to smuggle Rear Admiral Royce de Mel, ex-Chief of the Sri Lankan Navy, out of the country. Admiral de Mel had been sacked from his post some years earlier for alleged involvement in a local scandal (I think his government announced his removal when he was on a formal visit to India). The Press report, thoroughly unfounded of course, was embroidered with the news that the Admiral was sneaked on board the *Tir* dressed in the uniform of a ship's cook. He apparently enjoyed a reputation for being a dab hand at cooking.

Diving Assistance

In September 1959, on an urgent request made by the Government of Punjab, the Navy rushed a team of one officer and six diverrs to the Bhakra Dam to carry out a survey of the approaches to the tunnel where cement blocks were being dropped to seal the diversion tunnel and to salvage a 7.5-ton draft tube gate from the left power plant. The task was completed by the diving team by September 30,1959.

A diving team consisting of one officer and six divers was transported to Car Nicobar on board *Investigator* in April 1960 for carrying out a survey of coral formations near the Malacca Jetty at Car Nicobar. After the initial survey, coral reefs in the area were blasted to render approaches safe for navigation. During 1960 diving teams were also sent to the Tungabhadra and Bhakra Dams several times to survey and salvage underwater equipment, clear blocked tunnels and operate underwater machinery. In May 1960 a diving team comprising one officer and five divers was sent to Munirabad to clear an underwater obstruction in the Tungabhadra Dam in Karnataka.

During 1961 diving teams were deputed to the Bhakra, Hirakud and Rihand Dams for providing assistance in the installation of the Dams' underwater machinery. These teams also rendered assistance in underwater welding of the steel sheet piles of the main wharf in Cochin's dry dock and workshop area, recovering dead bodies of the passengers of a bus which had fallen into a lake near Trichur and blocking 11 underwater pipes and clearing sluices near Pune.

Diving assiatance provided to various civil authorities during 1962 included removal of an obstruction to the emergency gate of the Pykara Dam in Tamil Nadu, desiltation of the gate sill and lowering of a pen-stock bulkhead gate at Hirakud, demolition of underwater obstacles in the navigable channel of the river Ganga between Buxar and Patna built by the Ganga Brahmaputra Water Transport Board and clearance of the sills of all the penstock bulkhead gates at Bhakra.

During 1963 diving assistance was provided to the Bhakra Dam Administration for underwater inspection and clearance of silt from the spillway apron, to the Hirakud Dam Authority for desilting operations and to the British tanker, *British Industry*, for underwater damage inspection.

Events at Sea

The old order at sea changeth rather slowly and yields place to the new after a considerable lapse of time. So was the case with the communication procedure used at sea during the two World Wars as exemplified in the following narration by Admiral Barboza,

I joined the *Rajput* as her Executive Officer after the Staff Course - the third Executive Officer's assignment in about six years. The three Rs *(Rajput, Rana* and *Ranjit)* were sent to escort President Tito's yacht *Galeb* for a part of its passage across the Indian Ocean *en route* to south East Asia. When, after making the rendezvous, we sped past the yacht to take up screening stations ahead of her, the President and his wife stood on an open deck and waved to us, though the weather was wet and squally and the sea lively. We asked the Captain of *Galeb* to signal changes in his course and speed so that the screening ships could adjust their positions accordingly. He complied, and we were pleasantly surprised to see that he did so employing a code used by Allied Convoy Commodores in the Second World War.

There were some minor collisions too causing excitement on board. Admiral Barboza recalls the episode of 'catted' anchors on board the *Mysore* catting being a nautical term for raising the anchor to the cathead, a horizontal beam on each side of a ship's bows, used for raising and carrying anchors.

The *Mysore* has had her share of mishaps as well, both minor and major. While a particularly major catastrophe is described often, I would like to dwell on one minor one, especially since it has humorous overtones and relates to our sojourn in the Mediterranean. Commodore Erach Debu, then our First Lieutenant and Forecastle Officer as a Lieutenant Commander, used to complain bitterly about the need for catting the anchor. 'Just because Nelson catted the anchor', he would grumble, 'must we keep on doing so?' Once the catted anchor swung and damaged the *Mysore's* bows - she probably carries that scar till today and Captain Nanda was convinced that this was one Nelsonian tradition which we could dispense with.

