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UNITED SERVICE INSTITUTION OF INDIA

for

the furtherance of interest and knowledge in the art, science and literature of the Defence Services

Secretary and Editor
Colonel Pyara Lal
AVSM

CONTENTS

APRIL-JUNE 1978

Defence and National Development

DS NAKRA

THE GENERAL IMPRESSION

THE general impression about defence expenditure even in comparatively knowledgeable circles, is that it is essential and unavoidable but non-developmental and unproductive all the same. Its implications are serious. There is deplorable lack of interest in Defence matters in Parliament and Government except, of course, the Defence Ministry and the general public is almost completely uninformed ; it is exuberantly sympathetic in war and somnolently apathetic in peace. This attitude of indifference on the part of administration and public is naturally not conducive to proper understanding of defence problems and adequate appreciation of Defence needs. In Government, there is water-tight compartmentalisation and a large communications gap between civil and Defence departments : coordination is not even remotely thought of as desirable and practicable. The policy stance seems to be "let the Defence Services have the minimum funds compatible with efficiency and then let us get on with the job of national development and growth". What constitutes the optimum operational efficiency and peace-time defence preparedness in the context of political and geo-physical factors is a question that is hardly ever examined in the depth and detail it deserves. Inspite of the size of the Defence Budget, there is no cell for long-term defence planning and policy in the Planning Commission ; even the set-up in the Defence Ministry and the Service Headquarters is very weak and not as effective as it should be. The need for a system of a peace-time inter-Ministry consultation and coordination has not even been recognised.

The overall effect of these political and administrative attitudes has been to exclude Defence from the main stream of nation's progress and advance. This is very unfortunate indeed. True defence expenditure is not directly developmental but its impact on growth and its contribution to national development is very significant ; in fact can be very much large if only it is first recognised and then its potentialities are exploited, to the maximum. The neglect of these potentialities has

resulted and is resulting in wasteful use of scarce resources of men, material and money, in so far as there is duplication of effort and expenditure.

In this article it is proposed to make a brief survey of the quantitative and qualitative contribution of Defence expenditure to national development and what is even more important to highlight the avenues for fuller contribution which have unfortunately not been adequately explored in the past but which can be used to great national advantage in future.

Defence Services and Development

Broadly defence expenditure covers manpower, weapons and equipment and production and research. The expenditure on manpower is intended to produce highly trained and disciplined fighting men to defend the country against any aggression. Hence it is of the nature of an insurance and prima facie can be viewed only as unproductive and non-developmental. But is it really so ? The manpower of the Defence Services does not remain in active service till superannuation when the body and mind begin to go to seed in most cases. After a colour service of 15 years or more soldiers (which includes airmen and naval ratings) come back to the stream of civil life in their thirties. They bring with them their training and discipline and a character that bravely faces the challenges of life. Their qualitative contribution to civil life by way of invigorating its culture and character and their quantitative contribution specially to rural economy is something which our social scientists and economists have made no attempt to assess so far. But significant though this contribution undoubtedly is, it is only a very small part of the contribution they can make to national economy if their services are utilised in agriculture and/or industry in an organised manner. Here is a dynamic force for development that is not being harassed for want of adequate appreciation of its potentialities. The so called unproductive expenditure on defence manpower can be made productive if we will.

Similarly the officer's cadre of the Services has yet to be fully utilised. Here is a body of leaders of men—who have been trained to inspire that loyalty—which would lay down life at their command. Again they have been trained to take prompt and yet correct decisions—a delayed or a wrong decision could be fatal for them in war—and they have learnt not to make any facile wishful assumptions but to prepare their plans of action in minute details and to execute them successfully. To the extent the nation has made use of them in civil Services and in industrial management they have given an excellent account of themselves. It

is not just a matter of accident that ex-Service officers who were appointed to the I.A.S. have almost always done extremely well—many of them are Secretaries to the Government of India today.

Not only the Service officers but even those who have been associated with the Services and have imbibed their discipline and character have done very well. Similarly, in the field of industrial management too they have done as well, if not better than the best of managers. Some of the Indian Defence Accounts Service officers are heading large public enterprises now and some of the Defence Civilian I.A.S. officers are also occupying the top positions. But can we say that the country is making full use of this source of competent and honest leadership in developmental activities—industrial, agricultural, social and economic ?

In developed countries officers and men of the Services find suitable avenues of employment and the expenditure on their training is not allowed to go waste. We can also convert a good part of the non-developmental Defence expenditure on manpower into a base for development.

Apart from the desirable assets of Service character and discipline there is another important reason why Defence officers and men can help to accelerate development and why the nation should try to get a return on the investment made in their training. Optimum speed and efficiency are the hallmark of Defence operations in peace and war. There can be no question of leaving things to chance, there are no compromises, no half way houses—either you achieve your target and succeed or you fail. Defence administration is highly result-oriented. Unimaginative antideluvian procedures and systems cannot be tolerated. All over the world the improvement and updating of administrative procedures and the evolution of new systems have generally come from the Services. For example, operational research and value engineering owe their origin to the services. India is no exception. Mechanisation of accounts was introduced in the Defence Services in the thirties. Pay accounts were centralised and individual paybills were done away with decades ago. The use of cheques in money transactions has been maximised—each Unit Commander has public and regimental bank accounts to operate upon—some of these things have only now begun to be extended to civil administration. And Defence organisation is officer based, it is these officers who take all decisions and assume full responsibility for them ; except at the Secretariat and to some extent at the Services HQrs., the ever-present, all-powerful officious "Babu" of civil administration is just not there.

We call upon the Defence personnel in emergencies such as floods, earthquakes etc. Why not make use of them in normal peace-time

assignments. A question arises how can we do it without in any way affecting their military duties and responsibilities and their training preparedness for defence of the country. They are used to series of courses of instruction which are a regular feature of Defence training. I would suggest that we arrange special courses for them, specially when they are approaching the time of retirement. They get two months annual leave. By combining the leave for 2 years (at the end of one year and the beginning of the next) officers and men can have four-month intensive courses in public administration, management of industry, agriculture, technical training, self-employed enterpreneurship, cooperative organisation for construction contracts etc etc. Except the cost of training there will be no other expenditure on stipends etc., because they will be getting their full pay and allowances during leave.

Besides, to the extent practicable, they could be sent on deputation to Defence Production units (Ordnance Factories Defence Public Sector) during service.

Defence Supplies and Development

I have highlighted the potentialities of the contribution of the disciplined dynamism of Service officers and men at some length because it is rather out of focus at present. But when we come to the impact of Defence supplies and services, the developmental aspect is more obvious. The annual purchases of the Defence Services are now of the order of about Rs. 1200 crores. Of these, the private sector's share will be at least 50% by way of direct supplies of finished goods and indirect supplies of raw materials etc. However, the real contribution to industrial and technical development is indeed more than the figures of Defence orders would indicate. Defence Services, the Defence Supply Department, Defence Research and Development Organisation and the Defence Public Sector enterprises are constantly and increasingly encouraging civil industry to develop its capabilities for defence supplies. As India advances in industrial technology and sophistication and as Indian business becomes more reliable in regard to quality of supplies and delivery schedules, the scope for the development of civil industry for defence supplies will increase further.

However the most important contribution of the Defence Budget has been in the production field ; in fact its potentialities have not even been adequately appreciated much less fully exploited. The statistics of investment, production and employment are impressive but they do not still indicate what could have been and can now be done with the facilities available by way of plant and managerial talent and trained and disci-

plined technical manpower oriented to produce 100% reliable defence requirements—in which there can be no compromise with quality—a gun that does not have the required range will kill our own men instead of destroying the enemy ; an armour plate which does not come up to specifications will give us death-shells instead of tanks.

To relate the tragedy of "might—have—beens", is generally an exercise in hind-sight wishful thinking but even at the risk of being accused of trying to be wise after the event, I would like to point out a couple of cases. Long before we thought of and built steel plants Defence had its mini-steel mills which were producing even some of the critical alloy steels required for Defence equipment. Of course, imports were considerable but steel technology was not unknown. Because of inadequate political and administrative appreciation this technical experience and manpower was not tapped at all when we planned steel production ; one of the most unfortunate decisions came when a project for an alloy steel plant with a capacity of 50,000 tonnes p.a. at a fixed cost of less than Rs. 15 crores (infra-structural facilities were already available) was turned down on the ground that Defence should not concern themselves with steel production which the civil sector would take care of. Another still-born project was for the creation of a complex for electronic components which could be used as we developed more and more sophisticated electronic equipment and which could also be exported. The possibilities of producing commercial explosives in Ordnance Factories have not even been considered. There are other instances too but it is more important to concentrate on what has been and can be done than to give an account of missed opportunities. Full exploitation of the facilities acquired by taking over Mazagon Dock and Garden Reach Workshops (now Garden Reach Shipbuilders and Engineers) shows how a constructive and imaginative approach can help national development. The following statistics will highlight this point.

(Rs. crores)

	Investment at the time of take over (April 1960)	77-78	*Production at the time of take over*	77-78
Garden Reach Workshops (now Garden Reach Shipbuilders & Engineers)	1.10	31.00	1.68	59.5
Mazagon Dock Limited	0.85	21.90	*Not available.	61.0

* Could not be more than Rs. 1.2 crores even on the basis of 1 : 1.5 capital output ratio.

Both have now become full-fledged shipyards producing not only warships but ocean-going passenger and cargo ships, dredgers, patro! ships etc. Garden Reach is making Marine Diesel Engines; its engineering ships are producing cranes, road rollers, structurals for steel plants and deck machinery, pressure-vessels, pumps, compressors etc etc. Two other examples of exploitation of developmental potentialities in Defence are (i) the Bharat Earth Movers and (ii) the Vehicles Factory which started as small adjuncts to Ordnance Factories and have now grown into full-fledged industrial enterprises—the Vehicles Factory has still to go a long way to achieving economics of scale.

But if the general political and administrative unconcern and indifference to the segregated Defence Sector give place to its recognition as an integral part of the national productive resources the achievements for which the future holds promise will be far greater than these already attained—achievements for which due credit must be given to the vision and dynamism of a much maligned man. This change in attitude involves change in the policy of keeping plant and equipment idle for possible optimum use in an emergency ; this policy has become obsolete because technology is moving so fast that a machine of yesterday will not produce the quality product of tomorrow; keeping machine idle is therefore not only wasteful but it tends to give a false sense of security because the anticipated higher production during emergency is not likely to materialise. A much more business like proposition is to get the maximum out of the plant and equipment and make fast replacements to keep it as up to date as possible. Necessity compels such replacements even now but meanwhile the production capacity of the entire plant has partly gone waste and the investment has been un-remunerative. It is not beyond the ingenuity and skill of our engineers to plan maximum peace-time production in a manner that allows a quick switch-back to optimum war-time production in an emergency. What is needed is a review of various defence production units and their augmentation and modernisation if this is justified from the point of a better return in investment, higher production (not merely for Defence), and regional development and large employment--after all if hundreds of crores of public funds are going to be spent on the rehabilitation of private sick mills by way of direct investment or indirect subsidies—in my estimate the figure will cross a thousand crores by the end of the current decade—it is in national interest to give a chance to healthy but somewhat obsolescent and partly idle Defence units to contribute to national wealth. It may seem paradoxical but it will also reduce the strain on the Defence Budget as the spread of overheads over much larger production will help to reduce the cost of production. Besides Defence production will begin to generate its own internal resources and surpluses.

FUTURE POTENTIALITIES

A legitimate doubt might arise whether there is really much scope for adding to peace time, production in factories and establishments meant exclusively for the production of special defence equipment. I should dispel this doubt which is basically due to lack of information. Defence have the biggest complex in the country for making garments, mountaineering equipment, snow clothing, tentage of all types; they have some of the most modern machines in this complex and skilled workers and qualified technicians. In fact they have been making some garments for the private industry to sell abroad.

Again, they have tanneries and workshops for making shoes, saddlery, bed rolls etc.

They have a chain of chemical plants, the bye-products of which have often been made use of commercially by the private industry to make exhorbitant profits.

And they have an automobile Factory too ; then there is ample general engineering capacity in other factories ; they produce their own metal boxes and containers etc.

Integrated into national production and helped by marginal investment for modernisation, Defence can, without any adverse effect on meeting their own requirements, enter the domestic as well as export market in garments, containers, leather goods, vehicles, engineering and chemical products. They can, of course, produce commercial explosives too. This list is only illustrative as the full possibilities can be revealed only when a comprehensive review is made.

In the field of armaments there is the possibility of our being able to sell abroad in South East Asia and even in the Middle East. Our neighbouring nations will arm themselves for defence : we should not be reluctant to sell them defence equipment. So far we have neglected this field of development almost totally. We can supply not only small arms and guns and ammunition but naval ships and aircraft. This will need a new look at Defence Factories and public enterprises—a look from the national Plan angle.

And last but perhaps the most important from the point of view of future development is the possibility of converting the Hindustan Aeronautics into the base for the largest aviation industry in this part of the world. Just because this enterprise happens to be in the Defence Sector we should not look upon it only as a complex of assembly plants for producing defence aircraft to the design and specifications of our foreign

suppliers and collaborators. How long can we afford to continue to buy our civil and military aircraft from abroad. If we decide today to be self-reliant in this field and initiate immediate action towards that end and keep on moving as fast as we can, it will take us at least a decade to produce an aircraft of our own design and specifications with optimum indigenous material and equipment. In the process of design and manufacture, we will have developed capacities for aero-engines special alloys, highly sophisticated electronics equipment, and ancillary industry for aircraft seats and other fittings. The industrial and technical fall out will be even greater than that in the case of building naval ships.

I hope that in the light of what has been said above it will be seen that there is a good case for at least an objective assessment of the possibilities of Defence contribution to national economy and development. What is needed basically is the recognition of the potential for development in Defence and an integrated Plan approach which will not treat Defence as a segregated untouchable. If this change in attitude takes place the whole of Defence expenditure on manpower, supplies and production need not be in the nature of security insurance ; a good part of it could provide the base for supplemental development or accelerate the process of economic growth without in any way affecting the quality of Defence preparedness.

This article was written on the basis of my value judgements formed during the course of my association with the Defence Services (including, of course, defence factories and public enterprises) on the one hand and civil administration and the public sector on the other. Since completing it I have come across Emile Benoit's book "Defence and Economic Growth in Developing Countries" (USI Library No. 19595) in which India has been chosen for a detailed case study. "Several of the insights and hypotheses explored" in the book, the author says, "were either first suggested to us or were worked out in their final form in our examination of the concrete experience of defence and development of India.....India was chosen for study because it is by far the largest country in our sample, with nearly a third of the sample's total population and the highest defence program.....moreover, the emphasis on economic policy toward development, and the severity of the poverty problem have posed the issue of the opportunity cost of the defence program much more sharply than in most of other LDCs (less developed countries)."

The author has worked out the opportunity costs of various items of Defence expenditure—personnel, equipment (imports, domestic purchases and defence production), and calculated the impact on growth by way of net loss of resources (percentages of GNP) to civilian development

by their diversion to Defence. In making these calculations he seems to be inclined to overstate the adverse effect of defence programmes on development ; in fact, he admits at places that his calculations of the adverse effect of defence programmes on national defence may be on the high side : "the projections shown here probably overstate the extent to which increases in defence expenditure would adversely affect growth rates". He has then projected the future quantum of this impact on the basis of (i) freezing of real defence expenditure at the 1968 level (ii) a cut-back in defence expenditure to the real level of 1950 (iii) maintenance of the 1968 level in terms of the percentage of G.N.P (3.7%) which is estimated to double real defence expenditure by 1980 (iv) continued defence build up (v) full economic mobilisation (vi) minimum nuclear force (vii) nuclear force with retaliatory capability and finally (viii) the Civic Action Military Assistance Programme under which foreign military aid is accepted and defence resources, even in peace time are utilised to the maximum for development simultaneously with training for defence.

It is an interesting study (incidentally the author seems to suggest between the lines the desirability of accepting the last alternative). But what I would like to highlight are not so much the calculations of the opportunity costs—(the adverse effects of the non-productive part of defence expenditure on national development)—but his conclusions that

(a) "defence expenditure may have quite serious adverse growth effects, on a gross basis ; but.....they were fully offset—or possibly more than offset—by certain growth stimulating effects which the defence program also had".....Economic analysis suggested that every one percentage point of GDP (Gross Domestic Product i.e. GNP) added to the defence burden might reduce the civilian growth rate by as much as $\frac{1}{4}$ of 1% per annum—offsetting about 70% of the growth produced by an additional 1% of GDP going into investment.....Surprisingly, however, we did not find the inverse co-relation between defence burden and growth rates....."The simple co-relation between defense burden and growth rate was not reverse but positive and strongly positive."

(b) "Aside from their fiscal stimulus" (by way of increase in Government expenditure, net budget deficits and increase in the total volume of demand) ; "defence activities may also have contributed valuable inputs into the civilian economy"—e.g.

(i) Development of remote areas as a result of military roads etc.

(ii) "Indirect development benefits of many regular army programs particularly in the education and training of servicemen.

(iii) Pre-release and post-release special programs and training courses for resettlement and employment—"these have considerable potential for diffusing improved agricultural methods etc."

(iv) The maintenance of defence forces has a restraining effect on the number of berths".

(v) The modernisation of the rural people by the impact of servicemen (active as well as retired). "The Army is one of the strong forces for modernisation"—a stimulus to economic growth.

(c) "There would be a strong case for a much closer coordination between Defence planning and development planning than is usual in developing countries". "Substantial benefits for growth could be obtained by more systematic planning of the economic aspects of Defence programs by giving them development orientation".

That is exactly what I have suggested in my article and what I have been advocating all along. Unfortunately, indigenous ideas and suggestions, however constructive, positive and practicable, are not easily accepted till they are endorsed by foreign Western experts. I am glad that the idea of making the Defence programmes "development oriented" has found such support—that it is possibly motivated by entirely different considerations is, of course, a different question.

I would not go to the extent of suggesting as Prof. A.N. Agarwala seems to do that the Indian economy can stand any build-up of Defence expenditure without much adverse effect but I do think that giving the Defence expenditure development orientation by marginal adjustment and re-structuring will help national development and Defence both. I am therefore, happy that this idea will receive some serious consideration.

At the same time I should point out the dangers of the economic implications of an alternative that has sometimes been strongly advocated, of transferring from Defence to civil industries such activities (specially production of certain non-armaments items) as can be easily taken over by the latter.

Firstly, whereas only marginal investment (except in the case of aviation) and re-structuring within Defence, economic growth can be substantially increased, the transfer of such items is likely to involve heavy capital expenditure and push up the cost of production not just by capital related charges but other items of cost too. Even where the existing factory buildings and offices and plant and equipment can be transferred in their entirety without any security risk the chances are that civilian management will incur capital expenditure to suit its style of management—modern well-furnished offices and residences for Chairmen, Managing Directors, Directors and senior executives ; plant and equipment will also be replaced, modernised and probably capacity expanded to cater for additional civil demand and to achieve economy of size—the

defence requirements are likely ultimately to recede into secondary position and may tend to be neglected in favour of more profitable items.

Secondly, the cost of production will go up appreciably on account of the following factors:

(i) additional capital related charges as a result of (a) fresh expenditure and (b) re-structuring of the capital base by introduction of loan-capital with heavy interest liability. Besides a reasonable return on equity capital (net of income tax) will have to be allowed capital cost of imported plant and equipment if any will itself increase as customs duty will become payable on it and of course, capital related charges will increase too.

(ii) administrative cost of the new management super-structure on the civil public sector model and the additional cost of the new style of management — entertainment allowances, air-travel, conferences and seminars etc.

(iii) provisions for depreciation and permissible tax allowances and reserves in the cost-structure.

(iv) interest on working capital which will then come mostly from ranks.

(v) improvement in the emoluments and amenities of workers, supervisory personnel and officers to bring them in line with the pattern of pay and allowances of other public sector undertakings -- apart from general increases in pay etc., there will be the 8.1/3% bonus to pay. Incidentally, this will make it all the more difficult for Government to resist the payment of bonus and also better emoluments to workers and officers of those factories which do not move under the cover of civil management--this in turn will have repercussions in the Railways.

(vi) the liability to excise duty and sales-tax on out-put.

(vii) other invisible factors such as the loss of discipline and efficiency imbibed from the Defence Services.

Thirdly, the quality control of production at various stages ensured by the Services Inspection Organisation is likely to be substituted by end-inspection and standards may fall or be compromised at the cost of defence efficiency.

Fourthly, instead of the Defence making a significant contribution to national development, its exclusion from the main-stream of economy will be accentuated.

Let me, however, hope that the powers that be will make defence production development oriented rather than reverse the process by further segregation by way of specialisation.

The Law of the Sea Conferences and their Impact on Maritime Affairs

Lt Cdr AK Shrivastava, psc

"I am master of the earth, but the law is mistress of the sea."
—Emperor Antoninus

INTRODUCTION

SEAS are the medium of navigation and communication, a source of food, a vast treasure house of untapped resources, a world teeming with marine life, and a vital link in the earth's life-support system. Today, mankind looks towards the seas for sustenance as never before, because the growing population and higher living standards have intensified the demand for food, fuel and other resources. Through the advance of science and technology, the once-unfathomed ocean depths are now within the reach of man.

The historic function of the law of the sea was long recognised as protecting and balancing common interests of all peoples in the use and enjoyment of oceans, while rejecting assertions of particular interest in contravention of general community interests. The code of law framed by Manu—'Manusmriti'—contained a section on the shipping laws. Kautilya's 'Arthashastra' also mentions the existence of a 'Supdt of Ocean Mines'. This shows the Mauryan interest in the exploration of ocean beds, particularly in pearl-fishery.

Basing their claims on two Papal Bulls promulgated by Alexander VI in 1493, the two major maritime powers of the world then, viz, Spain and Portugal, divided the oceans of the world between them ! However, the oceans cannot be seized or enclosed and by mid 16th century, these Iberian powers were being challenged at sea by England, France and Holland.

In 1609, Hugo Grotius, a young Dutch Jurist, published a treatise called 'Mare Liberium'. It appealed to the civilised world for a complete freedom of the high seas for innocent use and mutual benefit of all. His

pioneer work provided the main outlines of a maritime code which held the field for nearly 300 years. Grotius wrote, "Most things become exhausted with promiscuous use. This is not the case with the sea. It can be exhausted neither by fishing nor by navigation, that is to say, in the two ways in which it can be used."[1] His code has, however, been pounded by the time and tide of developments and has become ripe for change.

The 2nd World War dealt it a fatal blow as the old maritime regimes collapsed. Decolonisation was the order of the day and the emerging states with newly defined boundaries carved out of old empires, demanded a recodification of the international sea law which had been formulated by the imperial powers. Recent developments in science and technology have revealed a new 'seascape' of the world's oceans. The surface area of the sea is about 2½ times that of land on the earth. The sea contains the same amount of food and mineral resources as on land, if not more. The historical notion of the freedom of the high seas regarding the exploitation of its resources was based on the assumption that they were inexhaustible. The stark truth, however, is that indiscriminate use may indeed exhaust the seemingly bottomless ocean reservoir.

In this paper, I intend to deal with the UN Conferences on the Law of the Sea and their impact on maritime affairs as far as the fishery problems on the international scale are concerned.

DEVELOPMENTS UPTO 1949

Early Claims. Although claims to some resources of the seabed had been made for centuries by some nations, they were mostly confined to pearl and sedentary fish. The few disputes were resolved easily. It was accepted that a coastal state had priority over the resources in the waters adjacent to it.

Continental Shelf. The seabed resources are commonly found in the area near the coast called the continental shelf. This shelf is the shallow gradient ocean floor upto the shelf edge, where the gradient becomes very steep. The sharp change in gradient, ie, from one-eighth of a degree to three degrees, occurs at various depths between 30 and 300 fathoms. The width of this shelf ranges between a mile and 800 miles. This area is very rich in fishery resources.

Madrid Congress. The first real interest in the continental shelf and its resources was expressed unofficially in 1916 by the Spanish oceanographer Oden de Buen, who suggested at the National Fishery Congress in Madrid that the territorial sea should be extended to encompass the whole of the continental shelf for conservation and protection of fisheries. This statement went largely unnoticed.

