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The Sino-Soviet-Indian Triangle

MAHARAJ K. CHOPRA

THE triangular relationship between India, China and the Soviet Union has been developing ever since the power structure of Asia underwent a revolutionary change by the middle of the present century. In 1950 India was well on its way to consolidating its independence won three years earlier. China had established a new regime under communist leadership, in a territory now unified but was split earlier. And Russia had moved into its Eastern territory in a big way thanks to the impetus of World War II, and become an Asian power. Since then three giants have emerged sprawling the continent of Asia and facing two oceans.

These states have by now markedly crystallised their orientations, accompanied by a process of action and reaction. This is particularly evident at critical junctures. One could see it clearly during the Sino-Indian, Sino-Soviet, and Indo-Pakistani armed conflicts, and presently during the crisis in Afghanistan. And when in 1979 the Indian Foreign Minister visited China on a goodwill exploratory mission for the first time after a diplomatic break of 17 years, the Soviet Premier Alaxie Kosygin landed in Delhi immediately on his return. Nobody could miss the connection. The strategies of the three powers have now got inter-locked.

STATUS OF THE TRIANGLE

These strategies have produced significant consequences and would have attracted more attention but for the accidents of history. For it has so happened that the other three peripheral sectors of Asia have rather stolen the show—East Asia for its bloodiest wars. Southeast Asia for its perpetual fragility and conflicts, and the Middle East for its revolutions and oil. Comparatively perhaps, the internal crises and external involvements in the Indian subcontinent have been of lesser dimensions and so its rating on the global scale has been lower.

But this evaluation ought not to downgrade the subcontinent's status beyond a certain point. In the global context all the three

great powers—USA, USSR, China—have been involved in the region particularly the latter two. Regionally, the Indian subcontinent has witnessed four wars, border disputes still unsettled, military coups and assassinations, communal and ethnic violence, and running insurrections. If conflict crisis is a measure of "importance," then the subcontinent has a striking record indeed. In the present discussion this is proposed to be brought under focus with special reference to India, the largest of the states, in relation to China and the Soviet Union.

It might appear at first sight that the India-China-USSR syndrome is rather imbalanced. Territorially, Russia with its area of 8½ million square miles and China with its 4 million are very much larger than India with its 1½ million. Both Russia and China are nuclear powers and India has nothing more than one solitary nuclear explosion to its credit. The Soviet Union is a super power, while China has all the ambitions, resources and programmes to become one, in contrast to India whose desires and capabilities are much more limited.

And yet, a country like India with a population over 600 million and area over a million square miles, enjoying immense resources, is a factor of consequence. Its geographical location makes it a crossroad of East-West communications and its peninsular shape gives it a unique strategic advantage in the continent as well as in the Indian Ocean. In whatever manner one may classify the world—a world of super powers, of half a dozen big powers, of several powers, big and small—India's role in southern Asia must figure in the power balance.

CONVERGENCE AND DIVERGENCE

A striking aspect of the triangular nexus over the last three decades is this: during the 1950s, from reasonable friendships, while Russia and India began to move closer, China and Russia as well as India and China began to fall apart; during the 1960s this picture of the postures became even sharper; during the 1970s some sort of a "detente" was built up; now during the 1980s one would like to keep one's fingers crossed. Let us have a brief look.

China-India: As newly liberated countries India and China had considerable mutual respect. India abrogated its rights in Tibet, the two countries signed an agreement of "panchsheel", that is, peaceful coexistence, and they affirmed Asian solidarity at the Bandung Conference of Asian and African states. But soon troubles began over the Chinese repression in Tibet which made a flood of Tibetan refugees trek into India. There were border clashes and there came

the Sino-Indian war of 1962, That froze all relationship. It was only in 1976, the year of Mao's death, that some thaw began and diplomatic relations were resumed. But then there have been the wars in Vietnam and Afghanistan which have cast a shadow on the relationship.

India-USSR : Stalin was not exactly an admirer of India but under Khrushchev things changed rapidly. A whole complex of friendly relations began, comprising exchange of visits, economic cooperation, and political understanding. Russia supported India over Kashmir and wars with China and Pakistan and took active interest in India's political development, ending up in the crucial Indo-Soviet Treaty of 1971. Between 1973 and 1979 three major exchange visits on the part of the top leaders of the two countries took place, each accompanied by accelerated trade and economic ties. Over the Afghan crisis India and the Soviet Union have both emphasised a political and diplomatic rather than military solution.

USSR-China. When China and Russia signed their alliance treaty in 1950 much of the bitterness arising from the past events—Potadam Agreement for instance which included Soviet rights in China—was swept beneath the rug. On the visit to Moscow Mao brought back an agreement on economic aid and an air of communist comradeship. But the old scars showed signs of recrudescence. Controversial issues began to mount, over the quality and quantity of assistance, objectives of communist movement, relations with the Third World, posture towards the "imperial powers," and problems of war, peace and revolutions. Mao and Khrushchev were personally at loggerheads. Then the Soviet aid was cut out completely and was not resumed even after the fall of Khrushchev in 1964. During the Cultural Revolution there was virtual break in diplomatic relations. The Rubicon was crossed in 1969 when clashes took place in the Amur region over disputed islands. Cold War and ideological war followed, accentuated by the peace treaty between China and Japan and normalisation of relations between the US and China in 1978. The Sino-Soviet confrontation along their long border is now a fact of life. The termination of the 1950 Treaty in January 1980 is in line with the ceaseless estrangement, to which the Afghan crisis has made its own contribution.

Economic links have closely followed the political processes of convergence and divergence. Here the Soviet Union has held the whip hand. In respect to India, the USSR has participated in nearly 100 projects, including steel, power, oil and arms manufacture. The

Indo-Soviet trade has jumped from a bare \$ 2 million to \$ 2,000 million. Soviet credits have been at low interest and on the rupee-ruble exchange basis, while the trade has growingly included the export of Indian manufactures to the USSR. Moscow has thus been able to demonstrate that its assistance has nothing "colonial" or "imperialist" about it. India is grateful because the ties have made significant contribution to its economic self-sufficiency and political stability; and the Soviet Union is happy that it has consolidated its presence in the country.

Quite the reverse has happened in regard to China and the USSR. Mao never thought that the \$ 300 million aid he brought from Moscow in 1950 was enough, coming from a fraternal communist state; and later on he charged that Moscow was diverting to the Third World the resources which legitimately belonged to the communist fraternity. Estrangement grew when the Soviet assistance ceased. China talked of "self-reliance", but after saner counsels prevailed at the end the Cultural Revolution China began to feel the pinch of economic stagnation; and that prompted ties with the West which would provide advanced technology and finance and at the same time a counterweight against the ever-hostile USSR. The modernisation launched after the Mao era has brought China well within the Western camp.

Finally, ideology has been the third factor of consequence in the make-up of the triangle. In this respect India has been largely a recipient. Strictly, it has hardly built up a motivating doctrine. Its faith in human rights, democracy, socialism and secularism is a product of British rule, which is impregnated by its basic spiritual value such as non-violence. This faith serves the national purpose, but it has no international ambitions and no militancy about it. It is quite different from the communist doctrines professed, projected and strategically used by Russia and China.

Broadly, communism rests on belief in revolutions and wars till it fulfils itself, in the dismantling of imperialism and colonialism which would be substituted by socialism, in authoritarianism in place of liberalism, in the subservience of the individual to society, and in the dominance of the proletariat in place of the bourgeoisie. In actual practice however the Marxist-Leninists have been forced to adopt variations in above dictated by circumstances and national interests. Thus, as applied to India the Soviet dialectics has sought for a compromise, but as applied to China the same rhetoric has caused a split.

In India Moscow has supported communist and leftist elements in public as well as in the spheres of the government, and yet at the same time it has cooperated with the "bourgeois" elements. But with China matters have been different. To Mao Tse-tung "infatuation" with the bourgeoisie cut across the basic communist tenets and was a retrograde step in the march of revolution. It was anathema for Mao when Khrushchev renovated the communist thesis about wars, stating that the new spirit of the era required to take advantage of the "peace zone" created by the Third World and also necessitated competition, not confrontation with the imperialist powers, that is, the West. China broke away from the Soviet dominated communist movement, and so there came about the cold war between "revisionists" (Russians) and "splitters" (Chinese). But now that China has itself entered the Western camp much of the old rhetoric has become irrelevant.

That proves the point that for most purposes ideology is only a handmaid of national interests, a matter of strategy rather than of principles. As a matter of fact behind all the political and economic moves, beside the ideological, national objectives have been the main driving forces. Russia wants an Asian ally where it can develop political leverage, where there is little rivalry, where aid can be pumped, and where ideological conflict is minimum. India, a developing country having plentiful natural resources and located in a highly strategic part of Asia, is the answer—in contrast to China, a budding super power across its border, likely to become a Frankenstein, which spurns aid and would be ungrateful for whatever it receives.

SECURITY PERCEPTIONS

Amidst other considerations, security aspects have played a vital part in the Sino-Soviet-Indian syndrome, and perhaps constitute the oldest motivation. For the Russians have not forgotten the Mongol invasions from the "yellow land", the Chinese have not forgotten the inroads of the Czars, and the Indians still remember conquests from Central Asia.

Fundamental to this is the point of geography. Russia, China and India are neighbours. However, there is a difference in contiguity, and that has introduced a marked differentiation in their attitudes. India and China have a common border which, but for the intervening Nepal and Bhutan, runs continuously along the Karokaram—Himalayan range right upto Burma—some 1,700 miles. It bristles with complications, for it is largely undemarcated and contains disputed

sectors, The Karokaram range overlooks Kashmir, which is a bone of contention between India and Pakistan. Since a part of the Chinese Sinkiang is along the Pakistan-held part of Kashmir, China has become a contiguous neighbour of Pakistan—an event of far-reaching consequence.

In the past the Karokaram-Himalayan complex was a fairly effective barrier between China and India, and even through the familiar Karokaram Pass the traffic was a trickle. Now all this has changed. Extensive overflights took place between China and India during World War II and now India and China have fought in the Himalayas in 1962. As an aftermath, both the countries have stepped up their defence infrastructures on their respective Himalayan flank, with roads, airfields, cantonments, hide-outs, intelligence and missile bases. For the first time in history a north Asian power has the potential to march upto the Indian Ocean across a terrain only 500 miles wide from the apex of Sikkim.

As for India and the Soviet Union, they too are neighbours, but only by geographical proximity, not contiguity, and so they do not have a common border. Afghanistan is the buffer, a thin one though, for at its narrowest it is only 25 miles wide. Hence the Russian shadow has existed all along. This shadow has become even more visible after the revolution in Afghanistan.

With the growth of Soviet power and technological advancement Moscow's trans-frontier interests have extended. The Indian sub-continent is now looked upon as an important part of its southern borderlands, a vast buffer indeed between the metropole and the Indian Ocean. This must remain free from hostile presence. The US intelligence centre in Pakistan used to be a continuous target of attack, and Moscow wants to make sure that nothing like this happens again. It is also its endeavour to offset the American strategy of using the Bay of Bengal or the Arabian Sea as bases for nuclear-missile attack; in this India's assistance, even of a diplomatic nature, would be valuable.

The Sino-Soviet border is like the Sino-Indian border, contiguous, but otherwise it is markedly different. It is much longer, 4,500 miles; through several parts of it traffic has been ample by road as well as rail; and along both sides the economic stakes of the two states are high. The border is not fully demarcated, and involves some 600,000 square miles of disputed territory. To the east the border ends up on the Pacific Ocean where power constellation is intense and heavy,

with Japan and the USA thrown into the balance; and to the west is the Pamir knot, where the high drama of the Afghan war is being staged with a multi-national cast. Along the Sino-Soviet border two of the world's biggest powers keep vigil on a scale which is heaviest of all regions outside Europe.

As the triangle of geopolitics stands, it is not difficult to explain the convergence—divergence complex. Russia and China face each other directly and aggressively and there is always a threat of cold war turning into hot war. That also is the case between India and China. On the other hand, without much risk of direct engagement Russia and India serve each other's interests, one with an eye to the security of its southern flank and global strategy and the other with an eye to the threat from the more powerful northern neighbour.

The Critical Juncture. This configuration of forces however changes sharply in the shadow of the Pamirs, a sprawling, mighty crossroad of Asia. In this region Russia, China and India confront each other, and there are also Pakistan and Afghanistan. Described as the floor of the "roof of the world" interests of several nations have collided here for ages. Imperial powers of the Indian subcontinent have battled here to conquer Afghanistan or stem the tide of advances from Central Asia.

A most important sector of this region is Kashmir, which contains the strategic town of Gilgit. The British captured it and turned it into a listening post of Central Asia. Now it lies in the Pakistan-held part of Kashmir, a hub of Pakistani control and an important staging post on the newly built Sino-Pak Karokoram Road. This provides a route from Sinkiang to Islamabad, the capital of Pakistan, and thence to Karachi on the Indian Ocean. Here India and Pakistan and India and China have fought wars and here also lies China's backdoor route to the Indian Ocean, the Middle East, Africa and Europe which is much shorter than the Pacific route.

The Soviet attempt to safeguard its interests in Afghanistan has added a new dimension to the significance of the region. For India it means the elimination of an historic buffer, for China it is a threat to its foothold in the subcontinent with its important backdoor, and for Pakistan it brings a super power at its doorstep. Here there has come about an eyeball to eyeball confrontation of several national interests. And thanks to the convergence of the frontiers of Asia's three biggest states, it has become the hub of continent's power politics.

Four thousand miles away there is another hub, in the Far East, where Russia and China, but not India, meet. From the viewpoint of forces involved this is more important. Both Russia and China have immense economic stakes here; for both it makes an opening into the Pacific and then into Southeast Asia, a cockpit for power struggle. Because of the presence of Japan and the United States in this area the Sino-Soviet relationship enters here the arena of global politics,

For one thing the Sino-Soviet side of the triangle is heavily weighted in this direction, a point of considerable interest for India, for that means deviation of North Asia's power thrust away from South Asia. Secondly, sensitive to the vulnerability of its Far Eastern land route Moscow is increasingly stressing the value of the Indian Ocean route that provides a link between European Russia and Asiatic Russia, on which India enjoys a strategic location.

While the two hubs, at the Pamir and in the Far East, deserve emphasis, it may be added that any conflict in either of these two areas will tell heavily upon the triangular syndrome. The crisis in Afghanistan is a case in point: Soviet entry into the country has been accompanied by troop movements in China, alert in India, and military escalation in Pakistan, not to say a hefty reaction on the part of the United States.

MILITARY BALANCE

In the military balance of the triangular syndrome one notices that the armed forces of the constituents are the three largest in Asia—USSR, 3,800,000; China, 4,300,000; and India, 1,100,000. Among them the quantitative disparity places India at the bottom. Qualitative disparity is also pronounced. India is not a nuclear power, and having done nothing beyond carrying out a single nuclear explosion is far from it. Both China and the USSR are nuclear powers, but their status here is markedly unequal: strategic forces—ICBMs USSR 1,400 and China one; IRBMs and MRBMs, USSR 700 and China 70; strategic bombers, USSR 750 (long range) and China 80 (medium range); and naval missiles, USSR 1,000 and China Nil.

The disparity in regard to conventional forces follows the same pattern. China and India both require very considerable replacement or renovation of their arms which are rather antiquated, in contrast to the ultra modern hardware of the Soviet Union. For the

modernisation of their defence both China and India depend upon outside more advanced countries for weapons as well as military technology, and that introduces another factor in the triangle.

By providing military hardware to India Moscow has forged strong ties with Delhi, and by denying this to China it has alienated Beijing. Dependence is most pronounced at critical junctures. For India received enhanced assistance at the time of its wars with Pakistan and China; and presently China is leaning heavily upon the West for its defence modernisation. The war in Afghanistan is likely to escalate the processes of arms delivery in both directions, if the East-West confrontations move on to a collision course. Similar links and delinks are found in the nuclear sphere, where India seeks some kind of nuclear umbrella from Moscow and China from Washington.

As usual, geopolitics has dictated the deployment of forces. A bulk of Chinese forces is deployed along the Sino-Soviet frontier and a bulk of Indian forces along its frontier with Pakistan. China and India must keep some of their forces along the Himalayas. The Soviets however have no fear from the Indian side and, after Europe, can have their heaviest concentration on their borders with China. But Asia's politics is unpredictably fluctuating, and rapid redeployments take place in response to crises such as Sino-Vietnamese war and the Afghan revolution.

Subject to this flexibility, there is evident an effort to establish an equilibrium in the Moscow-Beijing-Delhi triangle. Both Russia and China in their military aid to India and Pakistan respectively seem to have been rather cautious, by limiting supply of the more offensive weapons and by restraining from direct involvement. This has suited India also, rejecting any overtures that Moscow might have made for bases on the Indian soil. But this position again cannot be regarded as permanent, alterable at the behest of developments such as now in the making in the Pamir region.

THE ARMED CONFLICTS

Within the triangular syndrome there have occurred four major-armed conflicts during the last 30 years and these have powerfully influenced mutual relations. They have all been occasioned by dispute over territory.

(a) *The Sino-Indian War, 1962.* This happened in the two extremities of the Himalayan range. In the north-east the

Chinese forces rolled down to the Indian plains but withdrew back to the border. In the north-west the Chinese captured a part of the Indian territory, which they continue to occupy. By early 1960s China and Russia had virtually broken off, but Russia and India had been drawn more and more close together. The war gave Moscow an opportunity to reinforce the bonds by condemning Chinese aggression and providing arms. By now Russia also was involved over territorial disputes, and this gave Indo-Soviet relations further impetus which conjoined to produce the historic Indo-Soviet Treaty in 1971.

(b) *Indo-Pakistan Wars, 1965, 1971.* Both these wars have been waged against the background of the break of relationship between China and Russia and enhanced friendship between Russia and India. In 1965, Kashmir was the bone of contention and over this issue the USSR had long supported India. The Soviet backing had a warning for China, to the effect that it must not intervene, despite the Sino-Pak Treaty of 1963. So China did very little beyond firing verbal potshots at India. But China did step up its military aid to Pakistan, and it became clear that a line-up of forces had been drawn in the subcontinent. The 1963 Treaty was followed up by China's open support for Pakistan over Kashmir, thereby obtaining Pakistan's collusion in constructing the Karokoram Road through a disputed sector.

The 1971 conflagration was more crucial, for it led to the break-up of Pakistan and the creation of Bangla Desh in its eastern wing. The Soviet support, now backed by a treaty, was crucial for once again China did not intervene. Moscow also sent a naval force into the Bay of Bengal after learning that the USA had done the same ostensibly in support of Pakistan. The defeat and break-up of Pakistan has had far-reaching consequences. It has made India emerge as the unchallenged power in the sub-continent, China has tacitly accepted this major shift in the power balance, and this has something to do with its new stance for a detente with India. But again one must not forget the Afghan upheaval which is likely to disturb postures.

(c) *Sino-Soviet Brushfire, 1969.* There were several bloody clashes between the Soviet and Chinese troops beginning about the same time as the Sino-Indian War—in the III region of Sinkiang, along the Mongolian frontier etc, during which China laid a territorial claim of 600,000 square miles said to have been seized by Russia. The most violent took place in the Damanski

(Chen Pao) island in the Ussuri River in March 1969 when artillery, missiles, tanks and air power were used. This was not "war" but did point to the seriousness of the possibility of a more bloody clash. That was the theme of the Chinese propaganda thereafter. In the course of this, military postures on both sides of the border have been reinforced; and that in the Sino-Soviet-Indian context has furnished Moscow and Delhi yet another plank against China.

THE ASIAN SECURITY SYSTEM

The triangular syndrome has never been divorced from regional or global politics. The Soviet hobbyhorse of Collective Security System for Asia is linked with it, although its aim has been more ambitious. Its announcement towards the end of 1960s coincided with the British declaration to retire from the east of Suez. President Brezhnev emphasised that a "vacuum" had been created, into which imperialists were about to jump. He thus invited the Asian states to enter into an arrangement that would safeguard their independence, and of course Russia would lend a hand.

The precise mechanism of the system has all along been left vague, but when asked whether it implied any sort of military alliance, the answer has been NO. The broader aims are not so vague. The proposal has sought to remind that the Soviet Union is an Asian power, that it intends to play an active role in Asian security, and that it can provide an alternative to the British withdrawal and the US thin-out.

But Beijing has been quick to smell a rat, castigating that the proposal is only a device for the containment of China emanating from the "new Czars" and that its objective is to cast an inner ring that would link South Asia with Indo-China to encircle China. In this grand strategy India has been identified as an important sector. Thus, China, while lambasting India, has sought to identify itself more and more with Pakistan, warning against the anti-China conspiracy. The Soviet proposal has succeeded only in injecting more tension into the triangular syndrome.

The Indo-Soviet Treaty, 1971. The Indo-Soviet Treaty may be seen in this context. Three of its articles have military provisions: mutual assistance in the event of threat to security of either party, prohibition to enter into any alliance with a third party, and the ban on supply of bases to outside powers. The treaty has served the interests of both India and the USSR, as a deterrent against China, as

an assurance of security for Russia on part of its southern borderland, and as a prop for Moscow's claim to be an Asian power.

The Soviets have been aware that India has never subscribed to anything like an Asian Security System, but they did hope that perhaps the Indo-Soviet bilateral model could one day be planted into a multilateral sphere. Presumably that hope is now blasted, for the time being at least, after its preoccupations with Afghanistan and Indo-China. But the potential of the Indo-Soviet Treaty must not be overlooked, now that a realignment of forces is taking place in the Pamir region. India suspects that a Sino-Pak alliance is shaping up, backed by the United States. India's dilemma is that it does not want Russians to break through the existing buffer, but at the same time it does not wish this to happen through Sino-Pak collusion. What must Delhi do? May it lean upon Moscow? What does the Indo-Soviet Treaty say? Very soon perhaps some answers to these questions may be found.

THE GLOBAL CONTEXT

Europe and the Triangle. Europe may be said to have two faces vis-a-vis the syndrome, one turned toward South Asia and the other toward the Eurasian east. Historically it has been very close to the Indian subcontinent which still has considerable value in European terms—for its situation near the oil source of the Persian Gulf, for its contiguity with the Middle East buffer that separates Russia from the Indian Ocean, for its location athwart the Suez route to the Far East and for its economic potential. But, strategically speaking, Europe has far receded from this arena. This recession began even earlier than the actual retirement of the British. One recalls that back in the early 1960s India began leaning on the Soviet Union for military aid because the West, the traditional arms supplier, withheld this aid. This factor has greatly reinforced the Moscow-Delhi arm of the triangle.