It was Prime Minister Nehru who, after visiting the Fleet and having witnessed operations at sea, had said that a naval ship is a virtual mini-India comprising personnel from different educational, cultural, socio-economic, linguistic, religious and ethnic backgrounds fight as one man, living together. Man-management and expertise in human relations, therefore, constitute some of the most essential attributes of Naval personnel.

Vice Admiral Krishnan had a different kind of experience in human relations when he was the Commanding Officer of *Vikrant* in 1963. He recalls:

After a week of intense flying exercises off Cochin, we anchored near

the fairway bouy, for rest and maintenance and I acceded to the engineer officers' request to shut down steam.

Early next morning I was doing my *Puja*, as was my wont, when the carrier's signal communication officer rushed into my cabin and rather agitatedly said, 'Sir, our radar has picked up a largish echo which is moving too fast for a merchant ship and is heading towards us.' I asked, 'What is the range?', to which he replied, 'Twenty miles, and closing in fast.'

I knew that there were none of our warships in the area at that time. Always at the back of my mind was the thought of a pre-emptive attack by Pakistan and I was not going to take any chance. I told the officer, 'Ring the alarm for action stations and I will be up in a jiffy.' By the time I got up, a silhouette of the approaching ship was partially visible and I could make out that it was the Pakistani cruiser *Babar*. Without steam even to raise the anchor we were a sitting duck and I had no intention that it should be so. I ordered steam to be raised with the utmost despatch and had the cable party standing by to slip the anchor. I sent for Tally-Ho (nickname for Lieutenant Commander, later Admiral, R.H. Tahiliani), the senior flier, and asked him, 'How are you for a free take-off?' He replied, 'There is a decent breeze, we are already into the wind and the Alize (Vikrant's antisubmarine aircraft) can just about do it. Have to use rockets and not bombs'. 'Go to it', I said, 'get two Alizes ready!' The cruiser was within the visual signalling distance. I suddenly remembered who the Captain was - Captain Syed Mohammad Ahsan, who was with me in England in the mid-1940s when he was awarded the DSC with me (Captain Ahsan later rose to the rank of Admiral as the Commander-in-Chief of the Pakistan Navy and served as the Governor of East Pakistan after his retirement). I signalled a message to him which read, 'Syed, don't come closer. We are ready for you. Krish'. The reply came, 'Krish, have Ayub on board, bound for Colombo. Thought will have a *dekko* at my old country. Cordial greetings Syed.' and he turned away.

Vice Admiral N.P. Datta was, among others, witness to the lighter side of the life at sea during his numerous appointments afloat. He remembers a Royal Navy officer who had been influencd by the Muse and had the propensity for communicating in verse, and the mammoth denizen of the deep sea which collied with one of our ships During the early 1960 he reminisces:

> We showed the flag during our visits to Malaysia, Singapore and Indonesia and on the way carried out intensive exercises with the Royal

Navy in the Malacca Strait. Rear Admiral B.S. Soman was in command of the Indian Fleet. His opposite number was the famous and much-liked British Flag Officer, Admiral Michael Le Fenu. I had known Le Fenu since 1953 when I was Flag Lieutenant to the then Indian Navy's C-in-C and Chief of Naval Staff, Admiral Sir Mark Pizey, and he was Naval Assistant to the First Sea Lord, Admiral Mcgregor. We had spent two weeks together visiting naval establishments and 'shooting' tigers with our cameras in between. Whenever in the mood, Le Fenu often broke into verse. He was obviously happy with his Indian visit and I got a three-page letter of thanks, all in verse. When the two Fleets met at sea, he sent for me in his helicopter. When taken to the flag bridge, you can imagine my surprise when I saw him, sitting in a corner and quitely knitting away! He explained he was doing so on doctor's advice, to soothe his nerves after his recent illness! Well or ill, he was a hard taskmaster and, therefore, you can imagine our joy when, at the end of the exercises, we received a signal which ended by saying:

We in the Far Eastern Fleet say, one and all,
That Soman's Fleet is on the ball.

