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—Brig T V Manoharan, EME

On Motivation

—Colonel R D Palsakar

M C (Retd.)

APR - JUNE 1984

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THREATS TO NATIONAL SECURITY

COLONEL R RAMA RAO (RETD)*

HISTORICAL MEMORIES:

NATIONS like individuals, it is said, have memories. Although this is a very general statement and may not stand rigorous scrutiny, it may be said that people whether belong to a country, a broad cultural, ethnic or religious group could and generally have distinctive characteristics and a historical view of themselves as an entity. In the case of India and Pakistan, historical memories undoubtedly exist and play some part in influencing popular attitudes towards subcontinental affairs. Likewise, since national leaderships be they military or other dictatorships or elected representatives have to reckon with popular prejudices and attitudes, Governments too, at least indirectly are influenced by historical memories. For reasons understandable in the context of India's history of successive invasions from the north-west and subsequently from the sea and more recently from the north, Indian public opinion after centuries of apathy is becoming aware of the need for vigilance.

THREAT PERCEPTIONS:

THE PAKISTANI VIEW,

In indicating, as far as is possible, the Pakistani view of the threats to its security one can at best attempt to summarise the views of representative members of the ruling elite and a cross section of Pakistani intelligentsia. To start with it is well to remember that in Pakistan, as in India, there are important groups whose perceptions of threats to national security differ considerably from their respective countries official views on the subject.

Since its emergence as an independent state, Pakistan's foreign, defence, economic and domestic policies appear to have been inspired

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by the belief that that country's only enemy is and would be India. The reasons that gave rise to this feeling may have lost relevance over the years. Even so, by and large an important factor determining Pakistan's national policies is anti-Indianism.

Immediately after Partition, Pakistan received political support from Britain and British officers then serving with Pakistani forces played a significant role in Pakistan's attack on India in the Jammu and Kashmir sector in 1947/48. The cease-fire brought about under conditions enabling Pakistan to retain the Western part of Jammu and Kashmir and the subsequent support extended to Pakistan at the UN by Britain and USA, enabling Pakistan to retain the fruits of aggression were clearly a carry over of British/American policy to secure leverage over Pakistan in furtherance of their own global objectives. This proved to Pakistan that it could expect military, economic and diplomatic support from the West in its anti-India policy. The events of the past three decades and more only confirm the correctness of this assessment. US Vice President George Bush¹ during his visit to Islamabad (May 15-18, 1984) stressed that US military and economic aid to Pakistan was intended to ensure Pakistan's security which was "vital to the region", and that US "was looking at Pakistan's security because of the difficult situation created by the Afghanistan problem". He also candidly stated that "US interest in Pakistan would not cease after a settlement of the Afghanistan problem" and that US-Pakistan relations "transcend the Soviet presence in Afghanistan". This American commitment to Pakistan goes far beyond what the pronouncements of American leaders tended to indicate earlier. India's concerns on this score would be discussed presently. Vice President Bush's affirmation is on par with China's since Chinese leaders have on several occasions affirmed that China and Pakistan are bound together by unshakeable ties and that the latter would always be supported by the former.

During the first three years of President Zia's rule, US under President Carter was by no means firm in its commitment to Pakistan. The Afghan Revolution and Soviet troops entry into Afghanistan provided USA with opportunity to harass the Soviets at little expense and the Reagan Administration was quick to enlist Pakistan's services for training Afghan dissidents for guerrilla operations inside Afghanistan. The extent of USA's present commitment to Pakistan is indicated by the fact that, diplomatic, military and other unspecified aid is being extended

1. News reports on the visit of Mr George Bush to Pakistan appearing in 'Statesman', National Herald, Indian Express of May 19, 1984 and other Delhi newspapers.

despite Pakistan's on-going nuclear programme, and despite Pakistan's low profile vis-a-vis Afghanistan and its efforts to secure Soviet assistance in expanding steel and oil production. It is in this context that Vice President Bush's observation that USA's commitment to Pakistan transcends Soviet presence in Afghanistan, assumes significance.

Thus the much advertised Soviet threat to Pakistan seems to be by no means that serious either from Pakistan's or USA's perceptions. The proof is that the bulk of Pakistan's strike forces are deployed along Indian borders and the aircraft, weaponry, electronic surveillance and other US supplied equipment are more suitable for and seem to be meant for attacking India and India alone. Additionally Pakistan's nuclear weapons too could only be meant for use against India. Pakistan's armed forces are at least as strong as any that India could deploy on the Pakistani front.

Thus Pakistani forces are strong, have the assured support of USA, and China, including the provision of vital electronic and satellite monitoring data, electronic counter measures and other strategical and tactical assistance. USA has reportedly² also provided Pakistan with blue prints of Indian nuclear installations indicating the nature of US-Pakistan co-operation in the context of India's security. Thus it seems clear that Pakistan faces no external threat—not certainly from India. President Zia ul Haq himself has stated as much when he told news correspondents that threats to Pakistan come from within.³

Leaders of the banned opposition parties have at different times stated that Pakistan faces no threat from India. Leaders of minority provinces go further and trace the source of trouble in Pakistan to continued military-bureaucratic rule by Punjabi elite and that the India bogey is kept alive only in order to perpetuate army rule in the country. According to a Pakistani leader Pakistan would not have peace or stability so long as USA used Pakistan to subserve its own interests.⁴

2. News report in Hindustan Times, April 11, 1984. It may be recalled that USA reportedly provided Israel with data pertaining to munitions for hitting important targets in deep emplacements, enabling the Israeli Air Force to carry out precision bombing of Iraq's nuclear reactor Osirak in June 1981.

3. President Zia ul Haq stated that threats to Pakistan come from 'hypocrites' within the country. News report in Times of India May 4, 1984.

4. According to a news report in Muslim (Pakistan) dated May 15, 1984 Mr. Mubashir Hasan, PPP leader and Central Minister in Mr. Bhutto's government, in an open letter to Mr. Bush on the eve of the latter's visit to Pakistan, has made several points. First, that if USA reduces its presence in Pakistan, the latter's relation with India would automatically improve, which USA says it would like to promote. Second, it would also ease the situation in Afghanistan and lead to Soviet withdrawal.

PAKISTANI OFFICIAL STAND

President Zia and his top aides have generally not been bellicose and have also been declaring that Pakistan does not possess and is not making nuclear weapons. Very recently Pakistan's President reportedly observed that India should withdraw its forces from Pakistan's borders⁵. While the assurances that Pakistan is not making nuclear weapons and will not be the first to attack India are welcome, it is strange that Pakistan which has positioned over 80 per cent of its forces close to Indian borders should ask for Indian forces to be withdrawn.

Pakistani strategists however have been making statements, which provide food for thought. General Akram⁶, not unfairly, sums up the feelings of Pakistan's ruling elite as well as pre-partition Muslim League stalwarts when he notes "We regarded ourselves as the successors of Muslim rulers of India, who in spite of being a minority, ruled over large populations of Hindus on the sub continent. We claimed the legacy of Muslim sultans and emperors of India.... We too have a role consciousness and were proud of it. We were the largest Muslim State in the world and assumed the mantle of leadership of Islam. We too thought we were the greatest and India had better treat us with respect. The farthest we would go was to regard the Indians as equals...."

INDIAN FEARS:

From this, India could, with justice conclude that Pakistan may when it considered the time opportune, again try to attack India in order to annex Kashmir or other parts of India. Further, India has been the victim of Pakistani aggression on four occasions. The Pakistan army in order to avenge 1971, may attack once again. That it has been rearming feverishly has been no secret. Although numerically Pakistan may not be able to deploy against India a force much larger than India's deployable forces on the Western borders, Pakistani forces would be operating under a favourable setting. First, Pakistan's motto is "hit first". This is the correct strategy for success⁷. India's in contrast though morally correct, is to avoid war, not attack but only to react if attacked. Pakistani strategists are not only re-emphasising the importance of 'hit first' strategy but

5. News report in Patriot, April 30, 1984.

6. Lt. General (Retd.) A.I. Akram "Shadows over South Asia-III, Muslim, December 25, 1983.

7. Quoting an anonymous poet General Wavell had said, "Twice armed is he who hath his quarrel just, Thrice armed who gets his blow in first".

also the other useful operational principle namely to carry the war into enemy territory in the opening phase of the war itself and keep fighting on enemy soil to the end. This again is sound operational strategy which every competent commander would endeavour to adopt. To these, Pakistan's strategists are adding a third principle namely to terrorise enemy populations in the battle zone and enemy territory generally so that the enemy dare not raise his head. Pakistan's forces, it is said should act on the premise that terrorisation is not only the preferred means to subdue the enemy but is even an end in itself.

Second, Pakistan's force structure—predominantly armour, mobile infantry supported by artillery and missiles, air weapons with emphasis on range, war head capability and high survivability in almost any environment—points to planing and preparations for pre-emptive attacks. Pakistan's naval strength too has been significantly augmented, posing formidable threats to India's coasts and off-shore installations.

Third, USA's and China's total commitment to Pakistan would indicate that should General Zia for whatever reason precipitate a war with India, Pakistan would receive from USA not only advanced weapons, equipment and ammunition to sustain an intense conflict with India but also vital strategic and tactical intelligence obtained from USA's ground, sea based, air borne and satellite borne surveillance agencies. The agencies could also 'feed' misleading information to such Indian monitoring agencies as may be in operation. China, for its part could significantly assist Pakistan by re-inforcing its presence in the Baltistan region, besides carrying out troop manoeuvres on the Tibet—India borders. Although China may not actually intrude further across India's borders, Indian defence planners would have to have contingency plans and troops at the ready in order to deal with possible Chinese incursions at a time when Pakistani forces may be exerting maximum pressure on India's Western borders. In 1965 and again in 1971 this threat was present. The situation now is that not only has Sino-Pakistani understanding become deeper following nuclear technology exchanges between the two countries (namely weapon design data as well as probably weapon test facilities from China to Pakistan in return for data and drawings pertaining to uranium enrichment by the ultra high speed centrifuge process) but Sino-US relations are also on a firm footing so that China may, without reservation, extend strategic and other forms of support to Pakistan. In the context of these developments, India would perforce have to reassess the security needs on her northern borders.

THE NUCLEAR THREAT:

These apart, the Indo-Pakistani strategic equation has now a nuclear dimension. In the opinion of many (on both sides of the border) this may be an asymmetric equation and to Pakistan's advantage. Dr. Abdul Qadeer Khan the architect of Pakistan's uranium enrichment programme had this to say during the course of a celebrated interview when answering the question⁸ "whether Pakistan can fabricate an atom bomb".— (Dr Abdul Qadeer Khan said) "This question would land me in trouble, whether I say yes or no. In the first place, I would like to say that our nuclear programme is entirely peaceful. Ten years ago India has done this job, though other countries had helped it. We have the capability of doing it. Although this is a political decision and my colleagues and I have no part in it, we would not disappoint the country and nation if the President were to take this extreme step for the safety and security of the country and the job is entrusted to us. My colleagues and I would stake our lives. In short I want to say that we are not so (sub) normal or dull headed that we cannot do the job, if India could do it ten years ago. God willing, we would do a better job as we have proved in the case of uranium enrichment". This statement of Dr. Khan was a well considered semi-official declaration of the basic fact that Pakistan has the capacity to produce the material needed for nuclear warheads and the latter would be fabricated, should Pakistan's government give the green signal. USA as well as other governments have drawn appropriate conclusions from the statement. In a move to allay the apprehensions of some governments, Brigadier Siddique has explained in the columns of the 'Dawn' of Karachi that⁹ "we are capable of (uranium) enrichment to three per cent (reactor grade) and there is nothing that stands in our way technically to stop us from enriching up to 90 per cent (weapon grade)". However, Dr. Qadeer Khan's statements are clear and direct. Pakistan, as USA knew at least as from 1978 has the capability to fabricate nuclear weapons. India for its part cannot but proceed on the assumption that not only has Pakistan the capability to produce such weapons but that it has been stock piling weapon grade uranium and has almost certainly already fabricated a modest stockpile of weapons.¹⁰ In a more

8. See: "Pakistan's Nuclear Programme": An interview with Dr. Abdul Qadeer Khan published in *Nawai Waqt* of Rawalpindi on February 10, 1984, translated and republished in "Strategic Digest" April 1984 pp. 291-300, Institute for Defence Studies and Analyses.

9. See News report in "Financial Express" May 21, 1984.

10. Although there is no direct evidence, it is possible that Pakistan, through China's good offices has tested a prototype weapon underground at Lap Nor. Pakistan was reportedly making feverish efforts to obtain high quality steel spheres required for warhead fabrication. She must have since either imported or fabricated this item.

recent press interview¹¹ Dr. Qadeer Khan has stated that Pakistan has the capability to produce hydrogen bombs as well, since highly enriched uranium could be used as trigger for a hydrogen weapon. Once again Dr. Qadeer Khan went through the ritual of declaring that Pakistan's nuclear programme is for energy production and is enriching uranium up to three per cent but that theoretically there is no bar to produce highly enriched material.

This latest declaration suggests that Pakistani scientists are working on H bomb design as well.

FUTURE CONFLICT IN THE SUBCONTINENT:

India's policy has been, and is likely to be for the foreseeable future, to pursue the path of peace and endeavour to settle disputes if any, with other countries by negotiation and other peaceful means. However, whether or not peace is allowed to prevail in the subcontinent depends not on India but entirely on the country that may have designs to attack her. If despite her best efforts India fails to prevent yet another attack on her, she must be prepared for defence against a powerful conventional assault underscored by an implied threat of nuclear attack against India's vital installations, political, service and communication centres besides urban conglomerates. Any failure to defend these 'targets' could mean loss of territory, destruction of national assets, heavy casualties, and extensive damage which may take decades to repair. Given the inadequate medical, communications, water supply, food storage, shelter and other disaster relief infrastructures existing in our country it would be rash to under estimate the national loss and dislocation that could result from a single nuclear strike. Proportionately it would be far more than was the case at Hiroshima or Nagasaki because of the poor resistance to fire of hutments and buildings in an Indian city and its environs and the exposed living conditions of the majority of the people. Thus if India is subjected to attack even by rudimentary nominal yield nuclear weapons¹², the physical damage sustained would be immense. Besides, the morale of the nation too would suffer. If however, India herself has nuclear capability there would be some chance of a potential aggressor entertaining second thoughts before committing aggression.

11. See News report in Patriot, May 23, 1984.

12. A nominal yield nuclear weapon such as the ones used against Japan in 1945 may have the explosive power of about 15 kilo tons of TNT, the conventional high explosive.