Today, in contrast to the past, Europe is much more concerned with the Euroasian east, largely because of the Sino-Soviet power game, which carries its imprint on practically all aspects of European environment. The more Moscow is diverted towards the east thanks to China the lesser the thrust on Europe. A most significant change has taken place recently with the Chinese emergence out of its shell and distinct orientation towards Europe, Japan and the United States. For one thing, Europe's assistance to China till recently was only marginal, but now it has taken a quantum jump.

In this post-Mao era of "modernisation" China has turned to the West for upgrading its defence. The crisis in Afghanistan is likely to hasten this process. From the Indian point of view it is bound to upset the subcontinent's power balance. The triangle is out for a shot in the arm. Possibly this aspect of developments has rather escaped attention in Europe, but could have far-reaching consequences.

US and the Triangle. The US connection with the triangle is peculiar and complicated, varying with the constituents of the triangle and fluctuating with time and circumstance. In Washington's perspective South Asia has not figured as a priority objective, its main preoccupations having been with East Asia and South East Asia. Immediately after World War II the Indian subcontinent was viewed as a zone of containment of China, hence SEATO. But while Pakistan joined SEATO, India did not, and that fact has rather militated against the development of really warm relations between Delhi and Washington. Meanwhile SEATO faded out and Pakistan too fell out of the American orbit. That phase also has ended after Afghanistan, and Pakistan has once again been wooed with attractive military and economic aid. This is bound to alienate India further, to the distinct gain of Moscow.

During the 1970s the US abandoned the China-containment policy, embarking on the road of normalisation of which the consequences are unfolding rapidly. Again Afghanistan is the catalyst, with the US promising to promote China's modernisation, including defence capability. Close confluence of strategies may be expected now, even if not formal alliance. So far as the triangle is concerned, a likely consequence will be further strengthening of Indo-Soviet links. Thus the triangular balance has come to be subjected to additional weight and counter-weight, and in specific areas such as the Pamir the conflict is liable to be intensified with the USA thrown in. What Afghanistan has done is this: through direct collision of super power interests, it has pushed the triangle into the cockpit of global power politics.

The Global Setting. From the size of the Moscow-Beijing-Delhi syndrome this might have been expected. For after all this formulation is constituted by states which between them contain some one-fourth of the surface of the globe and one half its population, sprawling over two continents. One of these constituents is a super power whose strategies are global and who would mould its policy with the other two on a world-wide basis. And the two bigger ones,

China and the Soviet Union, are in contest with each other in several sensitive areas of the world. A host of issues engaging them all are of world importance, ranging from ideology to territorial disputes, to bloc alignment or non-alignment, to military aid, to arms proliferation and control, and to problems of war and peace. The most remarkable feature of the triangle is the Soviet-Indian proximity and Sino-Soviet gulf. Recent events have highlighted these features; and if Afghanistan is the pointer, some pregnant realignment of forces of far-reaching consequence may be expected.

China's latest proposal to India, that the border dispute between itself and India be settled along the lines of actual control, is likely to soften up the triangle. This however has to be weighed against China's defence build-up about which India has openly expressed concern. Will then be an arms race? How will it affect the regional and even global balance is a matter which analysts will watch.

The North Atlantic Treaty Organisation (NATO)

COLONEL R. RAMA RAO (RETD)

ONE of the many lessons that could be relearnt from the history of the Second World War is that nations when facing a common danger could come together, work together unitedly even submerging their individual interests, pool their resources and fight the perceived enemy unitedly. Yet when the war is won, the allies during the struggle could soon become antagonists, proving the correctness of Palmerston's observation that nations cannot have permanent friends or permanent enemies but only permanent interests. Thus, while Britain and France, chose to resist Germany when that country invaded Poland in September 1939, the United States and Russia for different reasons, had stayed neutral. Later, on Hitler attacking Russia and Japan attacking Pearl Harbour, USA and Russia joined Britain in the war against the Axis powers. Soon after the defeat of Germany, it was clear that Western members of the Alliance had less in common with Soviet Russia their ally during the war, than with Germany, their erstwhile foe. In fact to the discerning contemporary observer of the Second World War it would have been clear, even during the most critical days of the war when the Allies—at least Britain in the West and the Soviet Union in the East—were struggling for self preservation that Britain and USA on one side and the Soviet Union on the other had serious mutual reservations.

During the final phase of the war, it was Churchill's view that the Allies should occupy Berlin first and proceed as far East as possible while Roosevelt was generally inclined to be more moderate.

The formal end of the war also saw the dismemberment and disarming of Germany and the occupation of that fragmented country by the Four Powers. But among the Four powers USA had the backing of Britain and in the early stages, of France also, and while the three tended to act in unison, the Soviet Union stood alone and mutual suspicions of the two groups steadily grew. Soviet suspicions regarding USA and the West were heightened because USA was the

one power which emerged stronger at the end of the war, industrially because it had greatly augmented its production capacities and militarily because it was the one country to possess the new weapon—the nuclear bomb whose destructive potential had been demonstrated on Japanese cities. For their part, the West suspected the Soviet Union because of its declared policy of encouraging the spread of communism. USA in particular was also apprehensive that in view of the devastation of West Europe as a consequence of almost six years of intense war, and the disruption of thousands of homes, West Europe was a fertile soil for the spread of communism. Hence an ideological barrier, born out of mutual suspicions, grew between USA and its Western allies on the one side and the Soviet Union on the other.

When the Soviet Union tested its first nuclear device in 1948, American suspicions strengthened, and the stage was set for the formation of a Western Alliance whose primary objective was the containment of the Soviet Union. West European countries Britain, France, Belgium, Netherlands and Luxemburg—concluded a Treaty at Brussels early in 1948, in terms of which the six powers pledged joint military action should any of them be threatened by an external power. At this stage the United States merely associated itself with the Brussels Treaty Powers. Later, in 1949 Canada, Denmark, Italy, Iceland, Norway and Portugal besides USA also formally joined the Alliance thus bringing into being NATO.

Greece and Turkey were invited to join in 1951, and West Germany in 1955. NATO, thus formed, is a defensive alliance in terms of which member countries would consult each other and evolve measures for joint defence against external threats to member countries.

In the early years, Western countries genuinely feared the spread of communism—although the Soviets faced with their own domestic problems of reconstruction may not have had either the inclination or the means to attack countries of West Europe. The security perspectives of NATO allies gradually changed with the years, and understandably so. In the beginning USA had overwhelming nuclear superiority; could speak to the Soviets from a position of strength (as demonstrated in 1962/63 during the Cuban missile crisis) and West Europe felt secure, notwithstanding the apparent superiority of Soviet conventional forces in Europe. Gradually, as the Soviets augmented their nuclear arsenals, American nuclear superiority narrowed. SALT-II Agreement tentatively agreed to by the two Super Powers—but still to be ratified by US Congress, concedes near

parity to the Soviets—although in effect USA still retains a significant lead over its rival because of the number of deliverable warheads available to it, their accuracy, versatility and their relative immunity to counter measures.

Reviewing NATO Treaty after a quarter century, Heads of NATO Governments assembled at Brussels on June 26, 1974 placed on record their confidence that NATO Treaty has stood the test of time, since it enabled West European nations to rebuild their countries from the ruins of the war and that today the alliance provides not only the basis for their security but also a framework within which to pursue detente. This last is in recognition of the fact that NATO (and world) security environment has changed with the attainment of near nuclear parity between the Super Powers.

NATO's European partners who provide three fourths of the Alliance's conventional forces affirmed their readiness to make their contribution "to maintaining NATO conventional strength at a level capable of deterring and if necessary repelling actions" directed at any member of Alliance while USA for its part reaffirmed "its determination not to expose its allies to external political or military pressures likely to deprive them of their freedom and states its resolve, together with its allies, to maintain forces in Europe at the level required to sustain the credibility of the strategy of deterrence and to maintain the capacity to defend the North Atlantic Area should deterrence fail."

All concerned noted that the presence of US forces in Europe remains indispensable for the Alliance.

Had this observation not formed part of the declaration of Heads of NATO Governments (Brussels, June 1974) there would have been no need for NATO, at least no need for American membership of NATO. Yet global as well as West European strategic environment has changed significantly during the Seventies and it would be difficult—at least for a non West European (or non Chinese, non American) observer—to maintain that West European countries are in imminent danger of a massive tank cum air attack from across the border by Warsaw Pact Powers. On paper, judging from force and equipment strengths of NATO and Warsaw Pact forces, it may appear that NATO forces would be heavily outnumbered by forces of the other side. In fact, however, this superiority may prove illusory. First the equipment of Soviet forces,—aircraft, air to ground, air to air and ground to air and surface to surface weapons and in tanks and APCs, is outclassed by Western equipment—although in the case of tanks it would seem that Soviet T 72 tanks are as good as

the best that NATO can now field. But allied superiority in aircraft, precision guided munitions and anti tank weapons is significant, neutralising whatever numerical advantage the Warsaw Pact Powers may have. It would thus seem that the danger of a massive Soviet invasion of West Europe spear headed by tanks and overrunning NATO's forward defences in a matter of hours is highly exaggerated if not non-existent. In any case, the Soviets would need considerable time to complete preparations for such an invasion such as moving assault troops to their launching positions, movement and proper positioning of follow up echelons, supporting formations and assembling and moving logistic formations. These tell tale activities would all be monitored by friend and foe alike and NATO commanders would have adequate warning of possible developments and NATO would immediately initiate action to meet all eventualities through diplomatic cum military measures. A firm warning by USA through diplomatic channels, followed, if necessary by appropriate cautionary signals on the 'Hot Line', would compel Soviet leaders to move back from the brink assuming that they make rash moves in the first instance. So far, the Soviets, even in the case of Angola and Afghanistan, have tended to be cautious rather than rash. Even so NATO military commanders, understandably argue in favour of further build up of NATO conventional forces so as to match Warsaw Pact for forces numerically, retaining and if possible further improving their weapon system superiority over adversary's and concurrently step up the alliances' nuclear arsenals as well.

US strategists would like West Europe to bear the entire cost of maintaining conventional forces in Europe in sufficient strength to dissuade the Soviet Union from considering attacks on West Europe. This in American view would be equitable because of the prosperity that West Europe has attained under American economic assistance and military protection.

Such a development would reduce American defence expenditure in Europe. Even if it may not in the end result in any reduction in American armed forces strength it would enable USA to deploy its conventional forces elsewhere or keep them in readiness in Continental America itself, for quick deployment in troubled spots around the world.

This reasoning is consistent only with the premise that West Europe faces no danger of a conventional or other attack from Warsaw Pact Powers.

Western analysts are aware that Soviet superiority over NATO in conventional forces is not as significant as may seem from a

gross comparison of the numerical strength of the two forces. As is well known if a million men are to guard Soviet Union's Eastern borders, and another million used up in logistic, internal security and miscellaneous duties inside Russia proper and in Eastern Europe, there would seem to exist a near balance in conventional forces between NATO and Warsaw Pact countries with the Soviet side enjoying slight advantage in numbers and the West more than offsetting it by better equipment and availability of bases all around the Soviet Union from which NATO forces could mount attacks on the Soviets, from all sides. In respect of air forces, USA is decisively superior. This superiority is even more pronounced in the case of naval forces as much because of the number, versatility and destructive potential of NATO fleet units as because of the control that USA and its allies exercise over critical water ways, through which Soviet naval forces will have to transit.

Furthermore, with the change in Sino-US relations Soviets have to be prepared for attacks from two fronts and fear of consequences would certainly inspire caution in the minds of Russian planners. Hence the fears of NATO planners of a sudden and powerful Soviet conventional attack seem to be highly exaggerated.

In order to halt a hypothetical Soviet conventional attack, NATO, planners envisage the use of 'tactical' or low yield nuclear weapons—the so called "mini" nukes at an early stage in the battle, as part of a policy of graduated deterrence or flexible response. Western statesmen, theoreticians and senior commanders have no doubt that there is a qualitative distinction between nuclear weapons however 'mini' they may be and conventional weapons although some varieties of the latter can almost equal the destructive potential of the smaller versions of mini nukes. This distinction is based on the belief that once a nuclear weapon is released by whichever side, the other side would automatically respond with a massive strike seeking to inflict unacceptable damage on its adversary. This would lead to retaliation in kind and nuclear war would have begun, devastating sizeable parts of the globe in a matter of a few hours. Hence the doctrine that limited, 'tactical' nuclear war can be waged, avoiding further escalation, is generally referred to as the COFFIN doctrine (confidence in first firing nuclear weapons, leading to disaster).

During the late fifties when low yield nuclear weapons were developed which could be fired from guns of 175 mm calibre and slightly bulkier versions which could be air dropped or delivered by guided or unguided rockets, and issued to forward troops, NATO

armies evolved operational strategies assuming that both sides could use tactical nuclear weapons.

Because of the West's declared readiness to use nuclear weapons first, if necessary, the so called tactical nuclear weapons, Soviet forces base their plans on having to fight a war in a nuclear environment; they apparently envisage their forces operating and advancing under cover of or immediately after a 'tactical' nuclear strike designed to destroy opponent's forward defences.

This operational doctrine is seen by NATO as proof of Soviet preparations for waging nuclear war and as grounds for stepping up West's own nuclear arsenals. In fact it may be that Soviet battle doctrine is in response to the theories regarding the usability of tactical nukes by the West formulated in the early Sixties.

There is however a certain inconsistency in American NATO nuclear doctrine. Thus James Schlesinger maintains with justification that "the ability to respond effectively is what underlies the ability to deter effectively" and that "if the determination to employ nuclear weapons remains firm, one's opponent recognises that it would be his own decision to initiate major aggression, which even if successful at the conventional level, would inevitably lead to a nuclear response".* Yet he suggests that the West is deficient (or was in 1977) in the area of conventional forces and hence cannot afford to raise the nuclear threshold (i.e. should retain 'tactical' nuclear weapons and have contingency plans for their use).

Surely if the determination to use nuclear weapons is what deters an opponent, supplementing one's already formidable strategic nuclear arsenal by tactical nuclear weapons with their limited range, vulnerability because of forward basing and the inevitable difficulties in clearing such weapons for action to meet a rapidly deteriorating tactical situation on the conventional battlefield, is unlikely to provide additional security?

Marshal of the RAF Sir John Slessor had aptly summed up the situation, underlining the redundancy of tactical nuclear weapons thus:—"The dog that you keep to mind the cat can also mind the kitten." Slessor's strategy for maintaining peace by credible deterrence would hinge on US readiness to deliver a massive nuclear strike should Warsaw Pact powers attack West Europe. This doctrine would inevitably result in some at least among the countries of West

* JR Schlesinger in his forward to "Beyond Nuclear Deterrance: New Aims, New Arms" Ed by I.J. Holst and Uwe Nerlich.

Europe gradually veering towards neutrality vis-a-vis the two Super Powers. Hence Liddel Hart's assessment that "if massive retaliation is the only way for defence, many (in Europe) would opt for neutrality".

US is only too well aware of this possibility. It wants West Europe to remain with it and at a respectable distance from the Eastern Bloc as only such a political alignment, according to American perception, would be in keeping with that country's global economic, political and strategic interests.

Further, the forward basing of low yield nuclear weapons, the development of still smaller nuclear weapons and special tactical nuclear weapons such as Enhanced and Reduced Radiation weapons on the one hand and the development of a new generation of precision guided munitions which can cause almost as much damage as tactical nuclear weapons thus narrowing the gap between conventional and nuclear weapons, can be dangerous. At one time US policy makers were clear on this issue and Fred Ikle (Director US Arms Control and Disarmament Agency) had declared at the Geneva Disarmament Conference :—

"(USA gives) assurance that it would not develop a new generation of miniaturised nuclear weapons that could be used interchangeably with conventional weapons on the battlefield"...and "we have no intention to move in a direction that could blur the distinction between nuclear and conventional arms."*

NATO has never been a monolithic organisation despite the overwhelming power of USA. USA plays a dominant role no doubt in NATO affairs ; but junior members do manage to have their say. Thus, the European members of NATO have two sets of problems, first, problems amongst themselves as West European countries and second their problems as members of the West European community vis-a-vis USA, the dominant power within NATO and NATO's principal guarantor.

The Southern tier of NATO extends from Portugal on the Atlantic coast through Italy and Greece to Turkey at the entrance to the Black Sea. USA was and still is anxious to have these countries firmly in the NATO alliance not only because of their geopolitical location controlling the Mediterranean Sea and in the case of Turkey the additional reason in that it can be a useful check on Soviet movements from and to the Black Sea, but because if these countries

* New York Times, May 24, 1974.

are permitted to stay outside NATO grouping they could, one by one, "fall" to the communist for a variety of reasons. These countries are economically considerably behind the rest of West Europe; they have fairly strong left wing elements who could under certain conditions gain control of their governments and seriously embarrass NATO. It is no secret that in order to keep leftist political elements under check US political engineers expend considerable effort.

In the extreme South Eastern sector of NATO namely on the flank covered by Greece-Turkey a serious problem for NATO is Greece-Turkey differences over Cyprus and over Aegean Islands, the Aegean Sea and exploitation of Sea bed which has considerable oil potential.

Further, it is no secret that on economic matters Britain has its problems with others in the European Community. So have some of the newer entrants to the ranks of Community membership. West European countries' perceptions of their strategic interests too are not by any means identical, although there has been and still is broad agreement that their overall national interests would be best served by joining USA in alliance in order to prevent West Europe from becoming a theatre of military operations once again. Thus to the smaller countries of West Europe, NATO alliance serves to maintain peace in West Europe and at the same time inhibiting the larger countries of West Europe from dominating them.

The Germans lost their colonies after the First World War and paid other heavy reparations for having lost that war and had to pay just as much after the Second War, because of being subjected to partition. After years of hard work, West Germany has regained its position as industrial leader of West Europe. So has East Germany in East Europe. The Germans do not want another war either. Nor does France which had lost millions in killed during the two wars and had to go through privations and long and unprofitable colonial wars.

Thus West Europe whose economy is dependent on America for technology and trade, on West Asian oil producing countries for oil, on the Third World for raw materials and markets for its manufactures and services and now increasingly on East Europe also for sale of technology and manufactures, realises that it cannot afford another war—certainly not in Europe.

West European countries especially West Germany and France, want to gradually defuse East-West tensions and consider that increased economic co-operation between East-West apart from

benefiting the economies of both groups would lay firm foundations for detente and generate healthy conditions enabling each group to pursue its own policies and yet co-operate with each other in matters of trade and commerce.

USA, however, wants to "manage" the economic independence of West Europe in such a way that no West European country so develops its trade with the East that it may become dependent on the Eastern Bloc for vital resources or for too large a share of the market for its vital branches of production or ties down in the East, dangerous amounts of its long term credits *

West European countries are not unaware of the fact that although their security interests may be served by alliance with USA, their interests cannot be identical with their senior partner's beyond a certain point.

Some in West Europe want USA on the continent as a useful counterweight against the Soviet Union not necessarily because they fear a Soviet military attack but more probably because in a world which is likely to find difficulty in adjusting to a situation where conventional energy sources are likely to dry up rapidly, radical changes may occur, ushering in an era where current ideas and life styles based on heavy consumption of energy and materials will have to change yielding place to life styles based on renewable energy sources only.

Yet the call is going round for a steady increase in real terms of defence expenditure of European members of NATO to match the projected increases in US military expenditure. The increase in NATO military expenditure would arise from two factors, increased West European military man power and upgrading the weapons and equipment of NATO forces. The first would mean diversion of skilled personnel from productive to non productive occupations at least in broad terms. The Second is also economically unwise, since resources would go into non productive work. This apart it would mean in practice, buying American weapons and equipment and hence transfer of real resources from poor Europe to richer United States. West European countries feel that standardisation of NATO, military equipment though very desirable in the interests of operational efficiency of forces, should not mean the arming of European forces by American arms manufacturers.

* See "An over view of East-West Relations" by Jeremy R Azrael, Richard Lowenthal & Tohru Nakagawa. Triangle Paper No. 15.

France is outside NATO on all these matters; Britain, West Germany, and Italy with their fairly well developed and growing armaments industries would not object to standardisation provided they get what they consider their legitimate share of NATO arms market. Individually, even Britain, France and West Germany would be unable to compete with USA in areas involving advanced aircraft, underwater or nuclear technology; collectively, and with the support of the other countries of West Europe they could hold their own even if they may not be able to outclass USA.

Hence US long range planners could argue that while it may not suit them to have a fragmented West Europe, it may not suit them to have a politically and economically united West Europe either, since such an entity would automatically take its place as an important locus of industrial and political power.

West Europe's dilemma is due in part to the fact that it is yet to evolve as a coherent political grouping. Once that is accomplished, its true role would be that of a balancing power between the other dominant power systems—USA, USSR and China.

Thus in American view, West—East European trade must not grow to significant proportions since that would create in West Europe a vested interest for peace and detente.

West Europe, with judicious support from USA could survive perhaps, as junior partners of NATO but the real danger is to the uncommitted Third World. In the absence of detente between the Super Powers cold war tensions would be maintained and conventional and nuclear arms build up for the Big Two as well as their allies—West Europe, and China, on one side and East Europe on the other would continue.

The Big Two as well as West Europe notwithstanding China's urgings would avoid nuclear and conventional war in Europe. But as sophisticated arms come into service in NATO and Warsaw Pact areas, those discarded by USA and Europe, which would be very destructive from the point of view of poor developing countries, would find their way into such areas giving rise to proxy wars, to suit great power interests.