1. The Future of the Oceans—Govt. of Canada, p. 5.

US Proclamation. The trend towards extended coastal state jurisdiction was set in motion by the well known proclamation of President Truman of USA on 28 Sep 1945 which claimed the resources of the seabed and subsoil of the continental shelf. Another press release by the US Govt the same day declared that its continental shelf was the submerged land contiguous to the continent upto a depth of 100 fathoms. The Govt regarded the resources of the continental shelf as appertaining to USA, subject to its jurisdiction and control. By this proclamation 7,60,000 square miles of underwater land had been virtually acquired by USA. The three main points in the US proclamation were :—

(a) Continental shelf is an extension of land containing minerals.

(b) Exploitation of resources depends on the cooperation of the littoral state.

(c) Principle of reciprocity.

The principle that the continental shelf is a 'natural prolongation' of the main land mass evoked Prof Henkin to remark "High seas area natural prolongation of territorial sea, outer space is a natural prolongation of airspace and Canada in many places is a natural prolongation of USA ; 'natural prolongation' never gave any state proprietory rights."[2]

Proclamations by Other States. The US proclamation found quick international acceptance. It acted as a catalyst and several other states followed suit by unilateral and multi-lateral claims. By 1949, most of the Latin American nations and Gulf sheikhdoms including Iran had declared their jurisdiction over an extended area. The extents claimed were different. Some states like Chile, El Salvador and Peru, who hardly had any shelf along their coast decided that such 'geographical misfortune' should not prevent them from extending their sovereignty over adjacent waters and their resources. Referring to the US claim which had asked other states to proclaim likewise, these states claimed sovereignty over waters and underlying seabed upto a distance of 200 nm from the coast. Unlike the Truman declaration, the Latin Americans claimed right not only on the shelf but also over the superjacent waters near them.

Proclamations Challenged. These claims were challenged by the USA and UK as they violated the freedom of the high seas. However, the right of free navigation was not affected and the large claims were justified on the ground that the traditional concepts on coastal jurisdiction were no longer sufficient and that new concepts had to emerge to meet new demands. In 1948, USA commented on the Argentine Declaration that it failed to recognise the US fishing rights and interests in the high seas off the Argentine coast.

2. Page 404—IDSA Journal—Jan 73.

FIRST AND SECOND UN CONFERENCES

Afro-Asian Proclamations. The developing Afro-Asian coastal states joined hands with the Latin American ones to give a further impetus to this expansionist trend. Most of them had just got their independence and felt that the customary law of the sea was evolved by the European powers to suit their needs and interests. Since these laws did not reflect the interests of the emerging states, they did not consider them as sacrosanct and clamoured for a change. On 30 Aug 1955 India also made a Presidential proclamation declaring her sovereign rights over the seabed and subsoil of the continental shelf without specifying any limit to it.

No Consensus. The International Law Commission, at its very first session in 1949, selected the regime of the high seas as a topic for codification. After extensive groundwork for several years, a draft convention of 73 Articles was put up in 1956 by the Commission. This draft, with some important modifications, was incorporated into four conventions adopted at the first UN Conference on the Law of the Sea at Geneva in 1958. Though the conventions were generally agreed to, no consensus had emerged on the width of the territorial sea and the exclusive fisheries zone. The second UN Conference in 1960 also failed to come to an agreement on the width of these zones.

THIRD UN CONFERENCE

Views of Prof Francois. In his report to the International Law Commission on the Regime of the High Seas, Prof Francois noted that the greatest uncertainty existed regarding the extent of the continental shelf. In some cases there were several shelves and the submarine terrain so confused, as to make the location of any continuous line difficult. The maximum depth for practical exploitation, viz. 200 metres, would also give different states very unequal areas of the seabed. He suggested that it may be better to have a zone of uniform width along the coast where the coastal state would have special rights.

Common Heritage of Mankind. The hallucinations of the fevered mind of Mr Arvid Pardo, the Maltese ambassador at UN, were instrumental in calling the third UN Conference on the Law of the Sea. In Dec 1967 he spoke in UN of a dream in which he saw the seabed bristling with SLBMs and the existence of human life hanging by a precarious thread. He coined the phrase, 'common heritage of mankind' when describing the sea wealth. This prophecy of doom fired the imagination of everyone and accordingly a Seabed Committee of 42 nations was formed in 1968 for preliminary work. The 'Have Nots' rallied round the cry of 'the common heritage of mankind' to take a united stand against the 'Haves'.

Importance of Sea. The limitations of the international sea law as existing, were demonstrated by the discovery of oil and mineral resources in the seabed and the world's rapidly growing population turning more and more to the sea for protein. As a result, the UN General Assembly decided by Resolution 2750(XXV) adopted on 17 Dec 1970 to call a World Conference on the Law of sea which should attempt to formulate a comprehensive treaty establishing regimes for the sea and seabed.

Exclusive Economic Zone (EEZ). The African coastal states in a regional seminar in June 1972 pronounced as a principle of the law of the sea, their right to determine the limits of their jurisdiction over the seas adjacent to their coasts considering their geographical, geological, biological and national security factors. They claimed the right to establish an Economic Zone with an exclusive jurisdiction for the regulation and exploitation of the living resources of the sea and for pollution control. Most of the Asian coastal states of the Asian-African Legal Consultative Committee agreed to support the African claims.

First Session. The first session of the third UN Conference on the Law of the Sea was held in New York from 03 to 15 Dec 1973 to sort out procedural and organisational matters. "The essential purpose of the conference", in the words of Dr Kurt Waldheim "was to establish a viable agreed legal basis for international cooperation without conflict and in the interest of all mankind.....It was urgent that the first essential step towards international agreement should be taken as quickly as possible."[3]

Second Session. The second session of the Conference was held in Caracas from 20 June 1974 to 29 Aug 1974, where each state was allowed to make a comprehensive informal statement. 119 out of the 156 states attending presented their working papers. This revealed a widespread agreement on a 200 nm EEZ. The 29 landlocked and some geographically disadvantaged states obviously did not support this idea as it would further isolate them from the riches of the sea. They wanted the minimum inroads into the 'common heritage of mankind'. Their position was explained by Mr Tredimick, the Bolivian delegate, who summed up for them.

"The new law of the sea, if it is to be an instrument of justice, peace and well-being for all mankind, must establish a legal order which ensures the use of ocean space and the national exploitation of all its resources by all countries, coastal and non-coastal."[4]

3. Third UN Conference Official Records, Vol II, p. 3.
4. Ibid Vol. II, p. 199.

Third & Fourth Session. The working paper produced at the second session was discussed in the third session at Geneva from 17 Mar 1975 to 10 May 1975. Various alternatives were narrowed down to a consensus and an informal Single Negotiating Text produced. There were extensive discussions in the fourth session at New York which concluded on 7 May 1976. A Revised Single Negotiating Text was produced. Its main issues are :—

(a) Continental Shelf and EEZ.

(b) Protection of Maritime Environment.

(c) Resources of World Oceans.

Continental Shelf and EEZ. Accuracy in defining the extent of EEZ would be necessary to introduce uniformity. This should be 200 nm to exploit the organic and inorganic resources. This distance is necessary as the main reserves of fish catch and a big portion of mineral wealth, including oil, lie within this range. Though a consensus over a 200 nm EEZ appears round the corner, the question of jurisdiction over it is unresolved. Iceland and UK have already fought a 'cod war' in 1973 similar to their earlier clash in the 1950s. The seizure of US fishing boats by Peru and Ecuador within their 200 nm limit, aggravated the tension over this issue in the Americas.

Protection of Maritime Environment. This concept has acquired urgency in view of the mounting warnings against an unlimited use of the environment with impunity. Though the oceans have been regarded as vast reservoirs of resources, yet they are used as a bottomless pit for all the refuse that man wants to dispose off. Tanker spillage is a fairly common occurrence with severe effects on fisheries. Japanese fishermen are also in revolt against the nuclear plants beside the sea.

Resources of World Oceans. The resources of the seabed and superjacent waters are the main bones of contention in the sea law debate. Mechanical and sonar equipment is increasing the fish harvest, extracts from marine life are being more widely used in medicine and off shore mining is forging ahead. Improvement in technology is only making the fruits juicier. The introduction of the 200 nm zone gives coastal states the control of one-third of oceans and 80% of catchable fish.

Fifth Session. The fifth session held in New York from 2 Aug 1976 to 17 Sep 1976 was disappointing due to political reasons. Negotiating groups were formed and informal discussions held. Three basic committees were formed as follows:—

(a) *International Seabed Authority.* To see that the seabed riches in the high seas were taken care of properly.

(b) *Law of the Sea.* To define various sea zones and codify the concepts and laws.

(c) *Marine Pollution and Scientific Research.* To lay down safeguards against pollution and ensure that consent for research was not normally withheld.

EEZ. In this zone upto 200 nm from the base line, the emerging trend is that a coastal state shall have the following rights :—

(a) Sovereign rights for the purpose of exploiting, conserving and managing the natural resources of the bed, subsoil and superjacent waters. This will not be to the total exclusion of other states in respect of fishing but the sovereign state will decide who catches what, how much and where.

(b) Jurisdiction with regard to the preservation of the marine environment, including pollution control and abatement. But whether the coastal state, or the Flag State will impose penalties on erring ships is still undecided.

Notwithstanding the above rights of coastal states, all states shall enjoy the freedom of navigation, laying of submarine cables and pipelines, etc. Consent of the coastal state shall be necessary for any research work in and about the EEZ. In exercise of its sovereign rights, the coastal state would be empowered to board, inspect, arrest and prosecute offenders of its regulations.

SPECIFIC PROBLEMS REGARDING FISHING

The ever-increasing demand for protein by the expanding world population has made the living resources of the sea more important. To satisfy this demand, modern technology has devised highly efficient means of harvesting the oceans. For example, India's fishery earnings have gone up from under Rs one crore to Rs 130 crores in 10 years. But this increasing exploitation cannot go on unchecked. In the not too distant future, all major fish stocks useful to man will be exploited beyond the optimum level. Unrestricted competition for these scarce resources, particularly by gigantic distant water fleets will result in over fishing and reduction in yields. Already in some valuable species like herring, cod, sardines and salmon, the declines have set in. For some species of whales, fifty years without fishing is required to assure their restoration Thus, there is already an urgent need to restrict fishing to its capacity to regenerate itself. The control system should be based on licensing specified vessels instead of catch quotas, which are difficult to verify.

General Statements in UN

Upper Volta, a landlocked state, felt that coastal states should have no rights to pursue migratory species like tuna and salmon outside

their economic zones. Such a step would make nonsense of the 'common heritage of mankind' principle, which is already undermined by the selfish distribution of coastal seas. East Germany cited the ICJ judgement in the fisheries jurisdiction case between UK and Iceland which was based on the premise that coastal states should pay heed to the interests of others in the conservation and exploitation of living resources, particularly in respect of the traditional rights of other states to fish.

Barbados felt that coastal states should be free to decide who all are to exploit the fishing resources and to what extent. Tanzania said that it was true that fish cannot be managed by boundaries, but the 200 mile limit applied to fishermen and not to fish. Shri Lanka and Spain were of the opinion that if the renewable resources are underused they go waste and are lost to the world. They wanted the land-locked and disadvantaged states to get preference to fish the unused catch. Scientific information and data from agencies like the FAO should be used to determine fishing periods and areas; age and minimum size of fish; quota of catch over a period of time: and the type of fishing gear and method allowed. Tonga wanted bilateral agreements for mutual benefit to fish the unused catch, e.g. a certain percentage of catch must be sold to the coastal state. Iceland felt that if the decision who is to fish and to what amount was left to other states or even to a third party, it will be only old wines in new bottles, as 12 nm plus what others give is equal to 200 nm minus what others take.

India asked the technically advanced nations and international organisations to participate in a planned programme to assist the developing coastal states to enhance their capability to explore, exploit and manage the living resources in their zones. High seas should be explored and exploited by regional or international bodies. West Germany wanted the provision of an appeal against coastal states to an independent expert commission. Tunisia stated that if the disadvantaged countries wanted to share the fish in coastal waters equitably, they should also share the excess food resources at equitable prices. The Khmer Republic did not wish to extend the right of innocent passage even to fishing vessels as they would carry out clandestine fishing. Peru wanted the wealthy distant water fleets to negotiate fresh agreements with coastal states or shift to other areas. She felt that more of coastal fishing would result in cheaper fishes in the world as the cost of catch was proportional to the distance travelled by the fishing vessels. Congo estimated that 60% of the total catch in 1970 was taken by a few developed countries, accounting for only a third of the world population.

ANADROMOUS SPECIES

Japan felt that the state of origin of anadromous species cannot claim proprietory rights over the species throughout its migration, as it spends 75% of its life cycle in mid ocean. Guyana pointed out that the state of origin incurred opportunity costs. It sacrificed valuable projects, e.g. industrial complexes that emit pollutants and hydroelectric projects for cheap power, so that the fish survive and can reproduce. Such a state should have a determining voice in the exploitation of resources. Denmark maintained that anadromous fish ought not to be reserved for the states of origin, as these fish gained 95% of their weight in other areas depending fully on the sea resources of those areas. They lived on other living resources Other states had an equal interest and responsibility in preventing contamination of the sea. She stated that salmon gained 25% of its weight during the three to four months it spent off Greenland; so the local fishermen must be entitled to catch a part of it. Further, the natural mortality of salmon, while moving from West Greenland to its home waters, is as high as 15-40%. So many salmon caught would in any case never have reached their spawning grounds.

Canada, a major state of origin of salmon, contended that the salmon's growth continued in estuaries as it returned to spawn. She explained that when growing in the open sea, they occupy the upper layers of cold northern waters where they do not compete for food supply with other valuable species. As they grow faster than they die off during migration, the greatest yield could only be near home streams. Costly supervision, enforcement and cooperation by fishermen was required to ensure that the right number reach the spawning areas. The state of origin had to maintain an unobstructed access to the spawning grounds which might sometimes be as much as 1500 miles inland. Landslides need to be removed and no dams could be constructed for power, irrigation or flood control. Hence there should be curtailment of salmon fishing in the open sea and a regional cooperation established with other states through whose zones they pass.

ENFORCEMENT OF FISHERY REGULATIONS

The consensus was for the enforcing state to hand over the fishing vessel to the flag state for legal action; the latter notifying the disposition of the case to the former. Each state member of the organisation must make the violation of such regulations an offence for its flag vessels and must cooperate with others to ensure their compliance. However, the flag of convenience states, like Liberia and Panama, may be unable to

enforce these regulations. Procedures for arrest and inspection in various zones would have to be worked out. The expenses of the International Fishery Authority are to be met by a uniform fee levied for fishing in the high seas. For fishing in EEZ the fee is to go to the coastal state. Membership would be mandatory and all states would have to make a minimum contribution depending on their fishing activities. The right of hot pursuit is to apply to violations in the EEZ. Though the 200 nm limit has been practically agreed upon, not many of the developing countries are in a position to enforce it. When the USA decided to agree to this limit, its coast guard enforced the law. Other nations still fish as usual around the coasts of India even though we declared the 200 nm FEZ on 15 Jan 1977 stating, "No person, including a foreign govt, shall explore or exploit the resources of the economic zone without an express agreement with the Govt of India or without obtaining a license letter of authority from it."

Recent Fisheries Incidents

The global catch has quadrupled in the last 25 years. Today the annual catch stands over 75 million tons worth about $ 10 billion. It supplies 10% of the world's protein. From a 'cottage industry' fishing has grown to be a highly mechanised multibillion dollar business. Fish, like oil and gas, are not distributed evenly around the oceans. Abundant stocks occur where major upwellings of cold, nutrient waters provide food for plant and lower marine life on which the fish feed. Such rich areas cover less than one per cent of the oceans' surface. In Asia these are NW Pacific and NW Indian Oceans, Red Sea and the Indonesian archipelago. It has been estimated that 98% of the global catch is in the Northern hemisphere, even though the Southern hemisphere contains 80% of the oceans.

The Japanese trawler, Taiyo Maru No. 28, was seized in Sep 1974 by USA after a hot pursuit. It was engaged in shark fishing though the agreement was only for tuna fishing. An Italian stern trawler, Tontini Pesca Quarto, was seized on 31 Jan 1975 by USA for taking starfish in 100 fathoms of water. The gear in use indicated the type of fishing activity.

Last year Japan caught nearly half of its 10 million ton catch within 200 nm of other states—notably USA, USSR and Canada. With the declaration of EEZ by most states, one lakh Japanese distant water fishermen face eviction from those waters. Some villages in Hokkaido depend entirely on distant trawling. The Japanese will have to change their food habits as they eat maximum fish per head in the world. As an offshoot, Japanese food and fishing companies are investing in pro-

cessing plants in USA and Canada to import fish from these Japanese companies established there. They have bought majority holdings and are operating fishing fleets in the USA to circumvent the 200 nm limit. The four Kurile and Sakhalin islands grabbed by USSR from Japan in the second war, have shot into prominence as the Japanese had fished there. Fish prices went up in Japan by 25½% in Mar 1977 over the previous year. They went up another 4% in Apr 77, whereas the general consumer price index went up in a year by only 8½%. The reason is that salmon, eaten daily in Japan, comes from the northern fishing grounds closed by USSR. She has been allowed back now under a compromise agreement, in which each nation will allow the other limited fishing rights in its zone.

Though UK has established a 200 nm fishing zone, the 2,70,000 square miles of sea cannot be patrolled by three frigates, Nimrod aircraft and a few converted trawlers. She will need 400 vessels to do justice. UK is sharing its EEZ with the rest of EEC members, though 60% of the EEC waters surround Britain. She will get only a 12 nm exclusive fishery zone around her coast. The French are fighting hard even against this zone, as some British fishermen would lose ground off Devon and Cornwall. Fishing in EEC waters beyond the territorial sea would be subject to quotas. The poor British regions of Scotland and North England will get more generous quotas than others. The combined EEC weight has helped to win better deals with other states ; e.g. USSR and East European states are reducing their fishing effort by two-thirds in the North Sea and some rights have been secured off USA. However, EEC failed to secure any rights for British trawlers in the deep sea waters of Iceland. As fishing provides less than one job in a thousand in UK, they have not pressed their claims. Ireland attempted to enforce a unilateral 50 nm fishing zone against its EEC partners. Ten Dutch trawlers were arrested for fishing by her. As EEC has failed to introduce adequate conservation measures, the Irish compromise plan was vetoed by UK as it would have given Ireland new fishing rights off British coasts. Ireland has retaliated by banning all large boats (more than 110 ft long or above 1100 BHP) within 50 nm. She has only two boats affected by the ban.

A Russian trawler was seized by USA in Apr 1977 engaged in 'pulsing'—scooping up whole schools of fish ; babies and full grown. North Korea declared a military sea boundary of 200 nm, where non-military ships, including fishing vessels, would be allowed only with their approval. Japan might accept the existence of the military sea boundary as a price to catch cuttlefish, found in North Korean waters.

CONCLUSION

If the size of catch in a year is C, the annual gain in stock from reproduction is R, growth of stock is G and the natural mortality is M, then

$$C = R + G - M$$

will be called the equilibrium catch. The problem is reduced to estimating R --G- M, the rate of natural increase which equals the equilibrium catch, for various values of P, which is the weight of the total stock. Since several terms are inter-connected biologically in general, there will be some maximum value for the equilibrium catch, the establishment of which is the primary objective of fishery conservation.

Unfortunately, the sixth session at New York which concluded recently could not wrap up the conference but all the problems seem to be resolved and it can be hoped that the next session at Geneva will really be the final one.

To sum up, it can be assumed that the ocean geography, politics and economics will have increasingly important consequences for international relations in the future. In writing a sea constitution, all nations have a unique chance to establish a legacy of accommodation and mutual trust for years to come. Further, unless the developing countries are as active in the field as on the rostrum, they will be deprived of their share of the 'common heritage of mankind', and the story of the industrial revolution will repeat itself.

Finally, the development of EEZ clearly shows that the International Law of the Sea is not static but a dynamic growing law, keeping pace with the aspirations of the people. As the demands and expectations of states change with new interests and growing technology, the Law of the Sea attempts to develop by evolving new concepts and regulations, according to the needs of the society to which it applies.

"To neglect the ocean is to neglect two-thirds of our planet. To destroy the ocean is to kill our planet. A dead planet serves no nation."

—THOR HEYERDAHL

The Pakistani Offensive

RAVI RIKHYE

THIS paper seeks to briefly examine what Pakistan's offensive potential is today. In an earlier paper in the USI *Journal* (April-June 1977, "The Pakistani Defensive") I had hazarded an opinion that because of Pakistan's post-1971 buildup, India may not be able to conduct a successful offensive against Pakistan under any one of several conditions—always assuming, of course, that Pakistani commanders operate with a reasonable efficiency. The basic flaw in any Pakistani plans for an offensive in the 1965 and 1971 Wars was that once Indian mountain divisions were transferred from the Eastern front, the balance would surely turn against Pakistan. In the present situation, however, Pakistan for the first time has sufficient divisions to give it a reasonable chance of defeating India in the West even taking into account Indian mountain divisions.

In 1971, the western balance was 12 Pakistani Divisions to 13 Indian divisions (including 3 Infantry Divisions), but India had a ready reinforcement of an infantry and a mountain division (from western UP), and except in the event of a very heavy Chinese attack, at least one more mountain division (from Eastern Command), was available within three weeks. This gave India 16 divisions to defend against Pakistan. In 1965 the figures after Indian reinforcement were probably 13 Indian divisions to 10 Pakistani. At the end of 1977, Pakistan had available 18 divisions to 20 Indian divisions, the Indian formations all being available within ten days ; one infantry and one mountain division (from Eastern and Central Commands) are probably available within three weeks. Further reinforcement can come only by drawing down on mountain divisions deployed in the line against China, and this will almost certainly take time. Assuming 10-days warning time, Pakistan and India will be evenly matched for the first ten days or so, till Central and Eastern Command reinforcements are brought up. And even with these reinforcements, the margin is 0.9 for Pakistan to 1.0 for India, whereas in 1971 it was 0.75 to 1.0. Given the immense advantage possessed by the attacker in a modern war, this can give India no comfort.

Part of the problem is that India has met the raising of six new divisions on Pakistan's side after 1971 by converting two mountain divi-

sions to infantry, thus effectively committing the former reserve available from mountain divisions ; by raising one infantry division from existing resources; by raising one armoured division in great part by rationalising existing resources ; and by raising one infantry division that is largely new. So nominally there are five new divisions, but the actual net increment of strength over 1971 is probably nearer to 2½-divisions.

My estimate of 18 Pakistani divisions has often been disputed by people who should know. On detailed discussion the area of differences is normally narrowed down to one division, which I generally refer to as Pakistan 16 Infantry Division in my writings. It may generally be agreed that Pakistan ended the 1971 War with the 1 and 6 Armoured, 7, 8, 10, 11, 12, 15, 17, 18, 23 and 33 Infantry Divisions. Two more divisions, which I term the 35 and 37 Infantry Divisions were raised in the spring of 1972 ; two more were raised in the fall of 1972, for these I use the numbers 14 and 24 Infantry Divisions. Then I generally assume that the initial reports giving the reraisings of two divisions in late 1973 from released POWs are correct, and give these divisions the designation 9 and 16 Infantry Divisions The dispute comes down to if the last division was actually raised.

This is not the place for a detailed discussion of what is essentially an intelligence matter. A civilian and an amateur at that is terribly handicapped in this kind of argument. My usual response follows two lines. One, it is quite possible to name 17 divisions for Pakistan instead of 18 and come out with substantially the same results. Two, in 1976 effectively added two divisions to the western front. If that last Pakistani division did not exist before, it would be foolish to assume it does not now exist. And a case can be made out for more than 18 divisions : I can think of at least one other analyst, Col Rama Rao (Retired) who will not be surprised if in the next war Pakistan deploys 20 divisions.

The question is today frequently raised : can Pakistan fight India when it is in internal turmoil ? Of course it can, as long as the military is not politicised. Pakistan has never been terribly stable by Indian standards. Further, "in politics one week is a long time"--Pakistan could easily become quite stable soon.

These comments may not entirely put at ease my readers when we discuss the question of the Pakistani offensive, but possibly they may feel reassured enough so that we can continue the discussion without arguing about fundamental assumptions like the number of Pakistani divisions. It is necessary to make one qualification : being neither a tactician or a strategist, there is no claim that the discussion is complete and immaculately argued. My aim is simply to sketch some possibilities for Pakistan. The real business of scenario building must be left to the experts.