An interesting experience during the summer exercises of 1963 was a collision with a giant whale on July 15, 1963 when *Mysore* was involved in a strange encounter with this 50-foot sea-mammal which got trapped across the ship's bows with its head to port and tail to starboard. Sailors in the mess-decks became aware of its presence due to the thumping on the ship's side and crowded on the ship's forecastle to witness the strange sight. The whale was firmly held and broke free only when the engines were reversed and the way was taken off the ship.

Vice Admiral S.H. Sarma, who retired as the Flag Officer Commanding-in-Chief of the Eastern Naval Command, is intensely aware of the 'brotherhood of the sea' which could bring together seafarers whose home ports are often separated by the vast expanse of the oceans and who often represent countries of different political, ethnic, religious, linguistic and cultural hues. While sailing back from England as the first Commanding Officer (in the rank of Commander) of *Khukri*, an antisubmarine frigate, in 1958, Admiral Sarma had an experience of this universal brotherhood of seafarers. He describes his chance encounter with a naval officer from Salazar's Portugal, the country that had refused to grant freedom to Goa:

While taking the *Khukri* to India from England, after acceptance, we

put into Gilbraltar for fuel. While securing the ship alongside our allotted berth, we observed that there was a Portuguese frigate already alongside a berth at right angles to mine. At that time India did not have diplomatic relations with Portugal. It was with a certain amount of surprise, therefore, that I heard my 'Officer of the Day' (the duty officer in harbour) that an officer from the Portuguese ship wished to see me. In my cabin the Portuguese officer said, 'Sir, my captain wants to know who is more important, you or him? If you are more important, he will come and see you.' He evidently meant who was more senior. I had already observed his Captain through binoculars, also a Commader like me but much older. I replied, 'Your Captain is more important, I will go and see him'. When I met him, I thanked the Portuguese commander for his courtesy - and he discoursed at length on the brotherhood of the sea which cuts across diplomatic barriers. A nice old sea-dog with whom it was good to spend a forenoon.

Commodore K.K. Sanjana who, as a Captain was the Commanding Officer of *Mysore* during 1963-64, relives his days on board as the Captain of the cruiser directing operations before and during the joint exercises off Trincomalee with the other Commonwealth navies:

It was in 1963 when the *Mysore*, after a fairly good refit, sailed in the second week of July for Singapore, Bangkok, Malaysia and thence to Calcutta. On our return passage, the *Mysore* called at Colombo to show the flag. At the entrance to Colombo we met the Pakistan Navy's ship *Khyber* and, in accordance with normal naval custom, exchanged identities and the names of respective Commanding Officers. Immediately on securing in Colombo Harbour, the *Khyber* signalled the *Mysore*, in keeping with the best of naval traditions, conveying the Commanding Officer's desire to call on me. We received the Captain of the *Khyber* - Commander (later Captain) Ameer Aslam - with due ceremonial. Immediately after stepping on board the *Mysore*, to every one's surprise, the young handsome Commander of the Pakistan navy touched my feet and said, 'Sir, you will perhaps, not remember me, but I was one of the sailors who served under you before the partition.' After that, we had a very long chat in my cabin and it was then that I realised that he was one of my communication sailors in Bombay just prior to Independence, when I was the Staff Communications Officer. We naturally talked very freely and frankly about old colleagues who lived, sailed and fought together before August 15, 1947. I then asked Aslam to tell me honestly and truthfully as to which unit of the Indian Navy the Pakistanis feared most. Without any hesitation, Aslam replied, 'Sir, it

is the *Mysore*.' (It was the *Mysore* whose presence in the Arabian Sea during the 1965 Indo-Pak conflict had reduced the Pak Navy's Fleet to the state of a fleet-in-being)