PAKISTAN'S LIKELY STRATEGIES:

Nuclear Pakistan could have several options specially vis-a-vis a non-nuclear India. Pakistan could issue an ultimatum threatening a nuclear attack on a vital Indian target such as a political centre or a nuclear installation if India does not concede Pakistan's demands e.g., surrender of Kashmir or other parts of Indian territory. The ultimatum may be accompanied by a swift conventional thrust by Pakistani forces into the territory claimed. Pakistani leaders may reckon that a non-nuclear India particularly if Indian leadership happens to be weak or indecisive at the time or if the leadership is faced with serious domestic problems may be in no position to resist Pakistan's demands. Alternatively Pakistan may first launch a massive conventional attack and threaten the use of or actually use nuclear weapons to clinch a victory, or to reverse an adverse battle situation. At least some Pakistani strategists seem to believe, despite the statements of Indian leaders to the contrary, that India has put by some nuclear weapons in the basement. Pakistan's nuclear strategy seems to be based on the premise that India does probably have some weapons and further that it is somewhat ahead of Pakistan in this regard. According to one school of thought¹³, given India's advantages over Pakistan in the matter of industrial infrastructure, economic potential and higher defence spending it would be foolish for Pakistan to enter into a nuclear arms race with India since India is likely to be ahead of Pakistan however much the latter may spend on acquiring and maintaining a nuclear arsenal. Even so, these strategists hold that Pakistan could deal with India effectively. Some others, including Dr. Abdul Qadeer Khan believe that India is far behind Pakistan in enrichment and therefore weapon fabrication technologies. Certain points made by this school of thought may be recounted. First nuclear¹⁴ deterrence whether in the Indo-Pakistani or in a wider context "is not a static property. It is brought about by a combination of military, technological and political cost/benefit situation. Only nuclear symmetry is the answer to security in a nuclear age, not an absolute level of nuclear capability without reference to the capability of the opponent. There is therefore quite some weight in the argument that entering into nuclear competition with India would be like following an alligator into water and trying to fight the matters out there, while remaining conventionally armed might be likened to fighting with the Indian nuclear alligator on the firm ground of the river side".

13. See Akhtar Ali, "Pakistan's Nuclear Dilemma" 1984 ABC Publishing House, New Delhi.

14. Ibid P. 83.

The thrust of this argument is that it will not be cost effective from Pakistan's point of view to enter into a nuclear arms race with India. The latter can spend more on nuclear defence and maintain a fairly large arsenal and means of delivery. Instead it would suit Pakistan to keep declaring that she will not make nuclear weapons but quietly produce weapons and keep them in the basement for political or military use at an opportune moment. Pakistan almost certainly has a "rudimentary" nuclear capability, and can deliver nominal yield weapons by aircraft now available to her. According to Pakistani theoreticians, "It has to be very careful about choosing targets for its nuclear weapons in India. They reckon¹⁵ that Pakistan's Air Force would not like to bomb targets:-

- (a) under 50 miles inside India's borders because of the danger of fall out inside Pakistan itself;
- (b) in muslim majority areas inside India;
- (c) in areas in India which Pakistan may like to annex, (since it would not like to deal with populations subjected to deliberate nuclear attacks by its own forces).

This exempts a number of Indian targets and therefore, at best, Pakistan's nuclear arsenal at this stage is likely to be only of marginal use for that country, while her conventional forces, if used boldly could yield some dividends for her. This theme is carried to its logical conclusion by Akhtar Ali¹⁶ when he argues:- "In fact a non-nuclear Pakistan may convert India's nuclear posture to a net advantage to itself. With an active foreign policy, political manoeuvring and lobbying, India's nuclear edge (in a rudimentary or intermediate nuclear regime only) could be blunted and a situation may be created where India may lose all its ability to use or resort to the threat of the use of nuclear weapons. Indian attack on Pakistan though conventional may be made to appear as carrying the nuclear threat and thus enormous political pressure could be brought upon India. India's manoeuvrability and thus ability to engage and initiate smaller conflicts may be reduced to minimum, while a non-nuclear Pakistan may challenge a nuclear India here and there, even engage in or initiate smaller conflicts, without a substantial and plausible nuclear threat".

Thus Pakistan is most likely to build and keep its nuclear arsenal in the basement and use its massive conventional forces to attack India

15. Ibid P. 71.

16. Ibid P. 75.

pre-emptively, and appeal to its patrons for protection against India's non-existent nuclear threats.

INDIA'S REACTION:

Indian defence planners would therefore need to take into account both conventional and implied nuclear threats from Pakistan. Although both USA and China are fully committed to support Pakistan, the Great Powers may not wish to see Pakistan involve herself in a war with India, at any rate as long as the Soviet Union retains its massive presence in Afghanistan and the Gulf War continues. Since India's optimal strategy would be to prevent attacks on herself, all three elements of Indian armed forces would need to be equipped adequately and evolve coherent strategies for dealing with likely contingencies effectively and economically. The country's nuclear programme has to be reactivated and a reasonable stockpile of fissile material built up. Only then could India hope to be left alone. USA and China too have to be convinced that they are unlikely to gain much by tacitly or otherwise encouraging India's neighbours to overtly and covertly attack or otherwise interfere in India's affairs. Saner elements in Pakistan, Bangladesh and Sri Lanka are aware that USA and China support certain regimes in their countries solely for retaining control over the region and not for the benefit of the people of Pakistan, Bangladesh or Sri Lanka.

India, however, while utilising every opportunity to extend friendship to all countries in the region, as at present, has also to build up her own nuclear and conventional strength in order to convince adventurist elements in the neighbourhood that aggression against India will not pay.

RIGHT OFFICER MATERIAL

BRIGADIER P K GUPTA, AVSM

INTRODUCTION

IT is perhaps not very well known that the Defence Services have not been getting the right officer material for the last few years. Due to the changed socio-economic environment in the country and changed outlook of our youth, the Services are no longer able to attract the right type of young people to join as officers.

Upto the 50s, the Services were getting almost the best material. It was in the 60s that some decline was first noticed. This trend continued and since the 70s, there has been a noticeable decline in the quality of youth joining the Services. The better ones do not want to join the Services at all, the majority of those trying to join are those who have no other avenue left. This is due to many reasons like increased importance of money in the society, erosion of purchasing power of salaried officers, vastly increased job opportunities available in and outside the country etc. Government service is no longer the most popular career. The best young men prefer to serve in the private sector, be self-employed or go abroad. Those joining Government Service prefer the Civil Services, which offer better material benefits, career prospects and job satisfaction.

Increasingly, the Services have been lowering standards to obtain adequate number of young people as officers. This does not augur well for future leadership in the Services, which needs a mix of high calibre and average types as officers, so as to throw up the right higher leadership in due course.

RIGHT OFFICER MATERIAL

Without going into this in detail, as that would take a full paper itself, we should be clear as to what is the right officer material needed by the Services. There is still some ignorance on this. It is widely felt that anyone with a good physique, loud voice, breezy manner and minimum of intelligence would do very well! The Services have a well established

system of selection, which tests the aspirants' intelligence, diligence and academic and physical proficiency. In addition, and more important, officer-like qualities like determination, honesty, courage, team-spirit etc are thoroughly tested. Various psychological tests probe for hidden weaknesses. Only fairly well developed youngmen-physically, mentally and character wise, with stable emotional profile, are selected.

THE PROBLEM

Due to the rapid advances in technology, the Defence Services are becoming increasingly more sophisticated and complex. Every 10-20 years, Services have to absorb and utilise new weapon systems and equipment. Future wars would be fast, furious and brief with little margin for error as these will prove too costly. These imply that the future leaders of the Army need to be far more intelligent and capable than in the past.

However, the Services are unable even to get the minimum numbers required and have been facing continuous shortfalls. These were approximately 3,000 in 1960 and went upto 8,000 by 1971. That led to greater numbers of soldiers being granted commission, which is not really good. Soldier-officers have proved their value fully but there is an optimum mix; more than that, their value is limited. Worse, it also led to the lowering of standards of intake. Despite these questionable methods, the figure stood at 6,000 in 1982, about 17% of the total authorised strength. Table 1 below illustrates how in the recent years, despite the lowering of standards of intake, the two officers' training institutions - The Indian Military Academy (IMA) and the Officers' Training School (OTS), are unable to train adequate number of officer cadets.

Table 1—Shortfall in Officers Training

Year	Indian Military Academy				Officers Training School			
	Planned to pass out	Actually passed out	Shortfall Number	%	Planned to pass out	Actually passed out	Shortfall Number	%
1978	892	692	200	22	—	—	—	—
1979	924	740	184	20	500	484	56	12
1980	956	793	163	17	500	214	286	57
1981	956	861	95	10	500	251	249	50

The situation is worse for Technical Graduates. These youngmen are in an engineering/scientific stream and man the technical Arms

or Services like Engineers, Signals. The shortages in intake has reached a stage that courses planned to train them have had to be cancelled. Also revealing is the data on wastage of cadets at the NDA in their final term, given below at Table 2.

Table 2—Data on Wastage of Cadets at NDA in their Final Term

Year	Total under training including relegated from previous courses	Wastage			Total	%
		Relegated	Resigned	Withdrawn		
1978	595	81	16	19	116	21
1979	624	65	16	20	101	16
1980	621	86	5	22	113	18
1981	571	102	6	37	145	25

The wastages prove irrefutably that the quality of cadets at NDA, our premier feeder training institute for officers, is very much below par. The high numbers of resignation indicate the basic unpopularity of this career as these youngmen have to pay back the cost of training done, fully proving that they prefer to do something else even after having done so much training. It is clear that the Services, despite accepting a large number of substandard officers, face substantial shortages, which are likely to worsen in the future. In another 15-20 years, when these officers reach senior and decision-making ranks, the Services will face a crisis of leadership.

Defence of the country is a national problem and the entire society must contribute its share, including suitable youth, towards it. It cannot be treated just as a profession, joined only to earn a livelihood. There has to be a degree of idealism and commitment, even sacrifice, especially from the more privileged sections of the society. The unpopularity of a career in the Services is best, though ironically, brought out by the fact that unlike 20 to 30 years ago, sons of most serving officers are now unwilling to join the Defence Services.

There is thus a serious problem facing the Defence Services viz the right type of youth in adequate numbers is not joining as officers. If not tackled, this problem will handicap the Services in the near future. Can something be done now to solve this problem?

SITUATION IN OTHER COUNTRIES OF THE WORLD

Before we examine our problem, let us see the situation in other countries, as Defence is a basic need of every State.

DEMOCRACIES

Western Democracies have a much higher standard of living and economic prosperity than us. Due to many wars in the last 2 centuries and a live threat of communism, they have realised that well trained and equipped Defence Forces, with good leadership, are the only real safeguard against aggression. They accept that their best human material must contribute to this noble task. A well known example is British Royal Family - Prince Andrew's stint in the Falkland War; Princess Anne's marriage with Captain Mark.

The Governments have taken steps to ensure that the Defence Services personnel are adequately paid in and out of service so that they never face financial hardships. The Services provide vastly increased opportunities for free travel and adventure round the world. Many benefits are given to rehabilitate those who leave the Services. This is done not only by the Governments but more important, by the private firms and organisations, who consider it a solemn duty to help a "veteran".

Let us dispel a few wrong notions about Conscription here. Started by Napoleon, Conscription has had a long innings but has been given up by many countries, e.g. USA, UK because it was creating more problems than the only advantage of mass that it gave. In today's battle-field conditions, highly motivated well trained professional volunteers are needed, not half-hearted conscripts. Tremendous problems of training, discipline and welfare were created. Some countries are forced to retain it due to manpower problems but they still have only volunteer officers and non-commissioned officers (they have no Junior Commissioned Officers); only the men are conscripts.

TOTALITARIAN REGIMES

Dictators generally rule with the help of Defence Services, who then naturally take the top spot e.g. Pakistan and Bangla Desh on our two flanks. The senior Services officers man all top positions in the country, except perhaps in judicial services. Obviously, Services offer the best career there and attract the best material.

COMMUNIST COUNTRIES

In Communist countries, Defence Services rank next only to the Party. Realising that the Party can remain in power only with the support of the Services, these two vital organs have been very closely integrat-

ed. Members of the Armed Forces are encouraged to become Party members. Many senior posts in the Services are reserved only for party members. Party representatives serve at every level, down to units, even in actual combat. The Services are represented at important Government bodies and organisations, right upto the highest decision-making body. Defence Ministers are generally drawn from the Services.

The Services are a privileged body and there is stiff competition to become officers. Naturally, the Services can pick and choose. However, these countries have a system of very careful screening of the youth so that a young man is put in the right discipline, as per his aptitude and capabilities. This ensures that the Services get a fair and adequate share of the type of leadership that they require.

APPROACH TO THE PROBLEM IN OUR COUNTRY

RECOGNITION OF THE PROBLEM

The first, most important but often overlooked step in solving problems of this type is recognising its existence and extent. It is only recently that the top brass in the Services has recognised this unpleasant truth. The political masters have yet to fully appreciate that this leadership problem is of vital consequence to National Security. Just as the debacle of 1962 was a result of wrong National policies leading to Defence unpreparedness, similarly neglect of the genuine requirement of the Services now would lead to a harvest of "dragons teeth" some years (20?) hence. Nations have learnt to their bitter cost that "eternal vigilance is the price of freedom". A nation can neglect the Services only at peril to its integrity. We, having hostile neighbours, can ill-afford to do so.

RELATIVE COMPARISONS

For a long time, the Services had tended to live in their own narrow world, but in the last two decades, more and more officers have been forced to compare their lot with their friends or relations in the civil world. While they may feel comparatively satisfied with their living and service conditions viewed in isolation within the Services, a sense of deprivation sets in when they compare themselves with the outside world. As such, the Government must ensure that the satisfaction that the Service officers derive compares favourably with that achieved by other people. Too great a disparity would lead to greater frustration and prevent the right material from joining the Services.

INTEGRATED APPROACH

This problem has been caused due to a combination of factors. Some, like declining status, comparatively poor material rewards, uncertain and relatively poorer career prospects, need action by the Government. Others, like job satisfaction, postings of officers choice, a distorted image, need action by the Services. It should also be realised that this problem has many facets. Undoubtedly, improving financial reward is the most important one, but there are others which need to be simultaneously tackled. It is pertinent to remember that human beings differ widely and different things appeal to different people. An integrated approach including the improving of material rewards, comparative status, career prospects, job satisfaction, etc. would thus be needed.

MEASURES WHERE GOVERNMENT NEEDS TO ACT

GIVING THE RIGHT PLACE TO THE SERVICES

In our young nation, power equation is still fluid. Every one who has acquired any power wants more of it. Certain sections, for example the political leaders, have managed to wrestle away quite a bit of the powers that were formally with the officials. Since power means money, privileges, ability to do things for oneself and one's followers, a certain amount of jockeying to corner additional power is understandable. Unfortunately, in this scramble, the Services have been left behind. Despite having had to defend the integrity of the Nation more than once, they have not been given their correct place in the National framework and the Society. Till this is done, they would continue to receive step-motherly treatment from the people in power. Many countries have realised the folly of neglecting the Services, in any way, only too late. We need to correct matters before it is too late.

FINANCIAL SECURITY

Undoubtedly the most important aspect is that money has been gaining in importance very rapidly in the last 2 decades. There are many reasons for this but the basic one appears to be high inflation which has steadily eroded purchasing power. A career in the Service must give financial benefits commensurate with the difficulties and hardships involved and comparable with what reasonably well-to-do people in the Civil enjoy. Officers must be able to live and work without financial worry. Increasing disparity over the years between what officers earn and what

he and his family observe their friends and relatives in the civil street spending, has been causing great dissatisfaction and is the main reason inhibiting young people from joining the Services.

The Services have lived and been treated in isolation too long; there is now far greater interaction with the civilian main stream. The fact that people in civil professions, including other All India Services, achieve greater financial rewards and material benefits cannot be wished or argued away; how this is done is irrelevant here. Services officers live within the Society and when they see their civilian counterpart having luxuries of life at a comparative young age, when they are struggling to even live decently, it is natural that they and all who come in contact with them feel that a career in the Services is not financially rewarding. This is the reason why children of most Senior Service Officers do not want to serve in or continue contacts with the Services.