I Zero Warning. The Whimsical Scenario: The scenario that appeals to me the most is one where Pakistan attacks with zero-warning, using in-place forces, and mobilises only *after* the outbreak of war. Pakistani divisions lie closer to the border than ours, so that in any case in the race to move divisions to the border after the outbreak of war, Pakistan has a tremendous advantage. And we may well imagine the confusion on our side if we have to mobilise after Pakistan has crossed the border. Every time information from the front is sent back to Army HQ, this information will have become outdated. Indian troops on the border will be largely trapped in their cantonments. Formations will move up piecemeal, all the easier to cut up in detail. The railways will not be able to meet the sudden extra military demands. Troops will land up with artillery, tanks will arrive without support echelons, the IAF will be busy fighting to keep its bases operational and will at best be able to spare the army a few reconnaissance sorties. If the attacker is bold and aggressive, these are ideal conditions under which to operate.

Take the Pakistani 1 and 6 Armoured Divisions, both of which lie close enough to the border that if they were ready to move, could within 12 to 24 hours be across the Indian border, one division through Dera Baba Nanak, the other through Kasur. Launch these divisions, throw whatever infantry is available with them—two divisions could be managed. Throw after them armoured and infantry brigades : one of each on each axis could be managed. It might take 24-hours to 48-hours to move up an additional infantry division on each axis, but by then the tank spearheads should be well on their way to snapping the jaws behind Jullunder ; within 72-hours Indian XI Corps could be isolated, all of the Punjab to the Beas lost, and India still only half-mobilised. It will take India ten days to move up the reserve armoured division and an infantry division from Central India. On Pakistan's side, its most distant reserve formation, V Corps out of Quetta, can reach the border within 72-hours. We need'nt elaborate on this thesis : most readers will concede that if Pakistan could execute such an attack truely with zero-warning, then matters are going to look very grim for India, and unless Pakistan blunders, India could lose very heavily : much of Kashmir, the entire Jammu area, the Pathankot corridor, several Punjab districts, Ganganagar-Anupgarh—just for starters in the first ten days. Once these areas are lost, and the forward-deployed Indian divisions lost, there is really not much India can do except offer a ceasefire and give up. This would be a disaster beyond imagining. Surely India would survive but it would be a different India from what we imagine today.

The real question is ; *can* Pakistan execute such an attack ? The answer is *yes*, providing it has half-a-dozen good generals, and this is

where my argument falls down, according to many military friends. As individuals, Pekistani and Indian generals are brave, dedicated, and professional. But the entire system works to stamp out initiative : by the time an officer becomes a major-general, he has been effectively neutered by the system, and should some fire-eating two-star officer still slip through the system's tight grip, he'll be gentle as a lamb by the time he's due for three-star rank—unless he wants to stay at two-stars. This is not the place to discuss why this happens : suffice it to say, it does happen, on both sides of the border. We have virtually no officers who could conduct such an offensive—individually, more than half of the general officers I have met could do it, and be at the Indus in ten days. Collectively, if the Indian Army breaks through to Shakergarh within three weeks, something is wrong with the Pakistani generals. Since we have observed their generals in three wars over thirty years, we know they are no different.

That is why I have termed this the whimsical scenario : its a case of *Suppose If* there were such generals on the other side. Its always wise to be aware of the possibility that might emerge : after all, look what the 1962 defeat did for us. So I will briefly discuss the matter of whether--assuming the leaders exist---Pakistan could launch such a surprise offensive as mentioned above.

What are some of the indicators of an adversary's mobilisation. A reasonably comprehensive list might include : (1) cancelling of leaves, (2) increased signal traffic, (3) stepped up stockpiling and road-building in forward areas, (4) evacuation of civilians, (5) forward deployments, (6) intelligence leaks, (7) increased forward patrolling and reconnaissance overflights. All these indicators can be suppressed except for forward deployments. The solution is to train troops to move into assault positions right off the march : this is a standard Soviet Army procedure. At most, in Pakistan's case, reconnaissance elements will have to be beefed up.

Opposite Chaamb there is a large concentration of Pakistani armour, within 80-miles of Dera Baba Nanak, and there should be an infantry brigade opposite Dera Baba Nanak. It should not be difficult to reinforce the infantry brigade quietly, so that it has 5 battalions. An armoured brigade from opposite Chaamb could control four tank regiments and two APC Battalions. Starting its route march in the late afternoon, the armoured brigade could be at Dera Baba Nanak before dawn ; together with the infantry brigade it will stand a very reasonable chance of breaking through at Dera Baba Nanak, where Indian defences are unlikely to exceed a brigade in peacetime. The Pakistan 6 Armoured Division can probably reach the scene within 24-hours, some 12-hours behind the

armoured brigade. The rest of the Pakistani division in the Shakergarh area (of which we are assuming the infantry brigade is part) can also probably be at the scene in that time. Pakistan 9 Division from Kharian (assuming for the purpose of the discussion that this division is back at its 1971 station after being freed from the NWFP for the purposes of the campaign) could be at the border in 24 to 48 hours, and in action on the third day, and should be a good step ahead of our ready reserve divisions moving up. And so on.

The important thing to remember is there is a lot of difference in time when a division that has been quietly alerted moves compared to a division that is conducting its normal peacetime activities. If ammunition and weapons have been issued, motor and rail transport arranged, units brought to full strength support elements prepared to leave at a moment's notice, then a division can move very quickly indeed. Even normally, Pakistan V Corps from Quetta can be at the border in 72-hours; Pakistan I Corps from Multan can be in action in 24-hours ; there is probably another corps in the area now, which should take no more than 24 to 48-hours to become active.

Methods similar to the thrust through Dera Baba Nanak can be implemented for an attack through Kasur. The entire strategy requires much hard work but is highly promising, and gives a good chance of giving Pakistan a resounding victory.

II Plains Attack/Kashmir Defence. Turning to more conventional military strategy, there are two obvious ways in which Pakistan could regain Kashmir. One is to first attack the Punjab, accepting the heavy losses inevitable, and to engage and then destroy several Indian divisions. This would permit the transfer of troops to Kashmir, to participate in the likely prolonged conflict for Kashmir, while freeing Pakistan from retaliation in the plains, and giving it a strong bargaining position. A second way is to cut the Pathankot corridor, perhaps the most vulnerable Indian position in the west, establish strong defensive positions between Lahore and Kathua behind the Ravi River, and then settle down to beating off Indian counter-attacks while Jammu is cleared, prior to the Kashmir attack. Readers will recognise in both these plans strong elements of past Pakistani strategy. The methods suggested here are not implied to be the best for the job, being only illustrative.

The great advantage of the Plains attack is that (1) Pakistan will be in a very strong bargaining position if it can knock-off half-a-dozen Indian divisions and seize large parts of Punjab/Ganganager ; (2) after India loses half-a-dozen divisions it cannot turn the tables on Pakistan

even if the China fronts are stripped of troops for the west ; therefore (3) Pakistan has ample time in which to undertake the difficult Kashmir attack. The disadvantage is that a high degree of skill is required, as is the acceptance of heavy losses. If Pakistan should blunder and India be quick to take advantage, Pakistan would take heavy losses and be likely to fail in its objectives.

Only competent authority can decide if the gains balance the losses. Here we will make two points. One, we know from history that the side attacking first has, by virtue of holding the initiative, a very good chance of achieving its initial aims. The only defence against an overwhelming, suddden attack is to give ground. This the Indian Government is unprepared to do. Not only do we deploy several divisions right on the border, if Pakistan breaks through, the Government will bring incredible pressure on the Army to stop Pakistan as close to the border as possible. We may then guess that reserve divisions will be deployed piecemeal as they come up, becoming grist for the Pakistani mill.

Two, no matter how we twist the figures, Pakistan can mobilise several days faster than us. True our figure of 10-days applies only to the last three divisions arriving from distant locations but when both sides are so evenly matched in total divisions, India will sorely miss those three divisions in the first week of war. Moreover, some divisions earmarked for the border will arrive in 72-hours, but will not be dug in and prepared to resist a Pakistani armoured onslaught in that time. Further, it is possible to decoy reserve divisions located in Punjab and Haryana, so that they land up at the wrong place.

Readers are requested to examine Map 2 and 3 for an idea of how Pakistan might attack under the above circumstances. Two points of note. Because of the sensitivity of the military censor, I have used consecutive numbers starting with "Division" for the Indian forces. No one expects the censor to pass papers with designations, but surely 1971 divisions can be correctly identified as their numbers have long since been public (see for instance Pran Chopra's *India's Second Liberation*). The use of consecutive numbers is inevitably going to confuse readers use to the real designations. For example, my 4 Division is at Jammu and my 8 Division is at Ferozepur whereas Pran Chopra identifies these as mountain divisions which presumably have nothing to do with the west in peacetime. Next, as I do not know the numbers for the new Pakistani armoured brigades, arbitrary numbers have been assigned—11,13, and 15 Armoured Brigades. For the Indian armoured brigades I have used the consecutive numbers from 51 Armoured Brigade onwards.

The main feature of the plan is the orthodox pincer, with one jaw from Dera Baba Nanak and one from Kasur. There is nothing terribly brilliant about this kind of strategy, but—I am told—it will work if executed competently. Readers will notice that Sind has been stripped of forces with only one division left to defend. India is not going to make much headway here before two weeks are over. Similarly, only one division has been left in Army HQ reserve. Pakistan has a known history of stripping areas to concentrate overwhelming force at given points, besides which the Germans used this tactic with great success time and again.

After examining the diagrams, the following points may be of interest to the reader:-

In the main area of operations, India will have two divisions deployed at the start of mobilisation (8 and 9 Infantry Divisions) ; and from 24-hours to 72-hours five more divisions could be in the area ; three belonging to the reserve corps (13 Armoured, 14 and 15 Infantry Divisions), and two infantry divisions (19 and 20) from western UP. Pakistan's concentration of five divisions between Ferozepur and Fazilka will certainly draw the reserve corps there ; if not, when the diversionary attack comes against Indian 9 Division and against the Fazilka-Ganganager screening elements. The Pakistan 1 Armoured Division will form in the area to ensure decoying the Indian armoured division with the reserve corps, but will attack through Kasur. Once the reserve corps is decoyed, there are only two divisions left at hand, and these will be racing to fill the gaps north of Ferozepur and at Dera Baba Nanak. Opposite these two areas Pakistan will have concentrated five divisions, ensuring the western UP divisions will move to these areas. At this point India has no reserves left : the 16 Armoured and 17 Infantry Divisions are moving up from Central India, with 7 days to go after the outbreak of war and the 18 Infantry Division from Central Command will also be moving up. Now, either India commits the above mentioned five divisions as soon as Pakistani concentrations become apparent, or it waits. If it commits them before the outbreak of war, as is likely—we can hardly expect India to defend the front from Pathankot to Fazilka with three divisions—Pakistan can fix and destroy all 8 Indian divisions. Pakistan is operating with 12 divisions; moreover, it will launch its attacks through sectors in which Indian divisions are just moving into.

For the diversionary attack on Indian 7 Division from Pathankot we have allotted a brigade of Pakistan 17 Infantry Division and the 8 Armoured Brigade. This leaves two brigades from Pakistan 17 Division protecting against Indian 6 Division between Samba and Kahuta. The purpose of this diversionary attack is to split up Indian 52 Armoured

Brigade out of Pathankot by forcing it to respond to the threat against Indian 7 Division and against Dera Baba Nanak ; also, by pinning down Indian 7 Division, Pakistan prevents it from giving support to its companion 20 Division opposite Dera Baba Nanak, thus effectively cutting India's Pakistan Corps in two. The question arises if it wouldn't be better for the diversionary attack to come at Dera Baba Nanak, and the main weight of the attack against Indian 7 Division. This is a matter of timing only experts can decide.

Once Indian 20, 8, 19, 9, 13 Armoured, 14 and 15 Divisions along with 52, 53, and 54 Armoured Brigades are surrounded and reduced, there is little point to India continuing the war. There are only three more divisions immediately available (D+7) and these are likely to be destroyed well before mountain divisions from the east come into play. If India holds back these three divisions and waits for mountain divisions from the east, before attempting a counter offensive, it only plays into Pakistan's hands. Surely no counter offensive can be attempted before D+30. Even then it is difficult to see what six or seven Indian divisions will be able to accomplish. These formations will be largely without armour, they will be heavily outnumbered in the plains, and by denuding the Chinese front we are only tempting aggression. The more divisions lose the longer it will take to recover from the disaster. Nonetheless, for purposes of argument we have included a map of what the situation might look after neutralisation of the above-mentioned Indian divisions.

In this model, three infantry divisions have been provided for the desert sector. It is always possible that India may move one desert division northwards to try and help the reserve corps. This cannot be of much help. If the three divisions undertake an offensive in the desert, Pakistan 18 Division and ad hoc elements will have to give up much terrain, which can be easily afforded. Reinforcements can be sent to Sind once the reserve corps has been neutralised.

III Kashmir Offensive/Plains Defensive

The great advantages of this plan are its relative simplicity ; initial movement by very few units, therefore permitting a high degree of surprise: and its initial focus on the Pathankot Corridor, the weakest of all Indian positions. The aim is to cut the Corridor north of the Ravi, use strong forces to block any Indian counterattacks, and roll up the position from Kathua to Chaamb by mounting two-flank attacks on individual brigades one-by-one. The disadvantages of the plan are that in the plains the initial strike is conceded to India. Of course, from the very beginning Pakistan faces 14 Indian divisions (fully mobilised) with 11 divisions, which will be quite adequate to defend against India. Only

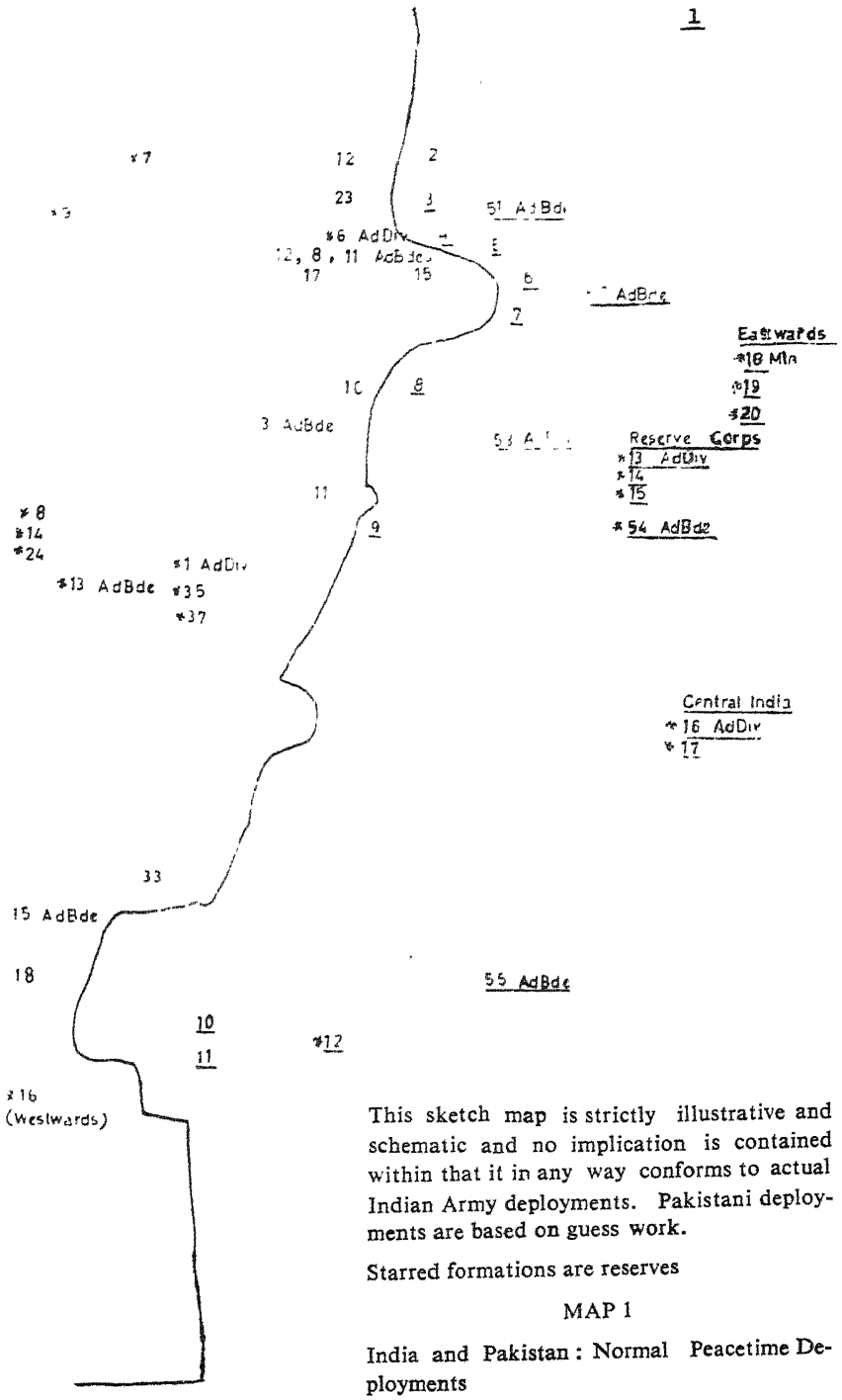
experts can decide if this strategy of conceding the first strike to India in the plains is worth the risks : but of course, there is nothing to stop Pakistan from taking the tactical offensive in the plains just to keep India off balance while Pakistani forces eliminate Indian divisions from Samba-Kathua, Jammu, and Chaamb.

This strategy does not require detailed discussion. In this model, Pakistan 6 Armoured, 7 and 9 Infantry Divisions fall on the Indian Division at Samba-Kahuta while a division from Pakistan V Corps at Quetta blocks any move by the Indian Pathankot division to cross the Ravi and thus aid its neighbour. Pakistan 17 Division launches a limited offensive against the Indian Pathankot Division, with the sole aim of keeping its off-balance while Pakistan V Corps forms a three-division barrier between Jandiala and Kahuta. After rolling up the Indian division at Samba-kahuta, a three division attack from Sialkot and Samba is made against the Indian Jammu Division, once Jammu falls, a three-axis attack is made against the Chaamb Division. There is no reason Pakistan should encounter substantial difficulty in these moves. If India puts an armoured division north across the Ravi before the attack begins, then of course Pakistan's job is harder. But there is no reason this move should take place : Pakistan can attack north of Pathankot with very little warning. And if India does move, an armoured division plus some brigades into the Pathankot corridor Pakistan can safely throw in two armoured brigades additional into the attack, plus an army reserve infantry division. The process of reducing the corridor will take longer, but once Pakistan V Corps cuts off the possibility of reinforcement from the rest of India, the Corridor cannot be held for long, and if an Indian armoured division is trapped in the Corridor, the position for Pakistan in the plains is correspondingly eased.

In this model we have provided for six divisions to attack Kashmir after Jammu falls. There will be three overstrength Indian divisions in kashmir and Ladak, but two of the Pakistani divisions (the Azad Kashmir divisions) are also heavily overstrength. So the numbers should favour Pakistan. Moreover once Jammu falls, the entire Uri-Ponch-Rajouri-Naoshera defence line is open to two-flank attack ; still further, this line will be bypassed through Jammu-Udhampur-Benihal. Under these circumstances it will be just a matter of time once Kashmir falls.

India could move two more mountain divisions to the west D+30, but a quick look at the third map will show this is unlikely to make any difference.

From these three Scenerios we may conclude that Pakistan—if it attacks first has a good chance of defeating India and taking Kashmir.

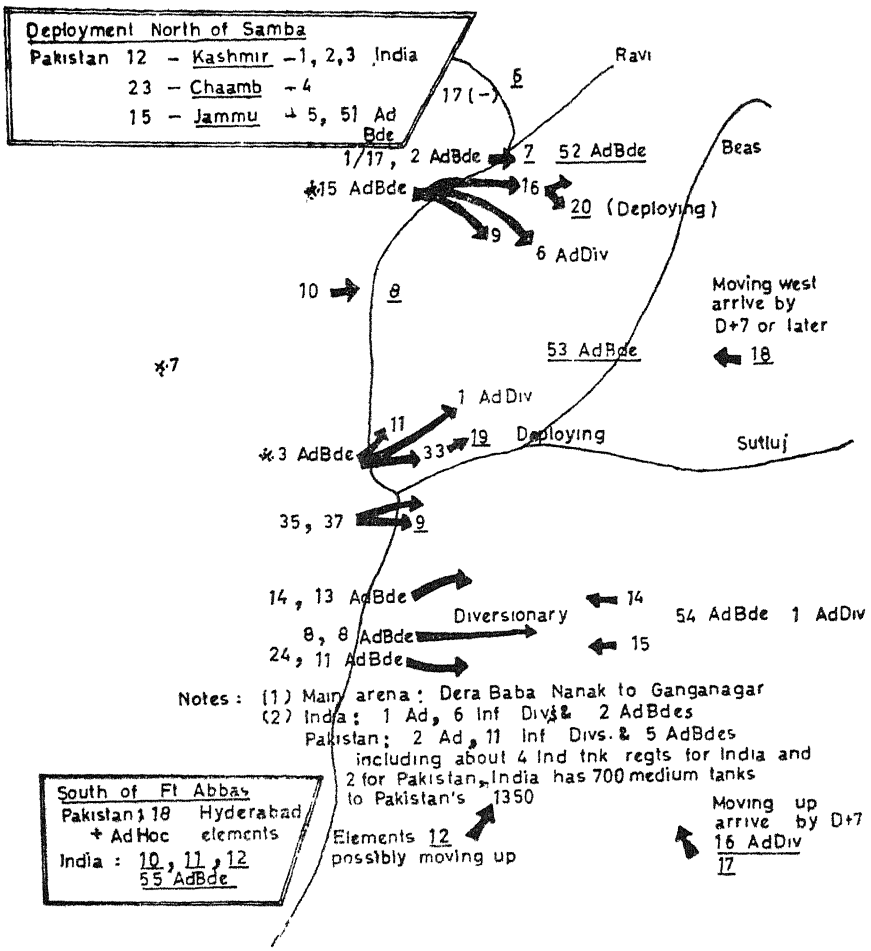


This sketch map is strictly illustrative and schematic and no implication is contained within that it in any way conforms to actual Indian Army deployments. Pakistani deployments are based on guess work.

Starred formations are reserves

MAP 1

India and Pakistan: Normal Peacetime Deployments



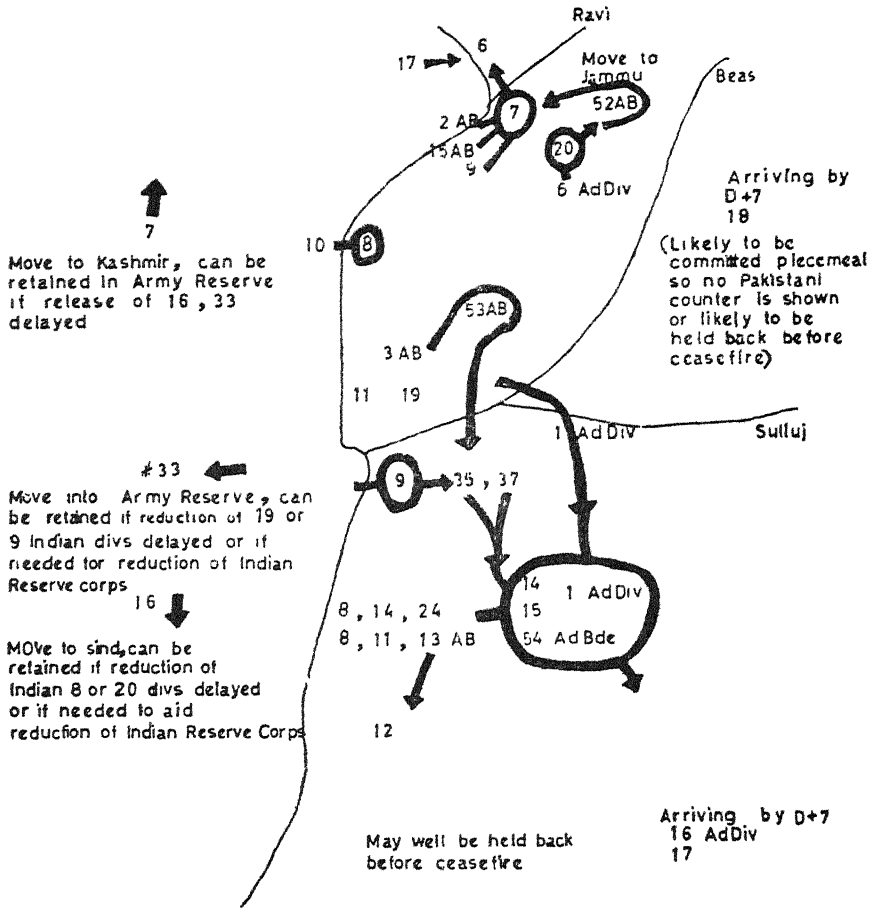
Notes: (3) Pakistani forces in Fazilka/Ganganager make diversionary attack in whatever strength required to pull Indian reserve corps to area. In Phase 2 Pak 1 AdDiv. 35 & 37 InfDiv, 3 AdBde turn south to help reduce Indian reserve corps; 6 Ad Div & 9 Inf Div attack Indian 7 Div prior to moving on Samba-Kahuta; 33 Inf Div goes to Army HQ reserve; 7 Inf Div attacks in Kashmir; 11, 10, 16 Inf Divs reduce Indian 19, 8, 20 Divs, then 16 goes to Sind, 10 to join 33 in Army HQ reserve, 11 to join if needed 1 AdDiv etc.