Transfer by jackstay, i.e., transferring personnel and stores from one ship to another at sea by a rope strung between two ships steering a steady parallel course, had been a male preserve for centuries, for women are generally not permitted on board naval ships except during visits on ceremonial or private occasions in harbour or on 'families' day' at sea. It was in 1959 that the first 'Jill' took off from the *Mysore* at sea and virtually hang-glided across the 150 feet of space over a frothing sea to the deck of *Delhi*. To recapitulate the momentous event, an ex-*Mysorean* recalls, 'It happened in the days when *Come September* was the top number of the pop parades! Came September 1959 and a bevy of beautiful young damsels - all of them naval wives and lady plotters from the Tactical School, Cochin - found themselves on board the good ship *Mysore*, for what is known as 'A Day at Sea'. Amongst them was young Meena, wife of Commander W.S. Nagarkar, then the Officer-in-Charge of the Navigation and Direction School. As part of the exercises, a jackstay transfer between the *Mysore* and the *Delhi* was soon ordered. Rakesh Sharma may have been the first Indian to sojourn into outer space, with *Salyut* as his vehicle, but Meena Nagarkar, however, had decided, way back in 1959, that she would be the first Indian eve to bounce across the waves in a bosun's chair, a wooden seat suspended from ropes, used at sea for transferring men and material from ship to ship whilst they are under way. So, braving ominous forecasts from the Cassandras surrounding her, she set off jauntily from the *Mysore* to the *Delhi*. It was after she reached there that her travails actually began, for the Captain of the *Delhi* (none other than the swashbuckling Krishnan) refused to return his 'prize'. It took an imperious edict from Rear Admiral Ajitendu Chakraverti, the Fleet Commander, threatening dire consequences, before Meena came bobbing back to the *Mysore*.' The waves of the Arabian Sea were never the same again.

It would not be out of place to recall here that it was during the Sino-Indian conflict of 1962 that the landing ship, *Magar*, had been deployed for patrolling in the waters around the Andaman and Nicobar Islands. No Chinese or foreign vessels were sighted by the ship but several reports kept reaching Port Blair describing a 'Chinese-looking' ship that had been seen prowling in the waters close to the islands. The *Magar* made several attempts to apprehend the intruder but failed to do so. Finally, in an effort to get a precise description of the elusive ship, some of the islanders who had reported the sighting were brought on board the landing ship. But the moment these islanders stepped on board they realised that the sighting

reports they had been making were of the *Magar* itself for in their reckoning the landing ship was indeed 'Chinese-looking' what with its 'aquiline' bows removed and the huge flat bow-doors fitted in front, which were peculiar to all landing ships, presenting a snub-nosed visage! It was another instance of acute Sinophobia leading to hallucinatory sightings on the lines of the spectral Flying Dutchman.

Review of the Fleet

Dr. Rajendra Prasad, the President of India, took the salute at the first Review of the Fleet by the President at Bombay on October 10, 1953. Present on the occasion were Prime Minister Jawaharlal Nehru, Defence Minister, Krishna Menon, and Admiral Sir Mark Pizey, Chief of the Naval Staff. Thirty three vessels took part in the Review and included 25 warships, seven yard craft and one merchant ship.

Ships of the Indian Navy took part in a Review of the Fleet at Bombay by his Imperial Majesty the Shah of Iran on March 6, 1956. The ships that took part in the Review included *Delhi, Cauvery, Rana, Ranjit, Shakti, Gomati, Bengal, Bombay, Madras, Bassein,* and *Bimlipatam* and Shore Patrol Craft *No. 3110.*

On April 20, 1964, Shri Y.B. Chavan, Defence Minister, took the salute at a Review of the Fleet at Bombay in lieu of the President. Dr. S. Radhakrishnan, who was indisposed. A total of 52 vessels including 31 warships, nine merchant ships and 12 yard craft took part in the Review. Dr Radhakrishnan later reviewed the Fleet in February 1966.

Adventure Activities

From the sea to the mountains may sound a far cry but those from the Navy who had the opportunity to climb in the Himalayas have found the same fascination and challenge in the mountains as is experienced at high seas. Like vast oceans, mighty mountains make a man realise his insignificance in the vast universe. And it is due to this identity of spirit of adventure that seadogs have found themselves quite at home on the mountains and have braved the hazards of mountains in the same way as they would face the raging seas.