The pay, allowances and other benefits to the Service Officers need to be substantially increased. The recent "concessions" amount to very little and do not benefit certain categories at all. The aim should be that while in Service, and on retirement, they have adequate financial security. The Government may have some problems in increasing the basic salary and allowances common to All India Services but it must help by giving more allowances and benefits for conditions and hardships peculiar to the Services. This needs a comprehensive study separately but two examples would suffice to drive home this point. Firstly, a large number of officers stay separated due to service conditions, which means running definitely two, and in some cases, three establishments. The separation allowance of Rs. 70/- p.m. was totally inadequate and recent increase to Rs. 140/- is still miserly. It needs to be in the region of Rs. 500 to 700/-, depending upon the number of children. Secondly, because of these separations and regular transfers every second or third year, officers have to spend a lot of extra money on education of their children. The Government contributes absolutely nothing for this. Paying tuition fees @ Rs. 60/- p.m. for boarders only is a drop in the ocean. Many officers are forced to put children in hostels and the total cost involved should be the basis of a new Education Allowance. It should meet actual school expenses, limited to about Rs. 150/- per day scholar and Rs. 800/- per boarder p.m. Other areas which readily come to mind are free housing and allied facilities, liberal conveyance allowance, larger transfer, kit maintenance allowances, command and Staff Allowance, enlarging scope and amounts of High Altitude and Uncongenial Climate Allowance. Two points should be kept in mind when giving these addi-

tional benefits. Firstly, these should be exempt from income tax. Secondly, these should be linked to Cost of Living Index and be increased automatically, at fixed increase in this Index.

Two more aspects need attention. One, is the need to increase pensions and similarly link them to this Index. The other, is to ensure that every Service Officer is assured of possessing a reasonable house, at a station of his choice, whilst in service. The Army Welfare Housing Scheme is not doubt working to this end but has got bogged down due to two shortages i.e. land at reasonable rates and adequate finance. The State and Central Governments can help in getting over one problem each.

A SATISFYING AND REWARDING CAREER

Next in importance to adequate financial benefits is that the Services must offer a more rewarding and satisfying career. Present uncertainty over promotion must go and more avenues of employment should be available. Despite very systematic and good pre and post commission training, a large number of our officers are 'rejected' in various selections, starting from the first one, Major to Lieutenant Colonel, when they have done about 16 years service and are aged 35-40 years. Only about 40 to 50% overcome this hurdle. More fall by the way side at each subsequent rank, leaving a bare 5 per cent or so to be selected as Major-General, with about 30 years service, at 50-52 years of age. In most of other All-India Services, almost everyone gets up to an equivalent rank and selection really starts at this stage. Our high rejection rate is unique and there is no other organisation—Government or private, where deserving and competent people are rejected at various levels so mercilessly. It leads to many evils and is the major deterrent to the keen youth. It leads to the peculiar situation where the majority of service officers with more than 18 years service, the group that occupies positions of responsibility and authority, has more superseded people. The insidious effects of this unhealthy situation have yet to be properly realised. These superseded officers get increasingly disgruntled and frustrated and to the youth represent the worst aspect of a career in the Services. One can appreciate the impact of this only after talking to an intelligent young son of a superseded officer.

An allied aspect is that even the able and deserving Service Officers 'stagnate' at various stages and lag behind their civilian counterparts in getting promotions. This is best brought out by Table 3 below.

Table 3—Comparative Service for some ranks

	Brig	Service in years		
		Maj Gen	Lt Gen (2)	
Army (1)	24	30	34	
I.A.S.	14	18	24	Equivalent ranks
I.P.S.	16	24	28	

Notes

(1) Equivalent ranks in IAF and IN have been considered.

(2) Not including Army Commanders. In the Services, both Corps and Army Commanders are Lt Gen, though the latter are senior and shoulder greater responsibility—whole India just has 5 Commands, each headed by an Army Commander.

Responsibilities, job content and requirements of various All India Services vastly differ and a direct comparison is not desirable. Yet as brought out earlier, Services do not live in isolation and the capable officers must be propelled faster towards higher rank.

A major step to make career in the Services attractive is to ensure that there is the minimum rejection of the well trained officers and that most of them continue to get regular promotion even if some may have to move 'laterally' to other fields. Also, within the pyramidal command structure of the Services that cannot be radically changed, efforts should be made to narrow the base and broaden the top. Certainly the limit has not been reached in this respect and there is ample scope to increase higher ranks. It is right that there is a second Cadre Review being done; this process must be continuous. Taking the example of the British Army, for a total strength of approximately 1.25 lakhs, there are 9 Generals on the active list. The Indian Army has a strength of approximately 1 million (8 times the British Army) but just 1 General. The Government must increase higher ranks cadre urgently. We may take some time to achieve the ratio prevalent in UK but the Indian Army should have at least about 12-15 Generals and Lieutenant and Major Generals in proportion. Also, it must be ensured that capable officers do not have to spend too long in the lower ranks and reach positions of decision and policy making more quickly. There is a definite need to reduce the time taken to reach rank of Brigadiers and above, by at least 3-5 years.

Age of Retirement and Lateral Movement. An equally important aspect is the earlier age of retirement for the Service Officers. Officers of other All India Services are assured of employment upto 58 years and a large number, especially the senior ones, are re-employed in various capacity by the Government itself e.g. almost half the present Governors of States are retired civil servants. In the Defence Services, 80 to 85 per cent officers go out too soon, at 50 to 52 years of age, when their financial needs are the maximum. The argument of keeping the Services young is valid but should not come in the way of ensuring that every officer must be assured useful employment till 58. This can be done in many ways. The present age of retirement, upto Major General, should be increased by 2 years for all ranks. Officers have already proved that, given a chance, they can do well in varied fields of public life. They should be 'laterally' moved, between the ranks of Major to Major General, into various Government Departments and Agencies e.g. I.T.D.C.; Air India, Semi-Government and other Autonomous Bodies, various Public Sector Undertakings, Para-Military Forces, Intelligence Agencies like R.A.W, I.B. and so on. A mixed portion of executive jobs in other organisations controlled or regulated by the Government e.g. Banks, Joint Sector Industrial Units should also be similarly earmarked. The provision to reserve a percentage of seats in various All-India Services for Emergency Commissioned Officers, should be revived but must be enlarged to include officers who want to leave due to other reasons.

While every officer needs to be helped in settlement, seniority needs special consideration, for obvious reasons. Every retiring officer above a brigadier's rank should be offered suitable employment upto the age of 58-60 years. More retired general officers should be appointed as Ambassadors, Governors and to manage other organisations referred to earlier. If need be, let the Government make suitable legislation to implement these measures.

REHABILITATION

Related to this is the question of proper rehabilitation of retired officers. In case gainful employment is assured upto the age of 58 years, this would become a minor problem as few officers would need re-employment subsequently. However, till this is achieved, the Government must accept its basic responsibility to provide alternative employment to all officers till they reach the age of 58.

A RIGHT STATUS

It is widely said in the Services that every time the Indian Defence Forces win a war for the country, their status goes down by one step. It has reached the absurd stage wherein in some States, a Collector (IAS) with about 8 years service is equated with a Brigadier with 28 years service.

It needs to be recognised that relative status means a lot to most human beings. Lowering the status of the Service Officers has been a great deterrent to the youth who cannot be expected to feel much pride in their uniform when they have to work along side the civilians, which is frequently happening in many States due to insurgency and other law and order problems. The Central Government improved matters somewhat with the revised Order of Precedence but States have been most unfair in making their own rules. It is clear that the time has come when this matter should be examined by the Central Government, who should lay down the order of precedence upto the rank of Lieutenant Colonel.

FAMILY LIFE & HOUSING

Especially in the Army, certain elements would have to be located closer to the borders. At the present rate, some stations would remain non-family stations for a considerable time to come, leading to long and frequent separations from the family, a strong deterrent to youngmen to join the Services. The problem has acquired greater dimensions now due to the break up of the joint family system, which means that the wives have to fend for themselves during such separations. This factor, more than any other, explains the very low popularity of the Service officers in the marriage market.

As already suggested, one measure long overdue is grant of adequate separation allowance. Also, the acute shortage of married accommodation in certain peace stations must be speedily removed. The provisions about hiring of civil accommodation help but they are far from liberal and there are many drawbacks in their administrative application, with the result that even in many peace stations, including Delhi, officers have to wait a long time to get proper married accommodation or accept substandard accommodation. Surely, this is one thing which can be easily set right by a crash programme of house construction to provide proper married accommodation. If the country can spend hundreds of

crores to host ASIAD or N.A.M., the Government can surely allocate sufficient funds for this vital need. Also, rules regarding hiring civil accommodation need immediate liberalisation.

FOREIGN TRAVEL

Young people today are greatly attracted to jobs or careers that offer opportunity to travel and living outside India. In many business lines, as also in some of the All-India Services, there is ample opportunity for this and thereby these are more popular with the youth. Efforts should be made to enable a larger number of officers to do this. Many avenues need be tapped e.g. sending more officers on courses, exchange programme especially in training institutions. Also, the Government must give more posts in the Embassies. The aim should be to increase the number and make it up in proportion to overall strengths of various Services. If officers of IPS can be posted in foreign missions, why not Service Officers? Certain posts in the Intelligence Organisations can be held by Service Officers. The rules of study leave, when finalised, must enable more officers to avail it ex India.

RELATIVE COMPARISONS

It needs to be reiterated that increasingly the Service officers have felt greater sense of deprivation when they compare themselves with the business world and other Services. Too great a disparity would lead to frustration and prevent the right material from wanting to join the Services. As such, the Government needs to regularly monitor this aspect.

RESPONSIBILITY OF POLITICAL LEADERSHIP

In India, Political leaders seem to overdepend upon the Bureaucracy in dealing with Defence Services matters. This is partly due to the conservatism of the Services officers, who have been apolitical and believe in merits of a case and not in lobbying. Also, Services do not take agitational approach; this lulls the Political Leaders into a safe sense of "all is well". There is a pressing need to drastically reorganise the Ministry of Defence and radically change the staffing pattern. This has been brought out by many others elsewhere, but not implemented due to the vested interests of the Bureaucrats. Let the Political Leaders realise their basic responsibility to keep the Services fairly happy and not leave this to Civil servants.

MEASURES SERVICES SHOULD TAKE

"Charity begins at home". Apart from what the Government needs to do, let us see what the Services can do for their officers. There is quite a lot:

FINANCIAL BENEFITS

Like the Group Insurance and Welfare Housing, other collective schemes to help the officers should be started, or existing ones like Army Officers Contributory Education Scheme, improved. This should provide more money for education of children, till the Government accepts this as their responsibility. In addition, "soft loans" for house building, marriages, greater and larger range of benefits from the Benevolent and other Welfare funds are other areas where Services can help their officers. The collective private funds of the Services are considerable. At present these are all invested in various banks who derive the main benefit. Ways to get a larger share need to be examined. There are many other Institutions offering far better return, so why should we stick to the Banks? Perhaps the Services could open a bank themselves and have the dual benefits of higher return and some employment for retired people. Another lucrative area seems to be investment in real estate, which would also help Welfare Housing.

GREATER SPECIALISATION

Officers should be so utilised that they specialise more in certain types of jobs. This would benefit both the Service and the individuals. The former, because only specialisation (not in any narrow sense), would lead to better staff work, especially at higher headquarters; the latter, as they would have greater employability in the civil, as also "job satisfaction" within the Service.

CIVIL QUALIFICATIONS

To help officers to get better jobs after leaving the Services, ample opportunity and encouragement should be given, while in service, to acquire civil qualifications. This should take two forms. Firstly, posting to places where professional institutions are located which the officers can attend on a part-time basis and grant of adequate study leave for those who go in for some specialisation or research. The latter is currently being examined and may be sanctioned but would have to be quite liberal to enable a larger number of officers to benefit. Secondly,

officers who gain specified civil qualifications must be given adequate recognition by way of a lump sum qualification grant and some priority for posting or promotion.

Adventure. In the Services, officers get many opportunities for Adventure, especially in the first 20 years, which is mostly spent with the troops. These should be further improved. This facet should be better publicised, so that the youngmen who are attracted by a spirit of adventure, prefer a career in the Services.

...Better Publicity. Public is largely ignorant of the actual working and living of the Services. The little knowledge that exists is only in the larger towns. There is a need for the Services to better inform the Public about the good points of a career in the Services. This is more important in the out of the way places, wherefrom a certain number of good youngmen may thus be adequately motivated. In the larger cities, the youth has many opportunities but a career in the Services may appeal more to small-town youth. Better publicity would tap this source.

POSTING AND JOB SATISFACTION

The Services take very little cognisance of individual preference in either the jobs or the place of postings. No doubt, the Services should employ officers to its best advantage, yet ignoring the individuals wishes all the time leads to dissatisfaction, especially amongst the large number of superseded and low medical category officers. The existing provisions for compassionate postings are inadequate. Officers inclinations or pressing problems are not given any weightage while ordering postings. Frequent transfers every 2 to 3 years hit the families especially hard. Let each officer state the job(s) and place(s) where he wants to be posted next. Efforts should then be made to accommodate this, wherever possible. On a specified number of occasions in one's service, these wishes must be met.

SEND OUT GOOD OFFICERS

It is vital that Services send their "brighter" officers for outside jobs in various Ministries, Agencies etc, as discussed earlier. Lest we forget, Maj. Gen. Alexander Haig was Chief of Staff at White House, only a few year ago and "grew up" to be Supreme Commander N.A.T.O. and Secretary of State subsequently. This would greatly help in im-

proving the "image" of the Services with the Country in general and the Youth in particular.

RE-EMPLOYMENT

The present system of providing re-employment is helpful but is somewhat restricted. It needs to be liberalised in a number of ways, e.g., rank upto which officers are employed, medical fitness of the officer and age upto which re-employment is granted. The basic aim, as emphasised earlier, should be that almost every officer is assured of gainful employment till the age of 58.

AGE OF SUPERANNUATION

It was good that the age of superannuation was increased by two years in 1977. This permits Colonels to retire at 50/52, these two figures being the minimum and maximum age. Each higher rank gets 2 years extra. Unfortunately, for somewhat petty reasons, too many administrative hurdles have been put which have reduced considerably the value of this benefit. Officers are uncertain, sometimes even upto the date of their retirement, as to whether they would be granted the extra period beyond the minimum age leading to undue tensions to the officers as also over-concentration of power at the Service HQs and the Ministry and avoidable paper work at all levels. There should be only one stage of superannuation, that is the maximum age. Officers should not be retired earlier on medical grounds as there are adequate office jobs where such officers can be employed. The Government can always invoke its right to ask any undesirable officer to leave the Service earlier.

IMAGE OF THE SERVICES

The Services project a rather Conservative, stiff and even ludicrous "Image to the informal dynamic youth of today. A very small percentage is attracted by the conventional "dressy" uniforms or the "spit and polish", may it be the smartly turned guards of honour or The 26th January Parade. Intelligent young people would like to join an organisation which is more informal and relaxed to work in and has far greater awareness of the individual's needs than at present. The Services must make serious efforts to ensure that they provide job satisfaction and material benefits compatible to those given to members of other professionals status. Career and Rehabilitation prospects must be considerably improved. It is only by attending to these aspects and not by "Bull" that the Services would project the right "Image" and attract better youth.