The Afghan and Iranian crises have induced new strains in the Western alliance. When the Afghan crisis erupted, West Europe immediately reacted in support of America's stand denouncing Soviet moves vis-a-vis Afghanistan. West Europe was not unaware that US and Chinese agencies, with Pakistan's active co-operation and support were training Pathan tribesmen who could be either Pakistanis or Afghans, providing them with funds, arms, ammunition and sabotage

equipment and launching them from bases in Pakistan, into Afghanistan for sabotage missions; and that these operations were going on ever since the assassination of President Daud. Russian reaction came when they feared that President Hafizullah Amin had either been threatened into submission or had otherwise been influenced to defect to the West and was on the point of so doing. But whatever the chronology of events, West Europe's support to USA on Afghanistan was total. In respect of Iran too, West Europe generally supported USA in its demands for the release of hostages. Up to a point West Europe also supported American decision to impose economic sanctions against Iran. But clearly, given West Europe's dependence on Iranian oil, on its markets in Iran and on Iranian funds invested in West European Banks there were limits beyond which West Europe could not support USA. Nor was West Europe enthusiastic about American decision to consider imposing a naval blockade of the Gulf and mining of Iranian ports.

West Europe, despite proforma support for America's abortive bid to rescue hostages clearly could not endorse the operation. Nor need this occasion any surprise since the rescue operation with its contingency military plans did not carry the support of American State Department itself as evidenced by Mr. Vance's resignation.

These developments, arising largely from America's own errors of omission and commission have strengthened the hands of that school of American analysts who favour tough measures to keep American allies under control.

Another very important development, which was obvious to observers over the years as has been mentioned earlier, is West Europe's, (with the possible exception of conservative Britain) fears regarding the virtual cold storage of SALT talks and East-West detente as evidenced by American preparations for the manufacture and deployment of a new generation of MIRVed theatre nuclear weapons. The Netherlands is against the development of these new weapons on its soil. So is Belgium. France is out any way. Only West Germany, against its better judgement, has agreed to the deployment of these weapons; but the last word on the subject is perhaps yet to be said by the people of West Germany.

It is in this context that the recommendations of a high level Pentagon study Group* have to be seen.

* According to a Press Report based on Mr. Jack Anderson's revelations. See Indian Express dated April 30, 1980.

This study group composed of Admiral Harry Train, head of US Atlantic Command and Mr. Robert Ellsworth former Deputy Secretary, Defence, appears to have concluded that USA cannot afford to depend upon its European Allies, since the latter have been ailing from "decomposition, erosion and destabilisation of political will." In consequence, Europe's defence posture has weakened. In America there would be "continuing Congressional and public desire to cut US military presence abroad". The report also seems to have noted that there exists "an unhealthy, if unavoidable, dependency by Europe on the US for Europe's military security (which) tends to further erode European will." Also it would seem, according to the authors that.

1. "A reallocation of resources and a restructured defence of NATO Europe offers the best prospects for the future";
2. "An autonomous European defence and deterrence capability" should be the strategic goal.

Following from these conclusions US strategists seem to have advocated withdrawal of all US forces, "except a small force" from Europe, with a promise to West Europe to make up for the pull out by undertaking to provide a quick military back up in the event of a Soviet attack. According to Admiral Train and Mr. Ellsworth, this strategy "would enable USA to use its military strength elsewhere in the world and encourage the creation of a credible European nuclear deterrent." These analysts also discount the possibility of Russia "reacting aggressively" when US troops pull out of Europe.

Several conclusions would follow even from the necessarily restricted summaries of the Secret Report that have come to public notice. First, as argued by this writer earlier, it is clear that West Europe faces no danger of a massive tank cum air attack by Warsaw Pact Powers. Second, that with its own existing forces, West Europe can very well take care of itself, should Warsaw Pact Powers ever consider an attack on West Europe. Third, and very important, USA's main objectives are elsewhere possibly West Asia and the Indian ocean littoral third world countries—and it wants its forces to be available for deployment in these areas to secure its economic and geopolitical interests.

Hopefully, West Europe, would encourage USA to take its forces out of Europe so that greater cooperation between East and West Europe could develop. This strengthening of detente would be in Third World interests since they want a "generation of peace" to attend to their pressing problems of economic development, population control and social development.

Management Training and the Armed Forces

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INTRODUCTION

NEED

Awareness of the term 'management' during the last one century was initiated by the writing of the 'Principles of Scientific Management' by FW Taylor. Since then it has been built up to the present state of ecstatic frenzy where no inaugural lecture, no convocation address, no annual report of the defence ministries/departments from that of a super-power to a tiny state, is considered complete without repeated panegyrizing of the virtues of management.

The military organization has, however, always practised certain well known principles of management even without a conscious awareness of this term. From the discourses of Lord Krishna to Arjuna in the battlefield of Kurukshetra, through the writings of Sun-Tzu, to the present day world wherever the importance of motivation, morale and leadership has been eulogized certain fundamental principles of management have been touched. Ever since modernized armies came into existence the very nature of the problems faced in managing large groups forced them to develop scientific principles of organizing. The line and staff concept of organization is also a gift of the military to the civil organisations. Planning, directing, coordinating, controlling and budgeting are other aspects of management which no result-oriented commander could ever neglect. The principles of war accepted by armed forces of various countries are but very thinly disguised principles of management followed by the business and industry worlds. Like the very air we breathe without being conscious of the process, management techniques have been followed in the affairs of the military organizations. Why then this sudden need for stocktaking of the need for management in the

armed forces? It is because of the rapidly changing environment. Just as even the process of breathing has to be planned and executed meticulously in a rarified atmosphere, so the complications of present day technology and its everchanging impact on the social environment have made it obligatory on us to sit back and muse over the role of management in the defence services.

IS A NEW PHILOSOPHY NEEDED?

WHETHER there is a need for a new philosophy of management in the Indian armed forces is a very debatable issue. Those supporting it, argue that management is a gift of the western societies. They claim that in the context of Indian defence services, where we are a single entity forged out of such vastly different subcultural, linguistic, religious and life style groups the creation of a unique environment should be the basic philosophy of management. They say that our settings are very different from those prevailing in other developed and well knit monolithic societies, hence the need for the creation or selection of a unique philosophy of management.

To seek the answer, let us first understand the term management. The simplest textbook definition is "The art of getting things done through (and with) others". A further elaboration of the same theme is made by Harold Koontz and Cyril O'Donnell who write—"Management is the creation and maintenance of an internal atmosphere in an enterprise, where individuals, working together in groups, can perform efficiently and effectively toward the attainment of group goals. Managing can then be called performance environment design."

The internal environment is naturally a direct projection of the external environment. Today the external environment in which the defence services operate is changing so rapidly that a Rip Wan Winkle posture will subject them to unbearable future shock. But so it is for the industry and the business world and their philosophy of management must take note of the same ephemeral nature of the environment. It may thus be concluded that management is universal and its basic philosophy and principle remain the same in all countries and all enterprises whether business or military.

THE ROLES OF MANAGEMENT

MANAGEMENT OF MATERIAL

The twin inputs in all fighting machines are men and material. Of these the latter is subjected to extremely rapid changes. The techniques of warfare are being revolutionized with the introduction of an impressive array of new weapons and armaments. This has brought in its wake the awareness of the high costs involved. Even the high and mighty super-powers have to take stock of the tremendous fiscal resources which are to be spent on the acquisition, maintenance, research and development of weapon systems. Even the USA suspended the multibillion dollar B-1 Bomber project in view of the heavy strains on the national purse. The backbreaking costs of the Jaguar Deal for India, which are to the tune of Rs. 1500 crores approx, generated a national debate in our country. Obviously the defence services have to plan their budgets based on a thorough understanding of their objectives.

Management aims at achieving the objectives of any organization with maximum efficiency and minimum costs. In any country, not to talk of a developing country like ours, the defence services cannot expect to get all the resources that they might aspire to get. They will have to find ways and means of making the best of their limited resources. Hence the two fields in which they will have to rely heavily on management techniques will be logistic management and weapon systems evaluation and acquisition.

While matching needs with their resources the defence forces must watch out against the following pitfalls :—

- (a) *Overstocking the Arsenal.* There is often no clear analysis of the threat. In a mood to take no chances the armed forces top brass wish to acquire the latest, and the most sophisticated without relating their inventory to the capabilities or intentions of the enemy.
- (b) *Lack of a Systems Approach.* Some times there is a genuine lack of recognition of the capabilities of other sister services to meet similar missions. At other times it is a manifestation of the empire building syndrome. This is especially pertinent today when there is incessant bickering among the Air Force and Army in many countries on the use of attack helicopters, air defence missiles and many other similar very vital equipment.
- (c) *Lack of a Thorough Cost/Benefit Analysis.* Due to the mounting prices of all types of equipment there has been an

awakening towards the need for a thorough and systematic Cost/Benefit Analysis—but even now there are many instances when trial and error method has not been completely replaced by a more scientific approach.

(d) *Lack of Recognition of Production Capabilities after the D-Day.* While the concept of Economic Order Quantity (EOQ) has become a sine-qua-non for running any industry or business profitably, the services often tend to forget this aspect. The tendency to 'hoard' creates stores keeping problem as well as blocks capital.

In the USA each major weapon system receives detailed scrutiny by the Defence Systems Acquisition Review Council (DSARC) of the Department of Defense, at a minimum of three major decision points during the acquisition process. These are :—

- (a) Prior to entering into advanced development.
- (b) Prior to entering into full scale engineering development.
- (c) Prior to proceeding with production and deployment. Each of the above milestones reviews the following :—
 - (i) The military need for the system in view of current and potential military threats.
 - (ii) Possible alternatives to programme condition.
 - (iii) The validity of the results of testing and the acceptability of the planned testing programme.
 - (iv) The extent of planned technical and economic competition.
 - (v) Schedule performance and cost thresholds.
 - (vi) The overall readiness of the system to proceed into the next programme phase.

A key element of each DSARC review is the Cost Analysis Improvement Group (CAIG) assessment of the programme manager and the Service Cost estimates. This review process results in any Conflicting Views of both acquisition and operating cost being made visible at highest policy levels prior to programme acquisition decisions. According to the Annual Defense Department Report for Financial year 1977, the long lead-time required for systems development makes it difficult to assess the impact of these and other actions towards reducing costs but a recent analysis indicates that there has been a decrease in the rate of growth in the costs of the new weapon systems as measured in dollars of constant purchasing power.

The need for a similar concept of cost effectiveness in the Indian concept seems axiomatic. The Indian Navy is presently undergoing a rapid modernisation process and the IAF too is currently in the process of replacing its ageing Hunters and Canberras. In view of the high costs involved in acquiring the sophisticated weapon systems for not only these two services but also the Army, there is a positive need for the use of latest management techniques in the weapon systems acquisition process. The use of modern management methods like System Analysis, Workstudy, Inventory Management and Project Management being utilized at various operative levels is a must today.

MANAGEMENT OF MEN

Inspite of the most sophisticated weapon technology available today, no armed forces can afford to forget the dictum of Maj Gen BA Schriever, the head of the US Ballistic Missile Programme, that "Despite all our push button technology, it is still the man that counts and not the button". While the human resources available to management in an organization are only one part of the resources which must be coordinated, it is through the combined efforts of people that money and material resources are utilised for organizational objectives. Consequently, the organization and motivation of human effort, the personnel function of management are a central responsibility of management anywhere and much more so in the Defence Services where a man is supposed to give not only sweat and toil but even his blood for the achievement of organizational objectives.

Todays defence services officers cannot be effective leaders if they continue using traditional management concepts. The socio-economic changes of the modern era are continuously changing the nature of men that the present and coming generation of officers will be leading. Better education is changing the values held by men at work and in the society. Their expectations are vastly different from those of their fathers or grandfathers. An autocratic style of leadership stands little chances of any success under such conditions. Short run results could some time be obtained by the carrot and stick approach, but the essence of good management is getting effective results not only in the short run but also in the long run through building and maintaining a productive human organization.

The US Army Combat Development Command Report "Man and the 1990 Environment" suggests the following picture for US Command structures in the future—"The Command Structure will become less rigid as more knowledge is required for decision making.

Autocratic leadership and arbitrary decisions will become less effective. Managerial skills will become increasingly important. Leaders will need a working knowledge of human behaviour and motivation. The leaders responsibility to integrate the personal needs of his men with the military requirements of his organization will become increasingly vital in the next decade". There is every reason to insist that even though the social settings may be different in India from that the USA, the requirements of managerial skills in Indian armed forces officers will be equally important for organizing the human element, as a matter of fact much more so in the context of the rapid changes in the social awareness of equality that are taking place in our community.

To summarise the above discussion, it can be said that there exists a pressing need for adoption of modern management techniques in the armed forces in two fields. One field is that of the skillful management of weapon technology and military hardware, and its development, procurement and subsistence. The other field is that of internal management problems with the new kind of manpower an advanced and affluent society will produce.

MANAGEMENT SKILLS REQUIREMENT

SKILL REQUIREMENTS FOR MANAGEMENT OF MEN

Having established the need for the development of managerial skills, let us now see what specific skills ought to be inculcated in the Defence Services Officers. In the USA, the Department of Army published recently a monograph entitled "A matrix of Organizational Leadership Dimensions". In this a study was made of those management skills found common to all officers from a Lieutenant to a General. Sifting from management science, communications science and behaviour science studies done during the last decade, the study presented the required skills in a hierarchical sequence quantified by degree of usage.

The study revealed that the requirement of the behavioural skills is different for different levels of management, communication skills are equally important at all levels and the importance of technical skills reduces as one reaches the higher rungs in the organizational ladder.

The requirement of management skills for internal management problems thus varies at different levels and whatever system of management training is suggested we will have to give different type

of training to Defence Services officers of different responsibility and authority levels.

SKILLS REQUIRED FOR MANAGEMENT OF MATERIAL

The management skills required for management of the weapon systems selection, acquisition, and sustenance require a thorough knowledge of the decision making process. The following skills are considered very useful in this field :—

- (a) An understanding of the methods of mathematical analysis and quantitative techniques.
- (b) Strategic planning and decision making.
- (c) Construction and use of models for any control process.
- (d) Designing evaluation measures for programmes.

Organizational changes for An Integrated Approach. The need for a techniques like Planning, Programming and Budgeting Systems (PPBS) and Management by objectives also brings in the question of certain fundamental organizational changes. Any concept of cost effectiveness must always view the defence services as a single system, yet in our present set up the Joint Planning Committee does not have any managerial expertise. Under the present system of individual service chiefs, each service tends to assess its strengths and weakness, objectives and threats (SWOT) as an isolated all. Do we require a reorganization of our defence set up ? A detailed discussion on this aspect is not feasible here, but there certainly exists the need to orientate the service officers to view the system as a whole.

METHODS OF MANAGEMENT DEVELOPMENT

Having determined the need for management training and the specific skills that ought to be developed, let us now see how the management development programme can be successfully inculcated in the three services.

TRAINING OF SENIOR OFFICERS

The Top down Approach. First of all any comprehensive policy for a management development programme must start from the top. The top level officers should themselves keep abreast of the advanced techniques of management ; only then will they be able to create an environment in which their subordinate will be able to practice new styles of leadership and modern methods of resource management.

LEADERSHIP TECHNIQUES AT CIVIL-MILITARY LEVELS

There is a need to determine the leadership style of our senior officers at the Service Headquarters and Ministry levels. Presently they have such short tenures at these levels that they find themselves at a disadvantage with their civilian counterparts who have long years of experience in the department. Presently the National Defence College only partially fulfils the role of Training high level managers and policy makers. In advanced countries service training establishments usually have civilian specialists on the staff. For example the head of the Systems Management Division of the Naval Post Graduate School at Monterey is a civilian management specialist. But in India, institutions like the NDC tend to be more of service establishments than academic institutions. Our senior officers may also keep pace with the management innovations by attending special conferences, appreciation seminars, etc organized by such senior bodies as the Administrative Staff College of India and the various Institutes of Management.

NEED FOR NEW TECHNIQUES

Management development programmes should utilize such techniques as Case Studies, role playing, discussions, Programmed Instruction for Management Education (PRIME), Sensitivity Training (T-Training), Managerial games and Managerial Grid techniques. New leadership theories like the Leadership continuum, the Blake Moulton Basic Managerial Guide, Life Cycle Theory, and the Leader-Group Situation approach should be introduced to provide the officers to change their traditional concepts of leadership.

NEED FOR INDIGENOUS CASE STUDIES

Case studies, originating from the Harvard Business school are considered a most effective way of creating an understanding of practical situations. But we do not have enough cases available for studies. The reasons are many but the most important ones are firstly our lopsided obsession with security and secondly our ignorance of the method's effectiveness. As a result we often rely upon cases obtained from foreign countries which lose most of their value because of the inherent differences in the Indian and foreign settings. This acute lack of realistic training literature can be reduced vastly by making available the details of the decision making processes we have adopted successfully in the past.

TRAINING AT JUNIOR LEVELS

Encouragement of Creative Thinking. A primary requirement for the development of good managers is innovative and creative thinking and freedom for expression of independent and dissenting views. In his book "Perspectives in Defence Planning", Shri K. Subrahmanyam has rightly said—"Unfortunately in defence services the differences in the nature of discipline required in Command and in the operations on the one hand in staff work, in managerial and policy making functions on the other hand are not always adequately appreciated.....while in this country it is a widely held view that on professional matters there can be only our view—that of the service chief, in other democratic countries like the USA, UK and France, active service officers after making it clear that the views are their own and not that of the service concerned are able to express dissenting views."

There may be a feeling that we are not yet a very mature nation; the democratic style of functioning is after all not very deeply rooted and our society has always placed on a very high pedestal unquestioned loyalty and obedience to the elders. Sudden exposure to free and frank expression of views at all levels may be deemed harmful to our organizational climate. But if our concepts of traditional leadership are to change, and management of personnel is to be given a new style, then there is a need to foster an atmosphere of original and free thinking to develop our middle level managers.

Catch Them Young. The mathematical and quantitative approaches to management are often tedious and unattractive to a large number of service officers. When exposed to such techniques, many service officers consider them the play things of academicians. The very notion that their fighting instinct will be rusted by the use of sophisticated management principles and tools is a reflection of their ignorance of what management can offer to them. Training of any sort can be successfully imparted only if the trainees themselves are keen to learn. Once the young officers realize that the mathematical and quantitative techniques are an inalienable part of the material and human resource management, they will shed the tendency to view these as an academic approach.

Young officers may be exposed to the rudiments of these techniques along with other fundamental of behavioural sciences, communication skills and leadership theories. Those who show promise in an understanding of the quantitative techniques etc may be

earmarked for higher training of the same at a later stage as middle level officers and may be given specialist training in these.

Practicability—The Acid Test. Service Officers are in fact already quite conscious of the importance of new management tools and techniques in logistics guidance and systems acquisition processes as well as in human aspects. There arises however a credibility gap when they find that all that is being taught is neither being practised nor the environment encourages its practice. For example there is a wide gap in the theory and actual implementation of modern O&M techniques. A subservience to bureaucratic procedures has produced such webs of rules and regulations and cumbersome administrative procedures that even the best management techniques get inextricably entangled in them. What is needed is a fresh approach to sort out the innumerable rules and regulations, the plethora of directives, orders and instructions to create a new environment in which the freshly acquired management skills can be actually applied by the officers. Practicability is the acid test of usefulness of a management philosophy in the services, and practicability can be achieved only by the adoption of this philosophy by the whole system with whole-hearted support of the top rungs and with genuine enthusiasm from the bottom rungs of the organisation.

CONCLUSION

A fundamental characteristic of management is its universality. The basic principles of management remain the same in all arenas of human endeavour. Hence a separate philosophy of management for the defence services cannot be visualised—only its application may be for certain specific roles.

Awareness of the fundamental principles of management has been implicitly sustained in all organized forces by the very nature of their organization. In the rapidly changing environment of today this awareness has changed to over consciousness. The complexities of decision-making involved in the evaluation selection and sustenance of exorbitantly costly weapon system and the intricacies of internal management problems with the new kind of manpower advancing societies will produce, leave no option but the adoption of modern management techniques.

A thorough understanding of the behavioural aspects, human relations, and communication is a must for defence officers at

all levels of service and the officers themselves are keen to learn these skills to become effective leaders. The specialist modern techniques of decision-making, however, tend to seem too academic and dry to many officers. An exposure to the rudiments of these techniques will create new interest in the young and junior officers towards these. However, higher training in these techniques should be imparted only to those who are self motivated and show promise for acquisition of these skills. At present there is a void in the training of policymaking techniques at senior level. The training at conceptual levels cannot be left entirely to service establishments. Such training should incorporate the services of specialists in management and coordination with premier management training institutions.

The old methods of class room lectures will not suffice. Full use should be made of new techniques like case studies, full and frank discussions on participative basis, management games, computer based games, management grid, and T-training, aided by films, TV/video and other sophisticated training aids. Frank expression of personal views and innovative thinking should be encouraged.

Any training can be meaningful only if the organisation reinforces it by providing opportunities for its application. All the stress on the creation of a Management philosophy in the services and the training for its acquisition will be fruitless if in the end the trainees are left with the impression that class room and text book approaches are largely different from their real world. Hence there is a need for creating an environment in which modern management skills can be successfully implemented.

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Employment of Helicopters for Combat Engineering Tasks

LIEUT COLONEL MAHARAJ SINGH

INTRODUCTION

The military geniuses throughout the long history of warfare have emphasised that manoeuvre and rapid movement are the keys to victory in battle and this principle is more valid today in the nuclear age than ever before. The tempo, speed and intensity of modern warfare demands the highest form of mobility both strategic and tactical to be provided to our own forces and the same effectively denied to the enemy. Strategic mobility to own forces can be provided by the use of fixed wing aircraft. Tactical mobility which hitherto was provided by the use of mechanical transport is neither adequate, nor feasible in all types of terrain, and with extensive net work of planned obstacles. The gap can be effectively filled by helicopters which can operate almost anywhere. The aim of this paper is to study the employment of helicopters for combat engineering tasks.

TYPES OF HELICOPTERS

BASED on the load carrying capacity of helicopters, these can be conveniently divided into three categories as under :—

- (a) *Light helicopter.* It is an easily manoeuvrable aircraft and can carry a small pay load of 500 Kgs or five men. We have ALLOUETTE III, American BELL 47 G-3 (SIOUX) and SA-315 manufactured by HAL.
- (b) *Medium helicopter.* This is larger than the lighter helicopter and can lift loads upto a fully equipped section or 2000 Kgs. It is used as a general purpose transport for troops lifting or for logistical support. We have Mi-4, S-55 and S- 2.
- (c) *Heavy helicopter.* This is a large and a powerful machine such as SIKORSKY-64. Russians have built and produced

still heavier helicopters viz Mi-10, which have a lift capacity upto 31 tons. This is primarily used for providing logistic support. These types of helicopters have a potential for carrying out a number of combat engineering tasks.