(4) This is a hypothetical scenario and bears no resemblence to actual or planned Indian Army practice.

MAP 2

Pakistani Plains/Offensive/Kashmir Defensive

Phase 1, from D+0 to D+3



Notes: (1) Shift of 16 and 33 InfDivs can obviously be delayed if they are required to mop up Indian divisions.

(2) In Fazilka/Ganganager areas there will be for Pakistan 1 AdDiv, 5 InfDivs, & 4 AdBdes plus either or both the Infdivs mentioned in Note 1. India will have 1 AdDiv, 2 InfDivs, 1 AdBde. As needed, forces from this area can be used to form a delaying barrier against the arrival of Indian 16 AdDiv and 17 InfDiv till the Indian reserve corps is eliminated; then these two last Indian divs can be eliminated.

(3) In all cases forces assigned may be too few or too many for given tasks : only trained strategists can decide these issues. Our deployments are purely illustrative.

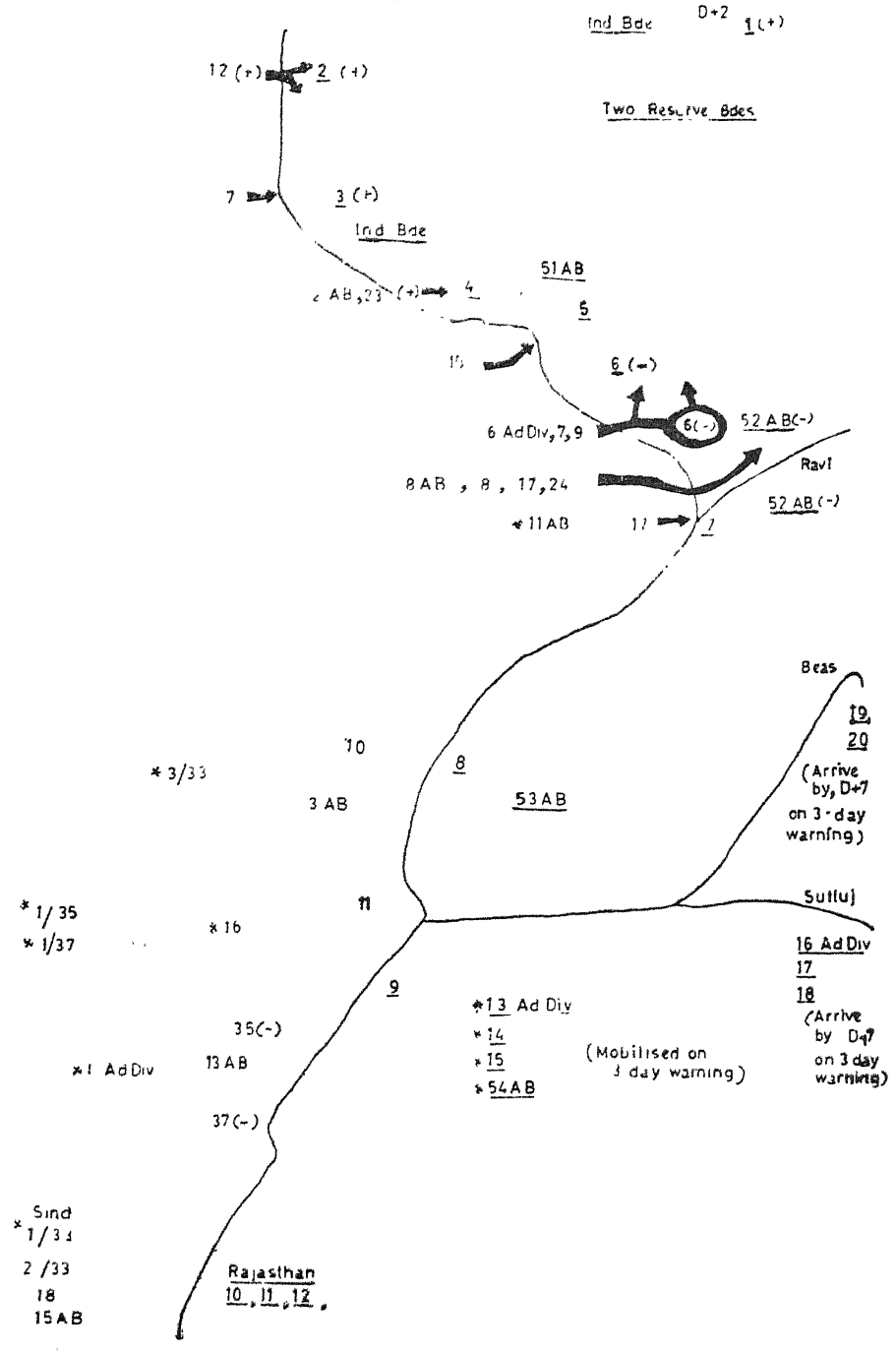
MAP 3

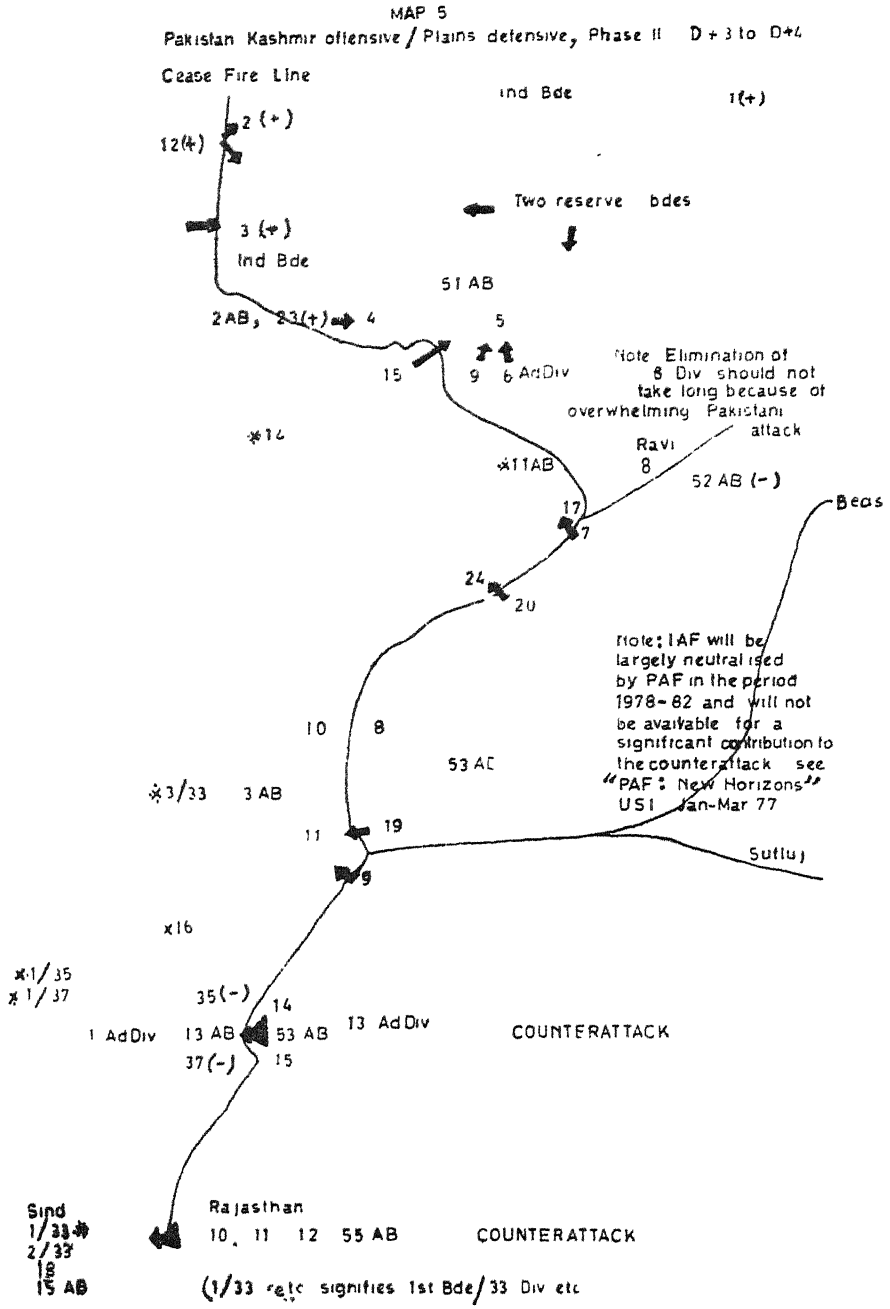
Pakistan Plains Offensive/Kashmir Defensive

D+4 to D+6 or D+7

MAP 4

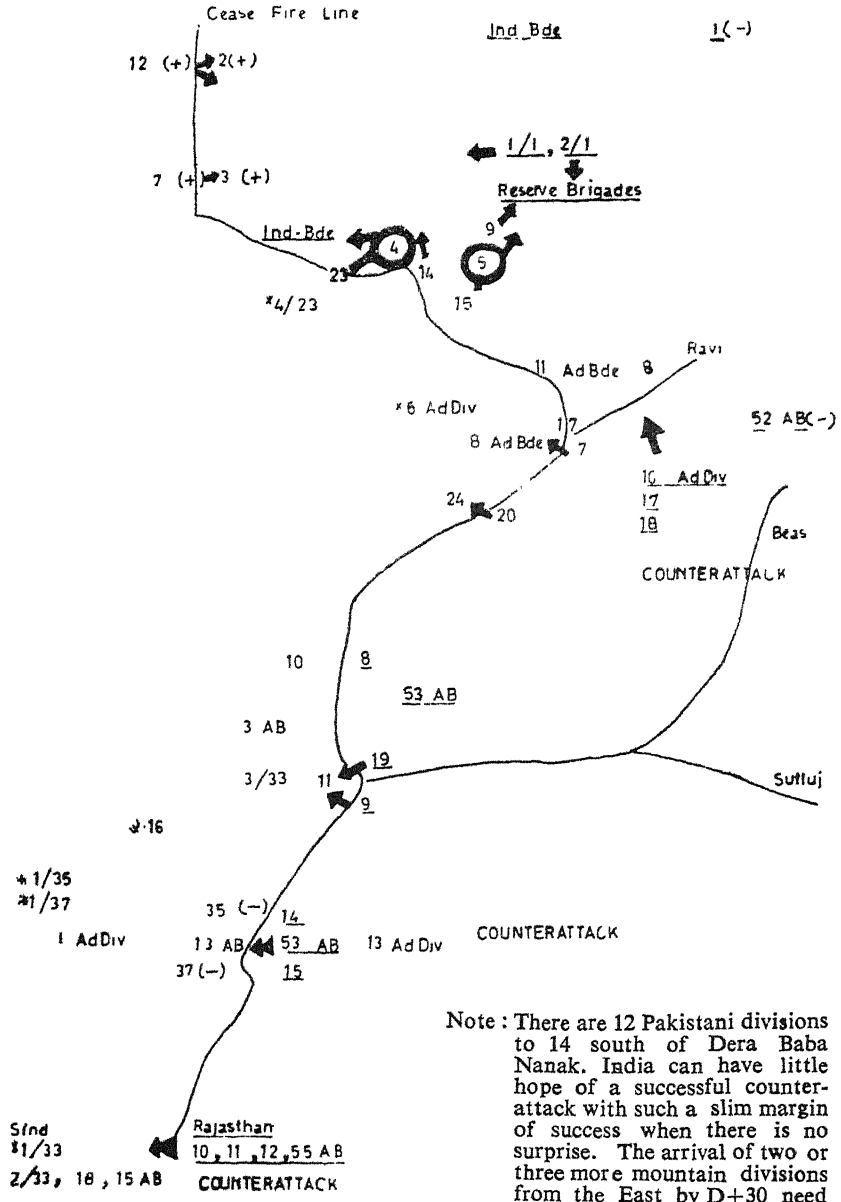
PAKISTAN KASHMIR OFFENSIVE / PLAINS DEFENSIVE, Phase II D+0 to D+2




MAP 5
Pakistan Kashmir offensive / Plains defensive, Phase II D + 3 to D+4
Cease Fire Line
Ind Bde
1(+)
12(+)
2 (+)
Two reserve bdes
3 (+)
Ind Bde
51 AB
2AB, 23(+)
4
5
15
9
6 AdDiv
Note Elimination of 8 Div should not take long because of overwhelming Pakistani attack
Ravi
8
52 AB (-)
*11AB
17
7
24
20
Beas
Note: IAF will be largely neutralised by PAF in the period 1978-82 and will not be available for a significant contribution to the counterattack see "PAF: New Horizons" USI Jan-Mar 77
10
8
53 AD
*3/33
3 AB
11
19
Sutlu j
9
x16
*1/35
*1/37
35(-)
14
1 AdDiv
13 AB
53 AB
13 AdDiv
COUNTERATTACK
37(-)
15
Sind
1/33
2/33
15 AB
Rajasthan
10 11 12 55 AB
COUNTERATTACK
(1/33 etc signifies 1st Bde/33 Div etc

MAP 6

PAKISTAN KASHMIR OFFENSIVE/ PLAINS DEFENSIVE Phase III D+5 to D+6



Note : There are 12 Pakistani divisions to 14 south of Dera Baba Nanak. India can have little hope of a successful counter-attack with such a slim margin of success when there is no surprise. The arrival of two or three more mountain divisions from the East by D+30 need not make any difference as the equivalent of two divisions can be released by then from Kashmir. Also note that Pakistan by virtue of defending has ample reserves.

Retiring ?

LIEUT GENERAL SD VERMA (Retd.)

SERVICEMEN have to retire one day, though most of them do not wake up to the fact until the day comes when they have to be "turned out to grass"; unless of course they move over to politics, in which case they do not have to worry about retirement at all. They stay on the active list like a Field Marshal, till the call comes from above to face their maker. But for the average one of them the date for retirement is more or less defined from the date they were commissioned—give and take a few years. Most of them do not think or plan ahead for a "retired life". They console themselves with the illusion that a service life having made and kept them physically and mentally fit, at their comparatively, young age on retirement, they should be able to fit in to any walk of life where their background and experience would be welcomed with open arms. In most cases, however, it does not happen that way at all and they add to the numbers of disappointed and disgruntled ex-service officers letting off steam at every opportunity. As if any one cares what the poor clots feel or think !

A sizeable number of ex-service officers gravitate to Farming, after trying the odd stint at an even odder "re-employed" job. It is natural enough, as most of them belong to agricultural families and own or inherit some land. They read about the "Highest Priority" to agriculture being given by the Govt. and all the facilities and assistance being made readily available to the farmer. All the farmer has to do is to produce more foodgrain etc. and he will be the Patriotic hero of the "Maatri Bhumi". What could be easier for a trained, disciplined and methodical serviceman than to step in and set an example to his Rural compatriots ? It is only after he has sunk all his savings, borrowings and anything else he can lay hands on, that he realises that "the lucrative and attractive farm life" after retirement is the most over-rated pastime. He begins to appreciate the significance of the apt Punjabi saying "*Yaa Raah payya Jaane, yaa waah payya Janne*" which may be loosely translated as "only he who gets involved in a problem can understand the pros & cons of it".

This article is based on a personal experience with a 50 Acre farm (now reduced to 21 acres and soon it is hoped to zero acres in the Punjab)

Courtesy : The Grinder 1977

over the past decade. Irrigation is by tubewells, farm work by a 35 HP Massey Ferguson tractor. A retired JCO and 3 staff, comprise the permanent man power. Daily labour is hired as and when required if available. As far as the running of the farm is concerned there are no snags and no complaints. It is a well organised and well run unit. But, and this is a big BUT, it is a frustrating, heart breaking experiment and economically it is hardly a viable proposition. In the Service you get used to expecting an order to be carried out, and to carrying out an order when you get it. Any clarification or arguement can only be entertained later. Not so in your new life. Almost everything you want done will be done "tomorrow"—"that tomorrow"—never seems to dawn. You try to adjust yourself to the new ways of your new life. Your planning goes to hell. Your nerves end up in tatters. How you wish you could have the backing of the Army Act again—just for one month, one week, one day even !

If you are lucky you may know something about farming before you end up at your farm. If not you will have to learn the hard-way through trial and error and reading books, magazines, bulletins from various Agricultural Oracles. These will make every thing clear as mud! You will get plenty of advice, from neighbouring farmers, your own staff, the once in a bluemoon visiting Agricultural Inspectors and even the University Extension Service Officers—if you have been fortunate enough to establish a personal rapport with them. If at the end of it all you have a crop worth harvesting, you consider yourself the luckiest chap alive and use the income on thanks giving to whichever Deity you owe your reverence to.

Because of your background you will straightaway be designated a "progressive Farmer". You will be invited to join the Farmers Forum of the District/Zone or Area. You will be asked to attend Seminars at some H.Q. or the other and be expected to contribute freely to make the Seminar a success. If you are running a reasonably good farm, you will be honoured by Ministerial visits and even foreign VIPs will be brought to your farm by the local dignatories to impress the visitors with the high standard of organization and techniques the local authorities have spread in their area, and you with the presence of the VIPs. You may even get a 4 line report from "our special correspondent" in the papers to the effect that Major so and so's Farm was visited by Minister X, who was much impressed by the wheat crop etc. etc.

You will not lack encouragement and appeals to your patriotism from the powers that be. The country must be made self sufficient, say, in edible oils, you will be told. Grow oil seeds, specially Soyabean—"the wonder crop". You jump to it. No one in your area knows much

about Soyabean cultivation, not even the Agricultural Deptt. You accept the fact that a new crop will need some time to establish the agronomic practices in your area. You spend a lot on seed, fertilisers, pesticides and labour. You harvest the Crop but can find no buyers. You write to all the high ups but get no satisfactory answer. The euphorea for Soyabean in these circles has evaporated by now, like any other project after its inauguration. After accumulating a 3 years stock of Soyabean you decide that "enough is enough" and you discontinue growing the "wonder crop". Day after day you read and hear on the Radio that the only seed recommended by the Agricultural University for this Crop or that is "ABC". You try for the seed every where without any success. You write to the University and you are told it is N.A. Next year you are early in the queue and you are promised the seed in September. You arrive at the University armed with the letter promising you the seed, only to be told "Stock finished".

You need water for your crops. You have sunk Tubewells at a high cost. Your Power requirements are charged on a flat rate, i.e. you pay the same amount whether you get power to run your Tubewell for 24 hours or 10 or 5 or 1 hour or not at all. You read in the papers that Power for agricultural use has been given the "highest priority" (By now a familiar phrase to you). You read the C.M's statement that there is no shortage of power in the state. The very next day a 20% cut is announced by the Electricity Board. The following day you hear that you will get power daily for 12 hours, then 8 hours, then 6 hours and so on & on. Your carefully made plans to deploy labour are knocked on the head, to say nothing of the withering crops that need water. In the meantime the cost of Power has more than doubled on a Tubewell that hardly runs. Frustrations ? You feel like tearing your hair out—assuming that by now you have any left to tear out.

You look out for the announcements about the recommended support prices for various commodities that you grow. They are seldom announced before the sowing. So you can not decide what crop is going to be worth your effort and expense. But you do read about the increased area that is going to be put under wheat, paddy, cotton or what have you. You wonder how this area is calculated by the various announcing authorities ? You know that the Patwari does the "Gardawri" after the crops are sown. It would therefore, be easy to work out the area of the crop sown from his records. Alternatively if all farmers were required by law to sow a certain percentage of their holdings with X, Y or Z crop, it would be possible to calculate how many million acres is going to be under wheat or paddy etc. in the ensuing season. You begin to wonder on what basis the acreage that is going to be under a given

crop is worked out and announced. Guess-estimate ? Wishful thinking ? Astronomical calculations by the Astrologer.

As the crops begin to ripen, a morale building game starts. "A Bumper Harvest" is predicted by all the experts—high & low. Then come unexpected rains, hail storms etc. Everyone vies with each other to project the district and area wise losses. At the same time the refrain of Bumper Harvest is kept up. Wheat procurement targets are announced by the Agricultural Prices Commission (A.P.C.). The Punjab Minister of Food and Supplies says that Punjab's target of 30 Lakh Tonnes of wheat this year (1975) can not be realised. Production he says, will be around 23-24 Lakh Tonnes (Tribune 22 March, 1975). The Director of Agriculture Punjab declares that wheat production this year is likely to be 53-54 Lakh tonnes (Tribune 25 March, 1975). You wonder what new factors could have boosted the wheat production in the State by 30 Lakh tonnes in 3 days out of the same acreage ?

The price fixation of various commodities is another baffling phenomena. You will rack your brain as to how the A.P.C. comes to a given figure. The Chief Ministers of various states claim that X Rupee per quintal should be "the minmum remunerative price" in their state and they "demand" this price from the Centre and the A.P.C. When the price is announced it bears no relationship to the "minimum price acceptable" to the state concerned. The exercise savours of a customer/vendor haggling over the price of peas or onions in the Market. The cost of almost all consumer articles and inputs has gone up by about 2 to 4 fold in the last decade. But the farmer has got a meagre increase in prices e.g. wheat, from Rs. 76/- to Rs. 110/- per quintal.

It is claimed that the agricultural produce prices have to be kept down to control inflation. No one seems to want to control the price of inputs and accessories that go to generate the agricultural produce. For instance Fertilisers (urea gone up from Rs. 840/- per tonne in 1967 to Rs. 2,000/- in 1975, CAN from Rs. 510/- to Rs. 1,095/-) Diesel oil from 0-86 per litre to 1-40 in 1976, power rates from Rs. 12.50 to Rs. 19/- per HP, Massey Ferguson Tractor from Rs. 21,563/- in 1967 to Rs. 45,583/- in 1975. Most of these increases were due to enhanced excise duties levied by the State and Central Govts. Yet the farmer is considered the "nigger in the woodpile" and blamed for the price rise in food grains. The authorities do not seem to want to be realistic. It seems that some of the statements are made either on wrong promises or without thought. About 4 years ago a member of the APC was reported in the press as saying that "an acre of land with assured irrigation and producing 2 crops has an income of Rs. 3,000/- per year". Assuming that a farmer

could get 20 quintals of wheat and paddy each (a very high yield indeed) per acre, at the then prevailing prices of Rs. 76/- and Rs. 51/- per quintal for wheat and paddy, the total worked out at Rs. 2,540/-. Where did the Rs, 3,000/- come from ? If anything were to go wrong, e.g. unseasonal rain, hail, pest damage etc. the income would be much less. Yet the myth created by urban based economists and planners continues to thrive; namely that the farmers are making money hand over fist and should be taxed more heavily. Reality appears to be ignored. A survey carried out by the Punjab Agricultural University (P.A.U.) 3 or 4 years back, at the peak of the so called Green Revolution, discovered that 83% of the farmers in the Punjab were actually in debt, which is understandable if you look at the net income accruing from farming. Dr. M.S. Randhawa, until recently the Vice Chancellor of the P.A.U., has contributed a tremendous amount to the growth of Agriculture in Punjab and to the Green Revolution. In an article in the Illustrated Weekly of India (7-13 August, 1977) Dr. Randhawa says "where efficiency is high and seed is raised there is some profit. In Ropar Farm, which is with the Punjab Agricultural University and is well run with the best expertise, the gross income was Rs. 1,900/- per acre and the expenditure was. Rs. 1,700/- per acre. Thus the net income or profit was only about Rs. 200/- per acre. Village studies of accounts of farmers in the Punjab also reveal a similar situation. This also shows that if some people have been claiming fantastic incomes, it was for some other reasons. Farmers know that hens do not lay golden eggs and everyone cannot grow grapes of gold". This 700 acre Farm land was given free of cost to the P.A.U. They do not even pay land rent on it. And the produce is mainly sold as seed, which means sale at a higher price than an average farmer sells his produce. If under the best conditions an acre can give an income of less than 200/- per acre, what hope has the average ex-serviceman who wants to make enough to supplement his meagre pension to get his children through College? As Dr. Randhawa says "Economists who have no experience of rural life continue to harp on the need for taxing the farmer. My advice to such economists is that they should purchase a piece of land and face the realities of farming in a practical manner rather than build fairy castles in the air".