DEALING WITH POLITICAL LEADERSHIP

Just as the Political Leaders need to realise their responsibility towards the Services, the latter needs to fully understand certain aspects to achieve better results in their dealings with the former. This has many facets but more than anything else, the Service officers should remember that Politicians yield mainly to pressure that can take many forms; personally repeating a just demand, till it is accepted, is one of them. It is little use only blaming the Civil servants. If they are unhelpful, why should senior Service officers not deal directly with the Politicians for just demands?

CONCLUSION

There has been steady and progressive deterioration in the quality of young men joining as officers in the Services, especially in the last decade. Despite lowering the standards of intake, the three training institutions namely NDA, IMA and OTS are faced with decreasing intake and greater wastage during training. Career in the Services is no longer popular. The situation would continue to deteriorate as better job opportunities and a more relaxed way of life comes to the country. Today's young officers are the generals of tomorrow. If present trends are not speedily reversed, the Services would face a crisis of higher leadership after a decade or so. It is time that the Services abandon their ostrich-like attitude and squarely face up to these unpleasant facts. The senior officers must hammer home these unpalatable facts to the Government.

This problem can be resolved, given the necessary will. To do this, an integrated approach to tackle the situation, in toto, is needed. Foremost, the Nation has to realise that in today's environment, Defence Services need the very best of human material, just as arms and equipment, if they are to have a reasonable chance of safeguarding our national integrity. The Services must gain their rightful place and National leadership must make earnest efforts to understand and resolve problems faced, without depending too much on civil servants. The Government must ensure that the officers cadre is provided with adequate material benefits, compatible to what is enjoyed by other sections of the society and catering to the special needs and problems faced by the Service officers e.g. long and frequent separations and transfers. The officers must have full job-satisfaction and good career prospects. Greater opportunity to travel abroad and acquire better qualifications must be

provided. Those leaving the Services should be looked upon as the Nation's responsibility and must be properly rehabilitated. Special legislation may have to be enacted to achieve some of the desired measures.

"God helps those who help themselves"; there are many ways in which the Services can themselves help their officers, thus attracting better quality youth to join as officers. It is important that the Services project the right "Image" so as to project dynamism and a challenge to the youth. By proper publicity, this should be projected to distant corners. Individual requirements in postings and acquiring of civil qualifications should be met. Promotional chances need to be improved. Officers should serve upto the higher age of superannuation and be assured of re-employment. Some more collective "self help" Scheme need to be started to provide greater financial benefits. Every officer should be assured of getting a house, whilst in service.

It is evident that the organisational and personnel structure of Ministry of Defence needs basic change so that needs of the Service officers are properly understood. The Services need to bypass the obduracy of the Civil Servants coming in way of their just requirements and develop greater dealings with the political leaders.

While some of the above measures are not difficult to implement, others require a special effort and will. Let us hope that the Civil and Military leaders of the country are farsighted enough.

FUTURISTIC ARTILLERY PERCEPTIONS THREE 'D' CONCEPTS

MAJOR GENERAL P C JERATH

PREAMBLE

THE tactical functions of Artillery is to support other arms by establishing such *fire supremacy* in the battle area that the enemy can neither interfere with *our operations* nor develop *his own effectively*. This task is fulfilled by *destroying* or *neutralising enemy's* ground and air weapons by causing *casualties* to his troops and ultimately break his *will to fight*. This artillery function is the outcome of World War II where artillery was utilised enmass and ultimately fire power supremacy was created by the "Atomic Bomb". This lead to nuclear strategy of "Deterrence, Massive Retaliation, Flexible response," and then to counter Fire concept and now Zero option". These numerous conceptual changes in strategy perception was to gain supremacy in war and make the other super power to react, now had led to "Neutron Bomb Era." These conceptual strategic changes could as well also apply to conventional warfare where fire power has definitely enhanced its supremacy due to availability of improved fire power means and ammunition. We on the contrary feel very confident and complacent that our tactical function and perception needs no change. It may be true to some extent, but this Fire Power supremacy has to be perceived in a more effective language which should have an impact on artillery concepts, doctrines and weapons system. Our earlier perception of fire power supremacy was to provide fire at the *right place, right time, right quantity* and *right type*. This perception became the basis of our tactical concepts and organisation and led to philosophy of more neutralisation than destruction to cause casualties. This perception is "subjective" and dependent on what supported arms wants. The fighting arms will always want to achieve decisive results on the battle field for any task given to it. This involves analysis of the tactical battlefield environment in the area of operations, from this we obtain our objectives and means to capture or defend it. Now, we should give an "*objective*" outlook to our Fire power perceptions since it is capable of tilting the outcome of tactical battles. Our environmental analysis should bring out our objectives and indicate

desired treatment to ensure success of mission and provide alternatives to fighting formations to achieve its aims. With this approach fire power will become supreme and carry out its functions to break the enemy's will to fight knowingly that 70 per cent casualties in war are from artillery fire.

ARTILLERY PERCEPTIONS

The future army concepts are based on 'Mobility' and 'Firepower' in conventional or nuclear battlefield. In our large borders and having a variety of terrain to operate we have to use our scarce and frugal resources in a most cost effective manner. The new technologies and electronic era has brought more complexities which have to be resolved in a simplified manner *more in quality than quantity*. In such a future environment our artillery perception should be; "Firepower should *enhance* battlefield *Mobility* with *Impunity* and which makes enemy to *React*". The key words of this perception are *Enhanced Mobility—Impunity* and *Reaction* which are analysed in the succeeding paragraphs.

ENHANCED MOBILITY

Any force to be fully mobile and to exploit it in the battlefield it needs freedom to move from both the ground and air weapons as I would label it as "*Three Dimensional Tactical Freedom*." It should inhibit fear and create boldness in operations. It should cause minimum casualties and maximum gains. It should dominate the tactical battlefield and make enemy to React to our moves and create a confusion in the opposite camp as to "What Next?" Built up confidence of own forces to an extent that they can hold on to any objective or carry out any mission irrespective of grouping of forces. The feeling of isolation and weakness should be brushed aside with the perception of possession of *supreme firepower*. Giving also our adversary initiative at any moment of time, we should be able to react in a forceful and decisive manner, thus converting his initiative into destruction.

The Terrain Obstacles. This is another factor which would effect mobility. Thus mobile forces need flexibility to overcome the terrain limitations. The enemy firepower on such obstacles will aggravate such hinderances in a disastrous manner since it impedes own mobility. Therefore, destruction of enemy's firepower becomes another paramount precept of our firepower. In order to do such a task target acquisition through surveillance of battlefield comes in the forefront.

Freedom from the Air. In any modern battlefield freedom from ground and air are totally integrated. A field formation wants such liberty irrespective of "what he does" and "where he operates". Days are gone when he would feel happy if you protected his some important VAs/VPs. This perception is outdated. A field formation is concerned with exploiting his enhanced mobility in the tactical area without inhibitions. This thus concludes to area coverage concept and saturation of battlefield by air defence artillery based mix of ECM, missiles and guns to achieve this concept of battle.

IMPUNITY

The vital logistic factor in any war situation is to have adequate services and machinery to ensure that all types of casualties are replaced at the earliest so that all field formations remain at the highest effectiveness level. Thus focus is on replacement of casualties at the top speed. Casualties also have an adverse effect on morale of troops, which cannot ever be weighed but has to be maintained to highest value as possible to achieve decisive results. Thus casualties-morale-effectiveness have a very fine inter-relation in which casualties play a more important role. Therefore, why not find effective means to reduce these casualties and this is what is implied by impunity. This impunity can be created in battlefield by thorough surveillance and target acquisition in depth and then destroying enemy forces and logistic support. Thus by keeping the battle as far away from forward troops as possible and giving sufficient time to our forces to react offensively. Impunity in turn will cause caution and fear in the enemy's mind. In such a state initiative and boldness will be severely effected and thus bringing to the stage of "Reaction". Also it will create a feeling of deterrence since the cost of initiative will become prohibited.

REACTION

Reaction is an integrated environment created by enhanced mobility and impunity by destructive and deterrence firepower. Creation of such an environment gives initiative and boldness and leads to perspective planning. We are defensive in attitude due to our national policy. This has always resulted in our reacting to adversaries tactics and weapon systems induction. Only one time we made our adversary react was after 1971 War, but even this initiative of ours has become subdued and we are again on "Reaction" philosophy. Reaction at strategical level is the prerogative of our national aims and foreign policy. However, it also has a connotation at tactical level. This battlefield reaction by adversary is only possible by adopting correct tactical concepts and

induction of effective weapon systems. Reaction, I feel is an important instrument of war and must be exploited at all levels to create an effective war machine.

IMPLEMENTATION OF PERCEPTIONS

Our artillery perceptions as enunciated in earlier analysis have to be implemented in our concepts, doctrines and in selection of weapon systems. The perception have long term implications and needs decades to implement them. As such phases can be created for such implementation, but they have to overlap till we keep looking towards our ultimate aims. The factors effecting such implementation can be :-

- (a) Existing state of equipment and its optimum utilisation and de-induction in a cost effective manner.
- (b) Development of doctrines to implement perceptions. This needs an integrated approach which will improve effectiveness of the organisations and in particular fighting formations.
- (c) Analysis and evaluation of tactical, technical and design parameters of weapon system. Trials and evaluation of various alternatives in weapon selection in a cost effective manner.
- (d) Based on weapon systems, analysing organisational concepts, logistic support, ease in training, handling and development of expertise in weapons.
- (e) De-induction of existing weapon system and induction of new weapon system has to be planned in phased manner to avoid imbalances and effectiveness of our fighting forces at any moment of time. This becomes a very interesting and vital exercise since it effects repairs and spares provisioning for obsolescence and obsolete equipment and creation of inventory for new weapon systems.
- (f) Creation of self-sufficiency in weapon system is an important tenet of a good war machine. This laudable aim is inter-related to Research and Development, import of equipment from shelf and creation of infra-structure for licence production with buy back arrangements to enhance cost effectiveness.
- (g) Lastly the most vital aspect is creation of "Implementation Machinery" with a result oriented outlook. Such a high level body should have autonomy, vision and Government backing to implement policy decisions in a time bound programme.

In order to "optimise, maximise and be very responsive," the firepower needs to be employed in an integrated manner. In the battlefield

target acquisition with proper surveillance has to be superimposed on tactical situations. Then Commanders at all levels have to take decision based on various alternatives in order to gain Firepower supremacy. Accordingly, the firepower has to be made available with speed and to cause casualties in a cost effective manner. This integrated approach of firepower will provide flexibility and optimum fire support to achieve success in battlefield. This integration can be achieved by automation and use of computers at various levels of Command and Control of Artillery. Thus such a perception of integration can be "To present a *Panoramic View* of the battlefield scenario at all Commanders in order to *manipulate* the Firepower."

CONCLUSIONS

The functions of Artillery to gain firepower supremacy in the battlefield is a laudable aim and is achievable provided we visualise Artillery perception in next three decades carefully. With mechanisation of battlefield firepower has a major role to enhance *Mobility* with *Impunity*, thus making our adversaries *React* strategically and tactically. The integration of all weapon systems, surveillance and target acquisition will provide a *Panoramic view* to enable Commanders at all level to *Manipulate* the firepower to achieve a success of all missions. The Firepower planning must adopt an "objective" approach than "subjective" hitherto if it has to gain a total supremacy in battlefield. In three words I will call it "*Three D Concept*" i.e. DETERRANCE, DESTRUCTION & DECISIVE RESULTS."

This "Three D Concept" of firepower will provide tactical commanders a clear vision and analysis of battlefield situation as to the likely intentions of our adversary. It will create a thoroughly integrated firepower with a view to destroy him as far away from our forces so as to incapacitate him and blunt his offensive designs. Our forces will then have time to employ themselves offensively to totally destroy the adversary's forces in an environment which has impunity from ground and air and thus enabling us to use initiative with tactical freedom.

The above tactical perception have long term implications to the induction and de-induction of new weapon systems, tactical concepts and organisations. These can be achieved in a phased manner by a high level implementation machinery in next two to three decades. These firepower perceptions provide the most advantageous strategical and tactical "REACTION" of our adversary which would enable us to attain our national aims.

COMPOSITE ARMOUR FORCE

DR. K.R. SINGH

TRADITIONALLY, in India, armour is generally associated with tanks, self-propelled guns and, of late, with mechanized infantry combat vehicles. Its role was seen as that of a heavy arm, co-ordinating its activities with those of the infantry and the artillery in a battlefield in offensive-defensive operations. It is still largely employed in that role. But, such a restricted use of armour, despite the recent induction of mechanized infantry, self-propelled guns and anti-aircraft defence systems, not only restricts its mobility to the relatively slow progress of the infantry, or more precisely the foot soldier, but also breeds a state of mind that often refuses to exploit the advantages that a composite armour force provides in several tactically advantageous theatres.

The composite armour force (CAF), to play its designed role, should possess, besides the usual triad of mobility, firepower and protection, two other inputs—staying power or independence of operation and, what logically flows from it, autonomy of operation. The autonomy of operation is related not only to the space but also to the existing battlefield environment. In other words, such a force should possess an integral capability for defending itself from air attacks and for launching an offensive-defensive action on its own. Thus, besides the tanks and the MICVs, it should possess its own air defence capability as well as indirect fire support of medium and heavy self-propelled artillery and rocket launchers. Also, for rapid cross country mobility the CAF should have its own support vehicles capable of operating along with the fighting vehicles.

Experience in that field, since the Second World War till the recent Arab-Israeli Wars, provide useful data to evolve this concept still further and to tailor it to India's defence requirements and capabilities. A CAF, to be effective, should have five main components:

- (i) ground-based air defence umbrella
- (ii) land-based long range offensive/defensive capability.
- (iii) the spearhead

- (iv) 'Brain' or command and control mechanism
- (v) 'Tail' or logistics and support infrastructure.

All these five components need to be integrated into a composite armour force (CAF). Such a combination alone will provide it with mobility, fire power, protection, staying power and autonomy of operations in a given hostile environment for a given length of time and for a certain depth of operation. India already possesses most of these components. A few systems will have to be added. Given India's technological base it is not difficult for it to provide these inputs.

Ground-based air defence umbrella

It will be unrealistic to expect the airforce to provide an air umbrella at all times to far flung armoured units. Hence CAF must be equipped for its basic point defence against air attacks whether by fighter-bombers or by assault helicopters. The ground-based air defence umbrella, as suggested in this paper, is composed of three integrated weapon systems; self-propelled SAM like SA-6, self-propelled 40mm L-70 anti-aircraft gun (single or twin) and self-propelled 23 mm ZSU-23-4 Shilka.

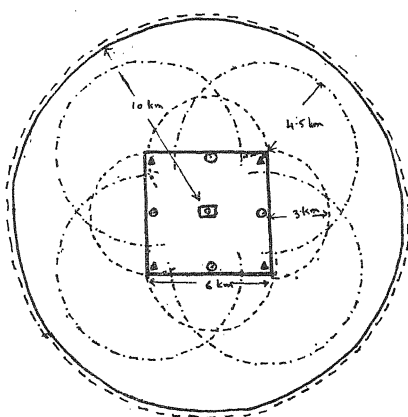
The self-propelled (SP) SAM like SA-6 would provide air defence capability against low-level air attack within a radius of 10-15 km, depending upon the height at which the air attack is launched. It will not only provide protection against stand-off weapons launched by aircraft but its radar system will also provide useful early warning against possible air attacks to other constituent units of the air defence system like 40 mm L-70 guns.