CHARACTERISTICS, CAPABILITIES AND LIMITATIONS

CHARACTERISTICS

- (a) *Flexibility.* Forces and logistics can be moved in a very short period to any location.
- (b) *Concentration.* Concentration of effort at a given location can be achieved very fast.
- (c) *Mobility.* It is not hindered by terrain or ground conditions.
- (d) *Rate of movement.* A fixed rate of movement can be planned without any restrictions being imposed due to ground conditions or terrain.
- (e) *Versatility.* It can be used for a number of tasks.
- (f) *Bad Weather Operation.* Helicopters can operate in inclement weather.

CAPABILITIES

- (a) *V/STOL.* The rotary wings provide the aircraft with the capability to take off and land either vertically or with very small take off and landing run.
- (b) *Hover.* There are two types of hover—in ground effect (IGE) and out of ground effect (OGE). When the helicopter hovers close to the ground, the down wash of air from the rotor blades increases the air density and enables the aircraft to hover with a larger load or with the same load at higher altitude. This is known as hover in ground effect. When the down wash does not reach the ground it is known as hover OGE.
- (c) Load carrying capability in cabin and underslung.
- (d) Strike capability.
- (e) All weather operation.

LIMITATIONS

Helicopters developed so far suffer from the following limitations :—

- (a) *Speed.* Max speed of approximately 400 Kms/hr.
- (b) *Fuel consumption.* It is higher as compared to conventional aircraft.
- (c) *Range.* It is limited due to higher fuel consumption.
- (d) *Pay load.* As a result of the above factors, pay load is restricted and drops off rapidly with increases in altitude.
- (e) *Maintenance.* Is more costlier than the conventional aircraft.
- (f) *Vulnerability.* Due to slow speed is more vulnerable to enemy ground fire.
- (g) *Stability.* Not very stable due to high centre of gravity.

COMBAT ENGINEERING TASKS

Helicopters can be employed for a number of combat engineering tasks in support of a formation. These can be broadly discussed under the following heads :—

- (a) Mine laying
- (b) Mine breaching
- (c) Bridging
- (d) Construction of roads and tracks
- (e) Water supply.
- (f) Engineer reconnaissance
- (g) Demolitions
- (h) Miscellaneous tasks.

MINE LAYING

In present day warfare where each force has got a tremendous amount of mobility, it is imperative that a defender lays artificial obstacles in conjunction with natural obstacles in minimum possible time. The gaps are going to be large and if these obstacles are to be of any value, they would have to be laid in depth anything upto 1000 to 1500 mtrs and with high densities varying from 6 to 9 anti-personnel mines per yard front. The defender

to have the ability to outmanoeuvre the attacker by creating extensive artificial belts in a short period would have to evolve special techniques of laying mines.

DISADVANTAGES OF PRESENT SYSTEM OF MINELAYING

In the present system mines are mostly laid by hand or by mechanical minelayers. This system suffers from the following major drawbacks :—

- (a) Heavy demand on engineer and infantry resources for minelaying at critical periods of the battle.
- (b) Weight of minelaying stores causes serious logistic problem both in terms availability of transport and road space.
- (c) Limited number of minelaying parties can be employed, and the rate of laying is very slow.
- (d) In effectiveness of the mechanical mine layers in hard soil.
- (e) Setting not proper due to lack of time, thus limited flexibility with a commander.
- (f) At times requirement of infantry for providing protection to minelaying parties.
- (g) Problem of camouflage and concealment of the minefield due to large number of tracks made during minelaying.

IDEAL MINELAYING SYSTEM

It should have the following pre-requisites :—

- (a) An effective minefield laid with minimum resources both in terms of manpower and time.
- (b) Must not overburden the logistic resources.
- (c) Simple system of recording and recovery of minefields.
- (d) Provide commanders with maximum flexibility.
- (e) Efficient in terms of cost effectiveness.

AERIAL MINELAYING

By this method mines can be laid from the air either through a chute attached to a helicopter or by an aerial spray. The rate of laying is very fast and particularly suitable for deserts and plains.

This concept was first evolved by the Germans during World War II, when they dropped an anti-personnel fragmentation mine

fitted with anti-lifting fuse known as Butterfly Bomb. It consisted of a cylindrical metal cannister containing HE and built-in fuse. The mine was fitted with wings that folded around the cannister, but when dropped from aircraft these wings were forced open by air pressure and retarded the fall of mine. The US have improved version M 83.

In 1960 experiments were conducted by UK and USA to lay mines by helicopters flying at a level of 10 ft above ground and with short chute attached to it, to enable the mines to be distributed evenly on the ground. The trials were not fully satisfactory and suffered from the following drawbacks :—

- (a) Conventional anti-tank mine was not very effective because it was visible and could not be fitted with anti-lifting devices.
- (b) Weight of mine in relation to its performance lowered the efficiency of the system.
- (c) Carriage of sensitive HE together with detonators made the operation hazardous.
- (d) Flying at low altitudes made the helicopter vulnerable to ground fire and endangered by trees and power lines.
- (e) Arming of the mine while airborne was difficult. However, it was undesirable to load the helicopter with pre-armed mines. Anti-tank mines were cumbersome and slow to arm.
- (f) Since the mines were not laid to a pattern, lifting at a later stage was time consuming.
- (g) It was not possible to lay any tripwire operated mines, hence simpler to breach by the enemy.
- (h) From the pilots points of view, it required skill and experience to fly slowly a few feet above the ground on a bearing. Flying at slow speed the rotor lift is reduced and the progressive lightening of the load as the minelaying proceeds requires constant counter action by the pilot.
- (i) For minefield marking, stores and parties had to be dropped.
- (k) If free dropped from a height of 300 ft, the mine either detonated, burst open, rolled too far out of position or buried itself deep in the ground.

Type of mines for aerial minelaying. Based on the above experiments there was primary requirement of developing a new type of mine with the following characteristics :—

- (a) Hits ground without detonating, bursting or burying itself.
- (b) Has a fuse with two separate initiation systems, one per set for the vehicle or tank, and the other self delay activating after laying, to operate against any manual lifting disturbance of the mine.
- (c) A simple arming system which can arm the mine in a single movement.
- (d) Remains in the place where it falls.

The above limitations could be overcome by :—

- (a) Eliminating heavy metal case of the mine and replacing it with a tough flexible bag made of nylon and coated with plastic membrane.
- (b) Replace solid HE filling with a soft plastic explosive.
- (c) Replace sophisticated detonator and initiator with simple crush type initiator but sensitize both initiator and plastic explosive with a highly volatile desensitizing agent.
- (d) The colour of the plastic bag can be selected to blend with the ground. This together with any definite shape makes the mine difficult to detect by infantry and almost invisible to a crew of a moving AFU.
- (e) The problem of marking and recording can be overcome by laying a rear boundary fence before commencement of dropping of mines. As regards recording, drop a visible foam alongwith the mines and photo the foam pattern on the ground. The foam then evaporates, but the photograph together with a knowledge of the total number of mines dropped will give a record. Alternatively self sterilizing mines could be used.

Technique of aerial minelaying. The mines are suspended in racks below a helicopter. The racks are designed so that once dropping starts the mines are automatically released at the rate of 65 mines per minute. When the mine is dropped as a free drop, it behaves like a bag of putty, hits the ground and stays where it falls. As soon as desensitizing agent evaporates the mine is armed. Experiments have shown that the ground pattern is predictable enough to allow a minefield of given shape and density to be positioned by day or night.

The associated anti-personnel mine weighs only 4 ozs and is similar in construction and operation to the anti-tank mine. The mines are stored in pods, hermetically sealed and in an atmosphere saturated with the vapour of the desensitizing agent, which prevents the agent to evaporate until the mine is released from the pod. These mines are released in a shower and rely on speed and air resistance for dispersion.

Tactical advantages

- (a) Speed of laying in deep minefields with higher densities.
- (b) Better concealment from air reconnaissance as no fell take tracks.
- (c) Commanders afforded complete freedom on selection of ground. Helicopters not tied to any road system. Inaccessible areas can be mined. Operation can be conducted deep inside enemy territory.
- (d) Mines can be laid at a very late stage, thus surprising the enemy and causing confusion and heavy casualties during attack.
- (e) More efficient from cost effectiveness, because mines do not have expensive metal cases or sophisticated fuzes. Because of speed of laying commander can withhold decision of laying till the end, thus save mines and manpower from being diverted to a wrong place.
- (f) *Logistic advantage.* Since move not road bound, losses due to enemy air action or guerilla action against vehicles carrying stores is eliminated.

Limitations

- (a) Due to ease of laying large areas likely to be rendered unusable.
- (b) Large number of surface laid mines can be recovered by enemy and reused.

FUTURE TRENDS

Helicopters have a very major role to play in aerial mine laying, and some of the limitations which exist today can be overcome by 'measures' recommended below :—

- (a) *Self sterilizing mines* These are mines with pre determined armed life. Two types of mines could be developed, those required for harbouring with short life of 7-28 hrs and

those required for laying protective, defensive or tactical minefields with life ranging from 7 days to 3 months. Once these mines are developed problem of recording and recovery would be totally eliminated.

(b) *Anti-lifting/Handling devices* An inbuilt device similar to the Butterfly Bomb should be incorporated in the anti-personnel mine and anti-handling device for anti-tanks mine.

(c) *Desensitizing agent*. Since rate of evaporation is dependent upon local atmospheric conditions, variations of these cause irregularities in the time between laying and activation. There is a requirement for an agent with constant rate of evaporation.

MINE BREACHING

With the ability of the defender to lay deep and extensive minefields with high densities, the present techniques of mine breaching have become completely outdated. The delay in the move forward of the tanks and other anti-tank weapons onto the objective is just not acceptable in view of the infra-red capabilities of the defender. Unless effective means are developed it would not be worth having sacrificed precious lives for capturing an objective, because holding it against an enemy armour onslaught would be impossible. The present techniques of mine breaching are briefly discussed below :—

Hand breaching. With the introduction of plastic type of small size mines the rate of prodding has decreased considerably and the mine detectors are no more effective. This has resulted in increased timings for mine breaching.

Explosive means. Charge line mine clearing has the limitation that when fired singly it clears a lane upto 140 mtrs depth only. For deeper minefields CLMSCs have to be fired in tandem, after preparing launching pads before each subsequent firing. Apart from the inaccuracies in alignment of subsequent firings, this is very time consuming.

Mechanical means. Employment of trawls for minebreaching has solved the problem only to a limited extent, because the defender with the use of double actuating mines can disable the tank, apart from the inherent disadvantages of the tank gun being ineffective while trawling.

EMPLOYMENT OF HELICOPTERS

Helicopters could be usefully employed in breaching minefields which have been laid to cover wide gaps, or laid on the flanks of a

formation. Helicopters could carry the explosive hoses over the minefields and after being dropped over the minefields these could be fired by suitable means. Depending upon the depth of the minefields the explosive hoses can be coupled together in the concentration/assembly area. These can then be wound on a drum fitted to the undercarriage of the helicopter and released from it over the minefield. Apart from being able to breach deeper minefields within one night, the width of the lances cleared could also be increased by using hoses with higher explosive content per foot run of the hose. With the conventional rocket motors used for firing the CLMC it is not possible to fire these large hoses due to the problems of aerodynamics. However special means would have to be devised to ensure :—

- (a) Helicopter flies over a fixed course while flying over the minefield, so that the explosive hoses are uncoiled over a fixed alignment and there is not too much of deviation in the path cleared.
- (b) Suitable arrangements are available for firing of the explosive hoses after they land over the minefield.
- (c) Hoses are not prematurely detonated as they are being uncoiled over the minefield.

In addition, helicopters could be usefully employed to spray the jelly explosive over the minefield which can then be detonated to clear the minefield. The spray can be directed towards a specific area very accurately. The system of firing it through a shell has certain limitations viz limited accuracy over the target area and not so economical.

BRIDGING

With the effective network of artificial canal obstacle system developed, the only chance of success for an attacker is to be able to cross his break out force across the obstacle during hours of darkness and break out of first light. This would mean that a maximum of 3 to 4 hours would be available for the sappers to construct the bridges. Some of the major problems affecting such a crossing are as under :—

- (a) Construction timings for bridges are too high
- (b) Insufficient time for reconnaissance
- (c) Lack of roads and tracks to bridge construction sites
- (d) Technical considerations at times restrict the options to a commander in selecting the area of bridge head

- (e) Restricted construction and launching sites or high canal banks
- (f) Difficulty in ferrying across of rafts in fast current.

EMPLOYMENT OF HELICOPTERS

These can be very usefully employed both for wet and dry, bridging, as well as ferrying, as discussed in the subsequent paras.

Dry bridging. In dry bridge construction the helicopter can be used for bringing up bridging stores to the bridge site from a rear area. Because of the good manoeuvrability it could also be used for the bridge construction; the helicopter hovering with the heavier bridge components permitting the working parties to join the components together.

In restricted construction sites such as canals with high embankments launching of a bridge is very time consuming and a difficult operation. The helicopter can carry the nose constructed with standard Bailey equipment, underslung and place it in position. Thereafter the bridge can be constructed and pushed forward manually, thus eliminating the necessity of constructing gantries or use of counter weights.

Light bridges over restricted spans could be lifted directly and placed in position. Light weight aluminium bridges upto 100 ft length have been flown and placed on bank seats. It is practical to fly and place a complete bridge directly over as an underslung load, the size and weight being dependent on the payload of the helicopter in the conditions of weather, altitude and range required.

Wet bridging. In wet bridging one of the main drawbacks is the move forward of the bridging equipment to construction sites in the absence of suitable tracks leading to the construction sites, an unloading of pontoons into water from high canal banks. Construction of tracks to these sites from the bridge manshalling harbour cannot commence till the home bank is secured. The time being at a premium, and if the track construction starts so late, bridging would not commence as soon as the small arms fire is eliminated. Helicopters could directly lift pre-assembled single float units of KRUPPMAN Bridge from the engineer assembly area to the bridge site, and lower them in water. Thus the bridge construction could start simultaneously with the track development.

Helicopters could also be used to bring forward and drop assault or storm boats into water. Helicopters have been able to push forward the assault boats by the pressure created by its rotor blades.

Ferrying. In rivers with large spans construction of bridges is very time consuming and in the initial stages of assault for the establishment of the bridge head we would have to resort to rafting. However, carriage across of a cable and other ferrying gear such as heavy winches required for the establishment of a captive ferry, more so in a fast current poses a serious problem. The present system of initially hauling across a small size cable and thereafter gradually taking across larger size cables is very cumbersome and time consuming. Alternatively firing across a cable with a mortar is not very effective due to its range limitations. Helicopters could be very usefully employed in hauling across the main cable and establishing the captive ferry in a very short period.

The following points will have to be looked into while using helicopters for bridging tasks :-

(a) *Lifting.* The initial lift requires special attention to ensure speed and avoid fouling of strops. The bridge should if possible be constructed over a level ground, with its nose pointing towards the wind. The smaller loads should be kept carefully to avoid being blown off with the rotor down wash.

(b) *Fins.* These would be required at the rear of the bridge to stabilise it in forward flight.

(c) *Transportation.* The tendency of a bridge to swing when being lifted or lowered seems to be the unpredictable effect of rotor down wash, wind speed, ground configuration and the form of bridge.

(d) *Placing.* For accurate placing the helicopters observer should be able to see the completed bridge. In case he cannot, it would have to be controlled by the ground commander and suitable communications established.

(e) *Ground crew.* Men employed for the positioning of the bridge would be subjected to the down wash, and would have to be provided with close fitting head gear, goggles and gloves.

CONSTRUCTION OF ROADS AND TRACKS

Road construction in mountainous and desert terrain is very slow and poses a number of problems due to limited capacity of existing roads, imposing severe strain on the logistic capabilities of task force for carriage of track construction material. In deserts particularly huge quantities of track material are required to be transported. The speed of construction is retarded because the stores

cannot be dumped forward at a number of sites, as such road building activity is restricted and cannot commence simultaneously at a number of places

Helicopters can be very usefully employed for transportation and laying of prefabricated track material. Pre-fabricated cl 30 Aluminium trackway could be underslung rolled on drums, and laid directly. Track laying by helicopters could commence simultaneously at a number of points. Thus the employment of helicopters would not only save time of transportation, but also give flexibility to a commander to employ more troops at a number of places, resulting in considerable over all saving of time.

WATER SUPPLY

In the deserts mobility of an advancing force is invariably retarded due to the inadequacy of the logistics to keep pace with the operations. Most predominant factor which stands out is the acute shortage of water, and the allied problems of its transportation. During operations there have been occasions when water has been transported over long distance in all types of transport including railway wagons.

Till such time that the lines of communication are developed, there is a requirement for providing water in shortest possible period to maintain the momentum of advance. Light weight alkathene pipes, neoprene, plastic or PVC coated pipes could be laid by helicopters at a very rapid rate. These can be wound on drums underslung, and uncoiled. The pipes could be joined together by water supply teams dropped from hovering helicopters. At suitable points booster pumps could be incorporated in the system which could either be operated electrically or mechanically by positioning detachments for manual control. For storage prefabricated tanks could be dropped at chosen sites and water points established.

ENGINEER RECONNAISSANCE

Reconnaissance for alignment of roads, selection of bridge sites, airfield sites and a number of sapper tasks can be done by the use of helicopters, thus enabling the senior commanders to personally see and assess the tasks before formulating plans. Helicopters reconnaissance is very useful for providing detailed information at a very short period.

DEMOLITIONS

For carrying out demolitions deep behind enemy lines or due to unexpected tactical situations demanding demolition of certain targets,

the demolition party with prepared charges could be moved in a helicopter at a very short notice to the demolition site. The party should jump out while the helicopter is hovering, fix the charges and initiate the charge. Thereafter the helicopter moves away, and is brought back to the site after the demolition has been fired to assess the damage. It is essential that the task is completed in minimum time, and while the demolition party is carrying out its task the helicopter engines should be on and it should keep hovering.

In addition the firing parties in case of reserve demolitions have mostly to fire the demolition in face of the enemy. Their withdrawal is a serious problem. To break contact after these parties have exfiltrated to a suitable RV in depth, these could be lifted by helicopters.

MISCELLANEOUS TASKS

In addition to the above tasks, helicopters could be used for a number of other tasks viz construction of airfields, laying of petroleum pipe lines, move of prefabricated huts assembled in the rear to a forward area. Also, these could be used for move of small parties in an emergency viz removal of charges placed by an enemy agent, and disposal of unexploded bombs.

CONCLUSION

In this paper some of the tasks for which helicopters can be used have been discussed. With the varied type of terrain on our borders there is ample scope for exploiting use of helicopters for carrying out sapper tasks. The concept of helicopters operations has given new dimension and flexibility to an engineer adviser to carry out his tasks in support of a formation in the combat zone.

With the development of lighter and lighter bridges, and new types of self sterilizing mines, alongwith the introduction of heavier transport helicopters, sappers would be in a position to provide the tactical mobility to our forces.

Due to the versatility of the helicopter for carrying out unlimited number of tasks for all arms, it is strongly recommended that when these heavier helicopters are introduced in our service, sapper tasks are given a priority as the result accruing would far outweigh the effort allotted, and open new horizons for the tacticians to plan their operations with unbounded mobility provided by the sapper.

Principles of War

LIEUT COLONEL V UBEROY

INTRODUCTION

The ten Principles of War, which form part of our basic military philosophy, have been adopted in a matter of course as part of our heritage from the Indian Army of pre-independence era. Not only have these been accepted as our heritage but have all along been considered as infallible. Their validity and relevancy to our past, present and the future environments have never been questioned or considered seriously.

The Principles of War, unlike principles of science are not necessarily valid for all times to come. These are evolved as a result of historical and military traditions, the strategic and battle-field environments and national aspirations. However, within these confines, these principles are not affected by relatively moderate changes in the weapons systems and tactical doctrines.

Since the basic structure of military thinking, planning and execution at all levels is based on these principles, not only should we adopt these principles with the deliberations but also these should be kept under periodic review. Stagnation can effect these principles as much as any other philosophy or discipline. It is, therefore, necessary that the current principles of War be reviewed in context of our requirements.

PRINCIPLES OF WAR—FOREIGN ARMIES

A Comparative study of the principles of war adopted by some of the major military powers of the world is quite revealing. While most of these are common, a few principles are peculiar to a particular country, Russia, for instance, has among others, Dynamism, Ability of Commanders, Armament and Quality/Quantity of divisions as Principles of War. Flexibility, Economy

of Effort, Concentration and Selection and Maintenance of Aim do not find place among its principles. USA, on the other hand, has simplicity as one of its Principles of War. China has Initiative and Flexibility included in its list of Principles while France has chosen 'Liberty of Action' as one of its Principles of War.

The highlighting of some of the Principles of War, as followed by some of the foreign countries, suggests that these principles do not have universal uniformity although, a number of those are common. Each country has evolved these Principles according to the influence of various factors discussed earlier. It is natural that a number of principles should be common since by and large, science of warfare is universal. Another interesting point that emerges from the study of these principles is that there is a vast difference in some of them from those enunciated by the earlier military thinkers. No country, including China, has adopted any of the Principles laid down by Sun Tzu. Similarly, principles enunciated by comparatively modern military philosophers like Clausewitz, Foch, Fuller and Liddell Hart have not been adopted in toto by any other country. The thoughts of great military thinkers on the subject have been subjected to critical examination by different countries and only those found applicable, have been adopted as part of their military philosophy.

ANALYSIS OF THE PRINCIPLES ADOPTED BY US

It is evident that the principles of war are under evolution all the time. Also, these may vary from country to country. It is therefore, only proper that we examine the existing ten principles of war against the background of the factors that influence their evolution.

THE VALID PRINCIPLES

Out of the ten Principles of War adopted by us, the following six are considered to have undisputed validity to our military environments and universal application :—

- (a) Selection and Maintenance of Aim.
- (b) Security.
- (c) Offensive Action.
- (d) Surprise.
- (e) Flexibility.
- (f) Administration.

It is in respect of the other four principles viz Maintenance of Morale, Concentration of Force, Economy of effort and Cooperation that we need a closer study for validity. Also, it should be considered whether there is any new principles which needs to be incorporated into our military philosophy.