Captain M.S. Kohli of the IN and an internationally renowned mountaineer records in his book, *Mountaineering in India,*

> Although man's contact with the mountains is as old as the seas, somehow not many Indian Naval personnel have been able to venture to the Himalayas. I was perhaps the first Naval Officer selected for a

major Indian expedition. It was to Saser Kangri (7,672 m) in 1956. It was a great expedition with Nandu Jayal as leader, and a band of strong instructors of Himalayan Mountaineering Institute. Although we failed on the main peak, we succeeded in climbing a satellite peak, Sakang (6,948 m). The following year Lt Cdr. Jyoti Rawat was selected for the Nanda Devi Expedition and managed to reach a formidable height to 7,470 m. The expedition failed but Jyoti proved that Naval Officers are as capable as others in tackling the high mountains. In 1958, Lt. P.P. Mehta joined Col Kumar and succeeded in reaching the top of Trisul (7,120 m).

One of the most glorious years in the history of Naval mountaineering was 1959. This year Cdr. J.T.M. Atkinson who was commanding *Kistna* submitted his plans to the Naval Headquarters for an all-naval Expedition to the 6,861 m high Nanda Kot. I happened to be then posted on his ship. The expedition was approved by the Naval Headquarters but unfortunately at the last minute John Atkinson fell ill and opted out of the expedition. Of his proposed team members, I was the only one who had done the Basic and Advance Courses and was asked to take over the leadership.

Looking back over the years, I recall with a great sense of pride climbing this difficult and challenging peak. After a gruelling effort the summit was reached by Chief Yeoman of Signals, K.P. Sharma and myself.

Besides me, there have been a few other Naval Officers who took to mountaineering. In 1961 Lt. (later Vice Admiral) V.S. Shekhawat and Chief Yeoman of Signals, K.P. Sharma, joined me on an expedition to Annapurna III, K.P. Sharma also joined the expedition to Everest and Nanda Khat.

Kohli's crowing achievement was leading a team of 18 intrepid climbers to scale the Everest in 1965. Nine of them were put atop the highest peak and the story of this spectacular Indian Climb is stirringly narrated in his book, *Nine Atop Everest*. Paying her tribute to this achievement, Shrimati Indira Gandhi has recorded in her preface, 'The record of Commander Kohli's expedition will find special mention in history. It was a masterpiece of planning, organisation, teamwork, individual effort and leadership'. Shri Lal Bahadur Shastri in his tribute has also recorded, 'The Indian Everest expedition has created mountaineering history by this record-breakng achievement. Climbing Everest even once is a great distinction, doing so four times in a row is a spectacular triumph'.

The indomitable spirit of adventure of personnel of the Indian Navy has also taken them to the icy continent of Antarctica. The achievements of

Lieutenant HR Bowers of the Royal Indian Marine who accompanied Captain Scott on his expedition to the Antarctica in 1910 have been recorded in an earlier chapter. The first Indian also to set foot in Antarctia was Lieutenant Ram Charan of the Indian Navy, a specialist in Meteorology, who accompanied an Australian expedition to the South Pole in 1960. After returning to India, Ram Charan prepared a valuable report on his expedition, but in 1961 he was tragically killed in a road accident.

Defence Services Staff College

One of the prestigious professional courses conducted for officers of the three Services is the Defence Services Staff College course (for officers of the rank of Major and its equivalent in the Navy and the Air Force) at Wellington, a picturesque hill-station in Tamil Nadu. One of the better features of the course is a series of weekly talks by renowned specialists, eminent thinkers, social workers and professionals on a variety of subjects which considerably enlarge the intellectual horizon of the student officers. One of the eminent visitors to the College in 1957 was the Prime Minister, Jawaharlal Nehru, who was accompanied by the then Chief Minister of Tamil Nadu, Shri Kamaraj Nadar. Vice Admiral Barboza, who underwent the course in 1957, reminisces:

> After *Tir*, I did my Staff Course in Wellington. Prime Minister Nehru visited the college during a tour of the Nilgiris, accompanied by the Chief Minister of Tamil Nadu, Shri Kamaraj Nadar. Among other things, the Prime Minister was treated to a Student Discussion on a Second World War campaign. It appeared to have given the Prime Minister the impression that the College was teaching the students to fight the next war the way they fought the last one. When asked to address us after the discussion, he spoke extempore, displaying the wide sweep of his historical knowledge, quoting Napolean and describing the Chinese 'Long March'. While agreeing with the need to study the past, he advocated the virtues of imagination, innovation and ingenuity in tackling the challenges of the future. He drove home his point by telling the story of a famous poet, who, when importuned by his students to divulge the secret of his success, replied: 'Master your grammar - and then forget it.'
>
> Panditji was the Chief Guest at a formal dinner at the Staff College officers' mess that evening. He attended it dressed impeccably, while Shri Kamaraj wore his customary homespun attire which bore unmistakable marks of a hard day's wear. We knew and respected the Chief Minister too much to frown on his not 'dressing for dinner', but we wished he had donned a freshly laundered change before coming to

our function. The starchy pomp and parodical rituals of the mess function, so devoid of any home-grown flavour, doubtless left Shri Kamaraj cold, but he had the grace to make his indifference seem benign. When the proceedings drew to a close, the Commandant rose stiffly, raised his glass to the Prime Minister and commenced a rather off-key rendering of *He's a Jolly Good Fellow*, which the rest of those assembled joined in dutifully. Kamarajji rose to his feet with the rest of us. And as the swelling chorus echoed from the rafters, he hung his head and visibly sighed.

Three years earlier, the author was also doing a course at the same institution when Dr. B.R. Ambedkar, the architect of our Constitution addressed the College. This was in 1954 and two years before Dr. Ambedkar's last act of 'revolt' when he found his peace in the Buddha and which was two months before he passed into history. Dr. Ambedkar was not in the pink of health and had to be helped to the rostrum by our British Commandant, the distinguished General Lentaigne. Dr. Ambedkar had made a quixotic statement after he resigned from Nehru's Cabinet that the Constitution should be burnt! A British Major who was also doing the same course, was emboldened to ask Dr. Ambedkar at the end of his illuminating talk, as to why he had come to such an unthinkable conclusion and so soon. Dr. Ambedkar thundered back in his powerful voice: 'One makes a temple for gods to live in, but when the devil usurps it, it has to be destroyed.' The meaning was clear to us all!

Dr. Ambedkar was posthumously awarded the Bharat Ratna in 1990.

Oceanographic Research

In recognition of the importance of oceanographic research in the Indian Ocean, the Indian Navy took part as a major participant in the International Oceanographic Expedition in the Indian Ocean held from 1962 to 1964. The main task allocated to India within the framework of this expedition were the participation by *Kistna*, which had been specially fitted out for oceanographic research to the extent of six months in each of the three years. The facilities made available by the Indian Navy included provision of assistance for radio communication to the vessels taking part in the expedition, provision of shore facilities to oceanographic vessels within Indian ports, provision of facilities in Naval laboratories at Bombay and Cochin, making available Naval scientists for participation in research work, both ashore and afloat, and provision of training facilities for scientists required for the expedition.

Indian responsibilities, within the overall framework of the expedi-

tion, lay in the waters near the coast of India, both East and West, and intensive investigations on the continental shelf and superjacent waters. The outer limits of the area of Indian responsibility were the Arabian Sea north of the Equator with six degrees longtitude as the western boundary and the Sumatra Coast along with the Andaman and Nicobar Island as the eastern boundary. Some cruises were made to the latitude of 12 degrees south and to the East Coast of Africa where some important oceanic currents originate and which have a bearing on the circulation of sea water along India's North-West Coast.

The Indian programme included observations and calculations of the energy flux between the ocean and the atmosphere. Studies were also made of the solar, sky and atmosphere radiations, air pressure, temperature and humidity at the deck level, surface temperature of the sun, near-surface ocean currents, waves swell, tide, rainfall, evaporation profiles of wet and dry bulb thermometers and winds above the sea surface.