Perhaps retiring servicemen should also think twice before sinking their hard earned savings in "fairy castles". You may be lucky and have a large family, say 8-10 children and other relatives who can work free and save you labour costs. (This is on the assumption that you had escaped the "nasbandi" camps). Also you may be able to find a relative of a relative with a cousion whose in-law is a high up in the political world. That could be of a great help until the Government changes. If not, think twice before you stick your neck into this mess. Remember the advice "Look, before you having looked, do not leap".

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(a) Direct Entry	19—22 years	Degree or equivalent	UPSC exmination and SSB interview	Two courses normally held in Jan and Jul each year
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OFFICERS TRAINING SCHOOL MADRAS (For Army only)				
(a) Short Service Commission (Non Technical)	19—23 years	Degree or equivalent	UPSC examination and SSB interview	Two courses normally held in May and Oct each year
(b) Short Service Commission (Technical)	20—27 years	Engineering Degree or MA/MSc	SSB interview	Two courses normally held in May and Oct each year
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Combatting the Attack Helicopter

LIEUT COLONEL S ROY CHOWDHURY

INTRODUCTION

ON 20 November 1917 tanks entered the pages of history near the little French town of Cambrai. The story of that epic battle is too well known to admit of further repetition here, but one lesser known facet may still be recounted—out of the 389 tanks participating in the attack, the British suffered 180 tank casualties, many of them from German artillery firing direct (perhaps in desperation?) at the advancing British armour. The birth of the tank has also simultaneously brought into existence the earliest generation of anti tank weapons. The race for supremacy between armour and anti-armour weapons has continued uninterrupted ever since, fuelled by the Second World War and the Cold War thereafter, when the scientific and technological resources of the two most powerful nations in the history of the world were brought to bear on this problem. The latest manifestation in the anti tank genealogy is the attack helicopter. The aim of this article is to consider future equipment, organisation and operational techniques which should be adopted by armoured forces to combat their chief adversary in the 1980s—the attack helicopter.

THE ATTACK HELICOPTER

At the very outset, we must understand that the "attack" helicopter, in spite of its belligerent nomenclature is basically a defensive weapon; primarily an anti-tank "super-weapon" to break up attacks by massed armour. The concept is American, and is based on the operational philosophy of "fighting out numbered", which is the bed rock of the American Army's tactical doctrine against Warsaw Pact forces in Europe.

ARMAMENT

An attack helicopter, then, can be described as a helicopter-mounted weapon system, specifically designed for providing anti-tank and anti-personnel fire support to ground troops. Its lethality is directly propor-

tional to the weapons fitments it carries. At present, some or all of the following armaments can be installed :—

(a) *Anti Tank Missiles.* Second generation HOT or TOW wire guided missiles are usually carried at present America's new Hughes AAH-64 attack helicopter is designed to carry eight of the laser beam riding Hellfire missiles as its primary anti-tank armament. Its Russian counterpart, the Mi-24 HIND is equipped with four radio command guided Swatter missiles. Since the helicopter provides an elevated firing platform with extended fields of observation and fire, all anti-tank missiles (in theory at least) can be employed effectively upto their designed maximum ranges of 3500-4000 metres. The missile traverses this distance in an average flight time of 11-13 seconds not much reaction time for a tank commander under missile attack ! These missiles are aimed, launched, and guided by the weapons operator of the attack helicopter.

(b) *Rockets.* These are normal free flight air to ground rockets with hollow charge anti-tank warheads. They are fired in ripples or clusters as from aircraft.

(c) *Machine Guns.* These are usually of calibre 7.62 mm (or slightly heavier) and carried in single or dual mountings in swivelling "chin" turrets in the lower nose of the helicopter, and are mainly used as an anti-personnel or anti-vehicle weapons.

(d) *Multi-Barrel Gatling Cannon.* Gatling cannon are standard armament for specialised "tank busting" ground support aircraft like the American A-10, and can also be very easily fitted in specially designed attack helicopters as well. With a calibre of upto 30 mm, this type of six to seven-barrelled rovolving cannon has a rate of fire of 2000/4000 rounds per minute, and, firing bursts of armour piercing ammunition, can effortlessly rip open the relatively thin top armour of most battle tanks in existence today (tank designers please note !). During trials, the GAU-8 30 mm seven-barrelled Gatling cannon mounted on the A-10 aircraft, has strafed and destroyed Patton, T-62, and T-55 tank targets.

EMPLOYMENT AND OPERATIONAL TECHNIQUES

In principle, the operational employment of attack helicopters is largely similar to that of armour in the defensive role. Like all other mobile anti tank weapons, helicopters should also be employed concentrated under the direct command of the highest headquarters in the battle-zone—usually Corps or Army. In view of their incomparably greater speed *vis a vis* tanks, the unit level battle drills and procedures would, naturally, differ widely from those of an armoured regiment. Going by the present trend of organisation in the NATO forces, an attack-helicopter regiment (consisting of about thirty helicopters organised in three squadrons of ten helicopters each) would probably be initially deployed in sub unit groups to cover the armour approaches to a Corps or Army defended zone or sector over a frontage of upto 200-250 kilometres, with

each squadron being allotted a sector of responsibility of upto 75-100 kilometres frontage. Thereafter, the tremendous speed of the helicopter would make rapid reinforcement of any threatened sector a relatively easy task.

Within their respective sectors, squadrons would be waiting in a state of "ground alert" at selected helipads, with helicopters manned, fuelled and armed, awaiting the call to action. In this context, the term "helipad" may be misleading—the helicopter waiting areas would simply be suitable pieces of ground secure from enemy ground threat and possessing adequate cover from air. On receipt of enemy sighting reports from ground or airborne early warning detachments positioned forward 10-15 minutes flying time away from the base (i.e. upto 50 Km), a designated number of helicopters would lift off for the target area. Flying at very low heights (50 feet and below, depending on the ground) and utilising the cover of trees and ground contours—"nap of the earth" flying—the helicopters would approach the designated target area and take up suitable firing positions. Thereafter, enemy tanks would be engaged by "popping up" from behind ground cover to a height of 70-80 feet, hovering there while firing missiles at the enemy tanks, and again ducking down into defiladed positions after scoring a hit. The point to be noted here is that the helicopter would have to hover out of ground cover in an exposed position for the duration it takes to launch and guide a missile onto the target—a period of approximately 11-13 seconds at engagement ranges of 3500 to 4000 metres. Successive helicopters would repeat this lethal minuet from different fire positions, until hopefully the advancing enemy armour is finally wrecked and brought to a stand still.

CHARACTERISTICS

We have attempted to sketch a snap profile of the attack helicopter, and at first glance, it must be agreed that it certainly appears to size up as a formidable opponent—perhaps the deadliest the tank had encountered to date. However, it is also axiomatic that every weapon system—even so formidable as the one under discussion—must possess some weak points or disadvantages. It is these chinks in its armour that must be assiduously located, exploited, and methods devised to neutralise the lethality of the attack helicopter.

When faced by attack helicopters, a tank Commander's problem basically boils down to rapid, long range detection and engagement, of an airborne snap target exposed for a duration of 13 seconds or less. With this requirement as the point of departure, let us study the attack

helicopter through the eyes of a tank crew commander, and endeavour to enumerate and quantify its capabilities and vulnerable points :—

(a) *Capabilities*

(i) Specially configurated to present the smallest possible target, especially head-on.

(ii) Potentially capable of engaging and destroying tanks at ranges of 3500-4000 metres with anti tank missiles.

(iii) Presents a fleeting target for surface to air weapons.

(iv) Vital components—e.g. engine, rotor shaft and head, fuel tanks and pilots compartment—are protected by light alloy armour against direct hits of weapons of upto 20 mm calibre.

(v) Maximum speed upto 300 km per hour ; low level contour flying speeds of approximately 150-200 km per hour.

(vi) Night flying and some night fighting capability.

(b) *Vulnerable Points*

(i) *Exposure to ground fire during the duration of target engagement.* Though the exposure is of very short duration, but nevertheless, it does occur, and—perhaps—it can be exploited.

(ii) *The Guidance System of the Missile* When a second generation anti-tank missile is launched a powerful flare (like an oversized tracer) is ignited in the missile tail assembly. Infra-red emissions from this flare are received by a goniometer incorporated in the helicopter's missile tracking unit, which also automatically measures the angular deviation of the missile trajectory from the line of sight of the operator, who meanwhile continuously tracks the target through his optical sight. Necessary corrections to coincide the two are then automatically despatched to the missile, either by thin trailing wire (TOW, HOT) or some form of microwave command link (Swatter, Shiellagh). The initial component of the complete guidance system—the infra-red goniometer itself—can be led completely astray if the IR emissions of the missile flare are drowned out by similar radiations from extraneous sources, such as decoy IR parachute flares.

(iii) *The Human Element.* What about the human element that operates this sophisticated weapons system ? The attack helicopter can function effectively, only if its crew is presented with a clear target picture, on which they have an opportunity for concentrating uninterruptedly for upto about 15 seconds. However, should the target succeed in obscuring itself by smoke, dust, and use of ground, or, should the pilot be forced to take violent evasive action during the engagement, then there is every chance of the tank evading the first blow and successfully striking back at its tormentor.

(iv) *Vulnerability to Aircraft.* Finally, the attack helicopter would be very vulnerable to hostile aircraft flying in close support of enemy ground columns. It will be extremely difficult for the helicopter to operate effectively under conditions of even air parity between opposing sides. To display its full potential, it must operate under conditions of friendly air superiority, which, for a defending force may be difficult to achieve, in the initial stages of any conflict.

THE PROBLEM

Having studied the attack helicopter, its capabilities, and characteristics, we can now endeavour to crystallise the problems involved in combatting it. These may be identified as follows :—

(a) Early detection of the helicopter before it can close in to effective missile firing range.

(b) Surface to air engagement of a snap target exposed for a maximum of 15 seconds.

(c) Reducing and adversely affecting the efficiency and performance of the helicopter crew by obscuring the missile operator's view of the target, and forcing the pilot to take evasive action.

(d) Electronic counter measures (ECM) to render the guidance system of the missile ineffective.

Long Range Detection

Being specially designed to present the smallest possible head on target an attack helicopter would be extremely difficult to detect visually at long ranges, especially if it happens to approach out of the sun. In any case, detection cannot be carried out from the tank itself—it has neither the technical capability nor a spare crew member to devote exclusively to this vital task. Therefore, logically, this essential task must be performed by a separate vehicle using means other than visual. Radar appears to be the most feasible answer to the problem. The proposed vehicle must have cross country mobility on par with the tanks it has to accompany, as well as integrally mounted search radar which can be operated on the move.

Surface to Air Engagement

Within the split second reaction times available in modern warfare, detection, identification, engagement and target destruction perforce have to be an almost continuous process ; and here the first dilemma we have to solve is—gun or missile ? Considering the maximum slant ranges at which we would like to eliminate the attack helicopter—4000 metres—a missile system would appear to be more effective than air defence guns, whose average effective ranges today are in the region of 3000-3500 metres. Thus, our radar equipped tracked vehicle now adds an

air defence missile system to its configuration, and we are presented with a missile-armed low-level air defence vehicle like the French-German ROLAND/Marder, the Russian SA-8 (preferably on a tracked chassis), or the British Rapier/FV 432 combinations.

HELICOPTER CREW PERFORMANCE

Early detection by radar, followed by rapid engagement by surface to air missiles will perforce compel the helicopter pilot to take whatever evasive action he can, to avoid destruction of his craft. This evasive action would consist of violent aerobatic manoeuvres (within the tolerances of the helicopter) and would add immeasurably to the problems of the weapons operator in obtaining and maintaining the clear, unobstructed view of the target so essential for accurate missile guidance. Half our task is now over ; the balance will be completed if we can quickly obscure the target from the vision of the missile operator. As the Americans say—"what you can't see, you can't shoot". This can be accomplished by the following methods:—

USE OF SMOKE

(a) Properly, effectively and promptly employed, smoke is the quickest and simplest method of ensuring that the sight picture of a ground or heliborne missile operator is quickly and completely obscured. Thereafter, he cannot track his target through the optical sights, and consequently, cannot guide the missile accurately. Quick smoke "blankets" can be built up in the following two ways, both of which must be utilised by armoured units and formations :—

(i) *By the Tank.* All tanks must have the capability of building up a local smoke screen in their immediate vicinity, either by use of smoke grenade dischargers or by smoke emission from the engine exhaust. The ideal would be a combination of both, as we understand the new American XM-1 (General Abrams ?) tank is to possess.

(ii) *Area Smoke Shoots.* This involves a smoke shoot by area-fire weapons, aimed at an area of ground approximately midway between the tanks and the helicopter, so that a wall of smoke is quickly built up between the two. By area-fire weapons, I refer specifically to two types of weapons—multi-barrel rocketl aunchers and mortars. If such weapons are given the requisite cross country mobility by being mounted on tracked carriers, and integrated closely into the organisations of armoured units and formations, they can render incalculable service by rapidly "drenching" a suspected area of ground with high explosives or smokes. In the process, not only would a smoke screen be created ahead of the tanks, but, equally important, any ground based anti tank weapons (missiles or guns) and their operators lurking in the area would be damaged and injured or destroyed and killed.

(b) *Use of Ground.* There is no change whatsoever in the paramount importance of sound basic training for the tank crew—I refer to the use of ground, which, if anything, has acquired added importance in the new dimensions of warfare. Skilful, intelligent and imaginative use of ground will reduce the missile operator's fields of view and fire and also ensure that the tank always presents the smallest possible exposed target. This will greatly decrease the chances of obtaining a direct hit which alone can destroy the tank, and correspondingly increase the latters' chances of survival. In addition, hollow charge missile warheads can harmlessly explode away from the tank on impact with trees or buildings whose cover is being utilised, while trees and tall crops may also entangle and check the smooth pay-off of missile control wires.

It may be worthwhile to pause here and remind ourselves that a smoke screen and radar controlled ground to air target engagement are not in the least contradictory—smoke hides the target from the helicopter, yet does not screen off the ground radar which identifies the enemy, and guides surface to air missiles on to it.

Electronic Counter Measures (ECM)

Based on what we have discussed earlier, there definitely appears to be scope for devising ECM against anti-tank missiles, and all avenues towards this must be explored. While ECM against laser beams may not have been perfected yet, it is a fact that the infra-red based guidance systems of almost all the current second generation anti-tank missiles can be mislead by "blinding" the tracking unit with infra-red emissions from extraneous sources such as decoy flares. Instances have been recorded of the malfunctioning of guidance systems (and resultant inaccuracy) when second generation anti-tank missiles (e.g. MILAN, HOT) have been launched towards target in the vicinity of heat sources such as burning vehicles, fires and exploding white phosphorus rounds. While these reports have to be carefully confirmed and evaluated, there may be some substance in them, since the Belgian and West German Armies are both reported to be retrofitting secondary manual guidance systems on MILAN and HOT missiles, and the United Kingdom appears to have selected the manually guided Swingfire as the anti-tank punch for their new tank destroyer, the Striker. The assumption is that a first generation, manually guided system, would be impervious to the vagaries of infra-red emissions. The manufacturers of MILAN and HOT missiles (the multinational firms of Euromissile) have of course denied reports of malfunctioning of their missiles. Inspite of this, reasonable room for doubt still exists, regarding erratic missile behaviour in the proximity of IR sources.

All tanks must be equipped with a simple para flare projector, which can be loaded and fired from inside the turret (an updated version of the old 2 inch bomb thrower on Sherman tanks) and has the capability of projecting infra-red decoy paraflares upto 1500 metres ahead of the tank. The flare itself must be designed to burst at a height pre-calculated to coincide with the missile trajectory above ground level, and burn for about 20-25 seconds (i.e. a little longer than the flight time of a missile fired at maximum range). Another "field expedient" which may be tried is for tanks to switch on their main IR search lights in the direction of the missile attack. Hopefully, infra-red radiation received from a large number of different sources may cause inaccuracy in the tracking mechanism, and thence, in the missile's flight path. The idea seems to be theoretically feasible, and experimentation may well prove to be surprisingly fruitful.

ORGANISATION

By analysing the type of threat posed by the attack helicopter, we have established the necessity for certain additional weapon systems to operate in close and intimate cooperation with tanks. Let us now consider the quantum and level at which these additional elements can be most effectively integrated with armoured units or formations.

To begin with, we must appreciate and accept the following basic facts :—

(a) Every individual tank or armoured vehicle is a worthwhile target for an attack helicopter. Hence, any proposed anti-helicopter defence layout must cater for the protection of every tank in an armoured column.

(b) It is not the tanks of the forward elements only that are susceptible to helicopter attack—a bold, crafty helicopter pilot may lurk on the flanks until the leading elements are well past him, and they unleash his missiles at the headquarters or reserve elements, to compound hostile tank casualties with an additional bonus of confusion caused in the enemy ranks. Therefore, detection engagement facilities must be spread throughout a tank column.

With a slant range of 7000-9000 metres in most cases, an outgoing surface-to-air missile has a comfortable advantage in reach over an incoming air-launched anti-tank missile which must be fired from a maximum range of 4000 metres. Missile based air defence vehicles may therefore be conveniently deployed upto 3000 metres behind the forward-most tanks and yet be able to reach out and extend an effective protective canopy upto a minimum of 4000 metres ahead of the leading tanks,

which should be more than adequate. At all events, air defence vehicles must always be located well behind the leading tanks to minimise the chances of their being destroyed by ground fire from hostile tanks or anti-tank guns.

Well handled attack helicopters will endeavour to project multiple targets in quick succession, coming in from many different directions, and, as such, may be beyond the capability of a single launcher to engage effectively. Adequate all round air defence can best be provided by dividing surveillance of air space into three sectors of approximately 120 degrees each. This would imply that there is a requirement of at least three air vehicles per unit of combat group size or nine such weapons systems to provide protection to an armoured brigade of three such groups.

Another component of anti-helicopter defence would be the mobile area-fire weapons systems like multi barrel rocket launchers or mortars, on tracked chassis. Their primary role would be large scale "Speculative fire" with high explosive and smoke to drench and clean out suspicious areas of ground where hostile anti-tank weapons may be lurking. In their equally vital secondary role, these rocket projectors would fire special smoke ammunition to create an immediate wall of smoke to shield tanks from the attacking helicopters. This ammunition should amalgamate sky trail capability with a composite warhead of both white phosphorus (for immediate build up) and base emission smoke (for enhanced thickness and lasting effect).

Under conditions of visibility obtaining on the Indian Sub continent, it would be adequate for the proposed mobile rocket launcher or mortar system to possess a range of upto 5500 metres. These weapons would be deployed in the vicinity of the depth troops of the leading armoured squadrons, so that their devastating fire power is readily available to the squadron commander, who is the person who will require it most frequently and at the shortest notice. At least two such multi barrel launchers will be required creating a smoke screen to cover the frontage of one armoured squadron (up to 2000 metres) establishing the necessity for four such weapons for an armoured regiment advancing two squadrons "up".

Thus, a three-tier layout of anti-helicopter defence suggests itself :—

(a) An initial curtain of active anti-helicopter defence in the form of self propelled, radar equipped, missile based air defence weapons.

(b) A second layer of passive (semi-active ?) defence in the form of a smoke blanket laid between the attacker and the attacked by area fire weapons like the multi barrel rocket launcher.

(c) Finally, smoke emission and decoy flare projection equipment mounted on the tank itself.

The supporting weapons we have discussed can be integrated with armour by any of the methods discussed subsequently.

A "Support Squadron" in Each Armoured Regiment

This squadron would consist of an air defence troop of three air defence vehicles (missile based) of the Roland/Marder or SA-8 type and a tracked multi-barrel rocket launcher troop of four weapons, divided into two sections of two launchers each, to be allotted at the scale of one section per leading tank squadron. This support squadron would be an integral sub unit of an armoured regiment, and, for administrative convenience, could also encompass the existing reconnaissance troop in its fold. Indeed, this would be the best method of ensuring the closest integration and quickest availability of fire support.

A Composite Artillery Battery in an Armoured Brigade

The "support squadron" concept, in spite of its varied and multifarious advantages in the operational field, does have certain drawbacks as far as training and economy are concerned. In our Army, air defence rests in the domain of the Regiment of Artillery, who alone possess the requisite experience, expertise, and training facilities; it may be preferable to let the operation of surface to air missiles remain with them, rather than introduce what can at best be a subsidiary speciality and trade into the Armoured Corps.

The air defence analogy does not, however, apply to the operation of area-fire weapons like multi barrel rocket launchers, where the degree of expertise required is considerably less, and can be easily and rapidly acquired. The capability and utility of such weapons in blasting a gap in missile based anti tank defence has been fully appreciated in the Russian and Israeli armies, where area-fire weapons have been closely integrated with tanks down to the lowest levels of organisation. In my opinion, the twin goals of quick reaction and ready availability would best be served if at least these weapons were manned by Armoured Corps personnel within the integral organisation of an armoured regiment perhaps as a rocket launcher troop of four multi-barrel rocket launcher pieces in the headquarters squadron.

Be that as it may, should "support squadron" concept not be adopted, then every armoured brigade (of three combat groups) must be permanently allotted an affiliated composite artillery battery whose organisation would be :—

(a) Battery headquarters,

(b) an air defence troop of nine surface-to-air missile carriers for deployment at the scale of three per combat group, and

(c) a rocket troop of twelve multi barrel rocket launchers for deployment at the scale of four launchers per combat group.

DEPLOYMENT, TACTICS AND BATTLE DRILLS

Changes in Tactics and Tactical Terminology

The advent of the attack helicopter will cause considerable rethinking in armour tactics and terminology, particularly pertaining to offensive operations. To begin with, the present trend towards night operations by armour, looked upon with trepidation only a few years ago, will accelerate even more, since (latest scientific developments notwithstanding), anti-tank missiles still cannot be fired, and helicopters still cannot be flown as accurately and easily by night as by day.

The "bound" — a crucial factor in any armoured advance—need not, and probably will not, be a tactical feature identifiable as such on map and ground, where enemy opposition is likely to be expected. With the tremendous speed and mobility of the attack helicopter, any tree line, hedgerow or sugarcane field can provide the initial cover to a lurking helicopter from behind which it canpop "up" to loose off its missiles, and, damage done, speed away to the next tree line. The tank commander's nightmare of carrying out "fire and movement" from the very commencement of an advance may well become an unpleasant reality. Both the manoeuvering element and the fire base will now also have to include an element of mobile air defence weapons as well.

Close air support will never need to be closer than on the tank versus attack-helicopter battle-field of the near future. Every armoured breakout will have to be provided column cover, one of those primary tasks will be to sweep the area in the vicinity of the proposed thrust line clear of lurking hostile attack helicopters.

Ideas of tank "going" will have to be rehashed—the best "going" may well be forested or built up areas which deny clear fields of observation and fire to the attack helicopter. This would, in turn mean slower rates of movement and, hence, slower rates of advance.

All these points, and many more, will have to be closely studied and analysed before a worthwhile operational doctrine for armour can be formulated for the pattern of warfare likely to be encountered on future battle-fields.

DEVELOPMENT AND BATTLE DRILLS.

However, even with our present theoretical knowledge of the respective capabilities of tanks and attack helicopters, we can speculate to a certain extent as regards the deployment and battle drill for the tank and mobile air defence components of a combat group.

To study the deployment and utilisation of anti-helicopter weapons at the level of an armoured regimental combat group, let us present ourselves with a hypothetical — but typical — scenario of an armoured brigade group (three armoured regiments, one mechanised battalion) breaking out of a bridgehead. It would most probably advance on two cross country thrust lines 10-15 kilometres apart with one regimental combat group spearheading the advance on each thrust line. One of the two thrust lines could also become the centre line on which the brigade headquarters and the reserve combat group would move.