MAINTENANCE OF MORALE

There cannot be two opinions on the value of morale as a battle winning factor. The history is replete with examples where high morale, or lack of it, determined the outcome of battles and ultimately, campaigns. The point to consider is as to the form in which this principle is relevant to fighting a war.

The state of morale is a sum total of contribution of various factors involving various aspects of the individual as well as that of society to which a body of troops belong. FM Slim analysed it as spiritual, mental and physical aspects of the individual. It is obvious that there are many agencies which contribute towards the ultimate state of morale of an individual as well as that of a group. A commander or a few commanders in the chain of command may contribute their share towards its build up but cannot provide all the ingredients that go to make for high morale. Also, morale is generally built-up over a comparatively longer period. In this light, how does a commander set up about applying this principle of war to his command? In the context of short and intense wars that we are likely to fight in the future, an answer to this point assumes greater relevance. In practice, the state of morale is accepted, as it is, by the commander since it is too vast an application on which to work individually and that too, over a comparatively short period. Like the proverbial virtue of a lady, which is never mentioned until it is lost, the morale eludes specific consideration. Even when morale is glaringly low and needs deliberate efforts, it needs tremendous coordinated effort at various levels, in different spheres, to repair the damage. Its application is too wide and across a large spectrum of activities for a small chain of command to achieve in a short period. As a result, the application of this Principle generally lacks the dynamism specially at lower levels where it is needed most. There appears to be a case to re-state the Principle so that it assumes dynamic and practical approach towards its application.

As an alternative, it is suggested that 'Motivation' should replace the principle 'Morale'. Although motivation contributes to and is a vital part of morale, yet it is something which can be suited to a

particular time and situation and is well within the capability of individual commanders as well as those in the chain of command starting from the highest level. It suggests positive and dynamic action in context of general as well as a particular situation.

It may well be argued that replacing morale with motivation may well lead to losing sight of wood for trees. The point is valid. Morale covers a much wider scope than motivation. In fact, none of the multi-facts of morale can be ignored by the agencies engaged in conduct of national defence. It emerges from the above that while Motivation definitely deserves to be included as a Principle, it cannot replace Morale. Therefore, it is suggested that the existing Principle "Maintenance of Morale" be changed to, "High Morale and Motivation".

CONCENTRATION OF FORCE AND ECONOMY OF EFFORT

The Principle of concentration of Force has limited usage in our strategic and tactical environments. It implies concentration of force at the decisive points at the critical time in our context, this principle is perhaps as much violated as applied. Also, it does not convey the correct perspective of the Principle.

Economy of effort is complementary to concentration of force and implies judicious use of force. However, it is liable to be misinterpreted. To give an example, Slim maintained that he would rather use a steam roller to crack a nut, if he happens to have a steam roller and the resultant condition of the nut was immaterial. Clearly, it is violation of the Principle but wouldn't this be the choice of most of the Commanders? To quote Slim again, "More you use, less you lose". It is as much true of men and other material as for armour.

In view of the above, there is a case for replacing both of these Principles with, "Superiority of Effort at the Decisive Point". It makes the implications of both the Principles clear and removes ambiguity.

COOPERATION

The modern warfare cannot be fought without cooperation of all Arms, Services, various civil agencies and the population. If idea is to bring out this fact, Cooperation as a Principle of War is valid and makes sense. In application, however, this Principle has certain practical lacunas. Cooperation conveys the sense of desirability, voluntary mutual assistance and certain degree of option. It implies loose association or assistance for mutual benefit whatever be

the level and type of assistance. This underlying concept of cooperation is more crucial in the case of active assistance required from civil agencies and inter-service than intra service. The point for consideration is whether this concept of loose form of mutual assistance required at crucial points and times needs to be replaced by integration of command and resources at all levels.

Due to the existing concept of cooperation, a commander can neither be certain of the effort that may be made available to him nor can he utilise those for maximum advantages. Theories apart, the difference between one's own command and "in support" is well known to all of us. If published materials are to be believed, the response given by PAF to the request by Pakistan Army for cooperation during the initial stages of 1971 operations can be taken as a case study. The fact that we did better than them, does not lead us to any definite conclusion. Given changed environments of weak Central political leadership, lack of harmony among the service Chiefs and paucity of resources; that opening scene of 1971 war might well have been enacted on this side of the Border. This trend of cooperation in varying degrees extends to higher, lower and lateral levels.

It is felt that 'Integration of Command and Resources' would be a better proposition than Cooperation. It would lead to integration of all resources under one commander whatever be the level, for optimum utilisation. Starting from the highest National level down to the field commanders, the new Principle would direct all efforts in achieving the objective along one direction.

INTELLIGENCE

Intelligence has assumed tremendous importance and ultra sophistication in the field of warfare. Modern warfare cannot be waged without a proper, efficient and widely organised intelligence system to provide the 'picture' about the other side. This aspect assumes all the more significance in the likelihood of short and intense wars. In fact, continuous flow of reliable and comprehensive intelligence, during peace and war, is a pre-requisite for our national security. And yet, this sensitive and vital aspect of warfare finds no place among our Principles of War. It is a small wonder, therefore, that the field of intelligence, has never got the attention and the effort that it deserves at various levels. Intelligence should, therefore, be given its rightful place among our Principles of War. It would then be assured that this crucial aspect of war would never be lost sight of and would get its right place in our concepts of warfare.

ARMAMENT

We, as a Nation, have traditionally been guilty of neglecting the armaments of our fighting forces. Our long history gives ample proof regarding the cost that we had to pay for this lapse in terms of national humiliation and subjugation to foreign rule. Whether it was Alexander in 326B.C or Moghuls and British later, the underlying cause of all our major defeats has been that the foreign invaders were equipped with better armament. It is time that we identified this area of our weakness and formalised the rectification measures by including Armament as a Principle of War.

At the policy making level, this Principle would dictate the requirement of remaining ahead of our potential adversaries in the matter of armament. Its application in the field would ensure that the Commanders have those resources in armament which are necessary for success in a particular theatre/operation.

CONCLUSION

The Principles of War should be subjected to process of evolution as part of our military philosophy. It is, therefore, pertinent, that these principles, which emerged from the environment of Second World War and adopted by us as part of Imperial Army, be critically examined for their current validity.

It is a vast subject and cannot be covered comprehensively in such a Paper. However, an attempt has been made to focus the attention of the students of military science for carrying out a review of these Principles in context of the changed military environments. The suggestions made in this Paper are pointers towards that direction.

Mechanised Warfare : Combined Arms Team Concept

BRIGADIER K.S. BRAR VRC

The aim of this paper is to review the evolution of Mechanised Warfare, and to discuss the concept of this form of warfare as being developed and practised in the major armies of the world. Also, we need to view the scope of Mech Warfare in our own context with particular reference to any future conflict with our Western neighbour. As we are aware, there has been a recent emphasis on mechanisation within our own army, but we are still a long way behind in this field.

HISTORY OF MECH WARFARE

THE advent of Mech Warfare is nothing revolutionarily new—as far back as in World War I, this form of warfare was being propagated by personalities such as Liddell Hart and Fuller. The aim at that time was to somehow break the deadlock of trench warfare. Gen Fuller, the leading British tank theorist foresaw a transformation of land warfare through mechanisation. He felt the Germans would be finished off by wearing them down and grinding up their reserves in local attacks supported by tanks working closely with infantry. Then the front would be breached; heavy tanks operating by surprise—in concentrations would open the way for succeeding waves of inf supported by tanks. Once the front was broken by medium tanks, fast machines equipped with cannons and machine guns for independent action would raid into the enemy rear, causing havoc and confusion like the cavalry of old. The final exploitation of decisive victory would be the work of the cavalry and motorised forces operating with inf and tanks. However, World War I ended before the tankers had a chance to try out their grandiose plans.

Rockerbach and Patton followed up the revolution of Mech Warfare in the period intervening the two World Wars. They spoke

of tanks preceding the inf, in assaulting prepared positions where ground conditions permitted and emphasised the fact that close cooperation with inf was essential. They looked at future attacks as "combined arms assaults" against an enemy in prepared positions. Once the enemy position had been breached, mobile forces would exploit the situation by breaking through the last formed bodies of the enemy, spreading confusion in his rear areas and where possible, cutting off the enemy's retreat by seizing bridges or other defiles. However, mechanisation of the large armies of the world didn't really get off to a proper start. Mech Bdes were formed in the US Army, but there were many deficiencies. I quote extracts from Gen Chaffee's address to the US Army War College on the subject of improving the organisation of their Mech Bde. He said —

"The Bde needs to be given increased power and manoeuvrability. It is in dire need of its own recce elements, separate and distinct, over and above that of its Regts. It needs additional holding power in the form of additional machine gun and rifle units. The need for some riflemen, who are securely mounted and are as mobile as other element of the Bde has been demonstrated time and again. The Bde needs an Engr component. It is not sufficient that these engrs be of the ordinary truck-carried type. They should have good cross country traction and they should be provided with special mechanical means to overcome obstacles." In conclusion, Gen Chaffee noted that "as more powerful and more numerous mobile mechanisation should be built up in the US Army, without much delay". Gen Chaffee, unfortunately, did not live to see the entry of the USA into World War II nor did he live to see his doctrines for the employment of mobile mechanisation proven in combat.

During World War II the sweeping, bold moves of Gen Guderian's panzers in their lightning strike through France in the spring of 1940, is just one example of how numerically superior, but less agile opponents have been defeated by a mobile force in the hands of an able Commander. The mobile warfare practised by the Germans during the first three years of World War II was the result of many separate elements cooperating and meshing, putting the panzer spearhead on the target with fire power and punch. The Germans had raised and employed panzer-granadier units of inf, based on tracked and half tracked vehicles, to support their tank formations. The need for mechanised inf participation in armoured battles had been clearly established.

In the sixties, first the Americans and then the Arabs and Israelis added the third dimension to mobile ground operations. The Air Cavalry was extensively used in support of ground operations. The helicopter had joined the "Mech Warfare club".

In the Oct '73 Arab-Israeli conflict, commonly referred to as the Yom Kipper War, mechanised warfare made further advances and what took birth is now the key phrase "Combined Arms Team Concept". It was in this war that the Israelis—despite their reputation as master of tank warfare, apparently forgot that the real secret of mobile warfare is the use of a combined arms team. By committing tanks piecemeal, they nearly lost the war in the early days. The armoured forces which opposed one another in the Yom Kipper War can be considered large, even by the standards of El Alamein, Kursk, and the Bulge. The tank forces employed by Rommel and the British in World War II were comparatively smaller than those that took part in the Middle East Campaign. Result from the Yom Kipper War indicate that victory is not wholly dependent on who has more tanks, or more inf, or more arty, but it is won by the side with the best trained and best led Combined Arms Team. The emphasis is on the word 'team'; a team which embraces a balanced force of tank, mech inf, arty, air def, engrs and logistics—a team which draws its effectiveness from balancing the capabilities of these systems. It is true that the balance would change in various environments, but it is always inter-related. As a result of experiences gained in the 1973 War, much more recently, the armed anti-tank helicopter has emerged a new and attractive dimension in future wars, adding further strength to the Combined Arms Team Concept of mechanised warfare.

INGREDIENTS OF MOBILE WARFARE

The NATO and Warsaw Pact countries have been seriously concerned about each other's growing strength and fully realise that powerful, mobile force will be pitched against each other in any future conflict. Whether it be a conventional or nuclear war, both sides realise the importance of speed with which the offensive must be delivered. The mission of armour as we know is to close with and destroy the enemy using fire, manoeuvre and shock action. The mission of inf, whether mounted or dismounted, is to close with the enemy by fire and manoeuvre, to destroy or capture him, or to repel his assault by fire, close combat or counter attack. It can be seen that the main difference between the mission of the armour and the inf, are the words "shock action" which differentiate the two arms. However,

this is not by a difference of mission, but rather a difference caused by physical characteristics. In the offensive, armour crushes through the defence, bypasses strong points, and isolates the defender from his reserves and support bases. Follow up inf-heavy forces destroy the bypassed enemy. Speed is the key to this doctrine. The defender must always be forced to react to the attacker. If the defender is allowed freedom of choice, the attack will be doomed to failure. The Egyptian attack across the Canal in Oct. '73 is a good illustration of this shortcoming. When Egypt decided to reinforce the Br Head, it allowed freedom of action to Israel. On the other hand, the Israeli's chose not to attack the Br Head directly, but instead went for the indirect approach of isolating the enemy in the Br Head from the South. This option of "indirect response" is only open to a fast moving, highly mobile force. It requires speed, fire power and superb control.

In Defence, the tanks must retain its offensive mission viz to penetrate and break through. The tank must NOT be used as a mobile pill box or an anti-tank weapon unless no other weapon system can be brought into action. A number of modern sophisticated anti-tank weapons now exist to relieve the tank from its anti-tank role and to permit unhindered offensive action by tank formations.

When committed, the motto of a mobile force must be to strike concentrated, not dispersed. The enemy must be robbed of his freedom of action. The great weapon in this arena is the subtlety of indirect approach. It is cheaper and so much more effective when properly planned and carried out. We must not permit ourselves to build a mental Maginot line by anchoring our tactical doctrine on the experiences of the past, when we should be developing innovative tactical concepts for future mobile conflicts. The questions which need to be answered are—how do we propose to deal with superior tank strength? How do our force operate in an environment devoid of air superiority? How do we dissipate enemy offensive power without depleting our offensive assets? These are but a few questions to which answers must soon be found.

THE "COMBINED ARMS TEAM" REQUIREMENTS

The Tank. I do not propose to discuss the type of tank we should have. Our MBT of the Eighties is still under consideration and, perhaps, on the drawing board. One of the main requirements to be fulfilled is that of "survivability". Some armies are going in for low profile tank eg, the Swedish 'S' Type tank and the Russian T-72.

The British are concentrating on improving their gun stabilisation and developing armour which can survive any types of shaped charge projectile—they have developed Chopham armour which consists of layers of steel, ceramics, plastic and aluminium and is known to be effective against all present day shaped charge projectiles. The Germans and Americans consider speed and manoeuvre to be a very dominant requirement of survivability and, as a result, the American XM-1 and German Leopard II have powerful engines with horse powers approx 1500 in comparison with the 530 of the Vijayanta. Night fighting capabilities are being improved with the induction of thermal laser systems whereas we are still struggling with IR and have not yet even switched to image intensification devices. To increase the rate of fire, automatic loading has been introduced in some of the latest tanks and trials are also on for giving the main gun the ability of firing bursts of 2-3 rds. It is hoped that in the not too distant future our armoured formations will be equipped with a versatile tank meeting most of these requirements to meet the challenge of our adversary in mobile operations.

Mech Inf. The BMP is going to be our ICV and is a very versatile weapon system. I have intentionally called it a weapon system so that we do not look upon it as a vehicle required to provide tracked mobility to the inf. Mech inf is a critical part of the tank-inf team—ideally a close knit, well trained team, in which the concept of “tanks leading” or “infantry leading” involves only minor differences in deployment. Inf leaders must be as familiar with the capabilities of the tank as are our tankers. Tank bring to the Combined Arms Team the capacity for tremendous armour protected long range fire power and the renowned potential for break through and exploitation of enemy weaknesses. Arty and armed helicopter give vital supporting fire; the inf virtually contributes everything else. It is therefore, critical that inf leaders know in detail the different roles they may be required to follow on the modern battlefield, and be ready to promptly assume the correct role for any situation. It is this capacity for multiple roles by inf that permits the combined arms team to respond to any enemy threat. The infantry man in the combined arms team deploys his forces to protect the tank from enemy anti-tank weapons by attacking or suppressing these weapons. He supports the tanks at a distance which enables him to quickly respond to any threat from enemy inf. He seizes and, when necessary, holds ground that may be a threat to the advance of own tanks. He clears obstacles that obstruct the teams progress. He remains in constant

readiness to assume the lead whenever the terrain or enemy situation becomes unfavourable for rapid tank movement.

With inf fighting mounted where possible, on foot where necessary, the team develops the tactic situation and exploits the enemy's weaknesses. Since tanks alone have difficulty in holding ground against a combined arms assault, the task of mech inf in defence remains that of doing every thing that cannot be done by tanks or arty. To further illustrate the point, I would say that with the repertoire of combined-arms "ring action" on the armoured battlefield, the tank hits the right cross. The jabs, hooks, feints and bear hugs, are provided by the mech inf.

Arty. For a high speed offensive, aiming at the complete route of the enemy and his political collapse, the momentum must be maintained at all costs. To square such an offensive, the mech formations will need continuous arty support and arty units will need to be closely integrated into the Combined Arms Team. The three stages of arty support during mobile operations can be covered under the following heads :—

(a) *Preparatory.* This is the fire delivered into the battle zone, before troops deploy for the attack. This role could be undertaken by less mobile arty, of the heavier variety providing greater range.

(b) *Support.* This is the fire delivered during the assault against targets interfering or offering resistance to the assault. Here again, comparative mobility of the guns in support could be less.

(c) *Accompaniment.* This is the support of Support arty closely following behind tanks and mech inf into the defenders depth areas to be able to render continuous effective fire support and beat off enemy counter attacks. Needless to say that these guns will need to be provided traction to achieve a high degree of cross country mobility so that they can keep pace with the leading mech forces. It will be this arty that form part of the 'Combined Arms Team'.

Engrs. It follows that the greater the increase in mechanisation of the army, the greater are the tanks dependent on passability of terrain and good roads and transport for success. Engrs will be required close at hand to help overcome minefields obstructing the passage of tanks, to carry out tactical bridging or water gaps, to

improve entry and exit points while negotiating obstacles and the various other engr roles in support of fast moving mechanised forces. They must be closely integrated in the Combined Arms Team and follow up in suitable tracked combat vehicles.

Attack Helicopters. The full potential of the attack Helicopter on the modern battlefield will not be realised until the prevailing tactical attitude towards the weapon is fundamentally changed. Certain basic concepts need to be understood and these are :—

- (a) The attack helicopter is NOT an aircraft.
- (b) The attack helicopter is a highly mobile anti-tank weapon. In fact it should be viewed as a 'tank killer'.
- (c) Attack helicopters are used as cohesive units and not as individual machines and sorties.
- (d) The attack helicopter unit must be viewed as a manoeuvre unit.

In the low intensity Vietnam environment where the attack helicopter achieved maturity, speed was needed to escort air mobile inf forces and to provide quick reacting fire support to ground forces. It was used more as a fire support and close air support aircraft.

What has now changed the concept of the attack helicopter is its new mission on a new battle field. The attack helicopter is like a tank in the sky, employed by manoeuvre units. The helicopter is more mobile than just an armour reserve. Just as the ATGM requires a mentally expanded battlefield, so also the attack helicopter will require an increase in mental mobility to match its capabilities. In the conduct of the battle, the attack helicopter will provide the force Commander a vital mobility advantage. With this advantage, the Commander will be able to extend the time line of battle. I do not intend going into the various types of attack helicopter in service with other armies today but the pace of increased sophistication is noteworthy. The attack helicopters armed with latest generation TOW, HOT and HELLFIRE type missiles are effective against tanks at varying ranges generally between 3-5 Kms and thus well out of the gun range. The latest armed helicopter in commission in the US Army is the YAH-64, equipped with the HELLFIRE missile. The HELLFIRE, incidentally, is the latest type of missile, and the nomenclature stands for "helicopter launched fire and forget". Most of these missiles are laser guided. In addition, the helicopters are armed with rockets and cannons. The helicopter approaches its

kill exploiting the techniques of terrain flying, stand off, stealth (sneek and peak), mass and movement and nose on profile. They find, fix and destroy the enemy targets on the ground as manoeuvre units closely integrated into the Combined Arms Team. Some of the foreign armies have integrated helicopter Battalions with Armd Divs, and helicopter Cosys with Armd Bdes. Ours is still a 'far cry' in this field.

EFFICACY OF OUR ARMD FORMATIONS FOR MECH WARFARE

In our present army we have the Armd Divs and independent Armd Bdes as our Mech Forces. In both these types of Formations there is a mix of Armd Regts and mech inf. The Armd Divs have two Armd Bdes, each having two Armd Regts. There are three mech inf Bns in the Div. The Armd Div today thus has the capability of producing only two combat viz the two Armd Bdes. In the offensive, there is thus a limited scope of two major thrust lines with inadequate reserve. This is where the sum total of our combined team ingredients ends. The Arty complement is the 105 mm Abbot which is tracked, yet unable to achieve the desirable cross country mobility to keep up with the advancing armour and providing it with continuous arty support. The bulk of engrs are generally road bound as these are carried in wheeled vehicles and there is thus unacceptable delay in their carrying out the required engr tasks in support of the fleeting advance of the armour and mech inf teams.

Our present APC's are not equipped with ATGMs and during operations ATGM units are allotted to the Armd Divs from ATGM units. These ATGMs are jeep mounted and road bound, and cannot, therefore, be integrated into the combined arms team either. It is difficult to understand why these ATGM units cannot be made integral to our Armd Formations rather than the present parochial attitude which stems from their having an identity of their own.

For armd helicopters we are dependent on the Air Force and there is no integration at all. The age old controversy of whether or not we should have an army aviation corps is still simmering. There can be no worthwhile combined arms concept unless these helicopters form an integral part of our Armd Formations. I would go a step further to suggest that they be flown by Armd Corps personnel who understand what to look for in the fast moving ground battle. As regards logistical support need for the Armd Formation, our systems are still very primitive and our administrative units are not geared for the role in mind. A Commander, having to look back for administrative

support can hardly be expected to extend the area of battle deep into enemy territory. What we need are tracked ammunition carriers and POL bowzers, which atleast have protection from SA fire. Casualties evacuation is another neglected field and there is a pressing need for tracked ambulances and additional APCs for such tasks.

Our Indep Armd Bdes today have three Armd Regts and one Mech Bn which have cross country mobility. Beside this, everything else including arty is road bound. Recce capability is only restricted to jeeps. In an armr environmental battle, there is little or no scope for jeeps to be plying in recce missions. Most armies have gone in for light, fast moving, versatile tracked vehicles armed with machine guns and missiles for recce tasks.

These were some of the limitations presently faced by our Armd Fmns and unless we overcome these, a combined arms team type of mobile warfare concept can hardly be evolved or practised by us.