A total of 20 ships took part in the three-year expedition and, besides India, the other countries representated were Australia, France, Indoensia, Israel, Japan, Norway, Portugal, Pakistan, South Africa, Britain, the USA, the USSR, West Germany and Zanzibar. India was represented by four ships - *Kistna* which was fitted out with the requisite scientific instruments and equipment to cope with the requirements of the various tasks allocated to India, Research Vessel *Varuna*, the survey vessel of the Indo-Norwegion Project in Kerala, *Bangada*, a fisheries vessel, and *Conch*, a research vessel of the Kerala University. The first scientific cruise by the *Kistna* was inaugurated by Professor Humayun Kabir, Minister of Scientific Research and Cultural Affairs on October 9, 1962 at Bombay. Twenty scientists were embarked on the ship which collected much valuable data on various aspects of oceanographic research.

The Kaleidoscopic Maritime Ambience

Life at sea thus is a series of experiences that constitute a multi-hued mosaic of the characteristics of maritime ambience. laughter, pathos, challenges and bravery, often interspersed with long periods of ennui and then superposed by fulfilment, glory and achievement are but different ingredients that embody the distinctive mental attitude that a sailor acquires over the years at sea. And during the process the ship, instead of being a mere weapon platform, transcends itself to the state of being a vehicle transporting the seafarer to a happier land across the mighty oceans. Robert Bridges, the poet, expresses the same thought:

> And yet, O splendid ship unhailed and nameless,

I know not if, aiming a fancy, I rightly divine
That thou hast a purpose joyful, a courage blameless,
Thy port assured in a happier land than mine.
But for all I have given thee, beauty enough is thine,
And thou, aslant with trim tackle and shrouding,
From the proud nostril curve of a prow's line
In the offing scatterest foam, thy white sails crowding.

16

NAVAL BATTLE HONOURS

The award of Battle Honours to ships is intended to foster *esprit de corps* among their officers and ships' companies, who are thereby encouraged to take a personal interest in the war time exploits, not only of their present ship but also of those of the same name which distinguished themselves in the past.

Till less than forty years ago, Battle Honours were displayed on Royal Navy ships on the authority of the Commanding Officer. However, in 1954, rules for their award were codified and Battle Honours then in use were regularised with a few exceptions; certain fleet action Battle Honours were omitted from the official list which was published in Admiralty Fleet Order 2565/54. The earliest action of which sufficient was known and was considered worthy of inclusion was 'ARMADA' 1588! The earliest action commemorated in the British Army is 'Tangier 1662-1680'.

The action and campaigns mentioned in the Admiralty Fleet Order are displayed on a scroll, mounted in a suitable position in the ships which are eligible for these Honours. A note of the Battle Honours awarded is to be recorded in Folio I of the Ship's Book. This Folio should contain a Record of Service of all ships of the same name. Many actions and incidents, meritorious in themselves, are not sufficiently important enough to be ranked as Battle Honours. Limitation of space also precludes everything from being included on the scroll. Therefore, several incidents are often compressed into a single, short-titled Battle Honour in a manner similar to that adopted for determining the Battle Honours which appear on a Regimental Colour.

Battle Honours have been generally awarded for successful war serv-

ice which includes, sinking or capture of an enemy warship, sinking of enemy merchant ships in escorted convoy, engagements with enemy light forces when both sides often incurred losses and operations which resulted in the more or less complete frustration of the enemy's intention at the time, although no warships may have been sunk.

The qualification entitling a ship to a particular Battle Honour is that she was present during the action - the extent of her participation is immaterial. In the days of sail, physical or visual contact with the enemy was *sine qua non*: but in the wars of the 20th century radio communication etc. enabled patrols and scouting groups to operate effectively at much greater distances and long range ship missiles have changed the picture altogether. The word 'present', therefore, is taken to mean presence at sea under the direct orders of the senior officer controlling the Operation.

If a ship is renamed at any time, she will assume the Battle Honours which go with her new name, and will no longer be entitled to those previously awarded under the old name.