Under the broad umbrella of the SAM, two other integrated systems are operating for additional support. They are the 40 mm L-70 anti-aircraft gun (SP) and the 23 mm ZSU-23-4 Shilka. This triad of SA-6, 40 mm and Shilka would provide overlapping fire to each of its components and thus provide added protection against simultaneous air attacks from different directions or from very low-level attacks by assault helicopters (see diagram 1, page 127).

The ZSU-23-4 Shilka has been battle tested during the Arab-Israeli War of October 1973. It has proved to be an effective weapon against low-level air attack by fighter-bombers, especially within an operational radius of 3 km. As seen from diagram 1, it will offer protection to SAM

DIAGRAM 1TRIAD OF AIR UMBRELLA

Placement of weapons in a square at the level of the regiment



□ SAM launcher

▲ 40 mm AA gun SP

○ ZSU-23-4

--- Radius of operation of SAM (SA-6), 10 km

--- " " " 40 mm AA gun, 4.5 km

--- " " " ZSU-23-4, 3 km

— Boundary of the inner core of the regiment
6 km square

Scale 1 cm = 2 km

and 40 mm gun against that threat. It is, however, vulnerable to long range (3 km plus) anti-tank guided missile attack by assault helicopter. Thus, it is placed within the protective umbrella of 40 mm gun which has a longer range.

The 40 mm L-70 SP gun is being suggested as a new component of the CAF. 40 mm L-70 is an old and trusted system, primarily used for static or point defence. No worthwhile effort has been made to use its capabilities in the armour force by making it self-propelled. Undoubtedly, some attempts were made by the USA after the Second World War to put a twin 40 mm gun in a tank turret for mobile air defence. The system was soon discarded for two main reasons. First, at that time it had no suitable guidance system appropriate against high speed jet aircraft that were introduced soon after the war. It was not equipped with radar or other systems for enhanced accuracy. Secondly, once the USA found that its aircraft themselves could control the sky, especially against the MIGs during the Korean War, the need for an effective ground based air defence system based on conventional guns was neglected till the seventies. Instead SAMs became more popular. But these twin 40 mm SP guns were retained in stores and some years back they were transferred to Jordan where they are still operational.

The 40 mm SP gun (single or twin), if employed against assault helicopters, need not be radar controlled. That will make it more cumbersome. Instead, it should be equipped with laser rangefinder and, if necessary, with passive low-light vision device for night operations. The laser rangefinder will enable the operator to find the range more correctly up to 5 km. That will help in aiming the gun more accurately even up to an extended range of 4-4.5 km. This extended range, combined with the rapid rate of fire and the new type of 40 mm shell armed with proximity fuse will give the gun an enhanced capability not only against fast aircraft but also against low-flying assault helicopters. This ranging device will be useful even against the ground targets thereby converting it into a dual purpose (DP) gun.

The two components of the air defence umbrella, the 23 mm Shilka and the 40 mm L-70 guns, have considerable capability against land targets, especially against soft-skin vehicles, lightly armoured fighting vehicles (AFV) like APC and MICV, and infantry hunter-killer teams operating man-portable anti-tank guided weapons (ATGW) at ranges of 2 and 3 km respectively. Thus, the DP character of these weapons would provide a useful and often needed additional firepower in times of stress.

Land-based offensive and defensive capability

The CAF must be in a position not only to defend itself against long-range ground based attacks but should also be capable of launching such attacks on its own. Such a capability is provided by a combination of SP gun/howitzer, SP rocket launcher and SP 120 mm mortar. India possesses 105 mm SP gun (Abbot) and has converted 130 mm gun into a SP (Catapult) by mounting it on a tank chassis. It also possesses rocket launchers which are self-propelled but not tracked. It does not, as yet, possess any SP 120 mm mortar but it will not be difficult for a country like India to mount these mortars on the chassis of a medium tank or an armoured fighting vehicle (AFV), thereby providing it not only mobility but also limited armour protection.

The effective ranges of 105 mm gun, rockets and 130 mm gun are 10 km, 15-20 km and 25-27 km respectively. These are, relatively speaking, long-range weapons capable of offering indirect fire support. Hence they should be retained at the level of the regiment. The light helicopter, which is also under the control of the commander of the regiment, can be used for reconnaissance and guiding the fire of these long-range weapons. The 120 mm mortar (SP), because of its limited range of about 4-4.5 km, will best be used tactically if deployed as a part of the forces under the command of respective squadrons in that regiment. For a greater punch against armour ATGW (SP) teams can also be added at appropriate levels. The composition of weapons and support equipment at various echelons will be discussed subsequently.

The spearhead. It is the *raison d'être* of the CAF. It is composed of four main weapons; the main battle tank (MBT) which is the kingpin of the armour, the light armoured fighting vehicle (AFV) whether the APC or the more sophisticated MICV, which is the main tactical support base of the armour, light reconnaissance vehicle (LRV) and the 120 mm SP mortar. All these are under the command of the leader of the squadron.

India has adequate tank force, including the newly acquired T-72 tank, and does not have to search for that component. It is also operating AFVs of modern design though their number is rather limited. It does not have a LRV suitable for operations in desert sand, though the Ferret can be used. The Jeep or the Jonga are not appropriate for the task. But pending the acquisition of a suitable vehicle, they could be modified to operate as LRVs. They can be fitted with medium machine guns and radio for long-range reconnaissance role. They can also provide valuable fire power when the battle is joined.

The brain. The command, control and communication of the CAF, with its inbuilt fluidity of movement and the distance between the component units, depends to a large extent upon efficient means of communication between the various force commanders and their counterparts as well as with those in the higher echelon. Therefore, command cars fitted with appropriate communication systems (as well as the Signals) become essential for efficient operation of such a force. Often, radio silence might become essential for tactical reasons. Hence, the commanders at the levels of the regiment and the brigade should have atleast one light helicopter each to maintain adequate contact at various echelons. This helicopter, lightly armed, can also be used for reconnaissance and for directing the fire of long-range weapons.

The tail. Logistics and support are an essential component of the composite armour force. They provide it with the independence of operation. The CAF should be equipped to operate without further contact for at least five days or a distance of 200 km from the point from where the operation is launched. Resupply for further operations should be worked out well in advance before the action is initiated. Thus enough fuel, water, food, ammunition, spares etc. have to be carried on vehicles that can move long with the fighting force in all types of terrain.

Beside logistics, support is also an equally important component of this force. The EME, Engineers, Signals, recovery team, field hospital etc have, therefore, to be an integral part of the force. For more efficient operation, both, the logistic and the support vehicles, have to be equitably distributed at different echelons. For details see Table 2, page 132.

Organization of the CAF

Brigade

|
Regiment (3 regiments in one bde)

|
Squadron (3/4 sqns in one regt.)

|
Troop (3 troops in one sqn.)

For the optimum utilization of the CAF on the battlefield, the brigade has been treated as the largest tactical unit of the CAF. Brigade can be integrated with other CAF units or with the units of infantry and artillery as decided at the higher command at the division or corps level. Since the CAF brigade will be spread over a vast area it is operationally

useful to decentralize it functionally at lower echelons also; troop, squadron and regiment. For details of weapons and personnel at each echelon see Table 1, 133.

Troop is the basic unit of the CAF. Like the conventional armour force it has three tanks. They are supported by 3 AFVs (each having one driver, one commander and 9 men). The LRV is employed for reconnaissance. Thus the troop becomes a tactical unit and should not be split.

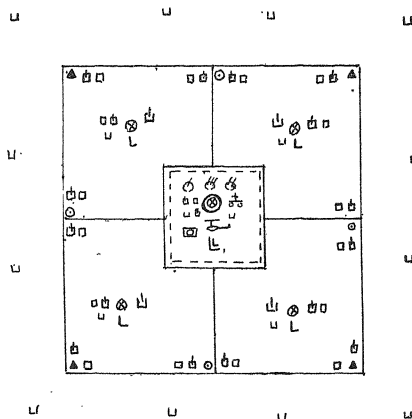
The squadron is a more composite unit. It employs not only the weapons of the troops (9 tanks, 9 AFVs and 3 LRVs) but also has three 120 mm mortars (SP) and one ATGW vehicle. Mortar gives it added firepower against infantry in the open and also in dug-in positions. The ATGW provides it with added capability against determined armour thrust by the adversary in that sector. If necessary, the squadron can draw upon the firepower of at least one 40 mm L-70 gun and one shilka if they are used as dual purpose weapon. (See diagram 2, page 132) The combined firepower is adequate in an open area on a battle front of about 3 km, once the CAF has penetrated through the main defences of the adversary with the help of the artillery and the infantry squadron.

The squadron has its own logistics/support vehicles and can operate independently for a long time. The command car with the squadron commander provides him with immediate communication links not only with the forces under him but also with the commanders at the higher echelon.

Regiment is the core of the CAF. Its commander not only coordinates the squadron-level operations but also commands the heavy and long-range weapons integral to the regiment. These weapons are the 105 mm and 130 mm guns and the rocket launchers as well as the triad of SAM, 40 mm anti-aircraft gun and the 23 mm ZSU-23-4 Shilka. The regiment has not only its own logistics and support base but also more core facilities like EME, Engineers, Signals, Medical etc. It also has the light helicopter for reconnaissance and liaison. The CAF regiment is thus capable of operating not only in conjunction with other regiments of the CAF brigade but also as an independent tactical arm if need be.

Brigade is the next echelon in the CAF. Brigade commander integrates the activities of the regiment under his command. Since the regiments are the core tactical units of the CAF, brigade does not possess major reserves except one small unit at troop-level for the protection of

DIAGRAM 2
OPERATIONAL DEPLOYMENT OF CAF
 Zones of squadrons and the regiment HQ



- | | |
|--|---|
| ☐ SAM launcher | ☐ rocket launcher (bty of 3) |
| ▲ 40 mm AA gun SP | ☐ 130 mm gun SP (bty of 6) |
| ○ 254-23-4 | ☐ 105 mm gun SP (bty of 6) |
| ⊙ HQ Regiment | ☐ 120 mm mortar SP (bty of 3) |
| ⊙ HQ Squadron | ☐ ATGW SP |
| ☐ Box under the control of the Commander of the regiment | ☐ tanks (Troop of 3 tanks) |
| | ☐ AFVs (" " " AFVs) |
| | ☐ LRV |
| | ☐ logistics/support vehicles - squadron |
| | ☐ " " " - regiment |

scale 1 km = 1.5 cm

TABLE 2 Logistics/Support at Each Echelon of CAF* (None at troop level)

Equipment & Vehicle	Squadron		Regiment		Brigade	
	Nos.	Personnel	Nos.	Personnel	Nos.	Personnel
Command car	1	4-5	1	4-5	2	8-10
Signals car	—	—	1	4	1	4
Fuel tanker	1	2	1	2	1	2
Water tanker	1	2	1	2	1	2
Supplies (provisions)	1	2	1	2	1	2
Ammunition	1	2	1	2	1	2
Engineers (dozer, mines etc.)	1	2	5	10	1	2
Field repair unit	1-2	4-8	1-2	4-8	1-2	4-8
Field medical unit	1	4	1	4	1	4
Field hospital	1	4	1	4	1	4
EME field workshop	—	—	2	12	—	—
Engineer base (bridges etc.)	—	—	2	12	—	—
Vehicle for helicopter	—	—	1	2	1	2
Total	8-9	24-29	18-19	76-80	11-12	36-40
	JCO/NCO 1	Off 1	JCO/NCO 3	Off 5	JCO/NCO 7	Off 4
	OR 20-25	OR 20-25	OR 64-68	OR 64-68	OR 25-29	OR 25-29
	Total 24-29	Total 24-29	Total 76-80	Total 76-80	Total 36-40	Total 36-40

*The battlefield mobility of the CAF depends upon the vehicles (tracked or wheeled) that are integral to the force. However, for its movement from the base to the battlefield, the CAF would depend upon the railways and the army's transport system. Since they are not integral to the CAF, they are not included in these calculations.

COMPOSITE ARMOUR FORCE

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TABLE 3. Forces under the Command at Various Echelons of the CAF

Level of Command	Fighting Forces			Logistics/Support Forces			Total		
	Vehicles	Personnel		Vehicles	Personnel		Vehicles	Personnel	
Squadron	25	170		8—9	24—29		33—34	194—199	
		Off	10		Off	1		Off	11
		JCO/NCO	18		JCO/NCO	3		JCO/NCO	21
		OR	142		OR	20—25		OR	162—157
Regiment	136	Total	170		Total	24—29		Total	194—199
			880	42—46		148—167	178—182		1028—1047
		Off	49		Off	8		Off	57
		JCO/NCO	101		JCO/NCO	16		JCO/NCO	117
Brigade	421	OR	730		OR	124—143		OR	854—873
		Total	880		Total	148—167		Total	1028—1047
			2720	138—150		480—541	559—571		3200—3261
		Off	152		Off	28		Off	180
		JCO/NCO	314		JCO/NCO	55		JCO/NCO	369
		OR	2254		OR	397—458		OR	2651—2712
		Total	2720		Total	480—541		Total	3200—3261

the brigade headquarters and the logistic and support integral to it. The brigade commander also has his light helicopter for liaison work. Thus the brigade headquarters is as mobile as the other units of the CAF and can keep pace with other units in all types of terrain, at all distances and for any length of time. For full details of the weapons and personnel as well as logistics and support at various echelons see tables 1, 2 and 3.

Deployment of the CAF

Once the broad conceptual framework of the CAF has been worked out ways and means have to be evolved to deploy it in operation. Such a force can be deployed in various formations. In this paper only one pattern is being discussed; the box with the square as the base (see diagram 1). The second pattern of the formation of CAF discussed subsequently reflects the CAF with reduced strength (see diagram 7, page 144).

The box with the square as a base

This pattern of deployment is based around an integrated air defence umbrella created by one SAM system (SA-6), four 40 mm L-70 guns (SP) and four ZSU-23-4 Shilkas. For optimum overlapping fire pattern their disposition has been arranged in a square whose sides are 6 km each. The SAM is placed near the centre and the 40 mm guns and the Shilkas on the periphery of the square (See Diagram 1). This box will be the core sector of the regiment.

If we take the maximum effective range of the SAM, at low altitude, as approximately 10 km, that of 40 mm L-70 as 4.5 km, especially against assault helicopters, and that of the Shilka as 3 km against low flying fast aircraft, then it is seen from diagram 1 that each system is so placed that it protects the others and is in turn protected by the others. Thus, while the SAM provides protection against long-range stand-off weapons or high altitude bombing, 40 mm gun protects both, the SAM and the Shilka, against sneak attacks by assault helicopters armed with ATGWs. The Shilkas offer basic point defence both to the SAM and the 40 mm guns against simultaneous high speed low-level air attacks. As noted earlier, both 40 mm guns and the 23 mm Shilkas can also be used as dual purpose (DP) guns against land targets and hence their placement on the periphery of the square also helps them to fulfil that role.

That box is contained within a circle of 10 km radius. This box, the core area of the regiment, can be further divided into four smaller squares whose sides are 3 km each. These smaller squares will correspond to the

core sectors of the respective squadrons of that regiment (see diagram 2). As long as the air umbrella is not broken, the forces operating from within these boxes are protected against air attacks including those of assault helicopters. These are also peripheral areas that spill beyond these boxes that are covered with the horizon or arc of protection provided by the weapon systems of the air-umbrella. See diagram 3, page 138.) These zones provide areas for the forces at the squadron-level to manoeuvre for offensive/defensive actions and for reconnaissance, LRVs and helicopter can even move beyond that zone for reconnaissance in depth.