LEADERSHIP AND TRAINNING IN MECH WARFARE

The army is not that homogenous in its outlook nor is the world in which its lives. In the army today, there is a parochialism that challenges and sometimes even denies many things about the combined arms idea. That parochialism sometimes may concern leadership, or tactics, or administration or any of a hundred other things. Instead of listening intelligently to one another, we are divided into two or three strident camps. In one, the tank is supreme. In another, it is the armd helicopter. In still another, it is the ATGM. The tank purists are in favour of more tanks to the exclusion, or at least neglect, of other Combined Arms Team. According to them all that is needed is an elite, sophisticated, highly proficient tank force. The ATGM supporters take the plea that the era of the tank is dead and ATGM have taken over. The armd helicopter is so new that those who understand it the least have made it the centre of too much attention. Its singular advantage—the ability to move rapidly from one part of the battle to another—has given mistaken notions of what it really can do. Ignoring the limitations of weather, terrain, air defences, and the inability to occupy ground, enthusiasts raise up the helicopter as the answer to the warriors' prayers. Some would even trade regts of tanks for sqns of armd helicopters.

The above imbalances of thought can be removed by proper training. Rather than training Armd Regts and Mech Inf Bns, we should, perhaps, be training Combined Arms Bns. Anti-tank Sqn Cdr,

in battle, may well find himself commanding more inf than tanks after he has been task organised for a particular mission. As such, each of these arms must have a vital interest in the training and proficiency of the other. It is for consideration weather the mech inf and armd helicopter units belong to the inf and air arm respectively, or weather they all belong to the Armd Corps. The armd helicopters in the US Army first came into service as 'Air Cavalry'—in other words, it was an extension of the Cavalry' into the third dimensional role. However, whether the armr, mech inf and armd helicopters belong to one corps or not, I feel these three senior partners of the Combined Arms Units, need to be very closely integrated for training.

Stemming out from this is the need to have high calibre leaders, who understand the combined arms concept and can control in battle a closely knit all arms force. Inf officers are shy of handling armr as they have not been given adequate exposure to armr. This can easily be overcome if we have a combined arms school of "armr, mech inf and armed helicopters." In the dynamic environment of the battle field, through the confusion, noise, obscuration, danger, fatigue and fear, the combined arms leader must make quick and sure decisions. He must be able to move, attach, detach, receive and immediately employ units on instant notice. He should be prepared to take appropriate action without waiting for orders of guidance. He must be able to develop, protect, exploit and optimize the potential of armr and other mech arms. His knowledge, drive, fitness, courage and responsiveness will give the combined arms team the capability of success in any situation. Selected officers from both the Armd Corps and the Inf should be prepared for the command of the combined arms team rather than keeping this as a preserve of the Armd Corps.

CONCLUSION

The pace of advance in any future wars will be crucial and the critical problem facing the military leadership will be how to raise the tempo of the offensive. The higher the speed of advance, the more the enemy is thrown off balance, losing his freedom of manoeuvre and his ability to deploy his troops and weapons to good effect. The answer to this lies in the combined arms concept which really is the extension of the "Panzergrenadier" concept of mobile war. Tanks can fight other tanks, punch through suppressed defences, create shock and panic, and wreck havoc against soft targets but tanks are

vulnerable in close terrain, woods, cities, and when visibility is reduced by bad weather or smoke. They cannot cross most rivers or swamps without bridging and they cannot climb steep hills or mountains. Although the tank must, however, be viewed as the primary weapon system on the battlefield in any future war, we cannot afford to close our eyes to the internal weakness of a pure tank force. We recognise a need to divert enemy presence from the tank through the use of supplemental, destructive, and suppressive fires and manoeuvres beyond that which are available from the tank itself. Let there be no doubt that the next war will be a battle of highly mobile mech forces wherein the tanks are supported by mounted inf, mech arty, engrs, ATGMs and armd helicopters. We need to streamline the organisation of our Mech Formations to meet the need of the hour, without further delay.

Arunachal — Land of Superb Beauty and Great Past

P. C. ROY CHAUDHURY

THE sub-Himalayan mountains upto the crest of the Himalayan range later known for political reasons as the MacMahon Line on the north from the tri-junction to Bhutan, Tibet and India on the west of the tri-junction where India, China and Burma meet to the northern tip of Burma were inhabited by a large number tribes of Tibeto-Burman stock. For long they did not acknowledge suzerainty under any other tribe or power. They had their own system of society and administration based on tribal laws and customs. They established some sort of loose and flexible relations with the people of the Assam valley on the eve of British occupation of Assam. Slow penetration into these mountainous territories of the tribals in the interior was made by the British. This was mainly through punitive expeditions after kidnapping or murder of British subjects by hill tribes within British jurisdiction. These off and on military expeditions paved the way to eventual taking over the administration over these wild areas, by the British Government.

Mr. B.K. Borgohain who has wide administrative experience in the area observes :—

"The North-East Frontier as distinct from Assam proper emerged when in 1875-76 the INNER LINE of Lakhimpur and Darrang districts was specified applying the Regulation II of 1873 (Part V, No. 1). The Inner Line separated some Tracts inhabited by the Tribal people from the districts of Assam Administration and journey by British subjects beyond this Line was restricted.

It was found inconvenient to administer these "backward" territories under the same rules and regulations applied to the neighbouring plains districts. The Scheduled Districts Act passed subsequently in 1876 (Part V, No. 2) authorised the Government to administer these undeveloped tribes in a "rude and tough" manner. In 1880 the Assam Frontier Tract Regulation

was passed. In 1886 under the authority of this latter status as amended in 1884, the Rules for the administration of Justice in Lakhimpur Frontier Tract was passed. This statute in point laid the foundation of administration of all the Frontier Tracts of Assam, now comprising Arunachal Pradesh."

Arunachal Pradesh (N.E.F.A. before), a land mass (83,578 Sq.s. K.Ms.) with lofty snow-capped deep blue mountains snuggling in their laps lovely, azure green valleys serrated by innumerable fast flowing rivers and streams, formed the gate-way to the plains of the Indian Sub-Continent in her North-Eastern corner even from the pre-historic times.

Her people contributed substantially to the main stream of pre-Aryan religion, culture and politics. This part of the Sub-Continent together with what is today known as West Bengal Assam and Bangladesh prominently figured in the two Immortal Hindu Epics MAHABHARATA and RAMAYANA. It was then known as PRAG-JYOTISHA (PUR).

BHAGADATTA the King took part in the war between the Pandavas and the Kauravas. His troops consisted of KIRATA, CHINA and "dwellers of the sea-coast." According to a noted historian of the early part of this land-mass when it was known as "PRAGJYOTISHA" the Southern part of this Country was a Sea. The perennially water-logged low lying parts of Sylhet and Mymensing (both are now in Bangladesh) are still called "haar" which, no doubt, is a phonetical distortion of the Sanskrit word "Sagor"-meaning, "Sea". King Bhagadatta's maritime troops must have been the recruits from these littoral territories. The Northern part of PRAGJYOTISHA comprised of the mountainous region kissing Nepal and Bhutan on the North. The "KIRATA" were evidently those people who lived in that region. The KIRATAS appear to have been the ancestors of the tribals whom we call the hill tribes of the North-Eastern region of India. The CHINA were probably the inhabitants of Tibet and Bhutan. It is, therefore, evident that the hill tribes of the region called ARUNACHAL have been living here at least from about 1,000 B.C. which is the generally accepted period of the war of KURUKETRA of the MAHABHARATA.

Mythology, however, is not history. If seek sources from historical or quasi-historical records on the antiquity of this region and its inhabitants The Buddhist *Jatakas* and the Greek accounts of the fourth century B.C. refer to this region. Mention is made in the accounts left by Ptolemy (about 6th century), Yuan Chwang the

Chinese traveller (7th century) and Alberuni (11th century). Ptolemy assigned various tribes among whom Damassals and Nagalagai. Accurate identification has eluded more than one scholar though. There is an irresistible temptation to identify the Damassals with today's Dimasa Kachari tribe of North Cachar Hills and the Nagalagai with the Naga tribes. In Assam any hillman is called Naga, no matter to which different part of the North Eastern mountains he actually belongs, e.g., whether he is a Garo, or a Mikir, or a Miri, or an Abor, or a Mishmi. In course of time, PRAGJYOTISHA shrank in size and the shrivelled version of the geographical territory came to be called by the new name of KAMARUPA.

The first epigraphic record which mentions Kamarupa is the famous Allahabad inscription of Samudra Gupta (330 to about 385 A.D.). Kamarupa is mentioned in the inscription as a frontier kingdom.

The famous Kashmiri chronicle in poetry *Rajatarangini* mentions that king Meghavahana of Kashmir married a princess named Amritaprabha who belonged to Pragjyotisha. It is also stated that this princess took with her to Kashmir a Tibetan Buddhist scholar named Stunpa who was a Guiu of her father. These literary accounts make out that Buddhism had infiltrated into Kamarupa long before Yuan Chwang found its anaemic existence in the mid-7th century and there was an old religio-cultural connection between this North-Eastern region and Tibet and the area formed an integral part of the Indian Sub continent.

The ethnic groups of this land of superb beauty and great past are:—Bangnis/Dafias, Hruссos (Akas), Monpas, Mijis (Dammai), Sherdukpens, Sulungs, Bangros, Sulungs, Boguns (Kameng District)-Dafias, Apatanis, Tagins, Hill Miris, (Subansiri District)-Gallongs, Minyngs, Tagins, Pangis, Padams, Shimongs, Membas, Bokars, Milaongs, Boris, Karkas & Bagums, Pasis, Ashings, (Siang District)-Miju Mishmis, Idu, Digaru Mishmis, Padams, Khamtis, Singphos, (Lohit District)-and, Wanchos, Noctes, Tangsas, Singphos, Yobins, (Tirap District). They are joyous and though ease-loving work hard. They love Nature, their few cattle and birds and the small bits of land.

Under Two Masters

A Review Article

P.K. MISHRA

THE British came to India with a trading adventure but taking advantage of the local disputes among the ruling princes, they started to capture political power. After the down fall of Mughal Empire, Hindustan was a divided land. The British power with an imperialistic motive, unified and consolidated the entire subcontinent. By the time, they landed up here, India presented the picture of a segmented, caste ridden and superstitious society with utter lack of uniformity in law, administration and social traditions of the people. With an iron hand, they tried to reverse the entire process through a unified administrative machinery. Such a machinery was the much coveted Indian Civil Service, which was created by a special act of the British Parliament. I.C.S. served as a means for the perpetuation and consolidation of British rule in India. The purpose of the British power was to create an Ivory tower class among the Indian masses. Because their privilege and prestige under the British paramountcy, they would not hesitate to suppress and tyrannize their fellowmen. It is this class which came to be known as the incarnation of British Government in the district and the country side. Some of these bureaucrats used to have Darbar in the same BADSHAHI style and people who came to see them, normally came with attractive gifts. They could terrorize the entire population of a city or village whenever they wanted. Thus India was treated as a slave society and the British power was projected as the natural master by the BUREAUCRACY headed by the I.C.S.

During the last decade of the British rule, a large proportion of the Indian elite class, came to be represented in the I.C.S. Many of these privileged Indians, were only Indian in colour, but British in temperament. In their blind imitation of the British style of life, they were behaving like aliens in the land of their birth. After the dawn of independence, many of these officers continued to hold top administra-

*Under Two Masters by N.B. Bonarjee, London, Oxford University Press, 1970, PP 317, Price Rs 25.00,

tive positions under the new Government. They saw to it that even after their colonial master left India, they must continue to rule over the people. Being trained primarily for the collection of revenue and maintenance of law and order, they were not suitable in the new set up. The transition from a police state to a welfare state created new problems for this bureaucratic class. Their own privileges and powers rather than the up-liftment of the masses was uppermost in their mind.

It is in this context that the biographical account of a former I.C.S. man, presents a very interesting study. It depicts the crisis and challenge in the mind of a man who served the British as an I.C.S. since 1925 and continued to serve the Congress Government for another decade.

N.B. Bonarjee begins his narration with the background information of his family traditions. He particularly emphasises his family's connection with Great Britain. Beginning from his early childhood until he qualified, himself for the prestigious I.C.S., he spent his days in that country. That's why he writes, "It was a powerful, dignified, imperial England to which I was introduced when just on four years of age: an England with a great belief in its purpose and destiny; an England of comfort, leisure, culture and prosperity for the moneyed or a pluto-aristocracy and upper class superbia with his cooks, his housemaids and parlourmaids in their trim dresses and starched lace caps; an England which almost unknowingly went to his death, both literally and metaphorically between the historic years 1914 and 1918 in the mud of France and Flandes, on the wind—swept cliffs of Gallipoli and in the desert sands of Mesopotamia and Palestine (P. 35). It is but natural that his entire line of thinking has been influenced by British ideas and institutions. He would go to the extent of suggesting a completely a new line of approach in understanding British Colonialism.

He feels nostalgic of his school days in England. According to him the English School of his days, was a combination of the complacency and massive solidity of the Victorian with the more critical Edwardian age (P. 46). When he entered Oxford University, he was equally delighted. He was particularly impressed by its building mellowed with age. He makes an interesting reference to attitude of Englishmen towards Indians and other colonial people. He writes, "If Indians were diffident and sometimes displayed the aggressiveness that often accompanies diffidence, the Englishmen remained parochial, with he insularity for which he was notorious throughout Europe preventing him from being an easy mixer with those of a different colour" (P. 72). Even now the British society is plagued by such an evil of racial discrimination.

He projects before the readers a correct picture of the Indian Civil Service because of his long association with it. The I.C.S. according

to him "remained essentially British in its 'abasic' nature, its traditions, its principles, its core. It continued to be an expression of the British national character, an impersonal ruling corporation, which reflected despite its racial undertone, the high standards of the era in which its great quality had been built" (P. 99). It is mainly because of this that even the native recruits to the I.C.S. could not display any nationalistic sentiments and never regarded themselves to be the sons of the soil.

Since the starting of his career in the district, he displayed his fondness for the countryside. He very rightly feels that the future of India lies in the rural redevelopment. To a perceptive researcher on the role of a District Officer, during the British rule, he throws some interesting sidelights, when he writes, "The District Officer of the British period of Indian history is no longer remembered. He died in 1947 and was buried—I fear without any honours—almost immediately. May he rest in peace! If his work as a whole is judged over the period of a century, he had nothing of which to be ashamed. He did his duty conscientiously and well" (P. 147). However, he fails to throw any hint on the new role that District Magistrate is supposed to play in modern India. Moreover, as a seasoned administrator he was expected to throw some light on the problems and challenges faced by a District Officer.

About Hindu-Muslim unity and the Two-Nation theory, Bonerjee has his own reservations. According to him the partition of India was in the best interests of the Indian muslims. However, he fails to elaborate his view point. Moreover, he strongly feels that the British did not desire the partition of India, for this would have negated their justifiable claim to have given political and administrative unity to at least two-thirds of the subcontinent" (P. 182) Thus he makes a searching analysis of British objectives behind the partition of India. According to him 'emotional integration' in India was a major problem to be faced. It was not merely the integration of different communities alone, but of different castes, language and regionals groupings. One has to agree cent percent with the author on this matter.

In his estimate of the struggle for independence in India, he is particularly critical of the Gandhian method of non-violence. According to him 'the doctrines of Truth and non-violence being stretched far beyond the immediate political object of their inventor have already proved to be dangerous in independent India, and may yet turn out to be a clamity, for violence masquerading as saintly non-violence can be a dangerous weapon in the hands of ambitious men seeking to exploit the disconsensus of an inflammable democracy consisting of several hundred millions of have—nots" (P. 221). When one closely looks

at the political climate in present day India, then this view point seems to be partly true. Non-violence as a weapon should not be frequently used. However, it can be administered as an occasional pill. His another interesting reference to a researcher on the history of Indian struggle for independence be summed up in his own word, "it was not so much the British who suppressed the rebellion as Indians themselves on behalf of the former" (P. 222). One needs to analyse this remark a little closely for a rewriting of Indian history.

In his nine years of official service under the Government of India since independence, he has had some interesting experience with the power hungry politicians. According to him the basic philosophy and ideology of a political party is sacrificed, when it comes to the real formulation of national politics. Moreover, he concedes the bitter truth that a civil servant in order to survive and prosper must remain a political out and out. Otherwise he has to pay a heavy price. Citing several instances of his own career, he observes, "He cannot rightly remain in official service and simultaneously insist on the general tone of the administration's being what he thinks it ought to be. It is not for him to sit in judgement" (P. 254). The ministers, as he rightly thinks at times reoriented the policies to suit to their personal ends, even under the guise of socialism. Priorities for development were changed several times without any objective consideration.

Long after his retirement, when he looks back at the past, Bonerjee summarises his entire philosophy of writing such a book. He compares British colonialism with that of the French, Dutch and American and very emphatically points on the superiority of the former. According to him the intention of the British was not to vacate a police state alone. The various progressive measures in the field of administration education and social services initiated by them cannot be sidetracked. Moreover, according to him, one should not outrightly condemn the role of I.C.S. in defending a socalled Police State. The I.C.S. personnel according to him were trained to be detached and objective. They served their masters in different times without any grudge or illwill. They were according to the author like the guardians of Plato's Imaginary Republic! One agrees with him when he feels that Indians while criticizing the colour prejudice of the British, must set their own house in order and truly implement the philosophy of a secular and modern nation.

Peace, War and Defence*

(Review Article)

DR. B: CHAKRAVORTY

ALTHOUGH world peace is the slogan of the post-war world, so far there was more war than peace, and more war leads to more defence. Consequently, the world is passing through a vicious circle of great preparations for defence, war and peace. Not only the modern Nazi philosophy believed in the efficacy of war, but also in ancient India Rama and Krishna felt the need for war to annihilate the wrongdoers and protect the virtuous. Even Quincy Wright, the author of the famous work—"A Study of War"—is reported to have said that 'wars contribute to civilisation'**

HUMAN BELLIGERENCE

Reanalysing Quincy Wright's data on "Primitive Warfare", John Galtung and Tom Broach have found out that of the 652 primitive societies, taken into consideration by them, 4% (27) showed only 'defensive warfare'; 53% (347) 'Social Warfare', i.e. war as a social ritual with no particular goal and little bloodshed; 26% (168) 'economic war', and 7% (43) 'political war', with a clear power-content. In other words, 33—or 1/3 of those societies were engaged in war in our sense. After a trivariate analysis of the variables related to belligerence (in those societies) on the basis of region (Asia, Africa, America, Australia, etc.), climate (cold, temperate, hot), habitat (forest, mountain, seashore, desert, grassland), climatic energy (low, medium, high), race (pygmy, red, yellow, brown, white, etc.), culture (hunting, pastoral, agricultural), subculture (lower, medium, higher,

**Essays in Peace Research Volume II*,—by Johan Galtung, International Peace Research Institute, Oslo, Christian Ejlers, Copenhagen 1976, pp. 472, price : not mentioned.

This book is the second volume of the series of five volumes of edited essays on peace research which had originally been written between 1958 and 1976, and were subsequently being published by the International Peace Research Institute, Oslo. The titles of other volumes are : Vol. I :—Peace : Research—Education—Action ; Vol. III :—Peace and Social Structure ; Vol. IV :—Peace and World Structure ; and Vol. V :—Peace Problems : Some Case Studies.

**Letter to Johan Galtung, *vide* p. 19 of the book under review.

dependent), political organisation (clan, village, tribe, state), social organisation (according to sex, age, profession, caste), inter-cultural relation (isolated, moderate contact, close contact), they have come to the conclusion that the white people are 100% belligerent in 10 out of 31 contexts ; the state form of organisation is 100% belligerent in 11 out of 30 contexts ; and close contact is most belligerent in 27 of 37 contexts ; and finally, the three factors—white race, state organisation and close contact reinforce each other to show that state organisation with white people, state organisation in close contact with others and white people in close contact with others produce 100% belligerence. They also conclude : (a) that size of the society (state is bigger than clan, village, or tribe) contributes to belligerence, especially when it has a fixed territorial base, because conflict over territory is of the constant-sum variety : (b) that white people are most belligerent, almost regardless of primitivity : (c) that increased civilisation leads to increased belligerence, which in turn leads to increased civilization in others (because of "survival of the fittest", homology, diffusion and simply eradication of the more primitive) : (d) that with a centralized form of government, society is more able to wage war ; and warfare, in turn, produces more centralised forms of government ; and (e) that the more similar the societies are, the higher is the probability of war, because societies at the same level will be competing for the same scarce goods and would be better role-partners for each other in the sense that can respond adequately to an attack.

However, the above conclusions are not fool-proof. History of the last thirty-four years shows that the white peoples have not fought any war in Europe since 1945, although they have been almost at the same level of economic, political and technological development.

BALANCE OF POWER

Power has been defined as the influence potential, i.e. the potential of a system "to induce its will on other systems", and balance of power has been sought to be explained in the so-called Zeroth law of thermodynamics and the Kelvin scale in power dynamics, but the analogy of thermal equilibrium or power dynamics is misconceived and far-fetched. The reality in any situation of balance of power is never the same as perceived by the Powers that are involved in the balancing process, or by other Powers outside the balance system. In the context of balance of power, real power has little to do, as only perceived power counts, because balance of power is no longer an objectively existing state of affairs, but balance in the minds of the balancing Powers. Again, perception is a function of position. There

will be a tendency to select an estimate of adversary strength that heightens the importance of one's own position. The minister of defence or service officers show a tendency to over-estimate the enemy capability, whereas the finance minister will try to underestimate it. Also, stress and tension lead to prefer information consonant to anxiety. Perception of equality between two adversaries gives no basis for belligerent action, but it can also be argued that in a state of equality there is no incentive to disarm. However, perceptions are important factors in balance-of-power strategy.

APPROACHES TO DISARMAMENT

There have been two identifiable approaches to disarmament—the legalist and the structuralist. Although in the recent times a large number of disarmament conferences were organised, unfortunately, the result has not been encouraging. The reason for this has been explained through several theories, e.g., the insincerity theory (the conferences are never intended to lead to disarmament), the powerlessness theory (because of the weakness in coupling between the machineries for armament and disarmament), the difficulty theory, the communication theory (less interest in disarmament than in communicating posture), and the disagreement theory (based on too much of disagreement and conflict of interests); but these theories do not exclude each other.