At regimental level, a combat group (with two combat teams leading) would cover a frontage of 3000-5000 metres, depending on the terrain, and about the same distance in depth. Working on the assumption of three air defence vehicles and four multi barrel rocket launchers being allotted per combat group (whether from the "support squadron" or air defence battery is immaterial), the diagrammatic layout of the deployment would be something on the following lines :—

While the entire column is on the move, the surveillance radar antennae of the air defence vehicles are in constant rotation, quartering the horizon for the first indication of any hostile air activity. Now, an unidentified object shows up on the radar screen and a well rehearsed battle drill goes into immediate operation The unidentified object is automatically interrogated on the IFF and the negative reaction automatically designates it as hostile. So far, only seconds have passed, — an immediate alarm signal, radio and visual, goes out from the air defence vehicle to all elements of the group, as well as to the brigade headquarters. (a separate "alarm" radio net may have to be considered for this). On receipt of the signal, the following action takes place within the regiment, if not simultaneously, then in as rapid a succession as possible :—

(a) Multi barrel rocket launchers fire a smoke concentration on a general area (something like a DF (SOS)) so that an instant smoke screen is created between the suspected helicopter and the target. For this purpose, the mobile rocket launchers accompanying the leading squadrons may be given fixed directions and automatically fire in such a contingency.

(b) Meanwhile in a continuous series of actions since obtaining negative identification on the IFF, radar guided surface to air missile(s) are launched at the helicopter(s), either destroying it or at least forcing it to take violent evasive action; thus affecting accurate guidance of the missile launched by it.

(c) All tanks in the combat group establish local smoke screens, and fire IR decoy flares.

CONCLUSION

With the fusion of the anti-tank guided missile and the helicopter, anti-tank weapons have undeniably taken a tremendous leap forward in lethality and accuracy — perhaps the greatest in the history of the "power struggle" between tanks and anti-tank weapons. Nevertheless, it is also undeniable, that the tank remains the primary component of any offensively oriented force; it has so far been irreplaceable in this role, and is likely to remain so. The greatest threat the tank faces today is from air borne attack by guided weapons launched from helicopters or aircraft. As far as ground to air target engagement is concerned, the attack helicopter, in its own peculiar way, perhaps presents a more difficult problem than a ground attack aircraft. The techniques discussed in this article would, obviously, also be applicable to a large extent against the latter type of threat as well, though that aspect has been kept outside the scope of the present analysis. No problem is insoluble, and this article is an attempt to dispassionately evaluate the challenge posed by the attack helicopter and to suggest some suitable means of countering it.

Aerial Reconnaissance

SQUADRON LEADER CHANDAN GHOSH

MUCH has been written and spoken about aerial reconnaissance but the magnitude of developments in this field have surpassed even the wildest imagination of a common man. It is no more a tool in the hands of commanders to wage wars; it has almost encompassed every facet of human life. Are these all seeing, all perceiving eyes omniscient ? May be, yes, it is because information gathered by these hidden eyes can be shared by the military strategists with meteorologists, geologists, scientists, farmers and even students as well.

One would agree that during cold war, aerial recce is the ideal weapon which acts as the best deterrent rather than the nuclear weapons. Because it is the credibility of the nuclear threat which raises the nuclear threshold and this credibility can be assessed quite accurately with the capability of aerial recce. The super powers are not in a position even to test any war waging equipment. SALT talks could have been a success on the face of it, if the super powers did not have their fantastic capability to look into the back yards of each other surreptitiously.

Where do we stand *vis a vis* present developments ? Is Indian capability comparable at all ? The answer will be in the negative. Our present capability is severly restricted in the field of strategic reconnaissance, which is not commensurate with our predominant position in the Indian Ocean region, as also to future threat from North and West. But time is ripe enough for us to improve upon our present capability. Will ISRO recce provide India with the quality and quantum of aerial recce ?

HISTORY

Historians claim that aerial photography was initiated by General McLennan in 1862 during American Civil War from a balloon. The beseiged enemy position of Rechmond, Virgina was photographed and thus he formulated his strategy. Revellie of aerial recce was sounded and stepped in the aerial recce from powered aircraft. First to make history was Captain Piazza of Italy on 23rd October, 1911 during a war between Italy and Turkey fighting for possession of Tripolitania and Cyrenaica.

He photographed ency positions from an aircraft. This epoch making incident caught the imagination of front line generals during first world war, who wanted to know and see more and more about enemy to plan their moves and counter-moves. This urgent need led to the progress in the field of aerial recce. During initial stages of the first world war the operation of aerial camera involved nine distinct operations by an operator leaning out into the cold air stream. However, by the time the war ended an automatic plate changing camera came into being.

While discussing further developments of aerial recce we come across the name of Sydney Cotton. An Australian by birth, aspired to become a pilot and joined Royal Naval Air Survey during the First World War only due to his love for flying. However, his temperament could not match the requirements of RNAS. He promptly resigned his commission and returned to Australia and began a new career with the Dufay Colour Film Co. His flying capability and the intimate knowledge about film and photography matched quite evenly and he was on the look out to utilise this specialist knowledge. Because he firmly believed that future of aerial photography will be glorious. During this intervening period and prior to the commencement of Second World War France contacted Sydney Cotton. They wanted him to photograph Mannheim Siegfried line from air. Cotton received an assignment which was very close to his heart and he took off in a Lockheed aircraft with a huge camera to complete the mission. But the result was very poor and France refused to organise aerial photography as per Cotton's suggestions. Cotton left France and joined British Intelligence for clandestine photography. As per Cotton's suggestion they provided him with a Lockheed aircraft, three RAF F-24 cameras and a co-pilot whose name was Niven. Cotton began his experimentation and fitted three RAF F-24 cameras in the aircraft in such a fashion that while flying at 20,000 ft a strip of about 10 miles vide below the aircraft could be photographed. His exploits prior to and during Second World War were many. He baptised many non-believers of aerial photography belonging to rightist group of Royal Navy and Royal Air Force. He also treaded the path of photo interpretation as well. Because he surmised that aerial photography will be rather useless without an efficient interpretation. RAF was quick to realise the effectiveness of such a knowledge and exploited fully the knowledge, ingenuity and experience of Sydney Cotton. By the end of Second World War, RAF built up a formidable PR force along with a band of efficient photo interpreters. However, this is worth mentioning that the captured German aerial photographs proved that Germany was also quite advanced in the field of aerial recce and used the latest available techniques extensively.

Techniques of aerial photography maintained its progress with time. The urge to see more and more about the enemy led to the development of various cameras and various types of films. Panaromic cameras were introduced. Aerial koda colour film with infra red coating and film with panchromatic emulsion were initiated. The capability of the flying machines also progressed further. By late forties the American RB-47 aircraft could photograph an area of one million square miles in one three-hour flight from a height of 40,000 ft. The invention of flash bombs with illuminating capacity of more than three to four billion candle power eliminated the necessity of day light for aerial photography.

But man was not satisfied even with the super developments. This restlessness of the mind to see, to probe into the unknown, to probe into the universe, into unknown galaxies, have led to tremendous progress. But the indications are such that the scientists are not yet satisfied. Will they be able to provide us with the capabilities to see into the cosmos and into the galaxies billions of light years away from us ?

WHAT COULD AERIAL RECONNAISSANCE DO AFTER W W II

Korean War. USA wanted to carry out an amphibious assault in Inchon, the post serving the city of Seoul. The war pundits will agree that this assault is the most hazardous operation that can be undertaken by any armed forces. This joint operation calls for closest co-operation between Army, Navy and Air Force. The US Navy was rather skeptical about the feasibility of Inchon Operation because of the wide variation of water level between low and high tide close to Inchon shores. But the Navy was surprised to find that the predicted water levels by the photo interpreters of USAF were within inches during the assault. The Operation was carried out on 15th September, 1950 at 1730 hrs.

Exploits of US Aircraft. Before Gary Power became a captive in the hands of USSR, the U-2 aircraft were being used by USA to carry out aerial photography of Russian defence installations by its powerful camera invented by Dr. Edwin Land, the inventor of polaroid cameras. The U-2 aircraft camera was so powerful that it could pick up a golf ball in a putting green from 40,000 ft. One of these ill-famed spy aircraft, once maintained a birds eye view over Soviet Aviation Day fly past over Moscow in July, 1955. Heavy bombers dominated the fly past as a part of deception plan by the Russians. They wanted the world to believe that Russia is concentrating on heavy bombers whereas the story was otherwise. They were developing a long range missile. Squadrons after squadrons flew past the dias. The ears became deaf with roars of jet engines. Their numbers far exceeded anything that western intelligence

estimated. But the story told by the U-2 was different. It told the world about the deception, it narrated that just few squadrons took part in that famous fly past. The section of aircraft, when out of sight was just joining the lead section and maintaining a consistent stream.

Vietnam War. This protracted conflict brought out various facet of aerial recce in such distinctive manner that the world was surprised when North Vietnamese Minister of State, Xuan Thuy declared in Paris in 1958 that pre-requisite for any peace treaty will be the cessation of all recce flights over his country. Such an exposure called for a close scrutiny regarding American reconnaissance over Vietnam :—

(*a*) *Visual Recce* :—The most feared and most hated by the Viet-cong were the Forward Air Controllers (FAC) in their Bird Dogs (O-1). These FACs maintained watch in their respective areas and on detection of suspicious movements in the apparently serene country-side, used to call upon their 'big brothers' (B 52s, F 100s) with devastation in their making. Needs of similar type of operation prompted the development of another Cessor aircraft (the 0-2) the military variant of the model 337 Super Sky Master. This was a twin engine monster with capability to see in the dark in their 'Star light scope' by intensifying weak light sources by their forward air navigation (Fan) system. In the role of visual recce the helicopters were also used extensively and out of this the Bell Hueys were most famous with their 'People sniffers'. It could sniff the people in dense forest and react accordingly.

(*b*) *Q-26 Aircraft* :— Q-26 aircraft was like a powered glider. These aircraft used to approach the enemy area under power and glide over the enemy area at 100 feet. without giving any advance warning about its approach. They used to carry out effective recce with the help of infra red sensors.

(*c*) *RA 5C Vigilante* :—US Navy used Vigilante extensively in Vietnam. This aircraft carried vertical, oblique and panaromic cameras, recce sensors, ECM equipment and side looking airborne radar (SLAR) as well. The inertial navigation system of this aircraft helped to imprint latitude and longitude on each photo-graph automatically, which immensely helped towards photo inter-pretation and plotting.

(*d*) *RF 4C Phantom* :—These all weather recce Phantoms were mostly used for tactical reconnaissance. They were fitted with SLAR, a battery of cameras, optical, infra-red and various electronic sensors.

(*e*) *Battlefield Sensors* :—The capabilities of the battlefield sensors are generally little known. But American use of such sensors in Vietnam has uncloaked some of these veils around them. These sensors are with amazing capabilities and are introduced under very strange sounding names like Black Crow, Commando Bolt, Compass Ghost, Long Talk, One Eye, Cross Legs, Moon Cone etc. Let us take a close look at some of these strangers in the field of recce :—

(*i*) *Acousid* :— Acousid as a sensor is very effective for transmitting sound and seismic data when lodged into the ground.

(*ii*) *ADSID* :—Air delivered seismic detection sensors (ADSID). This is a dart shaped electronic sensor being dropped by an aircraft and lodged into ground, while its antenna protrudes outside. The ADSID is capable of sensing ground vibration caused by moving transport and relay the same to the awaiting aircraft overhead to take necessary immediate action.

(*iii*) *Spikebuoy* :—Spikebuoy is derived from naval sonobuoy and acts in similar fashion like ADSID.

(*iv*) *Acoubuoy* :—Acoubuoy is a derivative of spikebuoy and only differs in process of application. Spikebuoys are lodged in the ground whereas Acoubuoys are parachuted in the jungle to enable it to hang on a tree and operate remaining suspended in the air.

American Compass Recce Programme During Vietnam War : Compass recce programme was taken up by the USA due to the unconventional nature of the conflict in Vietnam. Development and testing of various systems went hand in hand. They are :—

(a) *Compass Arrow* : Compass arrow is a recce system based on Ryan AQM—91A drones carrying payloads of various cameras, infra-red and ELINT sensors.

(b) *Compass Bin* : Compass bin is a low altitude photo recce programme also based on drones.

(c) *Compass Cope* : This programme is based on RPV. This has high altitude, long endurance recce capability, carrying various cameras, SLAR, ELINT equipment and signal intelligence equipment.

(d) *Compass Dwell* : Compass Dwell is a high altitude recce programme with similar equipment as in compass cope.

(e) *Compass Matrix* : This is an electronic warfare project.

(f) *Compass Quick* : This programme is connected with improvement of ELINT and electronic warfare equipment of EC 135 aircraft.

(g) *Compass Sight* : Compass sight enables IR recce information of RF 4C Phantom aircraft to be relayed to ground station *via* data link in real time.

(h) *Compass Strike* : Compass strike came into being to locate radar stations accurately from two or more aircraft.

DEVELOPMENT OF INFRA RED SENSORS & SIDE LOOKING AIRBORNE RADAR

Infra Red Sensors : Technology of using infra red energy as recce tool is being propounded by almost every country due to its inherent advantages over normal photography which needs sufficient amount of light to be effective. Each object has its own characteristics of reflecting

infra-red waves, and a specially invented film is capable of recording these invisible reflected infra-red waves. At present infra-red films are available in black and white and as well as in colour.

Infra Red Line Scan : Infra-red line scan system has been developed recently to utilise the entire infra-red spectrum. By means of a rotating mirror under the aircraft a IR detector is made to sense small area of ground under the aircraft and gradually build up a high definition picture. The advantages of IR system are :—

(a) It can see objects which cannot be detected by camera or eye, or specially if the object is camouflaged.

(b) It does not require any external illumination for photography which makes it possible to be used during night very effectively.

(c) This can be recorded on a magnetic tape in a form suitable for radio transmission. This facility will enable the interpreters to produce real time recce reports.

However the system is not free from its own defects. They are :—

(a) Area covered by such system is rather limited. An aircraft flying at 60 meters, the coverage will be few hundred yards, whereas an aircraft flying at about 1,000 feet the total ground coverage will only be about 1.6 Kms.

(b) Operation of IR spectrum will be severly restricted if everything on the ground is reduced to an even temperature due to rain or snow.

Side Looking Airborne Radar (SLAR) : Radar is an active sensor and it is being used for the purpose of aerial recce but the question arises why this should be side looking only. This is due to the fact that an aircraft carrying forward looking airborne radar will be detected by enemy much in advance whereas the detection of the aircraft using SLAR will be only possible when the aircraft is just overhead or abeam the target, which reduces the chances of interception.

The SLAR operates in X and Q band. The reflected pulses of a radar can be seen on a cathode ray tube by an operator and it may also be recorded on a photo film for analysis later. This can produce high definition radar picture at both high and low altitudes. High altitude radar photography will depict the terrain in two dimensions with an easily interpretable form. Whereas at low altitudes below 150 meters the picture will become three dimensional due to the reflecting shadow area behind. This phenomenon is more pronounced in a hilly area and urban areas. SLAR is an all-weather sensor but due to some climatic conditions like heavy rain will reduce its capability because ground returns will be attenuated to a large extent.

SOME MODERN AIRCRAFT AND RPVS CARRYING RECCE SENSORS

EC 135 Aircraft : This aircraft is of US origin and is being used by USAF extensively for various recce purposes. The revelations by them are rather fascinating. Their powerful cameras give us a glimpse into the space far beyond the range of normal ground TV cameras. The Saturn/Apollo rocket blasting through the space are caught by the eyes of these aircraft and is relayed to us. Sometimes they bring back pictures of USSR trial of MIRVs reentry to the atmosphere over the Pacific. These are also being used for recovering film capsules rejected by satellites.

SR 71 : SR 71 popularly known as Black Bird are the latest known aircraft being used for strategic recce. This aircraft can fly at a height of 24 Kms with a max speed of 3,200 Kmph. Its strategic recce system is capable of surveillance of upto 60,000 square miles of territory in just one hour time.

Atlantic : Twin turbo-prop powered maritime recce and ASW aircraft designed to a NATO specification by Dassault/Breguet France. The search radar carried by this aircraft is a developed version of the radar used in Alize maritime aircraft. ARAX 10B ECM equipment in this aircraft is capable of monitoring X, C and S radar bands. And the designers claim that a single pass of radar beam is sufficient to provide a bearing accuracy of three degrees and several passes will increase this accuracy to one degree only. The sniffer equipment in this aircraft consists of an air intake in the nose of the aircraft direct samples in a chamber where the air is ionised and accelerated. Traces of exhaust products in the atmosphere can be detected by measuring and recording the variations in the current changes resulting from the ions gathered at a collection grid in the analysis chamber. Apart from these, the aircraft uses sonobuoys to detect, locate and attack a submerged submarine.

Nimrod : Britain developed Nimrod primarily to use it in maritime recce role but it is likely that it could be used as air borne early warning system by NATO. This aircraft carries number of sophisticated recce sensor systems and also carries number of cameras for day and night photography.

Drones/Remotely Piloted Vehicles : The aviation world has realised that aircraft systems and aircrew are becoming increasingly costly. The induction of sophisticated missiles and radars have rendered the survivability rate of such costly equipment rather low. Therefore, to counteract such a situation, it is being felt that drones or remotely piloted vehicles should be introduced in numbers to replace the piloted vehicles for certain tasks at least. And it has been found that these vehicles should be able

to carry out recce effectively. Because, to intercept a RPV will be difficult due to its tiny size and speed, since it will produce an insignificant radar picture.

Ryan drones have already been tried out in Vietnam by USA, specially for recce. And the indications are such that number of countries are trying to emerge in this field on a large scale. They are trying to make this as versatile as possible. The capability of such a robot was displayed once in a simulated dog fight with a F-4 phantom. The robot eluded all the missiles launched by its Mach 2.5 adversary and it could have destroyed its 2.5 million dollar opponent, had it been armed to hit back.

But the use of such system will not bring about complete bliss to the party using it because increasing mechanical sophistication will create increasing difficulties, hence enhance RPV's vulnerability. Moreover, the radio link between RPV and the Master Control will be subjected to ECM.

Satellites: Satellites are in the process of eliminating other vehicles in the field of aerial recce. But these super eyes in the sky are still the property of the few mighty nations. Who may share the knowledge gained by these orbiting objects with other friends without jeopardising their own position. These satellites are so powerful that it can detect from an incoming flood, a forest fire to a ICBM launch and report the same to its masters. The US satellite of Big Bird class can photograph 1 square feet of ground very clearly from a height of 100 miles. However the lesser powers can utilise the information gathered by US satellites like Landsat or Seasat mostly for civil purpose freely but their military application will be rather limited. This is also quite evident that there is a scramble to gain this super knowledge as early as possible by nations without such capabilities. This specialist field requires close security, covered by a detailed study.

Indian Capability

In the field of strategic reconnaissance, India's capability is severly restricted. Though, the launching of Aryabhata has made a happy augury to eliminate such restrictions, ISRO is hopeful to launch its own communication satellite and land resource recce satellite in near future. Till such time we may have to depend on our big brothers to provide us with information to get out of national calamities like floods, cyclones, etc

Conclusion

Though made a slender beginning, the aerial recce system has outgrown its size and has encompassed every facet of human life. At present

meterologists call upon recce photographs for Met forecast, the geologists have discovered huge reserves of different minerals in various parts of the world. Canada has utilised these aerial photographs to stem forest fires, whereas USA utilised them to control floods. Indications are that a number of other nations will also utilise these valuable informations in a like manner to help their teeming millions.

India is not yet in a position to exploit this new area on her own. However, there is an endeavour to borrow such knowledge from other advanced nations and in the meantime India is trying to build up her own capabilities towards aerial reconnaissance. We look forward to the achievements of ISRO (Indian Space Research Organisation).

Strategic Balance in the Mediterranean*

(A Review Article)

PRAMOD KUMAR MISRA

MEDITERRANEAN has been and continues to be one of the most strategic areas of the world. Particularly in recent times, it has been a centre of Super Power's rivalry and a testing point for the show of their strength. Geographically speaking the Mediterranean world begins at Gibraltar and moving clock-wise, Spain, France, Italy, Yugoslavia, Albania, Greece, Turkey, Syria, Lebanon, Israel, Egypt, Libya, Tunisia, Algeria & Morocco. The two island countries of Malta and Cyprus also form a part of it. But countries in the vicinity which were instrumental in the shaping of events and thus may be included in "the geopolitical Mediterranean" are Portugal, Jordan, Spain, Iraq, Iran, Kuwait, Saudia Arabia, the two Yemens and the smaller Arab states of the Persian Gulf.

A number of studies have been undertaken by scholars from different parts of the world relating to the geopolitical, economic, cultural and strategic aspects of the Mediterranean world. Jesse W. Lewis, Jr. as a Middle East correspondent for the Washington Post, has extensively travelled in almost all the countries of the Mediterranean and has interviewed several hundred people who belonged to a cross section of government officials, naval officers, ship Captains, Shipping executives, historians and journalists. With the benefit of such cross examination and the ocean of datas available to him relating the concentration of arms and armaments in the entire area, he has been able to present an objective scenario of the strategic balance in the Mediterranean. In this venture he has received liberal assistance from the American Enterprise Institute for Public Policy Research.

He divides his basic findings into six chapters and provides for the convenience of the readers a comprehensive map of the Mediterranean area and a number of charts and tables relating to the weapon system in the Mediterranean. In Appendix B the provisions of the Montreux convention has also been included.

*"Strategic balance in the Mediterranean" by Jesse W. Lewis, Jr., Published by American Enterprise Institute for Public Policy Research Washington D. C., 1976, Pp. 169, Price $ 3.75

In the introductory chapter, he begins with the generalisation that the Mediterranean is "a barometer of the World's political climate". According to him this is more true today than any other time in modern history because developments in the seventeen Mediterranean countries and the state of relations among them often mirror the state of relations between the super powers, if only because the super powers have an overwhelming strategic stake in the Mediterranean (p. 1). Although United States and Soviet Union had chosen this area as a testing platform for their political ideologies, their economies and their weapons, one can agree with the note of optimism expressed by the author in the cautious approach displayed by the two powers in recent times while involving themselves in a regional conflict. So hopefully the Mediterranean will serve as a laboratory for measuring detente.

The author regrets that there is no Mediterranean consciousness in the United States. even if in terms of the density of vital interests, this area is only second to the Americas.

So far as Soviet Union is concerned the Mediterranean is "politically unreliable path to its backdoor, the Black Sea." All the major industrial and agricultural areas of the country are located around this region. So it has been often quoted that the Mediterranean is "the warm water" that has been the object of Russian foreign policy since the reign of Catherine the Great. Even now as the author points out, the most powerful Russian naval force outside Soviet territorial waters is in the Mediterranean, the only sea where the Soviet Union keeps its navy constantly within striking distance of the American surface fleet and where it may possess some marginal ability against the Polaries/Posedon Submarine (p. 3.). That's why Soviet Union, in recent times, has dramatically increased its naval presence in the Mediterranian.

In his chapter on "The Sea and the Importance of Naval Power" the author begins with the geographical location of the Mediterranean world and its link with the outside world. The only two corridors which separate the Mediterranean sea from the larger oceans are the Strait of Gibraltar and the Suez Canal. The Black Sea which is much smaller in area is separated by the Turkish straits—the Dardanelles, the sea of Marmara, and the Bosporus. The major "choke points" as named by the Naval strategists are the strait of Gibraltor, the strait of Sicily and the Turkish straits. The strait of Gibraltar, straddled by Spain and Morocco is only 8 miles wide and is one of the most congested water ways in the world. The strait of Sicily and the restricted waters of the central Mediterranean were the focus of much fighting during world war II.

According to the estimates a substantial amount of oil is produced from the region, particularly in Libya and Algeria. But even if it were possible to leave aside the powerful role of oil, the author very emphatically points out, it would be difficult to illustrate how important the sea is to economic and political health of Mediterranean countries and from this to demonstrate why it is in the interest of the United States to maintain its vitality (p. 11). For a few countries in the region, like Israel, Greece, Lebanon, Italy, Algeria, Tunisia, Libya, Syria, Turkey, Albania and Yugoslavia, Mediterranian sea provides the line of communication and their economy is to a great extent dependent on it. One completely agrees with the author, when he writes, "In an environment so dominated by water, the role of naval power is of paramount importance and rather than losing value in an age of lasers, space flight and solid state electronics, navies have gained prominence (p. 14). He gives a number of valid reasons which were responsible for this development. First because increasing attention is being diverted to the sea as a potential source of food, minerals and energy, the field of ocean science and technology, and maritime law are growing in importance. Second, navies make a unique contribution to warfare and to supporting nation's foreign policy objectives. Finally almost every kind of military system, from infantry to armour to air craft to intercontinental ballistic missile, can be launched from a ship.