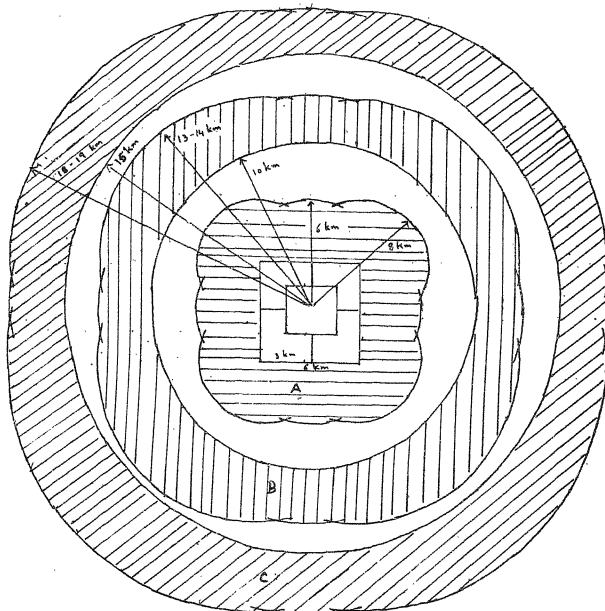
An analysis of diagram 2 and tables 1 and 2 shows that the main fighting forces and the bulk of the logistics/support vehicles are under the commanders of the squadron and the regiment. (See Table 3 for more details) The task of these commanders is also reduced considerably because less than half of the vehicles under their control are logistics/support vehicles, whose specialized jobs can be entrusted to the appropriate persons attached to these echelons. Another important fact that emerges is that the teeth-to-tail ratio of these forces is about 6:1. This is essential if the force has to maintain its compactness, mobility and independence of action.

Despite its relatively small composition, even at the regiment-level, it packs strong power based upon one battery each (6 guns) of 105 mm and 130 mm guns, three rocket launchers, twelve 120 mm mortars, four each of 40 mm L170 guns and ZSU-23-4, 39 tanks, 39 AFVs, 12 LRVs, 5 ATGW vehicles and one armed helicopter, besides one SAM launcher. All these are concentrated in a box of 6 km square and is provided with appropriate air umbrella, armour protection and mobility on the battlefield. Undoubtedly, it is a powerful punch.

The possible deployment of forces up to the level of the regiment is suggested in diagram 2. For an optimum utilization of these forces, it is suggested that placement be so regulated that the four squadrons of the regiment can not only act independently but also support the core i.e. the H.Q. of the regiment and the two squadrons adjacent to it. In such a formation the CAF can move in any direction, face attack from any side and manoeuvre even during battle conditions without losing its basic characteristics.

It will be noted that the forces at the disposal of the commanders of the squadron are not only tactically deployed for offensive/defensive operations but also provide protection to the outer flanks of the air

DIAGRAM 3
THREE ZONES OF FIRE OF THE CAF REGIMENT



Zone A 5 km plus, Zone B 10 km plus, Zone C 15 km plus

Note: Shaded parts of these zones denote the extra area that can be covered if respective weapons are fired from the periphery of the box (6 km sq)

defence units, viz 40 mm guns and the Shilkas. The LRVs provide a screen in depth for the whole force. While these units can operate independently, the long-range communication system provided at various echelons from squadron upwards links all these units with the commander of the regiment for unity of action and direction of the main battle.

COMBINATION OF THE THREE REGIMENT AT THE BRIGADE LEVEL

The three regiments, each capable of independent action, are grouped under a larger command, the brigade, for more effective operation. Such an arrangement will not only provide a greater punch to the CAF but also enable it to manoeuvre on a larger scale over a wider front. While the mobility will in no way be impaired, the combined force can use various manoeuvres like one up and two up formation for out-flanking and rear attack tactics that will not be feasible if only one regiment of the CAF is utilized. If we break up the regiment, its core, the air umbrella would be broken.

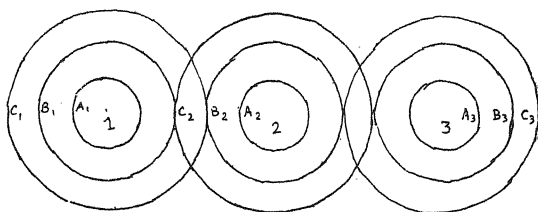
To evolve a suitable combination of these forces at brigade level one has to take into consideration various arcs of fire provided by each regiment and to combine the three regiments in such a way that they are able to strengthen each other and to form a chain whose links are in fact strengthened by the combination.

If the 6 km square is treated as a box of each armour regiment, with the SAM as its core, then three concentric circles, A, B and C, can be drawn depending upon the capabilities of forces and weapon systems within that box (See diagram 3). In the first circle, with the radius of 5 km, weapons that can be brought to bear will be 120 mm mortar, 40 mm gun, the Shilka and the ATGWs. The next circle of 10 km radius will be covered by 105 mm and 130 mm guns, rocket launchers and the SAM. The extended range of the third circle will be covered by 130 mm gun, rocket launchers and the SAM. Thus circle A is fully covered by fire. B gets fire support from 105 mm and 130 mm guns and rockets while C is covered only by 130 mm guns and rockets.

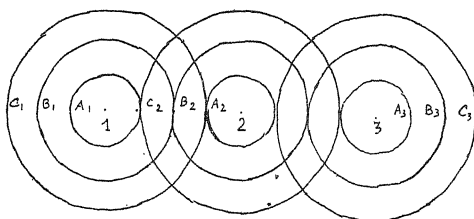
When three regiments (1, 2 and 3) are integrated at the brigade level, A is to be treated as the core, B the inner periphery and C the outer periphery for combined operations. Let the three circles of the three regiments be named as A1 B1 C1, A2 B2 C2 and A3 B3 C3. These regiments are arranged in an extended line formation (See diagram 4, page 140.)

DIAGRAM 4BRIGADE-LEVEL FORMATION (Extended line)

For operational purposes these zones are (radius)
 A 5 km B 10 km and C 15 km But each zone's func.
 extends considerably (see diagram 3)



Scale, 1 cm = 5 km

DIAGRAM 5BRIGADE-LEVEL FORMATION (Closed line)

Under such an arrangement the entire front is about 70-80 km wide and 15-20 km deep. In this case only the outer peripheries of these regiments are overlapping. Thus, there are gaps in between the regiments 1-2, and 2-3 that can be penetrated by determined efforts. Also these gaps allow low-flying aircraft to pass through them though they cannot do much damage to the core. Such an extended chain is useful when no worthwhile opposition is expected or if battle front tactics like outflanking are to be adopted on a wider front.

The three regiments can be bunched closer for greater strength if frontal opposition is strong or if the adversary is concentrated in a smaller area. In that case the brigade will be in close formation. (See diagram 5, page 140.) Instead of the middle circle B touching the outer periphery C of the other regiments as in diagram 4, the middle circles (B) of all the three regiments will be overlapping. In that case, the front will be reduced to about 60 km, but a greater concentration of firepower will be provided by adding the weight of 105 mm guns of at least two regiments of the CAF at any point of attack or defence. This concentration of fire power can be further enhanced if regiments on the flank execute a one up or two up formation. In that case the heavy weapons of all the three regiments can be brought to bear upon the target thus enveloped (See diagrams 6, and 6b, page 142).

In such a case, the weapons that can be brought to bear upon the target are:

130 mm guns	...	...	3	blys (3×6=18)
105 mm guns	...	...	3	blys (3×6=18)
Rocket launchers	...	...	3	blys (3×3=9)
120 mm mortars	...	...	36	
40 mm guns	...	...	12	
ZSU-23-4 Shilkas	...	...	12	
Tanks	...	...	121	
AFVs	...	...	121	
LRVs	...	...	48	
ATGWs vehicles	...	...	13	
SAM launchers	...	...	3	
Light armed helicopters	...	...	4	

Undoubtedly, not all of these weapons can be concentrated at a given point without weakening the structural defence of the CAF. Yet, at a conservative estimate, all the heavy weapons (105 mm and 130 mm guns and rocket launchers) can be brought to bear upon the targets without destabilizing the defensive structure. Moreover, since the flank and the rear are protected by the squadrons on the periphery of this chain and since several parts of the periphery are protected by the over-

DIAGRAM 6a
BRIGADE-LEVEL OPERATION : TWO-UP FORMATION

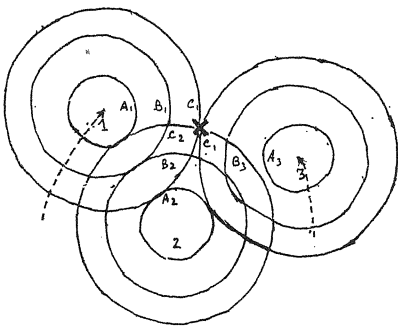
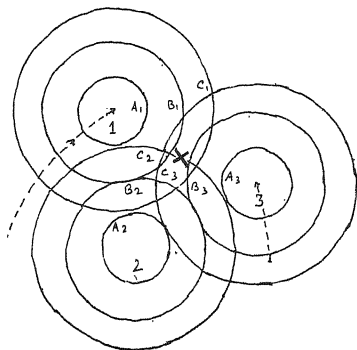


DIAGRAM 6b
BRIGADE-LEVEL
OPERATION :
Regiment 1
moving for
rear attack



X Target

scale 1 cm = 5 km

lapping fire power, part of the forces earmarked for those sectors can be shifted so as to add to the fire power at a given point. Thus, the overall fire power at any point can be enhanced without seriously weakening any given sector. That will ensure the maximum utilization of available fire-power of the CAF.

THE CAF WITH REDUCED STRENGTH: THE BOX SYSTEM
WITH TRIANGLE AS THE BASE

It is possible that, under some circumstances, the equipments needed for the formation of a box with the square as a base, as noted earlier, might not be fully available. In the event of reduced strength, the replacement of the various formations of the CAF will have to be modified.

Since the ground-based air umbrella is the pivot of the CAF the disposition at the level of the regiment will also be governed by the availability of those systems. If the number of constituent units of the triad of the air umbrella are as follows: SAM (one launcher), 40 mm (3 guns) and ZSU-23-4 (3 Shilkas) then the disposition of the box, at the level of the regiment, will be in the shape of a triangle. (See diagram 7, page 144.) As seen from that diagram, this triad provides adequate protection against air attacks but on a smaller scale and there are gaps in the circle that are not fully covered by the Shilkas. This poses some risks to the SAM from multiple air attacks by fast aircraft flying at low altitude.

Organization of CAF (Reduced Strength)