Again, some line of demarcation can be seen at the surface of the disarmament debate between absolutists (who believe in disarmament of all weapons in all countries as early as possible) and gradualists, between unilateralists (unconditional disarmament by one side) and multilateralists, between supporters of 'inspection first' and supporters of 'disarmament first' between supporters of 'conference first' and those of 'disarmament first' between supporters of explicit agreement and those of tacit agreement.

While the legalist supporter of disarmament will try to influence future behaviour so as to conform to the standards, the structuralist will try to change his standards so that they can be confirmed by the future behaviour. The legalist approach towards disarmament presupposes two axioms: (1) Balance Axiom:—All measures of total disarmament should be balanced, so that at no stage of the implementation of the disarmament treaty could any state or group of states gain military advantage, and so that security is ensured equally for all; and (2) Control Axiom:—During and after the implementation of total disarmament, the most thorough control should be exercised, the nature and extent of such control depending on the

requirements for verification of the disarmament measures being carried out in each stage. The balance axiom is fraught with the interminable difficulty of defining balance. The control axiom raises a number of doubts: (a) control is contrary to cultural values; (b) it has to stand up against basic asymmetries between the case of hiding and the difficulty of finding, between the resources of the controllers and the resources of the cheaters, between the strong and the weak links in the chain, between the expected and the unexpected; (c) in a technological culture, most efforts to cheat can be camouflaged for civilian purposes; (d) control is impeded by non-dichotomous nature of cheating and too much noise in the system; (e) the enthusiasm for detecting cheating may lead to the destruction of the control system; (f) international control is antithetical to national or regional sovereignty; (g) it institutionalises distrust, and stimulates both cheating and inventiveness in welfare.

The structuralist model is based on both normative and contractual compliances. Normative commitment can be positive or approach-oriented, as when there is widespread ideology in favour of disarmament; and it can be negative or avoidance-oriented as when there is deeply rooted fear of the bomb and its consequences. Then normative commitment can be based on positive or negative identification with institutions e.g., the United Nations or nation states. Moral attachment to the goals of peace and GCD is very important defence against world war. National and international societies will have to be organised in such a way that the actors can realize their goals without resorting to war or exploitation. Hence, an inter-looking network of positive interaction, based on exchange and cooperation, and leading to an integration where conflicts can be managed adequately, is needed.

It is interesting to note that there is little urge for disarmament at the centre of power, whereas there is a pressure to disarm where there is no power. It is seen that disarmament negotiators are generally recruited from ministries of defence and foreign affairs where legalistic thinking prevails because of their staffing and training patterns. But, of course, these days, there has been some give-and-take between the legalist and the structuralist.

However, with the conclusion of SALT I and SALT II between the two Super Powers, the pessimists about disarmament may perhaps think that disarmament conferences are not all that useless.

THE WAR SYSTEM

The War system includes all the machineries for organised use of direct violence, of means of destruction, with "software" (armed forces, people, social organisation) and "hardware" (arms and equipment) components. One may approach this system in various ways by analysing (a) its structure, (b) its function, (c) balance of power between two systems, (d) its dynamics, and (e) the arms race or the military race.

But the war system can also be studied through an identification of trouble spots, because areas of tension stimulate arms race and lead ultimately to wars.

According to the actor-oriented perspective, direct violence is initiated by actors, groups and nations, whereas according to the structure-oriented perspective, it is a corollary of structures pregnant with structural violence. The first view leads to the strategic analysis of the intentions and capabilities of actors, but the second one to structural analysis for conditions of revolution and counter-revolution within and between nations, with particular emphasis on mobilization. But both views are complementary to each other.

Broadly speaking, the five types of war—external war, internal war, imperialistic war (intra-block), subversive war, and internationalized class war—are tied to the system of dominance one way or another, and are vertical. This makes any theory of war, arms race, disarmament, security, etc., based on horizontal assumptions that the two belligerents are equally autonomous, etc., unrealistic.

In order to understand the implications of arms races correctly, they have to be broken down by types of war, such as nuclear wars, conventional wars and guerrilla wars. A horizontal arms race appears to operate along the line of a well-known market mechanism: 'If we don't do it, the other side will, and when they'll gain an edge on us.' But unlike the economic market, where the above mechanism assures economic benefit to all the concerned participants, the security market involved in an arms race may lean to the destruction of all concerned. Military races have to be measured in terms of destructive capacity, not in terms of budgets.

A distinction should also be made between the quantitative and qualitative aspects of arms race. The development of a new defensive system (a BM invites an anti-BM, and the latter invites the anti-anti-BM) may change the power balances as much, or even more, than a new offensive capacity. The arms race is an open-ended agenda, involving

new responses to adversary innovations and still fears of gaps, like the bomber gap under Eisenhower, missile gap under Kennedy and ABM gap under Nixon. There is a horrifying range of new systems like cheap nuclear bomb, laser death ray, holes in the ozone layer, LSD-related drugs, robot fighters, artificial droughts, earthquakes and tsunamis (tidal waves) that may be developed in course of time.

In a vertical military race, it is not a military-military race, but a military-political race, but what (arms) has been developed for one can also be used for the other. Then, there are non-war functions sustaining arms race : (a) political warfare involving national power and prestige, (b) economic warfare, (c) arms trade, (d) arms race as stimulating the economy, (e) military as a preserve of the society in worker's strikes, flood, earthquake, etc., (f) the use of surplus production and research capacity, (g) bureaucratic inertia, and (h) response to vested interests.

Thus the present war system is self-reinforcing and symptomatic of the whole global and domestic systems based on competition and domination, and is, at the same time, the cause and the effect of it.

The reasons that arms races are not controlled by governments are : (a) Governments are willing to control only horizontal, not vertical, arms races ; and (b) they want to control quantitative, not qualitative, arms races. Disarmament Conferences are also generally seen as ways of perfecting the balance power mechanisms rather than as a means for the reduction of the war machineries. The nationalisation of arms manufacture and trade has added "to the traditional competition for power competition for profit, and to the arsenal of Keynesian mechanisms adding arms production."

In the present atomic age, peaceful use of nuclear energy has become a slogan of the modern scientific culture. Interestingly enough, a survey of the opinion of Japanese students has shown that they are in favour of the use of atomic energy for peaceful purposes in a way no other country does. But the peril of the peaceful use of nuclear energy has become evident from the dangerous leakage of radio-active material from several atomic plants in U.S.A recently. Moreover, the existence of peaceful nuclear plants will remain as a source of temptation to those who would like to use them for non-peaceful purposes.

PEACE AND NON-MILITARY DEFENCE

Peace, which is an infrastructure more than a superstructure, is indeed a multilevel structure. To be of any use in the fight

(Continued on page 196)

Book Reviews

MILITARY ROLES IN MODERNIZATION ; CIVIL-MILITARY
RELATIONS IN THAILAND AND BURMA
BY MOSHE LISSAK

(Published by Sage Publications, INC, Beverly Hills, California, 1976),
pp 255. Price not mentioned.

THIS is one of the volumes of the Sage series on Armed Forces and Society, prepared under the auspices of Inter-University Seminar on Armed Forces and Society, chaired by Morris Janowitz of the University of Chicago and Charles C. Moskos, Jr. of North Western University.

While dealing mainly with civil-military relations in two developing countries, i.e., Thailand and Burma, the author has also broadly discussed the role. Expansion of the Military, stimulus and propensity, multi-dimensionality of modernization and the issue of its unevenness. There are also some notes on economic development and value predisposition in Burma and Thailand.

There has been a number of military coups in recent years in South American, African, Middle Eastern, South-East Asian and South Asian countries, and as a result of that the role of the Military has greatly expanded into civilian spheres. The author of the present study has chosen two neighbouring developing countries of South-East Asia—Burma and Thailand—which have more similarity with each other than with any other country, for making a comparative study of the role expansions of the Military in the context of Civil-Military relations and the resultant modernization through the instrumentality of the Military.

The author thinks that an "antipolitics" outlook of the military is accompanied by a negative view and even hostility to politicians and political groups. Although Huntington believes that professionalism of the military is linked with decreased military intervention, the author thinks that both under-professionalism and over-professionalism may lead to number of similar consequences. The motivation behind military intervention often stems from the military's self-image as guarantor of the permanent national interests as different from the interests of the contemporary regime or government. According to Finer, countries

with political maturity—where both consensus and social mobilization (into associations and groups) are very high—are immune to military take-overs. Huntington and Hopkins have found a positive correlation between multi-party system and frequency of revolutions. But one-party systems are also not immune to military coups, as in the case of Indonesia in 1966. On the other hand, multi-party system does not always witness military intervention, as in the case of India. The professionalism of the military makes it conservative, and so long the consensus over the norms governing the exchange of resources and social services between the various sectors involved is not seriously threatened. The Burmese army have made a great effort, with relative success, to reach a balanced conceptual relationship of the components.

(e) In Burma, (as in Pakistan also) the army used its feeling of "historical mission" as a justification for its political activism and role expansion, but in Thailand, the army's role expansion was motivated by the sense of being a professional elite with greater organizational ability than any other group.

(f) The civilianization processes in both are only partially the result of technological changes and innovations within the military system. But while in Burma, the dominant factor is the desire to impose a specific doctrine of social change and assume the exclusive monopoly of the techniques of modernization, in Thailand the dominant factor is the desire to impose the corporate interest of the military on the civilian society as a whole.

(g) The theory that the absence of a middle class tends to give rise to coups find corroboration from the experience of Burma and Thailand. Analysis of social stratification in Thailand and Burma indicates the development of limited number of objective conditions which enable their officer corps to serve as intermediaries among the various sectors and elites.

(h) Unlike Thailand, which was never a colony (a colonial regime) serves as a catalyst for political and social development) and never had frustrated key groups making excessive demands on the political centre, but had the beneficial role of the Thai Buddhist society to make the people obedient to authority, Burma witnessed colonial rule a week political centre vis-a-vis frustrated and militant groups and minorities in the periphery. While during 1962—1972, the Burmese army engaged not only in intensive role expansion, but also tried to achieve various social and economic aims, without neglecting the professional role against the insurgents, the Thai military between 1932 and 1972 expanded their role in a limited way, mainly in the economic sphere through

competition between military cliques, and not through the collective endeavour of the military as a whole, and did not show an inclination to civilianise.

(j) The modernization of the Burmese political system was more apparent than that of its Thai counterpart. But unlike sharp fluctuations in independent Burma's economic growth, Thailand had a gradual, balanced and continual economic growth.

(k) While Burma has experienced intense antagonism between the political elite and the bureaucrats, such sharp antagonism never developed in Thailand.

(l) In Burma, which is a multiple society, the civilian elite has not been able to develop social and political frameworks to strengthen its power base. Though the situation in Thailand is better, nonetheless the subversive actions in the north-east and south-east, the Chinese minority problem, and the antagonism between the bureaucratic military elite and the militant political groups tend to diminish the strength of the Thai political centre.

(m) However, the military power and managerial qualities could not serve as a substitute for adequate political leadership able to solve the problem of subversion and guerrilla warfare in both Burma and Thailand.

The author has thus concluded :

"The optimistic observers' disappointments about the qualities of officers as agents of modernization strengthen the felt need for demystification of the advantages of the military sphere. In any case, it would be advisable to construct a more balanced picture. The fact that some military establishment have succeeded in opening up bottlenecks within frozen and rusty social frameworks does not mean that the same officers would necessarily exhibit aptitude or willingness to provide new infrastructures in order to prevent further bottlenecks from developing."

This is a fine sociological case-study of two developing countries of South-East Asia, in the context of the ruling military regime's role in modernization, which both political leaders and soldiers, political scientists and bureaucrats, will find most educative and thought-provoking.

BC

THE DHOW

by CLIFFORD W. HAWKINS

(Published by Nautical Publishing Co. Ltd., Lymington, England, (1977), pp 143. Price £ 18.50.

FOR those familiar with the Arabian Sea, the Dhow is almost a part of the seascape. In the Coastal Waters of India, from Okha to Tuticorin, it is almost impossible for a seafarer to be out of sight of a Dhow laden with timber, Copra or grain. Even in the broader expenses of that sea, enroute to the Persian Gulf and the African East Coast, one regularly encounters these fascinating craft. With the possible exception of the Chinese Junk, the Dhow is certainly the ubiquitous seagoing sail craft in the world today.

'The Dhow' by Clifford Hawkins is a beautifully written, marvellously illustrated anthology of these vessels which form an important part of the maritime heritage of not only India but of most littoral countries of the Arabian Sea. It is particularly welcome since no comprehensive book on the subject appears to have been published since Alan Villier's *Sons of Sinbad* in 1940, K.B. Vaidya's *The Sailing Vessel Traffic on the West Coast of India and its Future* in 1945 and G.F. Hourani's *Arab Seafaring* in 1951. While the three books mentioned are of undoubtedly quality and significance, Clifford Hawkins' effort would appear to be of surpassing value from a seaman's angle because of the wealth of professional detail it contains.

Although the book has been written in a popular, readable style without detailed classification and class characteristics, it does take the reader through the full range of the Dhow world—the Kotias, Batellas and Odams of the Indian Coast, the Jalbauts, Booms and Dhangis of the Arab coasts as the Jahanzy is of East Africa and many more. There are fascinating details of hull construction, rigging details and sail making.

There is a whole chapter on the Indian scene which is an eye opener to those who think that the Dhow is a quaint anachorism on the road to extinction in the face of mechanised and automated competition. It gladdens the seaman's heart to know that the vast bulk of West Coast Dhows still do not have auxiliary motors and are yet able to hold their own in the increasingly competitive freight market. This is quite in contrast to the position in Arab waters where the purely sailpowered vessel is rapidly fading out. Obviously cheap oil is not an unmixed blessing.

The profusion of coloured and black and white photographs in the book is even more fascinating than the text. All are of superb professional quality and many convey details and atmosphere which no amount of wordage can. There are pictures of Dhows at sea, at anchor, alongside bandars, under construction and under repair. Considering that many classes of Dhows are on their way out particu-

arly in the Arabian waters, these photographs would prove to be of great interest and historical value in the years to come.

The Dhow' share of traffic across the Arabian sea, from India to the Persian Gulf and the African Eastern Coast, is undoubtedly diminishing. However the situation appears more reassuring along India's West Coast. The growing cost of oil and the favourable wind pattern along the coast are giving a helping hand to the Dhow in its fight for survival. One fervently hopes they succeed, for these settee-sailed craft and their hardy seamen constitute a vibrant part of our maritime heritage.

VK

JANE'S FIGHTING SHIPS 1931 ?

Edited by OSCAR PARKES

(Reprinted by David and Charles, Devon, England, 1973), pp, 512, Price £ 9.45.

THIS book is part of a series of Jane's reprints of milestone years to chart the path of maritime design and development during the past 80 years. 1931 is an interesting year as it marks the level of naval construction under the famous Washington Naval Treaty signed by Britain, United States, Japan, France and Italy. The Washington treaty had a complex set for parameters involving individual tonnage, armament as well as number of capital ships. Maximising maritime power under such conditions must have proved a tremendous challenge not to ship designers but also to those days' equivalent of Linear Programmers.

Tennyson D'Eyncourt's design of the 33,500 ton Nelson class battleship is an interesting study of how ship design was influenced by Treaty considerations. To arrive at a design which was within treaty limits yet approached the limits as close as possible, D'Eyncourt mounted all three 16" triple turrets of the ship forward of the bridge. The 'C' turret, being below the level of 'B' turret, had only a very restricted arc of fire, yet the Naval Staff accepted this tactical penalty in view of the savings in weight on waterline armour.

The book also offers fascinating insights into naval design trends which were explored and later given up. One of these which particularly strikes the reader is the heavily gunned submarine. It is intriguing to see that in the Twenties there was considerable debate as to whether the gun or the torpedo would be more effective as a submarine mounted weapon. The 2780 ton British X-I had four 5.2" guns in two twin turrets. And the 2880 ton French Surcouf, commissioned in 1929, had two 8" guns in a massive forward turret.

Equally interesting is the importance given those days to speed as a design factor. This is perhaps best typified by the 2500 ton French Le Terrible class destroyers which had an SHP of 70,000 giving them a fully laden top speed of 37 knots. Fifty years later we have no conventional hull surface ship with anything like that speed. One is equally struck by the cost of warship construction those days. In 1920, the 46,200 ton Hood cost the Admiralty the princely sum of 6 million pounds. Today a 3000 ton frigate cost ten times as much. Inflation and electronics have certainly played havoc with naval budgets.

VK

HOVERCRAFT AND HOVERPORTS

by IAN CROSS and COLEMAN O'FLAHERTY

(Published by Isaac Pitman and Sons, 1975), pp. 160. Price £ 5.00 net

HOVERCRAFT has come a long way since the first man carrying model (SRN-1) 'flew' in 1959. Within 3 years a commercial hovercraft service was operating across the English Channel and within 10 years (1969) a model carrying 254 passengers and 30 cars was in operation. Cross and O'Flaherty's book is an assessment of how the hovercraft development has progressed in the last two decades and how it has fitted in and will fit into the overall transportation matrix. Although the book touches upon the design characteristics of air-cushion vehicles, it is essentially meant for the non-technical manager who would like to use the craft as a transportation alternative.

The book is not of much interest to the military reader, as it has left the military hovercraft field completely untouched. Exciting developments have recently taken place in this field with 100 ton Surface Effect Ships already under operation and a 2000 ton helicopter carrying SES under development. The book also suffers from the fact that it is centred on Great Britain and has left uncovered the considerable developments which are taking place in the Soviet Union, United States and other countries.

VK

CREATORS AND DESTROYERS OF THE ENGLISH NAVY

by EVELYN BERCKMAN

(Published by Hamish Hamilton, London, 1974), pp. 212. Price £3.75.

THIS is an unusual book which charts the course of British naval history during the period 1533 to 1685. It is unusual because it is based entirely on the State Records which were dictated daily (and through centuries) to the staff of the King's Principal

Secretary. Those who recorded these papers were in the vortex of events and were privy to the innermost secrets. Further their records were put down as the events were unfolding and thus have an immediacy and authenticity which is hard to dispute.

The book has portrayed Elizabeth I, Charles I and Charles II as the Creators and James I and Oliver Cromwell as the destroyers of the English Navy. As the reign of these creators and destroyers occurred alternately, it has given a cyclical pattern to the Navy's fortunes. In the light of the evidence marshalled, Berckman's classification of the reigns would appear justified although one feels that some of the blame heaped on Cromwell is unjustified. That poor gentleman had so much else to occupy him during his brief tenure.

What is fascinating about this book, however, is not its judgement on men and matters. It is the insight it gives into the details of naval life as well as the decision-making processes of the Governments of those days. Miss Berckman has set these down in compellingly readable style.

VK

SOVIET AIR POWER IN TRANSITION

by ROBERT T. BORMAN

(Published by Brookings Institution, Washington, 1978), pp. 88, Price \$2.95.

THIS is one of the 17 titles brought out by the Brookings Institution Washington, D.C. In 82 pages the author carries out a comparison of the Air Forces that are available to the Soviet Union and Warsaw Pact Powers vis-a-vis NATO countries and the United States.

The American author has given a fair assessment about the Soviet air power which is going to prove a formidable challenge in the future as this instrument of war is no longer the monopoly of West in terms of design, production capabilities and competence. Soviet Air Force is going to be a force to be reckoned with in the eighties—is the burden of the message the author wishes to convey.

All in all it is a good reference book for the price as it gives out an inventory of all current combat aircrafts in use by the major powers in the world and presents the latest trends with regard to development and improved operational competence. For students

research and development it has special values. For planners of future air battles, it provides a useful food for thought.

The Book is divided into four chapters. Chapter I pertains to the comparative study of various types of aircrafts that are currently in use in the Soviet Union and the Western countries including Canada. It gives a complete inventory of aircrafts and their service capabilities.

Chapter II describes the organisation of the Soviet Air Force with its 1400 fixed wing aircrafts and 3500 helicopters. The Air Force is described as grouped on functional basis for variety of tasks which are self-explanatory like air defence forces ; the Naval air-forces ; long range aviation ; front-line aviafetion (combat support) ; military transport aviation.

Chapter III pertains to the design characterisation that are emerging for futuristic aircrafts. The Soviet Union appears to be engaged in developing a multipurpose and ground attack plane. The main innovations to aircraft are the jamming capability of enemy radar ; heavier bomb load carrying capacity and shift to swing aircrafts alongwith increased endurance capabilities.

The last Chapter gives a comparison of the opposing air forces of the USSR and the U.S.A. The application of experience gained by the two super-powers as a result of their involvement in Korea, Vietnam and Egypt has been discussed exhaustively. The likely scenario of a Soviet aerial threat against NATO has been discussed and the message the book has to convey is that the Soviet Union has improved its capabilities tremendously. It poses now a live threat to the NATO air bases. The book is an eloquent tribute to the Soviet Air-Power which has grown in all spheres during the last three decades. It is now rated highly competitive and in terms of a combat capabilities it can no longer be ignored. The Soviet Union has also taken into account the threat from low level flying tactics in order to avoid surveillance by radar. The integration of ground-based missiles to deal with low level tactics have also been discussed.

The chief merit of the book lies in the wealth of information on combat aircraft and technical details compressed in concise form at a modest price. Highly commended for personal and unit libraries.

"EYESET"

633 SQUADRON : OPERATION CRUCIBLE

By FREDERICK E. SMITH

(Published by Cassell, London, 1977), pp 206. Price £ 3·75.

“**M**OSQUITO” aircraft constituted Britain’s best bastion in the air against the “deadly” German fighter-aircraft during the later stages of World War II; and “No. 633 Squadron” of the Royal Air Force has been taken to be the best trained squadron for special operations.

Mr. Frederick Smith has developed a fascinating story against this background, taking advantage of the stresses and strains of air-warfare (of which he has pretty intimate knowledge), and the differences between the British and American War policies which came to be fairly well known even during that war.

The story begins with the depiction of an allied bombing raid deep into German territory by the American Long-range Bomber squadrons (of B-17s). Such deep penetration raids were quite naturally subjected to harsh treatment by the German fighters, and the American losses in aircrews and aircraft were not negligible. The idea that the famous Royal Air Force,—(which had so successfully fought the “Battle of Britain” in the air)—should provide long-range fighter-cover to the American Boys,—would be absolutely logical to an American War correspondent who happened to have accompanied the American aircrews in this raid.