As there is a keen competition among the super powers in terms of military strategy it will be in the fitness of things to make an individual assessment of each power. Of the two Super Powers, United States has a more elaborate and sophisticated military presence. According to an estimate the U.S. has 60,000 men, 275 Combat aircraft and 45 ships in the Mediterranean Basin. (p. 17). Through its Lafayette-class submarine armed with 16 Poscidon missiles it is capable of hitting targets 25,000 miles away, which puts the heartland of Soviet Union well within the range. Sixth Fleet aircraft, flying from two carriers can deliver conventional and nuclear weapons more than 1,000 miles away from their bases. Besides United States has its Air and Naval bases in a number of countries in the region, particularly in Portugal, Spain Italy, Greece, Turkey, Cyprus and Morocco.

Home porting in Greece, according to the author is a complex issue. The U.S. defence budget, American policy toward Greece unsettled Greek domestic policies (p. 24). According to the critics any home porting agreement concluded between 1971-74 would not encourage the return of parliamentary democracy in Greece.

The author also makes a separate study on the military and political role of the Sixth Fleet which is both "the symbol and the substance

of United States military presence in the Mediterranean Basin. It's major task is to protect American interests in the Mediterranean. The fleet organisation is quite complex. It consists of 40 to 45 vessels. The main striking arm of the sixth fleet is TF-60, the two aircraft carriers. The carriers, having 90 planes each, are a marvel of modern naval technology and are capable of operating for long periods independent of land. They are equipped with all the necessities and amenities for a complement of 5,000 men, including hospitals, bakeries and closed circuit television. Other task forces are TF-61 and TF-62, which give the Sixth Fleet it's amphibious and assault landing ability. Then there is the supply force which is composed of tankers, supply and repair ships. Task force 67 meant for surveillance consists of maritime reconnaissance aircraft, destroyer escorts on occasion, and patrol gun boats. Finally task force 69 which is the nuclear-powered hunter-killer Submarine (S.S.N.) force, primarily protects the carriers and Polaris/Poscidon Submarines.

After throwing light on the organisation, the author focuses the attention of readers on the political role of the sixth fleet. The first instance is that of occasional Port visits. During such visits there is a scope for direct contact with the local population. Even programmes like visits to ships by local residents, band concerts, parties for orphans, blood donation to local Red Cross etc. are organized. But sometimes these visits have been marred by drunken and disorderly behaviour of U.S. Sailors or by anti-American demonstrations. The second role is rescue operations. Following a devastating flood in April, 1973 in Tunisia it has helped in rescuing more than 1,000 stranded Tunisians. The next instance was the Suez Canal clearing operations during 1974, when alongwith the Egyptian, British & Soviet Naval forces, it removed the mines and other explosives from the Suez Canal. Thus it improved its image in the Arab World and helped in warming American-Egyptian relations. Another occasion, when it played a political role was the landing of marines in Lebanon in July, 1958. It was motivated to check the penetration of Soviet Union in the Middle East. Finally the Jordan Crisis of 1970 provides another example of the use of American naval power to influence events on land. The presence of Sixth Fleet in the vicinity differred Syria from openly supporting guerrillas in the northern region.

In comparison to U.S. presence in both tactical and strategic terms, the author strongly emphasized that the Soviet presence, which is almost all naval is less extensive and less capable (p 55). However by all accounts it has a sizable military presence in the mediterranean. The first major deployment of Soviet naval forces after World War-II

occurred in 1958 when Soviet Union moved eight Whiskey-class submarines and a submarine tender to a new naval base at Vlone, Albania. It's purpose was to check the danger of Sixth Fleet attack carriers. Hereafter Soviet intelligence gathering ships (AGIs) began to patrol the sea regularly. During 1964, 15 Soviet Warships patrolled the sea and by 1967 it's strength was further increased.

Any assessment of Soviet Naval Strength in the Mediterranean will be incomplete without a mention of the Fifth Escadra. In the absence of official Soviet publicity, it's reasonable to assume that it consists of sub-commands like surface combat, submarine, amphibious, and supply and replenishment. The commander, usually a rear admiral, normally keeps his flag and staff aboard a submarine tender that frequently visits Tartus, Syria. In all the Fifth Escadra consists of 55 naval vessels. At the moment there are no aircraft carriers, but two of them were nearing completion to join the fleet. However, according to the author, Soviet navy is not likely to achieve parity at sea in the near future even after their new naval air power is operational. Soviet Union has other considerations like lack of naval bases, Anchorages, restrictions put by Montreux Convention which limits the flexibility of the Fifth Escadra. However on several occasions the Fifth Escadra like the Sixth Fleet has played a political role. It's port visits although not very frequent, are significant because of a difference in style. Soviet sailors are more rigidly controlled during port calls. Again Soviet Ships tend to spend more time in port or at anchorages—about 60% than time underway. The Fifth Escadra also played a very significant role during the Libyan Coup d' Etat. A massive force of Soviet naval vessels alongwith the Egyptian and Syrian warships in the vicinity of Libya had a different effect on United States and United Kingdom not to interfere in a purely domestic upheaval when Col. Qaddifi captured power by dethroning King Idris. However, the author gives other reasons for their non-interference. Another occasion when the Fifth Escarda helped the Arabs against Israel without a substantial risk of direct involvement was in 1973 when Moroccan troops and equipment were transported by it.

The author builds up a US-Soviet war scenario in his imagination, particularly in the light of their conduct during the Middle East Crisis of 1973. But again in their comparative strength he justified the superior and quicker striking capacity of the Sixth Fleet vis-a-vis the Fifth Escadra.

In the chapter, "Scenarios for crises and conflict", he delineates the major disputed areas and trouble spots of the Mediterranean basin. He mentions particularly Spanish Sahara, Centra and Melilla, Gibraltar, Future of Malta, the dispute between Italy and Yugoslavia over Zone B,

Status of Alexandretta, Lebanon's future, an independent state of Palestine, Suez Canal and Tunisia. All these problems can form independent studies by themselves. But his major concern here is the involvement of external powers, particularly the U.S. and the Soviet Union in these trouble spots. He also tries to assess the comparative strength of other global powers like France and Britain in the Mediterranean World. Commenting about France, the author writes, "After United States and Soviet Union, France is the most influential nation in the Mediterranean Basin. And of all Mediterranean countries, France is probably the only one that has the requisite ingredients—the political and economic motivation, basic pro-western orientation, internal stability, and military strength to play a positive big-power role in the affairs of the region (p. 111). To its advantage, it is also the architect and principal advocate of the ECM's so called "Mediterranean Policy" which is the effort by the E.E.C. to knit a series of bilateral association agreement between itself and mediterranean countries.

About Britain's role, the author writes with a role of sympathy. "If its economy were stronger and if it could afford a larger defense establishment, Great Britain would be able to perform a more substantial role in the Mediterranean" (p. 113). Because of the strains in its economy it has already withdrawn a sizable force from this region, particularly located in Gibraltar, Malta & Cyprus. Whatever little role it is going to play it will remain a camp follower of the United States.

In his concluding chapter the author frantically pleads for the development of a Mediterranean consciousness in the United States. For that he would suggest the appointment of fairly senior Mediterranean Watch Officers in the State Department. Also other Senior Officers at Defense Department's office of International Security Affairs and the National Security Council should constantly watch the Mediterranean area and frame policy options in that area. He would also like the Congress and other Non-governmental institutions like the Universities and private research centres to be involved in encouraging an inter-regional approach to the Mediterranean. He has also earmarked an agenda for future study by scholars and students in the unexplained fields relating to the region. These are as follows : attitudes of Arab States to the change in the balance of naval powers in the region, attitude of the littoral countries about the presence of Super Powers, coverage of all naval exercises in the Arab media and finally regulating pollution and regulating other affairs of the sea. The author concludes his observation with a note that the mediterranean region is a "microcosm of todays World. On the whole it has been a very rewarding exercise. Students and researchers will benefit profusely from the useful datas and explanation given by him.

History of the Custodian Force (India) in Korea 1953-54*

A Review Article

MAJ GENL TN RAMACHANDRAN NAYAR (RETD)

THE official 'History of the Custodian Force (India) in Korea 1953-54' is a long overdue publication. Dr. SN Prasad has very ably made good this deficiency in his characteristic thorough and studious manner. He has made good use of the available official records, and has also taken the advice of Lt Gen SPP Thorat DSO, who was the General Officer Commanding the Custodian Force.

To correctly appreciate the performance of the Custodian Force in Korea, it is essential to have a thorough understanding of the international situation which prevailed at the conclusion of the Second World War. A bipolar world had emerged with the USA and USSR refusing to accommodate or yield ground on any major issues. During those days there were no graceful solutions. 'Brinkmanship' was freely practised, and the United Nations Organisation was reduced to an ineffective one. The US was actively engaged in anti-communist crusades all over the world. In the Far East, the US policy was to instal non-communist governments in those nations which had newly become independent. To achieve this object the US was prepared to take great risks, and incur heavy expenditure in men, material and money, as was witnessed during the Dullesian era. During the same period, USSR was making persistent efforts to reach an understanding with Maoist China as it would have helped her global ambitions by presenting a monolithic front to the Western nations. Under such rigid tutelege, countries like North and South Korea had little latitude for freedom of action or to pursue a truly independent national policy. It was in such a rigid ideologically and politically committed theatre that the Indian Custodian Forces were asked to conduct their operation.

In 'Repatriation', the all important issue of humane treatment got divorced and it came to be viewed by the belligerents as a prestigious and

* History of the Custodian Force (India) in Korea 1953-54: Armed Forces of the Indian Union by Dr SN Prasad and edited by Dr B Chakravorty and Published by Historical Section, Ministry of Defence, Govt of India, New Delhi. 1976. PP 1182, Price Rs. 40/-.

ideological matter. In the US, it was freely admitted that if the prisoners from Communist countries would not opt to go back to their home lands, it would be a great victory for the 'free world'. China and North Korea did not mind the loss of manpower, but they did not wish to admit any military weakness. The only saving grace present was that both sides had enough of killing and loss, and wished somehow to put an end to fighting, at least temporarily. This desire got strengthened after the dismissal of General McArthur, and ever increasing possibility of USSR forces rendering direct assistance to North Koreans.

India, having recently won her freedom was desirous of playing her part as a truly independent country in international affairs. Though we lacked practical experience in foreign affairs, we had set out non-alignment policy in clear and candid terms. Let it not be forgotten that during those early halcyon days many of us were naive enough to believe that an enunciation of acceptable principles was adequate to pursue a dynamic foreign policy. There could be no doubt that our foreign and military intelligence were immature and scanty during this period. How else could one account for the apathy displayed in collecting relevant intelligence since 8 May 53, when the possibility of sending a force to Korea came up. From then onwards more strenuous efforts should have been made to collect information and evaluate the prisoner of war situation particularly their psychological state consequent to brain-washing by detaining powers. The strength and composition of the Custodian Force was determined on the basis of estimates made by our Military Attache at Tokyo, who had only casual intelligence. Many senior officers in the army were still basking in the afterglow of the second world war, in which they had fought alongside with British and US troops.

There could be no doubt that the force strength fixed was arbitrary; it did not take into consideration sufficiently the special status the Korean War prisoners would enjoy, and the fact that they were practically immune to the use of force. Usually, prisoners of war suffer from severe shock, inferiority complex, and helplessness. In Korea, exactly the opposite was the case. A proper understanding of this and the political factors would have resulted in major changes in the composition of the force and the mode of taking over the prisoners. Organised prisoner gangs would have then been broken outside the prison compounds, which in turn would have diluted the inbuilt and indoctrinated leadership. Later events proved that a fanatical leadership was present within the compounds. It was later seen that the construction of the prison camps was designed to help the intercommunication of prisoners. The whole world knew that the US had to use tanks and Marines to quell prisoner

of war riots. Yet, we undertook a delicate mission in an inhospitable country with what really amounted to only a police force. The Advance Party of the Custodian Force made a belated attempt to visit the US prison camps. But this was not allowed, and further discussions were impracticable due to lack of time and pressure of events. As unexpected events and situations arose, our troops rose up to the occasion under inspiring leadership. This fact should not however prevent us from appreciating the short-comings which had occurred during the planning stage.

The conduct of 'explanation' to prisoners turned out to be a bugbear. It would almost appear that the modalities of 'explanation' were purposely left vague to act as an escape valve to preserve the precarious armistice. Both the conduct and failure of explanation were used by both the sides to take maximum advantage in propaganda and passing on the blame to the Custodians. To what extent it could have served any practical purpose? It was always doubtful if a few minutes of explanation would had materially affected the judgement of those war veterans. Yet, this aspect was severely stressed by the belligerents in Korea. What was needed was an opportunity for the prisoners to express their options, without endangering their lives and inviting repercussions on others. This could have been provided without resorting to explanations, and indeed such opportunities were provided to all prisoners, more than once. This aspect has not been fully realised by many critics, who have used mellifluent words to describe the overall achievement of the Custodian Force.

The soldierly and gentlemanly qualities of Indian soldiers come out invariably when difficulties present themselves. Korea was such an occasion. 'Life in Hind Nagar' gives only a glimpse of the spontaneous efforts made by our soldiers to establish a 'little India' in the demilitarised area. A much more detailed account of it from the historian is called for. It was through the maintenance of our traditional, cultural, and religious values that our soldiers faced all odds and came out on the top. Every regiment had its religious institution working, wherein all personnel congregated during leisure and enjoyed peace and obtained strength to face the trials and tribulations of Korean winter and international lust for power. The author would have got good pointers had he taken the trouble to interview some retired rank and file. This kind of drawback is inevitable when history is based primarily on written evidence. The human aspect often gets neglected. This absence may be due to the long time gap between the events and the date of writing of the history. However, it was such detailed attention which maintained and enriched regimental pride and spirit in Korea. There could be no doubt that what finally helped the Custodian Force to get through was regimental spirit.

It was this fine spirit which enabled each member of the force to live up to the clarion call made by its brilliant leader 'For the Honour of India'.

This book has more than a historical value. It has brought out faithfully the impediments our troops met in Korea and how they were overcome substantially. The Custodian Force made many friends for India, and all countries appreciated its sincere efforts. The fact that the Korean Armistice Agreement remained in tact, and fighting did not flare up is sufficient proof of the humanitarian service India did to mankind.

Book Reviews

THE JOINT CHIEFS OF STAFF—THE FIRST TWENTY-FIVE YEARS
by LAWRENCE J. KORB
(Published by Indiana University Press, Bloomington 1976) pp. 210, price $10.95.

WHEN World War II started, no country had a system of Joint Chiefs of Staff functioning. Very early in the war the need for close coordination of the Army and the Navy was felt in the USA; the Air Force had not yet been created as an independent service in that country. As a result of this need and necessity to coordinate operations between the UK and the USA, Combined Chiefs of Staff at the international level and Joint Chiefs of Staff at the national level were set up. The Joint Chiefs of Staff as a body with its separate staff was formalised only after the war. When the result of the lessons learnt during the War were analysed and need for proper coordination of the Services established, a full time incumbent called Chairman, Joint Chiefs of Staff was instituted. In the UK a more effective organisation was evolved in the appointment of a Chief of Defence Staff. The Canadians opted for full integration by combining all the three Services into one.

The book "Joint Chiefs of Staff—the First Twenty-Five Years" is an analytical study by Professor Lawrence J Kurb of this system in the USA.

The study traces the history of how this system was evolved during and after WW II with the aim of integrating and streamlining the higher command and control set up of the armed forces in order to have the most judicious mix of the three Services and their weapon systems and to undertake properly coordinated planning and execution of war. The major responsibilities of the Joint Chiefs of Staff can be grouped into four categories :—

(a) The Joint Chiefs are the principal military advisors to the President, the National Security Council (NSC), the Secretary of Defence, and the Congress, and have direct access to all of these structures.

(b) They prepare strategic and logistic plans that provide guidance for the development of the defence budget, military aid programmes, industrial mobilisation plans, research and development programmes, and the contingency plans of the combat commands.

(c) They review the plans, programmes, and requirements of the separate services and unified commands.

(d) The Joint Chiefs assist the President and the Secretary of Defence in the exercise of their command responsibilities.

In the field, a system of unified commands was established to make a single commander responsible for the conduct of operations by the three Services allocated to a particular theatre.

The book devotes a full chapter to the officers who, in the last 25 years, became the Chairmen, Joint Chiefs of Staff as also the Chiefs of Staff of the Army, Navy and Air Force. In the third Chapter, he analyses the role played by Joint Chiefs of Staff in the budgetary allocations for defence and in the fourth Chapter he discusses the role played by them in operations particularly the Koreans and Vietnamese Wars.

In the battle for budget, the Joint Chiefs of Staff have only a marginal say in the proportion of the total national resources allocated to Defence. He explains at length the systems adopted by the administrations of various Presidents for evolving the defence budget. Whenever the Joint Chiefs of Staff acted in unison, they were able to influence matters. However, any discard among them was exploited by the Administration to reduce the allocations. The right of the Chiefs of Staff to appear before the Congress has been discussed at length and how this provision has kept the Administration on its toes not to ignore expert military advice in arriving at the appropriations for Defence as also the attempts of the Administration to muzzle the Chiefs ! On balance, the author concludes that the system has not permitted the Joint Chiefs of Staff to dominate the budgetary process to such an extent that the nation spent more on Defence than its elected leaders desire. Nor were they denied sufficient input into the process with the result that the civilian leaders made their budgetary decisions without the benefit of expert military opinion.

In their operational role, particularly in Korea and Vietnam, the Joint Chiefs of Staff do not come out with laurels. The reason for this is explained by the author thus: "The JCS evolved accidentally in the early stages of World War II. The success of the allied war machine obscured the weaknesses of the Joint Chiefs and created false expectations for their future performance. Contrary to the intentions of some of its framers, the National Security Act and its amendments did not create a unified military establishment, and the JCS is not the cause but the reflection of that diversity. The Joint Chiefs are often not unified on important issues, because they represent constituencies with divergent viewpoints. The Chiefs do not have any men and material at their

disposal. By themselves, they cannot even move a ship. They cannot be blamed for the battlefield disasters of MacArthur or Westmoreland. Nor can they take credit for the successful tactics of Ridgway and Abrams. The Joint Chiefs are advisors and have as much power and influence as the political leaders wish to give them." However, having said this the learned Professor does not suggest any organisational solution to the problem but tends to find one in the personalities of the Joint Chiefs of Staff. He laments that they did not offer to resign enmass when they disagreed with the policies of the Administration. He would have made this study far more purposeful if he had a look at the UK and the Russian systems where Chief of the Defence Staff in the UK and Chief of the General Staff in the USSR come in the chain of command between the political authority and the unified commanders in the field. It is indeed an untidy arrangement in the USA, where unity of command is a principle of war, to leave the Joint Chiefs of Staff in a mere advisory capacity.

M.L.C.

BUNCH OF FIVE
by FRANK KITSON
(Published by Faber & Faber, London, 1977) pp 306. Price £ 5.95

IN the present book Brig. Frank Kitson, a serving officer of the British Army, has very ably expounded the implications and complications of Counter-Insurgency Operations in many theatres. Kitson does not write here from theoretical outlook of a chairborne specialist, but from the tough and bloody experience of having undertaken the planning and execution of counter-insurgency operations by himself and his officers and men.

The diverse theatres covered are Kenya, Malaya, Muscat & Oman, and Cyprus. In each case Kitson has provided a thorough and meaningful background before proceeding to his own ideas of planning such operations. It is interesting to read how he shaped his ideas by taking into account a multiplicity of factors pertaining to the situation concerned. The accounts of actual operations are graphic and detailed. Whether the operations have succeeded or failed, the reasons have been fully analysed.

Like pioneer in this and other fields, Kitson has experienced and explained the bitter frustrations, and lack of appreciation and support from many quarters for the unconventional plans and methods. It has been really lucky for the author to have been able to persevere upto

final acceptance, and in any case in having been chosen for counter-insurgency operations in many theatres. Obtaining the best possible results in the face of inadequate resources and unfriendly surroundings through intelligent motivation of officers, men and local support, is naturally a matter of credit.

Kitson has stressed time and again about the urgent necessity of an Intelligence Organisation that can be called upon to undertake comprehensive collection of information suited to counter-insurgency measures.

The Book is well written and well-produced. It has all the necessary information for a realistic appreciation by the interested reader. The book deserves to be recommended for inclusion in the libraries of all military institutions, and as a compulsory reading material for all students of counter-insurgency operations.

S.D.S

GENERAL MONCK

by MAURICE ASHLEY
(Published by Jonathan Cape, London, 1977) pp 316. Price £ 6.95

A HIS is an authentic biography of George Monck, the first Duke of Albemarle, General of the English army, General-at-sea (admiral), administrator, organiser and one of the central characters during the Cromwellian and the early Restoration periods.

Born in an ancient Devonshire family, George Monck between the age of sixteen and twenty-one took part in three abortive English amphibious actions, one against Spain at Cadiz and two against France at La Rochelle and St Martin. For a person with less resolute character and determination these failures would have been enough for any one in his position to have given up the idea of a military career. Yet true to his nature and his indomitable spirit, George Monck undismayed and undaunted analysed the main causes of these unsuccessful military operations. He learnt that a commander must himself train and lead his troops and that they should be well paid, equipped and furnished with adequate food and clothing. He learned the value of timely and accurate military intelligence and most important that a victorious campaign could not be waged with unwilling soldiers. He believed that a soldier must know the cause for which he is fighting for, so as to get the best out of him. These basic lessons he had never forgotten in his subsequent campaigns in Ireland and Scotland as well as during his naval campaigns against the Dutch and which brought him the military successes and honours he rightly deserved. Throughout his distinguished career it is

quite evident that he took great pains and trouble for the welfare of his troops and bombarded the Parliament for more and more funds to ensure that his troops were cared for, well equipped and fed. During his earlier campaigns in Ireland he recognised the problem, which has never been solved in the present day, of how to wage war effectively against a determined guerrilla enemy and that by using bold tactics with better trained and better equiped troops and with good discipline and obedience of orders it was possible to ensure success provided communications were not overstreched. Until then mainly an infantry officer Monck realised the value of the effective use of artillery both in offensive and defensive actions and used to great advantage. In fact his knowledge of artillery was to be extremely valuable in his subsequent military and naval career. His campaigns in Ireland and Scotland were well planned and equally well executed with considerable military skill. Although George Monck cannot be considered in the same mould as Fredrick the Great as a master of setpiece battles, nevertheless he fought each campaign on its merits by ensuring proper organisation, planning, making good and effective use of military intelligence, good training, providing adequate logistical support and by issuing clear cut written or verbal orders. While he waged his campaigns according to a plan nevertheless he maintained always that amount of military flexibility to turn the tide in his favour.

At the age of fortyfive Monck was suddenly transmuted into an admiral. During the first Anglo-Dutch naval campaign in 1653 by his superior organisation and planning, good and accurate intelligence, innovation of new naval tactics he mads sure that naval victory never eluded his grasp and which in turn brought great glory to the English Navy. Later during the Restoration period Charles II appointed him general at sea together with Prince Rupert in spite of the fact that Monck was fifty-nine years of age and none too good a health and diverted him from the task of countering the bubonic plague which had swept London and its neighbourhood. But due to inadequate preparations before he had taken command, a fleet which was numerically inferior both in size and fire power and faulty and delayed military intelligence culminated in the defeat of the English navy by the Dutch early in 1666. However in July the same year Monck once again with a refurbished English fleet inflicted a heavy defeat on the Dutch navy and destroyed a great portion of the Dutch fleet. Later Monck's heroic defence of Chatham was of no avail against strong and determined Dutch naval raids on the Channel ports due to the fact he was commissioned to take charge without adequate preparations, lack of coordination and errors in implementing his plans.

As an administrator Monck's role in Scotland and to a lesser degree in Ireland is a tribute to his administrative skills and acuman. Not only did he virtually rule Scotland as a martial law administrator and governor with an iron hand but with firmness and vigilance yet he was sagacious and his sense of honesty, fair play and justice endeared him to the Scotish population. He showed great sensitivity by being responsive to their needs and welfare within the framework of Cromwell's Parliament policies and the prevailing religious divisions. The greatest tribute to Monck's administrative ability can be guaged from the fact that even when he left Scotland to proceed to London in the midst of rumours of Restoration, the situation in Scotland under his deputy Morgan was never allowed to go out of hand.