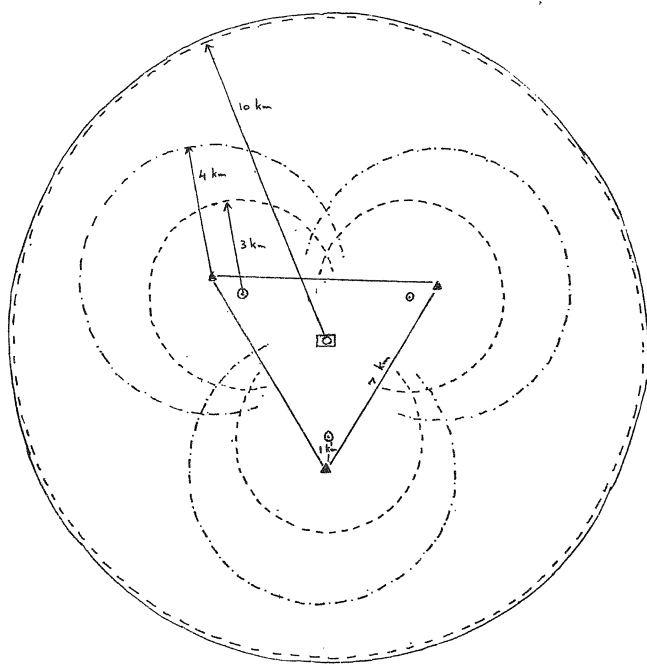
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Brigade
|
Regiments (three in one brigade).
|
Squadrons (three in one regiment)
|
Troops (three in one squadron)

```

There are basic differences between the CAF regiment (full strength) and the regiment of the CAF with reduced strength. Not only will it have reduced number of 40 mm guns and the Shilkas but it will be without the long-range 130 mm guns. For details of the weapons, logistics/support vehicles and personnel at the levels of various echelon see Tables 4 and 5 (Page 146 and 147). Yet even the CAF with reduced strength will still be a powerful fighting force. Its combined force at various echelons is give in Table 6 (Page 148). This gives the force a fair amount of balanced firepower at all levels of command. Moreover, the force is still kept very compact and the teeth-to-tail ratio even at the levels of regiment and brigade is only 5:1.

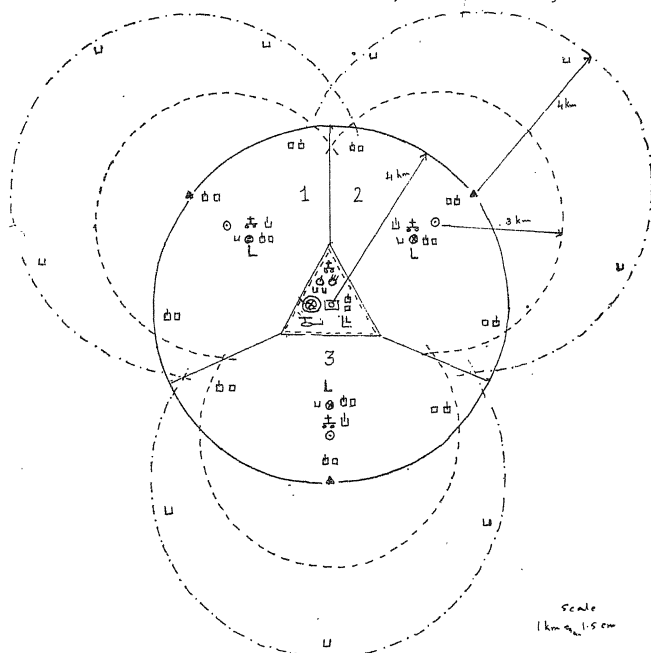
DIAGRAM 7
CAF (Reduced Strength): TRIAD OF AIR UMBRELLA



——— Radius of operation of SAM $\square$ (SA-6), 10 km
 - - - " " " " 40mm gun SP $\triangle$, 4 km
 - - - " " " " ZSU-23-4 $\circ$, 3 km
 scale 1 cm = 1 km

DIAGRAM 8

OPERATIONAL DEPLOYMENT OF CAF (Reduced strength)
Under the commanders of the squadrons and the regiment



- SAM launcher, ▲ 40mm AA gun SP, ○ ZSU-23-4, ✈ ATGW SP
 ○ 105 mm gun SP, ☄ rocket launcher, SP(3) □ 120 mm mortar SP (3)
 □ Tank Troop (3), □ AFV Troop (3), U LRV, ✈ light helicopter
 ● HQ Squadron, ⊙ HQ Regiment, L logistics (sqn), L logistics (regt)
 ▲ Bn under commander of the regiment, rest under 3 sqn commanders.

Table 4: CAF (Reduced Strength) Weapons and Personnel at each Echelon

Weapons	Troop		Squadron		Regiment		Brigade	
	Number	Personnel	Number	Personnel	Number	Personnel	Number	Personnel
Tanks	3	12	9	36	3	12	3	12
AFVs	3	33	9	99	3	33	3	33
LRVs	1	4	3	12	3	12	4	16
120 mm mortars	—	—	2	18	—	—	—	—
ARGWs	—	—	1	4	1	4	1	4
SA-6 SAMs	—	—	—	—	1	10	—	—
40 mm DP guns	—	—	—	—	3	12	—	—
ZSU-23-4 Shilka	—	—	—	—	3	12	—	—
105 mm guns	—	—	—	—	6	24	—	—
Rocket launchers	—	—	—	—	3	18	—	—
Helicopter	—	—	—	—	1	6	1	6
Total	7	49	25	169	27	145	12	71

Off	2	Off	8	Off	9	Off	4
JCO/NCO	5	JCO/NCO	18	JCO/NCO	26	JCO/NCO	10
OR	42	OR	143	OR	108	OR	57
	49		169		143		71

Table 5 : CAF (Reduced Strength) : Logistics/Support at Each Echelon
(no support at troop level)

Equipment and Vehicle	Squadron		Regiment		Brigade	
	Number	Personnel	Number	Personnel	Number	Personnel
Command car	1	4-5	1	4-5	2	8-10
Signal car	—	—	1	4	1	4
Fuel tanker	1	2	1	2	1	2
Water tanker	1	2	1	2	1	2
Supplies (provision) (—postal)	1	2	1	2	1	2
Ammunition	1	2	4	8	1	2
Engineers (dozer, mine layer)	1-2	4-8	1-2	4-8	2	4-8
Field repairs	1	4	1	4	1	4
Medical Unit	1	4	1	4	1	4
Field hospital	—	—	2	12	—	—
EME field workshop	—	—	2	12	—	—
Engineer (base) (bridge etc.)	—	—	2	12	—	—
Vehicle for hel.	—	—	1	2	1	2
Total	8-9	24/25-28/29	18-19	74-76	12	34-40
	Off JCO/NCO OR	1 3 20/21-24/25 24-25/28/29	Off JCO/NCO OR	5 7 62/64 74/78	Off JCO/NCO OR	4 7 23-29 34-40

Table 6 : Forces Under the Command at Various Echelons of the CAF
(Reduced Strength)

Echelons	Fighting Force		Logistics/Support		Total	
	Vehicles	Personnel	Vehicles	Personnel	Vehicles	Personnel
Squadron	25	169	8-9	24-29	33-34	193-198
		Off		Off	1	Off
		JCO/NCO		JCO/NCO	3	JCO/NCO
		OR		OR	20-25	OR
	Total	169	Total	24-29	Total	193-198
Regiment	102	650	42-46	146-163	144-148	796-813
		Off		Off	8	Off
		JCO/NCO		JCO/NCO	16	JCO/NCO
		OR		OR	122-139	OR
	Total	650	Total	146-163	Total	796-813
Brigade	317	2017	138-150	474-529	455-467	2491-2546
		Off		Off	28	Off
		JCO/NCO		JCO/NCO	55	JCO/NCO
		OR		OR	391-446	OR
	Total	2017	Total	474-529	Total	2491-2546

Total Weapons at the Regiment and Brigade Levels of the CAF (Reduced Strength)

Weapons	Regiment	Brigade
Tanks	30	93
AFVs	30	93
LRVs	6	22
120 mm mortars	6	18
ATGWs	4	13
SAMs (SA-6)	1	3
40 mm guns	3	9
ZSU-23-4	3	9
105 mm guns	6	18
Rocket launchers	3	9
Helicopters	1	4

As in the earlier formations, three regiments of this CAF (with reduced strength) can also be combined at the brigade level for more effective tactical disposition. These regiments will also have three concentric circles or arcs of fire (A, B and C) of the radius of 5 km, 10 km and 15 km respectively. The core A will have the maximum fire power. The inner periphery B will be covered by 105 mm guns and the rocket launchers, while the outer periphery C will be covered only by the rocket launchers. A, B and C will have the protection of the SAM. Because of the reduced fire power at the outer periphery it will not be advisable to maintain a wider gap between the regiments and they will have to be grouped in the close formation as in diagram 5 unless otherwise decided for tactical reasons.

The front covered by the three regiments in such a formation extends to approximately 60 km. In this formation at least two regiments can bring their heavy weapons to bear upon any target faced by them. All the three forces can concentrate their weapons if the regiments on the flank execute one up or two up formation (see diagrams 6a and 6b). Even with the reduced strength, the brigade can combine a substantial fire power. Thus, it can be a substantial force which will also retain its inbuilt advantage of mobility, fire power, protection, staying capacity and autonomy of operations i.e. all the characteristics of a composite force.

CONCLUSION

There is no doubt that the CAF will play a useful role in certain sectors, especially where speed, mobility and range of operations are crucial factors in determining the national strategy. It can also be used for deep penetration once the infantry and the artillery succeed in breaking the outer crust of the main defence in a given sector.

India already possesses several components of such a force. Those that are lacking can be indigenously produced within a reasonable time or acquired from abroad over a number of years.

The inputs required for this type of force will be of three types. The first will be the tailoring of certain systems to suit the new requirements. Under that programme, stress has to be placed on mobility, provided by tracked or wheeled vehicles, depending upon its suitability in the likely terrain, the type of weapon and the weight of the system as a whole. Thus the 40 mm L-70 anti-aircraft gun (single or twin) fitted with laser range finder and passive low-light vision system, the 120 mm mortar and the rocket launchers will have to be put on tracked vehicles. The LRV can be wheel based. In fact, a modified armoured car with six wheels, armed with 20 or 23 mm cannon in a turret and capable of launching heavy ATGW with turret closed, will be a useful addition. The Ferret is small for that purpose. Modified Jeep or Jona armed with medium machine gun, while capable of filling the gap for the time being, is too light and exposed to be a suitable component of the CAF. Moreover, the chassis of the new LRV can also be modified for use as command car and logistics/support vehicles.

The second input in the formation of the CAF deals with the question of logistics/support and manpower resources. Mobility, range and extended period of operation, which are the main assets of the CAF, depend upon adequate logistics and support provided to it. Undoubtedly the force will have its own logistics support infrastructure for five days and/or 200 km range. But that momentum has to be sustained if the potential of that force is to be fully exploited. In other words, not only the logistics/support but also troops have to be kept at full operational capability even beyond five days and/or 200 km.

That can be achieved by earmarking the supply and agreeing upon the modes of delivery by land or by air well before the operation is launched. But, while the supplies can be made available relatively easily, it will be difficult for the troops, that have been under strain for five days, to keep up the sustained pressure for a longer period especially under highly fluid battle conditions. This constraint can be overcome, to some extent, by rotating the whole team when new supplies are made available. In other words, more than one team has to be trained for each force so that the manpower is fit and available at a given time for sustained pressure. Switching weapons in the middle of an operation is probably one of the most difficult of the exercises and the personnel attached to the CAF

will have to be trained in that. This will have an added advantage. In case the country decides to increase the number of CAF brigades it already has the requisite trained reserves on hand for the same.

The CAF might appear to be a costly affair. Undoubtedly, each of its systems are expensive and, consequently, in terms of manpower-to-cost ratio, this force will appear to be far more expensive than other forces. But, it should be noted that India does possess several of the components of such a force. If we calculate the cost of additional inputs needed for the CAF, in relation to the total fire power, protection, mobility and range of operation acquired by the resulting combination, the concept of the composite armour force will be found to be as economical if not more than the conventional deployment of the armour. Thus, the third input, and in my view, the most important one, is the need to inculcate the spirit of boldness of operation based upon a new vision of space as a strategic asset rather than to see it as a serious military constraint. I am sure that such boldness and vision are not lacking in the country.

SMALL ARMS IN 2000 AD

BRIGADIER TV MANOHARAN, EME, FIE, MA, PTSC, IDM, NDC
CONTROLLER, CISA, ICHAPUR

INTRODUCTION

WHATEVER may be the type of war, however big the Artillery or Tanks and their Calibre may be, whatever may be the extent of use of Rockets and Missiles or even nuclear weapons, it is only the small Arms that ultimately will be the prize winning factor. It is only the Infantry with Small Arms that can capture and hold ground. Hence, Small Arms will remain most indispensable in any type of warfare for all times to come.

The earliest hand guns made of poor materials were not capable of withstanding substantial gas pressure and so to obtain muzzle velocity and range, it had become necessary to use the large ball; like that, necessity being the mother of invention, slowly but progressively various design-concepts came into being. Lot of constraints and continuous evolution are being boosted up in protecting the Small Arms system all over the World. The battle experiences and new operational concepts have led many countries to keep on developing very highly sophisticated and reliable Small Arms systems. In the bargain, vying with each other to compete in the International Arms race to sell the best, which will serve the best in the war, we have a variety of new and modern innovative systems displayed on the shelves.

IDEAL SMALL ARMS SYSTEM

From time immemorial a soldier is constantly dreaming of an ideal single weapon which can serve all purposes in times of war. He has been dreaming of a single calibre, multipurpose, handy, reliable and accurate weapon which can serve not only as a Rifle but as a Carbine, LMG, MMG or Pistol, in any role using any ammunition.

A realistic designer would be too happy to have such a system to

SMALL ARMS IN 2000 AD

achieve all of the following capabilities in one go in the battle field:-

- (a) One weapon which can be converted easily by the soldier himself to obtain different varieties of role of Pistol, Carbine, Rifle, LMG, or HMG as and when required.
- (b) Same weapon capable of firing different varieties of ammunition like ball, tracer, armour-piercing (all types), incendiary, blank, duplex, triplex, flechette, caseless ammunition and so on.
- (c) A weapon capable of being fitted with any sighting system of telescope, dial sight, IR and Passive sights to achieve accurate sighting during day, night or darkness.
- (d) A weapon which can easily be fitted on a Tank, Vehicle, Aircraft or any other mountings.
- (e) Choice of selective firing of automatic or single shot with a reasonably high cyclic rate of fire.
- (f) Both belt and magazine feeding capabilities.
- (g) Capability of fitting different calibres of barrels in the same receiver group with minor modification to extraction and feeding mechanisms.
- (h) A weapon with all the above capability but still being light, robust and sturdy to enable easy handling.

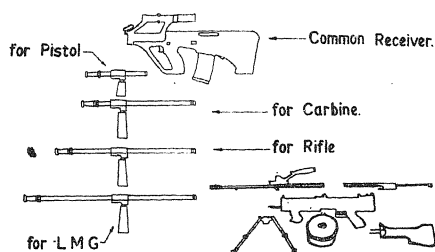
This ideal concept of multi-role capability on a single weapon with continuous supply of ammunition to achieve a very high cyclic rate of fire has become of paramount importance because of drastic changes in future war tactics where the fighting is likely to take place mostly under cover of darkness. High volume of concentrated fire will thus assume paramount importance to accurate shooting.

MODERN TRENDS IN MATERIALS

With the trends of inflation in the World market, everyone would like to have the weapon system as cheap as possible to meet the budget. Hence, the technology of material being used will be towards the concept for cheaper and easily available, materials, but at the same time it should be robust enough for rough handling and field operation. Therefore, robust material like thermoplast will be playing an important role in the Small Arms technology. Improved techniques of manufacture are also being made available in reducing the cost and weight of the weapon but maintaining the quality of product.

Stoner's 63 Multi weapon system concept

A new approach in Small Arms design is evidenced in the design of Stoner's weapon system. The fundamental characteristic of the system is that it is not a single weapon but a complete family of Small Arms from Carbine to a Machine Gun. In this, there is a basic component group consisting of body, trigger housing and feeding mechanism which is common to all. To this basic component group, other components like barrel, bipod, tripod, etc. are fitted to cater for different types of weapons. These groups combine to form six different types of weapons i.e. Carbine, Rifle, Magazine fed LMG, Belt fed LMG, MMG and Tank Machine Gun. Their basic parts are interchangeable and fire the cartridges of same calibre, thus simplifying production, logistics, training and maintenance. This concept is fast catching up and time is not far off to face such weapon in future.

**STONER'S CONCEPT**

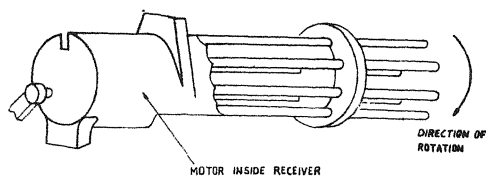
SKETCH 1 Application of Stoner's Concept

Multi Barrel concept

The original principle of Gatling's hand operated multi barrel gun has influenced this concept, being that of a weapon to achieve a very rapid rate of firing with a number of barrels. Guns are electrically or electronically operated having high rate of fire from 3,200 to 6,000 rounds per minute which can be used with air crafts, vehicles, tanks as

well as in anti-aircraft role or in any other mounting installations. Some of the examples already in market are:

- (a) *US 20mm Gatling Gun M 61*. This is a heavy machine gun. It has six barrels, rotated by the help of an electric motor. The rate of fire is 6000 rounds per minute.
- (b) *Vulcan Automatic Gun*. It is in 20mm and 30mm calibre. It can be vehicle mounted and fires an average of 3200 rounds per minute.



SKETCH 2 : Application of Gatling's Concept

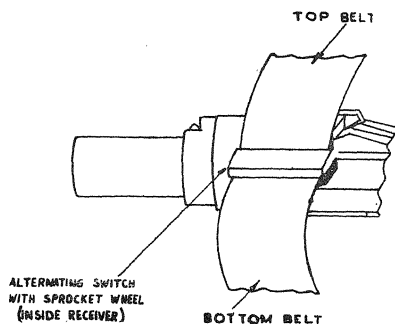
- (c) *7.62mm Mini Gun M34*. It was used in Aircrafts and helicopters in the Vietnam War. It has six barrels and fires 7.62mm x 51mm (NATO) cartridges. It is driven by a 28 Volt electric motor. It has an up rate of fire from 4000 to 6000 rounds per minute, and down rate of fire 300 rounds per minute.
- (d) *Six PAK*. The 5.56mm machine gun has been produced in complete light weight system. It has six barrels and can be used on an M-122 tripod or from a vehicle. The system with 1000 rounds of ammunition weighs 85 lbs, and can be quickly broken down into two equal loads for carrying. It has two rates of fire i.e. 400 and 4000 rounds per minute.

Small Arms in 2000 AD

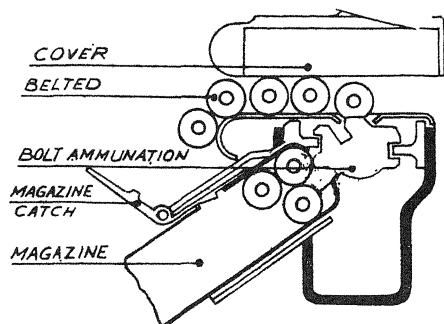
Based on some of the concepts described above, many countries are forging ahead with combination of these principles as well as some other modern trends to evolve most sophisticated, highly reliable and accurate

weapon systems. It is visualised that in 2000 AD, some of the future weapons which are now in drawing board stage, will surface and come on the shelves. These are discussed below briefly, systemwise:

- (a) *Feed*: The concept of multipurpose automatic weapon system needs a feed device capable of feeding the rounds to the weapon mechanism quickly where the firer desires the right ammunition to be discharged at the desired target. With a two-way feeding system with conveyer belts steered by oneshift lever with 3-Position (neutral, upper conveyer, lower conveyer transportation) as designed for rapid fire Swiss guns, is considered worth adoptable. The feeder does not require any booster but driven by recoil. Two conveyer belts (disintegrating links) are actuated by sprocket wheels. The weapon, if be electrically/electronically controlled, the feed will be as rapid as to attain a rate of fire to the extent of 2000 to 3000 rpm with alternate type of ammunition.