The selection of Battle Honours for the 1914-18 War was based on the award of clasps with the British War Medal. The Royal Indian Navy did not receive any awards for the 1914-18 War and those awarded for the 1939-45 War and promulgated vide AFO 2565/54 are given below:

Ship	*Battle Honour*
Bengal (IN)	'Hokoku Maru' 1942
	Burma 1945
Bombay (IN)	Burma 1945
Cauvery (IN)	Atlantic 1943-4
	Burma 1944-5
Delhi (IN)	Atlantic 1940
	North Africa 1942
	Sicily 1943
	Salerno 1943
	Anzio 1944
	South France 1944
	Adriatic 1944
Godavari (IN)	Atlantic 1943
	Burma 1945
Jumna (IN)	Atlantic 1941
	Sicily 1943
	Burma 1944-5
Kistna (IN)	Atlantic 1943

	Burma 1944-5
Konkan (IN)	Atlantic 1942
	Burma 1944-5
Madras (IN)	St. Lucia 1796
	Egypt 1801
Rajputana (IN)	Atlantic 1942
	Burma 1945
Rohilkhand (IN)	Burma 1945
Sutlej (IN)	Sicily 1943
	Burma 1945

The following two post-Independence Operations undertaken by the Indian Navy until 1965 entitled them to the award of Battle Honours:

Kistna *Cauvery* *Jamuna*	Combined Operations on Kathiawar Coast (Junagadh Operations)	October 1947	Naval Force Commander: Commander R.D. Katari
Vikrant *Mysore* *Delhi* *Trishul* *Betwa* *Beas &* *Cauvery*	Operation Vijay (Liberation of Goa, Daman and Diu)	December 1961 Rear Admiral	Naval Force Commander: B.S. Soman

LIST OF SHIPS (COMMISSIONED UNTIL 1965)

No.	Name of Ships (ex Name of ships)	Commissioned	Decommissioned
1.	*Gomati (HMS Lamerton)*	Apr 24, 1953	May 31, 1972
2.	*Godavari (HMS Bedale)*	Apr 27, 1953	Aug 31, 1976
3.	*Ganga (HMS Chidding-Fold)*	May 26, 1953	Jul 31, 1972
4.	*Shakti*	Jan 20, 1954	Dec 31, 1967
5.	*Bassein (HMS Littleham)*	Jun 15, 1955	Jul 31, 1976
6.	*Bimlipatnam (HMS Hildersham)*	Jun 15, 1956	Dec 31, 1972
7.	*Kakinada (HMS Durweston)*	Aug 17, 1956	Jun 30, 1979
8.	*Cannanore (HMS Whitton)*	Aug 21, 1956	Mar 31, 1981
9.	*Karwar (HMS Overton)*	Aug 28, 1956	Mar 31, 1981
10.	*Cuddalore (HMS Wennington)*	Aug 30, 1956	Jun 30, 1979
11.	*Savitri*	Aug 20, 1957	Jun 15, 1974
12.	*Sharayu*	Aug 20, 1957	Jun 15, 1974
13.	*Suvarna*	Aug 20, 1957	Jun 15, 1974
14.	*Mysore (HMS Nigeria)*	Aug 29, 1957	Aug 30, 1985
15.	*Subhadra*	Oct 20, 1957	Jun 15, 1974
16.	*Brahmaputra*	Mar 28, 1958	Jun 30, 1986
17.	*Khukri*	Jul 16, 1958	sunk 09, Dec 1971
18.	*Dharini (SS Hermine)*	Apr 02, 1959	Dec 31, 1975
19.	*Kirpan*	Jul 01, 1959	Transferred to Coastguard on Aug 18, 1978
20.	*Kuthar*	Jul 15, 1959	
21.	*Sukanya*	Dec 05, 1959	Jun 15, 1974
22.	*Sharda*	Dec 05, 1959	Agrounded in 1967
23.	*Trishul*	Jan 10, 1960	
24.	*Talwar*	Apr 26, 1960	Oct 30, 1985
25.	*Beas*	May 24, 1960	
26.	*Ajay*	Sep 21, 1960	Transferred to Bangladesh
27.	*Betwa*	Dec 06, 1960	
28.	*Vikrant (HMS Hercules)*	Mar 04, 1961	
29.	*Abhay*	Nov 11, 1961	Jun 30, 1980
30.	*Akshay*	Jan 08, 1962	Transferred to Bangladesh
31.	*Darshak*	Dec 28, 1964	Jan 15, 1990

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