Both as an administrator and organiser Monck showed his brilliance with his abundant personal courage, leadership and his immense drive and energy in bringing the situation created by the Great Plague and the Great fire under effective control and bringing succor to thousands of citizens To his last dying day he showed the same courage and fortitude.

Perhaps Monck's role in the Restoration of Charles II to the English throne may have cast some doubts about his moral integrity. Yet one thing is quite clear from the biography that Monck was no opportunist. After Oliver Cromwell's death Monck realised that the Rump Parliament had lost its moral fibre and governing authority, that the Army in England was split and on the verge of mutiny and that religious divisions were so sharp and bordering on fanaticism all of which augured a civil war in England with its consequent effects in Ireland and Scotland. He had therefore, already made up his mind that monarchy must be re-established. He firmly believed in order and not anarchy. Restoration in any case was bound to come but his actions and ploy paved the way for achieving the same without bloodshed and turmoil. Here his role, therefore, must be evaluated in this context.

Samuel Pepys and the first Earl of Clarendon who disliked Monck project a slanted account of his character. Pepys describes him as ponderous and stupid while Clarendon thought that Monck had been extremely lucky to be in the right place at the right time for which he was duly rewarded. But in spite of his distractors there is not the slightest doubt that Monck was a very courageous man and as a true soldier did what was required of him. He was always loyal to the authority in power and yet he was not personally ambitious ; the very fact that he restored Charles II to the throne when there were pressures on him to become king or take over as Protector.

Will posterity in England remember George Monck ? Soon after the Restoration, Charles II wanted to disband the army as he was courageous enough to believe that he could rely for his own safety on the loyalty of his subjects rather than upon a standing army. But Monck was wise enough to retain the nucleus of a standing army. The famous regiments like the Coldstream Guards, the First Foot Guards familiar to posterity as the Grenadier Guards, the oldest regiment in the British Army, the Royal Horse Guards (The Blues) and the Royal Scots perhaps owe their existence to George Monck.

This is a well written biography full of interest. Mr Ashley in his lucid style has dealt with the subject with great authority and has not given the slightest indication of any hero-worship of George Monck but has portrayed his character with great care and sensitivity.

An enthrilling book of great military and historical significance and a biography of a great general cast in an historical mould.

S.N.A.

RANJIT SINGH AND HIS GENERALS
by GULCHARAN SINGH (LT COL)
(Published by Sujlana Publishers, Jullundur, 1976, pp. 240, Price Rs. 30/-.

TO the reader who is not familiar with Sikh history or historical background this book may at first reading seem somewhat bewildering. Nonetheless subsequent reading is likely to create some interest.

Based on authoritative secondary sources and readily available primay sources the book is an interesting narration of the various military campaigns of Maharaja Ranjit Singh and the effective part placed by his general noteably Hari Singh Nalwa, Akali Phoola Singh, Mokam Chand, Divan Chand and others. The book also brings out the prowess of the Khalsa arms as well as the strategical and political implications of Maharaja Ranjit Singh's rule and the fighting qualities and bravery of his lieutenants and the Sikh army of that particular period.

Ranjit Singh's aim was to create a strong Sikh kingdom and in doing so he never wanted to involve himself against more than one enemy at a time. In this stratagem he was successful and which not only created for him a vast kingdom but also brought glory to the Sikh arms. The book depicts three main phases of Ranjit Singh's rule. The period of consolidation of the Punjab by annexation of the

adjoining territories of Lahore, Amritsar, Kasur, Kangra, Jhang and Gujrat. In the second phase the conquest of Multan and Kashmir. The third and final phase shows the annexation of territories West of the Indus. The book brings out the political and strategical aim of each campaign as well as the bravery and leadership of Ranjit Singh and his generals who have inscribed their names in letters of gold in the history of the Sikhs.

This is a highly priced book for its scope and content. It suffers from two shortcomings. Its size can be reduced by half as it's somewhat monotonous and repetitive; secondly a writer of history be it political or military or both combined together, must report and assess events as they occur and avoid the tendency as the author has been tempted to do so in some places to equate the rule and campaigns of Ranjit Singh as a prelude to or consequence to India's struggle for independence or freedom movement. This implication by hind-sight is distortion of historical perspective prevailing at that period of time.

This is not a book of reference yet it will arouse some interest to those who would like to make a further study of the history of the Sikhs. It may nevertheless at best serve the purpose of a history book for schools/colleges. A readable book of a period of Sikh history.

S.N.A.

BUILDING GERMAN AIRPOWER, 1909-1914
by JOHN HOWARD MORROW
(Published by University of Tennessee Press, Knoxville, 1976) pp 150. $12.95.

THIS book is the result of an intensive search by the author through the totality of background material available in Documents and Archives relating to the Prussian, Bavarian and Austro-Hungarian Empires of the "Pre-World War" years, together with many other relevant official publications, periodicals and individual sources.

Prof. Morrow's book is not an aviation history of the conventional type. His approach has been to focus the reader's attention on the "Military-Industrial Relationship", together with the interplay of forces and influences (military, bureaucratic, innovative, financial, political, etc) which eventually shaped the air-fleet available to the Prussian Army & Navy, as also to the Bavarian and Austro-Hungarian forces at the commencement of World War I.

The Military-industrial relationship had been the most vital factor in determining the progress of aviation (predominantly Military) through those formative years, and in promoting that "state of preparedness",—which did compare favourably with those of possible adversaries like France.

The present study has brought out how the creation of public interest and enthusiasm through the formation of a German "National Aviation Fund" (to which Germans from all over the world contributed), and the skilful disbursements from the fund money,—staved off the wolf of bankruptcy from the doors of a number of aircraft manufacturing concerns.

It would also be worthwhile to mention an incident on a lighter vein. An Austrian resident of Paris (Count Radowitz) had donated a French aircraft ("Bleriot") to the Austro-Hungarian War Ministry. It is said that the War Ministry accepted the gift of the aircraft, but refused to grant the funds necessary to send an officer to Paris for getting trained on the aircraft and bring it over to his country!

The book has excellent illustrations and an adequate bibliography.

S.D.S.

NAVAL BATTLES OF WORLD WAR II
by GEOFFREY BENNETT
(Published by B.T. Batsford, London, 1975) pp 253. Price £5.85

THIS is a slim volume of 248 Pages describing the battles of Narvik, Matapan, Midway, Guadalcanal and the Philippines, the chase of the Bismarck and the long series of convoy encounters. So much has been written about these battles by so many before, that one cannot be blamed for feeling a trifle biased as one goes through these pages.

The only way a new book of this nature can commend itself is by revealing hitherto unpublished facets, particularly from the Japanese and German view points. Unfortunately such insights and revelations are lacking and the book has been written predominantly from the allied angle, with the British view particularly dominant.

The book's main strength is the wealth of details it has given with regard to the hardware and capabilities of the scores of ships which took part in these battles.

A brilliant feat of condensation has been achieved by the author in this area and one absorbs vast qualities of finely sifted data, without being subjected to statistical overkill.

The writing is lively and taut and reveals considerable expertise, which is hardly surprising considering that the author is a retired Captain R.N., with several naval history books to his cerdit.

V.K.

MR ROOSEVELT'S NAVY : The Private War of the US Atlantic Fleet, 1939-42.
by PATRICK ABBAZIA
(Published by Naval Institute Press, Annapolis, 1975) pp 520. Price not listed.

THIS is a well researched, revelatory book about the unpublicised war which the United States Navy fought against German U-boats, long before the two nations were officially at war from 8 Dec 41. It vividly tells the story of President Roosevelt's efforts to help the British, in the face of strong isolationist sentiments in the congress.

What particularly interests the present day reader is the graduated manner in which a strong seapower can turn the screws on its adversary, while technically remaining at peace. The 'neutrality patrol' which Roosevelt instituted along 600 longitude West was patently illegal under international law, but it saved thousands of British merchantmen from icy burial off New Foundland and Nova Scotia. By end 1941, over 400 warships and 1000 aircraft of the US Navy were patrolling the Atlantic and escorting convoys, and there was nothing that the Germans could do but seethe with impotent fury. Of course the Germans struck back at the individual warships which attacked them and in Oct 41—two months before Pearl Harbour—US destroyer Reuben Jones went down with heavy loss of life after a U-boat torpedo struck her. Still, the two countries were officially not at war!

The book also vividly portrays the battle innoculation of the US Navy. In fact the two year twilight war in the Atlantic proved to be of inestimable training value to the Service when war finally broke out in the Pacific.

The book is written in a graphic, personalised style and makes a neat blend of individual combat incidents with overall strategic developments.

V.K.

COMBAT FLEETS OF THE WORLD—1976/77 : THEIR SHIPS, AIRCRAFT, AND ARMAMENT
(Published by Naval Institute Press, Annapolis, 1976) pp 575, Price $49.50.

THIS is the first English translation of the famous French fleet guide, 'Flottes de Combat', which is published biennially since 1897. It is no Jane's, either in terms of detailed description or updating accuracy. But on the other hand it is a much smaller volume of 27 cm x 21 cm, which makes for handling ease, particularly on the cluttered bridge of a small warship.

The layout is excellent and one can lay one's hands on the ship one wants very quickly. The photographs are good and the line drawings, though few, are of high quality. What one misses are the silhouettes, so essential for ship recognition at sea.

The coverage of the major navies is extensive, with 262 out of the 557 pages devoted to US, Soviet, British and French navies. In the case of smaller navies, particularly of the third world, there are a fair number of errors, and the data is generally less well updated than that in respect of the bigger navies. The descriptions of Soviet and other East bloc navies, on the other hand, are very good and the details of weapons and sensors of their ships are as good as any published any where.

V.K.

THE CONGO OPERATION 1960-63 : ARMED FORCES OF THE INDIAN UNION
by HISTORICAL SECTION, MINISTRY OF DEFENCE, GOVT OF INDIA
(Published by the Controller of Publications, Govt of India, Delhi, (1976) pp 248. Price Rs. 35/-

THE Indian Forces' operation in Congo over the period 1960-63 were singular in character and very unusual in their nature. These operations were conducted under the aegis of the United Nations, in pursuance of combined world opinion, to help a newly-formed Nation in preserving its independence and retaining its territorial integrity. Prevention of internal civil war and providing the people of the country with the means of progressing through Parliamentary Proceedings to the democratic governance of their own land,—these were the two main tasks. And interestingly enough, the third task added to these was preventing a part of that country from seceeding, and thus forming a separate Government.

The operations were conducted in a very troubled atmosphere, amounting nearly to a confusion. The background was blotched with tribal jealousies, conflict of financial and other interests, imprisonments and assassinations, rape and murder of UN personnel—further complicated by external influences exercised for financial and other reasons.

The Historical Section of the Ministry of Defence, Govt of India, have succeeded in providing in this book a clear and concerted account of the operations undertaken primarily by the Indian Contingent stationed in Congo in this context. The book is not only a detailed account, it is also a document of considerable value. The sources of information have been listed, and individuals mentioned wherever necessary. The international influence exercised by the Indian Prime Minister (Shri Jawahar Lal Nehru), and the restraint exercised by the Indian forces beginning from the top commander down to the Jawans in the field in the conduct of their operations,—stand out very clearly through the narrative.

It is perhaps a matter of regret that the completion of this publication has taken such a long period (nearly thirteen years). It is also a matter of regret that in the preparation of maps and charts and the choice of paper, there are signs of financial stringency. Apparently, much could have been gained if some of the senior officers who undertook those operations had been called upon to collaborate in the preparation of this publication. Intelligent appreciation and subsequent documentation of what we see—is real history.

S.D.S.

THE LOYAL REGIMENT (North Lancashire)
by MICHAEL LANGLEY
(Published by Leo Cooper, London, 1976) pp. 118, price £ 6.50

THIS regimental history, edited by Lt. Gen. Sir Brian Horrocks, has been published under the "Famous Regiments" series. Field-Marshal Sir Gerald Templer, KG, GCB, GCMG, KBE, DSO, DCL, LLD, in his Foreword, and Brig. G.A. Rimbault, CBE, DSO, MC, DL, the last Colonel of The Loyal Regiment, in his Epilogue, have rightly praised the great achievements of the Regiment which won about 100 Battle Honours in various parts of the world. The Regiment's brave actions in Louisburg, Quebec (1759), Maida (1806), Corunna (1809), Inkerman (1854), Kimberley, Mons, Ypres, Gaza, Kilimanjaro (1899-1900), Dunkirk (1940), North Africa (1943), Anzio (1944), Singapore (1941-42), Monte Grande (1944-45), etc., have become legendary.

Col. John Mordaunt was asked by a royal command in 1741 to raise a regiment, which originally ranked as the 58th Foot, took precedence as the 47th in 1748, on the disbandment of Wynard's Marines (the 47th). Following the call to increase the size of the British army in the wake of the French Revoluntionary Wars, the Loyal Lincoln Volunteers was raised by Col. Albemarle Bertie in 1793, and this as the 81st Foot subsequently paired up with the 47th to form the Loyal North Lancashire Regiment. However, not until 1881 were the regiments properly referred to by their County names, although the reform of 1782 had taken the initial step in designating the British infantry on a county basis. It was, indeed, after 1914 that the unofficial use of the numerical names of the infantry units came to an end in Britain.

In 1970, the Loyals were amalgamated with the Lancashire Regiment to form the Queen's Lancashire Regiment. Although The Loyal Regiment does not exist today, its spirit still greatly enthuses The Queens' Lancashire Regiment.

Chapter 9 of the book, which is entitled "India", tells us about the regiment's exploits in India. During the Sepoy Mutiny, the 81st, at Lahore, disarmed "threatening sepoys" and checked the spreading mutiny. During the Second Afghan War, they fought bravely at Ali Masjid, over the Khyber Pass, and won a Battle Honour.

The book, written in an interesting style, contains "Important Dates in the History of the Loyal Regiment", and "Battle Honours of the Loyal Regiment", but neither any Index nor a bibliography. Undoubtedly, the book will be read by the veterans and their successors in the new Regiment with pride, and even by others with great interest. The printing and the get-up of the book bear testimony to the professional competence of Leo Cooper Ltd.

B. C.

THE ROYAL SCOTS : The Royal Regiment
by MICHAEL BRANDER
(Published by Leo Cooper, London, 1976) pp. 111, price £ 4.95

THIS book has been published in the "Famous Regiments" series, under the editorship of Lt. General Sir Brian Horrocks and 'introduced' by Gen. Sir Peter Hunt, GCB, DSO, OBE, who has known and admired the Royal Scots for over forty years.

Although the Royal Scots, the oldest Regiment in the British Army, can trace its origin back to 1633 when Sir John Hepburn was asked by Charles I, through a Royal Warrant, to raise in Scotland a Regiment of Foot for service in France under King Louis XIII, Scottish

troops' involvement in wars fought on foreign soil was not new. Charles III of France had a Scottish bodyguard as early as the late 9th century; in the Eighth Crusade a Scottish contingent fought under Louis IX, and with the formation of the "auld alliance' in 1295 such services became frequent and formalized. Many Scots fought for France in the Hundred Years War (1337-1453), and during the 1590s in support of Henry Navarre. A Scottish regiment, raised in 1620, fought in Bohemia for the Elector Palatine during the Thirty Years War, and later in Holland against the Spanish, and subsequently served Gustavas Adolphus of Sweden in Poland, Prussia and Pomerania. Three other Scottish regiments combined with this regiment to form the famous Green Brigade under Hepburn's command. Hepburn left for France in 1632 and raised his force in Scotland, under the Royal warrant in 1633, which became a regular unit of the British standing army. The regiment served foreign masters during the Thirty Years War and even afterwards, till 1678. It was sent to Tangier, the first foreign posting in British service, in 1680, fought brilliantly under the Duke of Marlborough during the War of the Spanish Succession (1702-1713) and behaved like lions (as described by Gen. Moltke) in the Battle of Fontenoy in 1745 during the War of the Austrian Succession. In 1751, it was officially designated as the first or Royal Regiment of Foot. It fought in North America during the Seven Years War and in different parts of the world during the Napolionic Wars. Under Sir John Moore, its 3rd Battalion fought the glorious action at Corunna in Spain. The Battles of Quatre Brs and Waterloo cost the Third Battalion 363 casualties out of a strength of 624.

The 2nd Battalion came to India in 1808 and stayed on till 1831. They fought in the Maratha War 1817-19, in Burma during 1825-26, and afterwards in Crimea in 1855-56 (the 1st Battalion came there earlier). The Royal Scots served in Africa during 1880s and 1890, and afterwards till 1903.

During the Great War, 15 Royal Scots battalions served as active frontline units, and out of more than 1,00,000 men, over 11,000 were killed and over 40,000 wounded. In the Second World war too, they bravely fought in various parts of the world. Since the close of that War they have been on active duty in far-flung parts of the globe. The Regiment has won 138 Battle Honours so far.

The author has done a good job of writing this regimental history in a very readable style and also provided a bibliography. He has given a "List of Engagements in Continental Service", but a full list of its engagements upto date and an Index would have perhaps been useful. The printing and the get-up of the book are excellent.

—B. C.

Secretary's Notes

ANNUAL SUBSCRIPTION

I would like to thank all those members who paid their subscription so promptly at the beginning of the year. To those of you who have not yet paid may I remind you that your subscription was due on the 1st January. Would you please, therefore, put a cheque in the post to me today. There are some members who have also to pay their subscription for 1977. They are requested to make the payment for both the years to avoid unnecessary reminders. Effective from 1 Jan 1978, the annual subscription has been raised from Rs 15 to Rs 20.

NON RECEIPT OF JOURNAL

It has been reported by many of our members that though annual subscription for membership of the Institution is being debited to their account regularly by their Bankers, they are not receiving the USI Journal for quite sometime. The non-receipt of the Journal is because either the members have failed to notify change of address, or their Bankers have not duly sent the credit to the Institution or while sending the credit they have not given full and correct particulars of the member making it difficult to identify him in the ledger account. All these factors create accounting problems and result in names of members getting dropped from the mailing list.

It is requested that all members who have continued to send uptodate subscription through their Bankers and are not receiving the USI Journal may kindly intimate to me direct their latest address and membership number so that the USI Journal could be sent to them immediately. They are also requested to write to their Bankers that while sending annual subscription to Institution, their membership number, correct name with units and latest address is invariably given.

SUGGESTIONS FOR THE JOURNAL

The USI Journal is in its 108th year of publication. As you will, no doubt appreciate, the Institution spends a great deal of its funds on producing this publication. We would like to have your comments, criticism and suggestion so that we may improve this publication to meet your requirement.

NEW MEMBERS

The following new members joined the Institution :—

AANDRAJOG, Major O.P.
ABRAHAM, Captain T.C.
AERI, Captain M.K.
AHLAWAT, Captain M.I.

AHMED, Flt Lt S.S.
AKOLKAR, Captain R.V.
AMUDHAN, Captain S.
ANAND, Lieut C.J.
ANIL KUMAR SHANKAR, Captain
ARVIND KUMAR, Lieut
ATHMANATHAN, Captain G.
AUJLA, Major D.S.
AULUKH, Captain H.S.
BAKSHI, Captain J.S.
BAKSHI, Major Y.V.
BALAKRISHNAN, Major S.
BALDEV SINGH, Captain
BHANOT, Captain S.C.
BHARDWAJ, Captain A.B.
BHARDWAJ, Captain D.K.
BHARGAVA, Captain A.K.
BHARTE, Major M.
BHASIN, Captain S.
BHATIA, Major V.K.
BIJUR, Captain S.
BORGONAH, Major D.C.
CHADDA, Flt Lt J.S.
CHADHA, Captain M.C.
CHAHAL, Major A.S.
CHAKRAVORTY, Major M.L.
CHANDER BAL, Major
CHANGAPPA, Captain A.K.
CHAWADE, Captain C.A.
CHHABRA, Captain A.K.
CHIKALIKAR, Captain P.P.
CHOWDHRY, Major A.K.
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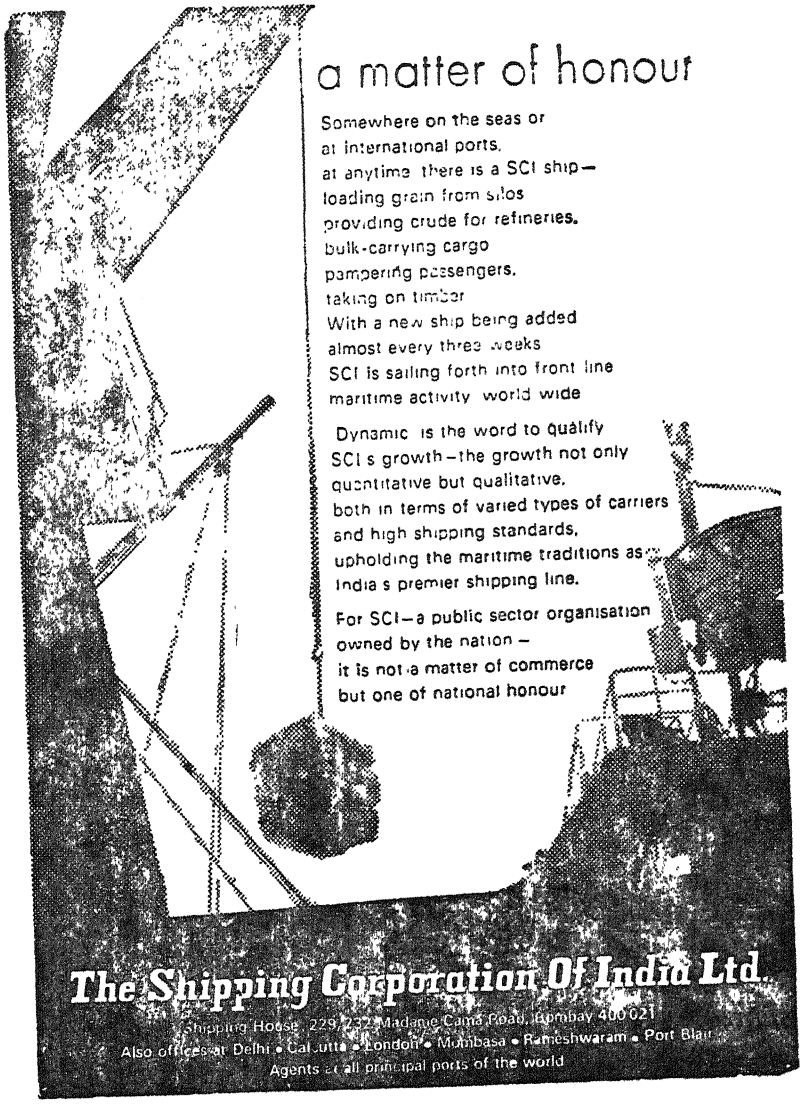

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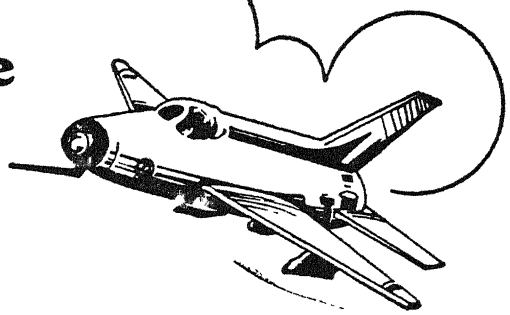

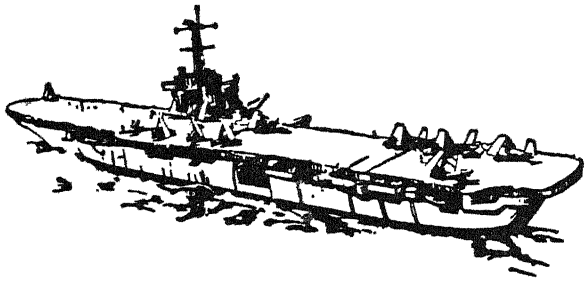

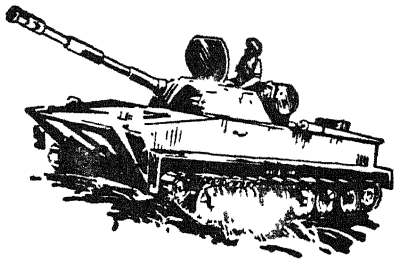

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