The story then gradually proceeds through the twists and turns of Anglo-American relationships, their respective strategies and high-level military decisions, and the intimate understanding between their operations-staff and the fighting personnel at the functional level.

The life in and around the famous squadron, the nature of aircrews in general and of certain important personalities—have been depicted by the author with the masterly touch of intimate knowledge and deep understanding. The characters are absolutely true to life.

The emotional stresses arising out of the bloody war, the comradeship in amongst the squadron personnel, and that between aircrews who are tied together as Pilot and Navigator in a “live or die together situation”, the nocturnal escapades and the love-life of the aircrews operating under nearly unbearable stresses and tensions,—all these are beatifully shown through appropriate situations.

The men and women of the story come from different strata of society, they react in their own individual ways, they have their own characteristic faiths in divinity and otherwise, they strive their utmost in fighting the war within their own limitations,—and some go beyond it,—and yet they operate as a strictly united force with the efficiency of a weapon manoeuvred with accuracy. Patriotism and the spirit of sacrifice reign supreme, esprit-de-corp shines at its best, the

"tough job" assigned to the Squadron is executed with its characteristic thoroughness and with minimum loss of striking force.

The reader is taken through the various stages of the air-operation from its inception, including the actual fighting over the target area, and the final return of the aircraft to the Squadron dispersal. The reader feels as if he too is in the air there, seeing for himself the breathtaking manoeuvres, the hits and misses, the glory of success, the agony of disasters and the final return home of those who have been lucky, to say the least.

A most enjoyable novel for those in the Services anywhere in the world.

SDS

FOCKE WULF-190 AT WAR

BY ALFRED PRICE

(Published by Charles Scribner's Sons, New York, 1978), pp. 160.
Price \$12.50

THE present book by Alfred Price is a very interesting account of that German fighter aircraft which proved to be a "terror" to the Allies in World War II.

When the Focke Wulf-190 first became operational in 1941, it was superior to the (then) best Allied fighter (Spitfire-V) in practically every way; and this superiority was maintained for more than a year.

It must be said to the credit of the Allies that in spite of this superiority of the German fighter, the Allies never lost their superiority in the air.

The present book by Alfred Price, coming so long after the din and bustle of the World War II, is a frank and dispassionate account,—without recriminations, and without the feeling of enmity or hatred.

The book begins with a brief account of what went on during the stages of design and development. This account is directly from Dr. Kurt Tank who was the Technical Director of the firm, and the Chief of its design and development activities.

Dr. Tank has outlined the philosophy adopted by him,—born out of his experience in World War I, and his own flying experience. The FW-190 was designed not as a "race horse" meant entirely for speed,—but as a "Cavalry Horse". FW-190 could operate from ill-

prepared front-line airfields, could be flown and maintained by men who had received only a short training, and could absorb a reasonable amount of battle-damage and still get back ?

This is followed by the account from Dr. Hans Sander who was the Chief Test Pilot dealing with FW-190 commencing from its prototype stage. Dr. Hans Sander provides a clear account of the good points of the aircraft, as also whatever went wrong and called for rectifications and modifications.

The designers and test pilots paved the way for much more exacting demands eventually made by the German Air Ministry on FW-190 whereby the aircraft had to bear much greater penalty in weight,—of arms and ammunition, as also protective armour,—without losing appreciably in its operational characteristics or fighting capability.

In the subsequent chapters of the book Alfred Price succeeded in getting first-hand accounts from those German airmen and commanders who actually took active part in the various types of operations and served in the various theatres of war.

It is not generally known that the (British) Royal Air Force had hatched a plan for hijacking an FW-190. The author also presents a chapter about certain squadrons of FW-190 of which the pilots were pledged to drive home their attacks on the enemy aircraft to the utmost possible (by ramming if necessary).

Towards the end of World War II, when the Allies had brought into service fighters which proved to be of superior performance,—the FW-190 was modified to accommodate a liquid-cooled engine (Long-nosed Dora) and this version had a performance to match the British, American and Russian fighters,—with its faster speed and superior rate of climb,—as compared to its version.

The present book by Alfred Price is a befitting companion to his "Spitfire at War", and is full of authentic accounts, interesting incidents and exceptionally good photographs. This would be of interest to the serviceman in general, and particularly to those who have been students of military history.

SDS

MARTIAL LAW : THEORY & PRACTICE

Edited by H.S. BHATIA

(Published by Deep and Deep Publications, New Delhi, 1979), pp 240.
Price Rs. 50/-.

IN the proper sense of the term, martial law means the suspension of ordinary law and government of a country (or parts of it) by military tribunals of its own Armed Forces. It involves the temporary and partial transfer of power from the civil to military authorities. The term 'martial law' is also used to denote the law administered by a military commander in occupied enemy territory in time of war. Martial Law must, however, be distinguished from military law which is the code regulating the conduct of members of the Armed Forces as such and is contained in the three Service Acts, viz., the Army Act (1950), the Airforce Act, (1950) and the Navy Act, (1957).

The Indian Constitution recognizes the right of Parliament to proclaim martial law in the sense of maintenance or restoration of order in any area within the territory of India. With effective provisions for internal or external emergency, martial law must remain a stranger to Indian conditions. As such, very little is known about martial law and its legal consequences. Viewed in this background, Mr Bhatia's book is a welcome addition to the legal literature.

The book is divided into twelve chapters and contains selected articles on specific aspects of the subject including the recent proclamations of martial law in Pakistan and Philippines. Although Chapter 1 is titled 'Origin and History of Martial Law', several other chapters in the book deal also with the historical aspects of martial law, e.g. Chapter 2 also purports to trace the origin of word 'martial law' in England. Chapters 7 and 8 deal again with the historical aspects of martial law in the United States of America and India. Chapter 9 under the heading "Delhi under Military Rule as seen by Ghalib" seems to have little relevance to the topic of the book. This chapter narrates the ill-treatment meted out to and atrocities committed on the citizens of Delhi during and after the 1857 mutiny by the British.

Chapter 10 'Punjab under Martial Law' written by Sir Valentine Chiron is the best article included in the book. This chapter throws light on the ferocity with which martial law was enforced in Punjab during 1919 and how the massacre of unarmed Indians assembled at Jallianwala Bagh, Amritsar, was totally unwarranted and unjustified on the mere suspicion that martial law regulations had been flouted. The indiscriminate shooting was obviously done to 'strike terror in the whole Punjab'. Although the monstrous actions of Brigadier General Dyer were severely criticised by the Hunter Committee, as also by the British Government the tragedy had far reaching effects in shaking the confidence of the Indian people in the justice and humanity of the British rule.

Chapter 11 recounts the recent happenings in Pakistan necessitating the imposition of Martial Law, from time to time, and its legal validity. Similarly Chapter 12 discuss the validity of the martial law proclamation in the Philippines in September 1972 in the light of writ petitions filed before their Supreme Court. These chapters are quite instructive and informative.

On the whole, Bhatia's book contains exhaustive information on a subject about which little is known to the lay reader. The book would, therefore, be welcomed as a useful addition to the law libraries.

OP

(Continued from page 183)

against violence, it must be built within nations as well as between nations.

Non-violent defence may comprise various techniques, e.g., protest, sabotage, escape, migration, strikes, boycotts, ostracism, alter-inflicted suffering, non-cooperation, civil disobedience, and even demonstrative self-sacrifice through hunger-strike, immolation, etc. "Non-violence is built around the basic hypothesis that persuasion is more effective if it is expressed in action terms, rather than as words." But non-military defence should not be looked upon as an absolutist model of change, rather it should be seen as supplement rather than an alternative to military defence. But, for experimenting with non-military defence in face of brutal aggression, there is the need of players of non-violent roles like Gandhi or Martin Luther King who could reinforce physical non-violence with their spiritual force.

Correspondence

Correspondence is invited on subjects which have been dealt in the Journal, or which are of general interest to the Services.

The Editor,
'USI' JOURNAL

I

ORGANISING FOR EFFECTIVENESS AN OUTLINE REVIEW OF THE ARMY ORGANISATION

Sir,

I have been commissioned to write the official biography of the late Field-Marshal Lord Wilson of Libya, and would very much like to make contact with anyone who know him, directly or indirectly, at any stage in his long and distinguished career. He served in India with 2nd Bn. The Rifle Brigade, 1904-6 and again in 1928-9. And Indian forces served under him in the Middle East, Persia etc. in the Second World War.

If any readers can help me in this way, I would be most grateful if they would write to me at the Department of War Studies and International Affairs, RMA Sandhurst, Camberley, Surrey. GU 15 4 PQ. All letters will be acknowledged.

Yours etc,
D.G. CHANDLER

The Royal Military Academy Sandhurst
Camberley
Surrey GU 15 4 PQ
18 October 1979

If

Dear Editor,

SUB : A BIO-DATA TO SELL THE SOLDIER

I do not know whether you entertain such letters, but I hope you will do so in this case.

I would first like to congratulate Brig. Grant for his article on the above subject in the July-September '78 issue of your journal. He has touched on a most important point which is of interest to retired as well as serving Servicemen.

Since I retired, I have tried to interest myself in the problem of resettlement of ex-Servicemen. As such, I have dealt with a large number of bio-datas, and I agree with Brig. Grant that one of the reasons for ex-Servicemen not finding employment is the way they present their bio-data.

With due apologies, I can say that the bio-data format given by the Directorate of Re-settlement is guaranteed to Not get a civil job ! In the very beginning, the format says "Civil Qualifications" and invariably the applicant fills in "NIL". It is obvious that a civil employer will not go beyond this point. He will throw the application into the waste paper basket !!

What is required is for the applicant to indicate the type of job he is seeking and his qualifications for the same.

As pointed out by Brig. Grant, nearly all military functions have a civilian equivalent and this is the aspect that has to be highlighted.

Apart from specialist qualifications such as Engineering, Communications (Signals), Logistics (Material Management) etc., every Serviceman, specially a Service Officer, has basic qualifications, which are vitally required by the Civil Sector. Some of these are man-management, organisation, planning, control, logical analysis of problems (appreciation) and systematic approach.

In civil terminology, man-management is personnel management, and the other aspects become MBO (Management by Objectives), OR (Operations Research), Network Analysis (PERT & CPM), MIS (Management Information Systems), Management by Exception etc.

As far as man management is concerned, every Service Officer has practical experience. He manages his men by being a 'leader' not the 'boss'. This is what is required in present day labour conditions.

In the civil side, there are still a large number of officers, who lack personal contact with their men and are 'bosses' rather than 'leaders'. They leave man management to the Personnel Department.

This I say from personal experience. In the Company I first joined after retirement, I was told that one unit was 'Peculiar' because the officers played games with their men ! The person informing me was shocked when I told him that in the Services we not only permit this, but in fact, we order it !!

Therefore, in the field of man management and many other aspects of management, every Service Officer has a lot to offer the civil side. This has to be brought out and highlighted in the bio-data and the covering application.

In this connection, I am enclosing a bio-data based on an American format, which I think is a format we should adopt in India.

A. C. Lal
Air Vice Marshal (Retd.)

G. J. SINGH
J-208, Saket
New Delhi-110017

Telephone
652990

OBJECTIVE

Management position where abilities and experience can be utilized to full potential... an assignment where a successful background involving Materials Management, Purchasing Management, Warehousing Management and top level organization skills will have valuable applications.

SUMMARY OF QUALIFICATIONS

<u>Administrative Management</u>	Twenty-six years of progressively responsible assignments within management-providing an excellent background in the entire spectrum of staff and line supervision.....Planning, organizing and supervising administrative elements; implementing systems that have significantly improved productivity and reduced costs. Directing procurement, warehousing, and materials management at the National and International level.....Have supervised over 300 technical, accounting, logistics and administrative personnel.
<u>Materials Management</u>	In-depth experience in all phases of procurement within highly technical and non-technical areas-plus stores and inventory control, expediting, shipping and receiving, contract negotiations and administration, also long and short range budgeting and planning as well as related cost and expense reduction, value analysis...Formulation and implementation of major policies and procedures in support of national goals.....A specialist in contract negotiations and bargaining.
<u>Personal</u>	A seasoned, profit conscious individual characterized by creative problem-solving ability coupled with the capability to communicate effectively at

all levels to produce results. Motivational, developmental and administrative skills are complimented by an outstanding record of accomplishment in both domestic and international assignments.

EMPLOYMFNT RECORD

1951-1978 INDIAN AIR FORCE-WING COMMANDER (final rank).....Logistics branch-responsible for the planning, acquisition, distribution and control of materials (aircraft and ground-support equipment, vehicular equipment, parts, lubricants, etc) for the Air Force.

<u>Chronology</u>	<u>Commanding Officer-Equipment Depot</u>	1973-1978
	<u>Deputy Director-Provisioning</u>	1969-1973
	<u>Senior Logistics Officer</u>	1967-1969
	<u>Assistant Air Attaché-Embassy of India, Moscow</u>	1963-1967
	<u>Assistant Director Provisioning, Warehous ! Manager, Supply Officer, Procurement Officer</u>	1951-1963

EMPLOYMENT RECORD (Continued)

Highlights :

As Commanding Officer of a supply depot-encompassing 240 thousand square feet, supervised 15 executive officers and 300 personnel in the receipt, storage and redistribution of 48 thousand aircraft and truck parts throughout the nation.....directed Planning, Logistics, Internal Auditing, Quality Control and Maintenance functions in the ongoing supply of these highly sophisticated and critical materials valued in excess of Rs. 25 Crores.....reported to an Air Marshal.

* Results—included introduction of work batching systems and storage methods which enabled a 20% staff reduction while maintaining previous service levels...expanded verticle storage methods and capacities.....consolidated inventory control methods and items increasing operational efficiencies by 18%.

As Deputy Director-Provisioning—was one of 8 officers responsible for total planning, budgeting, analysis and ongoing procurement of aeronautical equipment and parts for the Air Force..... Directed staff of 77 in consumption forecasting, procurement management, contract management and auditing activities necessary in the support of 5 transport aircraft.....On an ongoing basis, coordinated with Electronic Data Processing in all forecasting, procurement and contractual administrative activities.....Responsibilities included expediting, order placement and final payment release to foreign suppliers.

* Results—effectively prioritized and resolved a massive order backlog.....Was instrumental in streamlining provisioning procedures with foreign suppliers.

As Senior Logistics Officer—held full-charge responsibility for all men and machine procurement and supply requirements of a missile base employing 1 thousand personnel.....Directed staff of 50 in a gamut of activity, ranging from material planning to final receipt and re-distribution.

As Assistant Air Attaché—Embassy of India, Moscow, was specifically assigned to negotiate standard terms of contracts with the Ministry of Foreign Trade-USSR for the procurement of transport aircraft, helicopters, parts and ancillary equipment.....was particularly successful in the engineering of unusually difficult negotiations.....and was an active participant within the international diplomatic community.

EDUCATION

* Saint Stephens College, Delhi, India
Master of Arts Degree—Economics with
emphasis in Banking 1950
Bachelor of Arts Degree with Honours—Economics 1948

* Additional coursework has included advanced courses in Materials Management, Planning and Industrial Engineering Techniques

PERSONAL

Born: January 1, 1928.....5'9", 150 lbs.....Excellent health, Married, 2 children.....Fluency: English and Indian Languages...Enjoy Golf and Tennis

Secretary's Notes

MEMBERS' ADDRESSES

Copies of the Journal posted to members are sometimes returned undelivered by the Post Office with remarks such as 'the addressee has been transferred', etc. This appears to be on the increase and the only way to rectify it is for members to drop a line to the Secretary whenever their addresses change due to promotion, transfer, etc. It is of the utmost importance that the Institution should have the up-to-date addresses of all its members

ANNUAL SUBSCRIPTION

Although the Institute's year 1980 is now six months old, I regret to say that there are still many members who have not yet paid their subscription which was due on 1st January. Could I therefore request all members who have not yet paid their subscription for the current year, to let me have their remittance by return of post.

LETTERS TO THE EDITOR

We wish to develop this feature in the Journal, so if there is any point in its pages on which you feel you would like to send me a letter for publication, do please send it along. It might be a letter of commendation on an article, or you might disagree with the conclusion of a writer. Whatever it is, send in your letter and I will endeavour to get it in. Letters should be as brief as possible and should be sent to the Editor, U S I JOURNAL.

NEW MEMBERS

The following new members joined the Institution :—

AGARWAL, Captain B.K.	BABBAR, Captain D.K.
AHUJA, Captain S.K.	BARARI, Captain B.S.
ALE GOVIND, Captain	BARUA, Major S.K.
AMBRE, Captain E.N.	BASHA, Major S.G.
ANAND KUMAR, Captain	BAXI, Captain J.S.
ARJUN SINGH, Captain	BEDI, Major T.S.
ASHOK KUMAR, Captain	BHATIA, Major V.K.
AUJLA, Major M.S.	BHATTAL, Captain S.P.S.
AVASTHY, Lieut R.K.	BHOLA, Captain S.K.

BRAR, Captain R.S.	JUNNARKAR, Captain P.B.
CHAKKAL, Major J.S.	KALRA, Major M.K.
CHANANA, Major R.K.	KAMALAN, Captain P.K.
CHANDOLA, Captain J.P.	KANWAR, Captain W.S.
CHAUDHARY, Captain ATUL	KAPUR, Captain J.B.
CHAUDHARY, Major N.S.	KAPUR, Captain S.B.
CHAUHAN, Lieut D.R.	KAJURIA, Captain R.N.
CHOPRA, Captain K.K.	KHETARPAL, Captain R.
CHOWHAN, Captain M.S.	KHOSLA, Captain R.C.
CHUKERBUTI, Captain H. (Life)	KHURANA, Captain A.K.
DADWAL, Captain K.S.	KOONDE, Captain R.S.
DATTATREYA, Captain P.	KRISHNA KUMAR, Captain P.
DEEPAK RAJ, Captain	KULJIT SINGH, Major
DESHPANDE, Captain M.M. (Life)	KULWANT SINGH, Captain
DETBE, Lieut SHYAM	LIDDER, Captain S.B.S.
DEVAVARAM, Major V.D.I.	LALLAN SINGH, Captain
DHALIWAL, Captain S.P.S.	MAHAPOTRA, Captain A.B.
DHILLON, Major J.S.	MAHENDRAN, Captain V.M.
DHILLON, Captain P.S.	MALHOTRA, Major DEEPAK
DHILLON, Captain R.S.	MANKOTIA, Captain S.S.
DHILLON, Captain S.S	MATHEW, Captain E.T.
DHINDSA, 2/Lieut T.S.	MATHUR, Lieut A.K.
DOGRA, Major K.S.	MITRA, Captain I.
DUTTA, Captain D.K.	MUKHOPADHYAY, Captain R.S.
FORD, Major G.R.	NAIR, Captain G.A.
GAUR, Major R.B.S.	NAIR, Captain S.K.
GAUTAM, Captain RAKESH	PAHWA, Captain A.K.
GRHUMAN, Captain P.S.	PAUL, Captain N.S.S.
GILL, Captain S.S.	PRADHAN, Major N.K.
GUPTA, Captain ASHOK	PREM CHAND, Captain
GUPTA, Captain N.L.	RAI, Major P.S.
GURMUKI SINGH, Captain	RAJ KUMAR, Captain
HAKEEM, 2/Lieut S.A.	RAMJI LAL, Captain
IQBAL SINGH, Captain (0-34246)	RANA, Captain P.S.
IQBAL SINGH, Captain (0-34269)	RANDHAWA, Captain S.S.
JAGPAL, Major R.S.	RANDHIR SINGH, Captain
JAIN, Captain H.C.	RAO ANAND, Captain
JAIPAL SINGH, Captain	RAO, 2/Lieut VIJAY
JAIRATH, Captain A.K.	RATHI, Major M.S.
JAMWAL, Captain R.S.	RATHI, Captain R.S.
JHA, Captain G.K.	ROHEWAL, Major T.S.
JOE, Captain P.F.N.	SABHARWAL, Captain M.
JOSHI, Captain ARUN	SAIGAL, Captain P.K.

SAMANDER SINGH, Captain	SUKHJINDER SINGH, Captain
SANDHU, Captain D.P.S.	SURESH KUMAR, Major
SANDHU, Captain M.S.	SWARAN SINGH, Major
SANGAM, Captain P.R.	TEJ SINGH, Captain
SAPRU, Major T.K.	TEJINDER SINGH, Captain
SATU, Captain M.S.	THAKUR, Captain C.R.
SAXENA, Captain P.K.	THITE, Major M.S.
SATYENDRA KUMAR, Captain	THOMAS, Major P.M.
SETHI, Captain GAUTAM	TONK, Captain V.S.
SETHI, Captain S.C.	TRILOCHAN SINGH Captain
SHARMA, Captain K.K.	UPPAL, Captain P.
SHARMA, Lieut RAKESH	UPPAL, Major S.C.
SHARMA, Captain VIRENDRA	UBEROI, Captain S.K.
SHEKHAWAT, Captain D.S.	VENKATESHAM, Captain R.
SHEKHAWAT, Captain G.S.	VINAYAK NADGAUDA, Major
SIAG, Captain N.K.	VIRENDRA SINGH, Captain

**Join the Army
As a Commissioned Officer**

ELIGIBILITY CONDITIONS

Name of the Course	Age (Yrs)	Education	Courses Commence	Last date of receipt of applications.*	Entrance Examination
NDA	16—18½	Hr Sec/ 10+1	Twice a year Jan-Jul	18 Feb & 30 Aug	By UPSC
IMA					
(a) Direct Entry	19—22	BA/BSc	—do—	21 Jan & 28 Jul	CDSE by UPSC
(b) Technical	20—27	Engineering degree	—do—	31 Dec & 30 Jun	—
(c) Post Graduate	23—27	MA/MSC	—do—	31 Dec & 30 Jun	—
OTS					
(a) SSC(NT)	19—23	BA/BSc	Twice a year May—Oct	21 Jan & 28 Jul	CDSE by UPSC
(b) SSC (Tech)	20—27	Engineering Degree	—do—	30 May & 30 Oct	—
**ACC	19½—24	Hr Sec/ 10+1	Twice a year Jan-Jul	30 Jun & 31 Dec	By MT Dte Army HQ

*Exact date of exam and receipt of application is notified in UPSC notification/advertisement.

**Serving personnel of Army eligible should have 2 yrs service.

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