- (b) *Load*: Loading of ammunition into chamber, may it be of multi-barrel concept, will be actuated by ramming the round. The linea movement of the bolt/block can be imparted with a momentum gained from the electronic/electical energy and weight of the bolt/block.

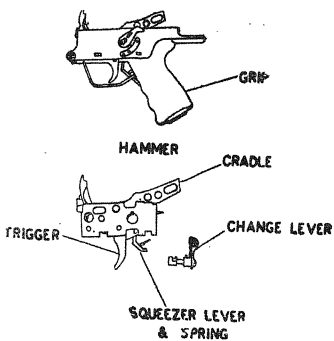


SKETCH 3 (a) Alternate belt feed system,



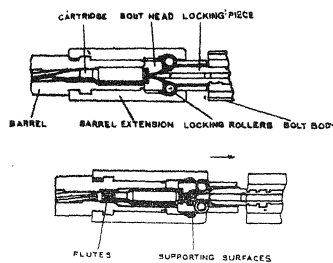
SKETCH 3 (b) Alternate Magazine and belt feed system

- (c) *Cock*: The storing of energy for actuation of the mechanism can be easily provided by a "cocker-squeezer" device introduced by Germany in automatic rifles. It enhances the rate of fire, reduces human fatigue, simplifies the stress on components.



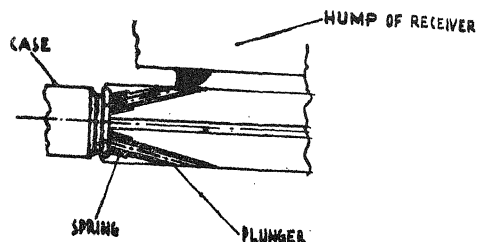
SKETCH 4 : Cocker-Squeezer

- (d) *Lock/unlock*: Positive locking is ensured by rotation of bolt/block clockwise and its anti-clockwise rotation enables unlocking of the breech. It is better controlled for pneumatic energy driven mechanism when electric/electronic system fails.



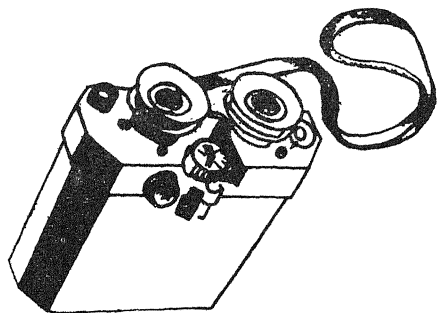
SKETCH 5 : Positive locking

- (e) *Fire*: The rapidity of fire by pressing trigger is discarded by the concept of electric/electronic operated trigger-sear combination. Concept of Finger touch firing has been a luxury till now. It facilitates the fire to concentrate more on aiming than to squeezing of the trigger. Switch-Control system of firing mechanism has become the most favourite for users.
- (f) *Extract & Eject*: With the advent of caseless ammunition, problems on extraction/ejection of spent case is overcome. However, for the misfired/undesired firing (under loaded conditions) the need of extractor will probe into the design for a simple spring energised lever. The design of a combined extractor-ejector for multi-barrel concept is ideal.



SKETCH 6 : Extraction & Ejection

- (g) *Sights*: The modern IR-Sights, image intensifying sights or Duplex sights provided to the weapon system in addition to the metallic ones have established supremacy of one over the other. The logistic approach of LASER sights are made by LASER Products Corporation of California, Laser applications are made to armaments sighting and ranging devices. It is fully established assembly that incorporates illuminating the projectiles and location of the projectile after hit by return signal. Also it can provide information about the target. The reliability and accuracy is superlative to a great extent by incorporating Laser Sights, whatever robustness and fire-power of the weapon may be. It is expected the LASER are going to revolutionise the future arms concepts.



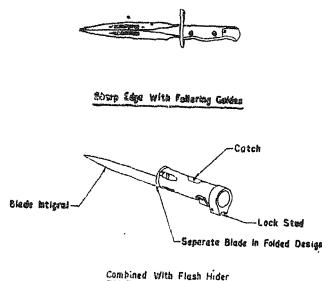
SKETCH 7 : Laser Sight

- (h) *Furniture*: Furniture of weapon system, the most important section of weaponry, should be improved in pattern and design. Most modern will it be for use of Plastics and the futuristic one should be evolved for detachable types. The varieties are reduced to the minimum leaving a solitary plastic butt, folded in design, and grips to serve manifold functions like that of cocking handle, support, carrying handle etc.

More to add, the Plastic technology has already presented components as well as receiver/body of weapons as robust as metallic ones with the facility of reduction in weight, simpler in design and easy for handling/transportation. The newer

efforts to manufacture plastic barrels of "do-away" type is peeping at the designer's desk which may gain overwhelming popularity to the user's bench. Plastic will be another field where we can expect tremendous revolution in weapon concepts.

- (j) *Grenade Launching devices* : The necessity of grenades for launching at a desired range accurately cannot be ignored for the next century to come. It is an over-requirement and sophistication of the same in design is adorable. Multipurpose weapon system accommodates the detachable type of flash hiders provided with the facilities for launching grenades. The automatic launching grenades are provided as is under development in America. The grenades carry HE and develop more lethal effects on the surroundings. The launching of the grenades is guided by firing on "air-blown" principle by bursting of CO₂-pellets or like.
- (k) *Bayonets* : Bayonets to be deployed by the soldiers during face-to-face encounter are spring loaded, sharp-edged with fullering guides. It is folded in design and is combined with the flash hider for quick operation and employment.



SKETCH 8 : Bayonet

TRAINING

Facilities for training should also be catered by instituting sub-calibre systems of multipurpose weapon system concept. It is better to have laser aimed weapon systems for training. A visible laser projects a

red dot to indicate bullet impact point, making the system ideal for both training and operational use. The laser power supply, the battery, pointing optics and power switch are mounted on the receiver of sub-calibre system as a ruggedized, integrated assembly. All components are capable of reliably withstanding the hostile weapon environment.

MAINTENANCE

Maintenance is an important equipment related element to both manufacturer and to the user. It provides an everpresent opportunity not only to produce more effective equipment and weapons but in so doing, also to make major contributions in reducing the life cost of equipment by reduction of maintenance that must be performed. The minimisation of the probability that a system will fail from causes unrelated to enemy action is the purpose of maintenance engineering. Reliability and maintainability needs are critical and the requirement for effective maintenance is absolute. The greater demand for readiness in recent years combined with the growing complexity of equipment, has created a need for increased maintenance responsiveness, a higher quality of technical skill and a greater productivity of maintenance works. The multipurpose weapon system will donate the soldier simplicity and maintainability factor for readiness. The soldier will appreciate his role in accomplishing the maintenance of the equipment or weapon within the limited resources. Development of material engineering combined with chemical engineering has come forward to function for complementing and sustaining the material readiness. Good old tiresome and cumbersome methods of cleaning and maintenance will have to be dispensed with improved technology in this field.

AMMUNITION

Although there is a little scope for ammunition to be discussed in the article, it may be emphasized that without modernising the ammunition trend, the multipurpose weapon-concept remain blank and unworthy. There are the concepts of Duplex, Triplex bullets, caseless ammunition, ammunition with time fuze and HE, precision guided munition (PGM). All-in-one system, though seems to be imaginative, can be brought to the existence by the experts for increased probability of hit factor, lethality and incapacitation.

STANDARDISATION/RATIONALISATION

Realising the economic and operational problems of a hodge-podge weapons population, standardisation and rationalisation of Service Small

Arms as well as ammunition is essential. Today standardisation is even more critical than before. Aside from the obvious issues of costs of production facilities, training, maintenance, ammunition, supplies and parts inventory, defence concept envisions joint service task forces a routine, we now have the reality of Rationalisation, Standardisation and convertibility. We should have a joint service Small Arms programme as is launched in other countries to harmonise the design, development, test, evaluation and introduction. To-day's threat is analysed by examining enemy weapon capability in terms of range, lethality, reliability and success of enemy countermeasures. Age is a factor when existing weapons inventories are depleted or in poor condition, leaving insufficient serviceable arms and therefore, the concept of multipurpose weapon system as described in earlier paragraphs will be a final decision and solution to the joint services for their present and future needs. Special requirements which cannot be satisfied with a common system are also identified for separate development. One of the most significant state may be to standardise the HMGs, having only one type of HMG to be used in various roles, i.e. in Tanks, with MBT, APCs, Icvts, air-crafts, and in mountings for AD-role. The rationalisation of HMG family in one calibre advocates for use of standard ammunition to meet the manifold requirements of the Services. Like this standardisation can be thought of in many fields.

QUALITATIVE REQUIREMENTS

With the era of sophisticated technology, modern trends as described above, not only need qualitative requirement in 2000 AD but also being highly sophisticated in nature demand a thorough knowledge in chemical engineering, power engineering, electronics, plastics, gunnery (ballistics), explosives and knowledge in metallurgy. The system of multipurpose tooling, gauging and highly sophisticated instrumentation will play a big role in assessing the quality of future Small Arms. The complete concept of present proof of weapon system will have to undergo a drastic change for testing sophisticated weapons. There may be complete simulation in laboratory level itself for complete modernisation and dynamic re-orientation instead of taking weapon system to any good proof range. Presumably, all the testing procedures may be computerised, which may result in a highly accurate and protectable fool-proof technology.

CONCLUSION

Small Arms, inspite of increased use of sophisticated technique, will continue to be most effective fire arms in any form, irrespective of any

warfare. Even in the nuclear warfare without Small Arms, there will be no defeat or success. With the increased technology in modern materials and electronics, all dreams of Science fiction and improvements are coming to light. Laser, MASER, computer and conceivable combination of ammunition system are going to make a momentum in 2000 AD, a very interesting stage in making an effective system in modern warfare. Hence, a great deal of thought have to be induced to this field from now only, so that we are not left behind in the world. It is now upto the DRDO to take up such challenging assignments and move to the new world of Small Arms and realise whatever the various trends that are happening in various designs and concepts in Small Arms and try to adopt the same with a futuristic outlook in all our Projects keeping an eye on the budget.

ON MOTIVATION

COLONEL R. D. PALSOKAR M. C. (RETD)

WHAT motivates a soldier to fight? Does he fight to earn his pay or is it a matter of honour to him “not show his back to the enemy”? Or, is it for his regiment or for his nation that he knowingly accepts risks that may cost him life? There is an oft-repeated cliché that there are no bad troops; only damn bad officers, implying that soldiers always fight well—they have only to be well led. Some say that officers and men fight for a cause; they have only to be convinced that their cause is the right one.

History gives answers to many of these questions, some quite contradictory to one another. The most interesting period in history to examine would be the last quarter of the eighteenth century when officers of the East India Company conquered large parts of Indian territory with the help of locally recruited sepoys. How did the officers of John Company motivate the sepoys to fight their own kith and kin? It should be noted that there was nothing common between the officers and men. They spoke different languages, and followed different customs and practices. Were the officers imbued with the spirit of empire building, and were they specially selected and trained for their tasks ahead? It would appear from the results obtained by them that they were the paragons of virtue. After examining their service conditions and taking a look at the way their minds worked, it is proposed to inquire into the reasons that prompted the sepoys to take up arms against their own people.

By 1775, the three presidency armies of Bengal, Madras and Bombay had come of age. Clive had raised the first sepoy battalion in 1757, won the battle of Plassey that year and soon advanced north-west along the Gangetic plains. By 1763, when the twenty-year war with the French ended, the Company had become the master of Bengal. It had come to rely on the sepoy battalions and used its European infantry sparingly as reinforcements for it were hard to come by.

The sepoy battalions were commanded by captains who were assisted by two other officers per battalion. They were a lieutenant who was

the adjutant and an ensign who functioned as a quartermaster. Each company there were ten to a battalion, had one sergeant with it. The three presidency armies were commanded by colonels. It took thirty years or more to attain that high rank in the Company's service. A well connected officer rose to the rank of general. In 1784, there were only ten colonels and thirty lieutenant colonels in the three presidency armies put together. They commanded a force of 116, 110 rank and file in 1783. If more officers were needed, the Company sanctioned more posts of lieutenants and captains. Promotion was so slow that lieutenants had to wait generally for fifteen years before they picked up the next higher rank. One officer became lieutenant colonel after 48 years of service. Promotion was strictly on seniority and many an incompetent officer rose to the rank of colonel.

Cadets joined the Company's army to make money in India and take back enough to live in England comfortably after retirement. There was no pension for them. Clive had started a pension funds, but the fund's resources were small and catered only for the needy. The pay was small but allowances were liberal. Officers earned double batta if they went out of the Company's territory. Then there was the bazar fund to which were credited the profits from the sale of spirits and opium. The earnings of the fund were the additional income of the commanding officer. Another source of income was the "off-reckoning fund". It was the difference between the stoppages from the sepoys for their clothing and the actual cost of clothing. This money was shared by the field ranks and the senior-most captain. Prize money or the share of the loot was another major source of income. The average income of a colonel was £7000 to £8,000 a year. If the officer lived long enough despite the disease and harsh climate, he hoped to take back enough money to live comfortably in England. But the mortality rate was very high indeed.

The Company's officers were professionally competent. They saw more service in India than their counterparts in the British Army. Yet they ranked below the British Army officers of the same rank. As promotions could be bought in the British Army, it was not uncommon for an officer of seven years service to become a lieutenant colonel and order about a Company's officer of his rank who had put in more than thirty years service.

The officers of three presidency armies were a varied lot. Some like Clive started their career as writers and a few came from the British Army. The cadets had to pay the directors some money to join the Com-

pany's service. Though the officers hoped to return to England after making a fortune, many died in India and most returned in broken health. They could not return to England without resigning their commission. If the Company granted them leave, they remained on half pay till a vacancy occurred in their rank. Since an officer did not retire because of age, ill health, or gross incompetence, promotion which was on strict seniority within each arm within a presidency was very slow. Only about one percent officers lived long enough to reach the rank of colonel. Once having come to India, the majority considered themselves as permanent exiles condemned to die in this country.

The Company had a number of foreign officers and Eurasians in its service. They too were as unhappy as those who came from England. The main causes of dissatisfaction were their status and prospects and their relations with the British Army units which by 1782 had numbered to nine regiments of infantry and one of light dragoons. The officers often conveyed their dissatisfaction to higher authorities and resorted to trade union practices of striking work. More than once they mutinied though none was blown away from guns.

Till the middle of the eighteenth century the East India Company followed the general practice of recruitment then in vogue in the country. It depended upon contractors to provide the armed men, and paid the men through the contractors. The contractors commanded the men and maintained discipline amongst them. The Mughal emperor depended upon his *mansabdars* who were authorised by him to provide from twenty to seven thousand troops. The *mansabdar* paid the men from the revenue of the land allotted to him. Most of these title holders seldom maintained the force they were authorised to keep, and some did not keep even a handful. The men were paid for eight to ten months in a year. The salary was around Rs 5 per month, often in arrears. When a sirdar was called up for service, he often promised to pay his men at the end of the campaign not only the pay but also part of the arrears. If the sirdar was killed in action, his men left the battlefield because there was none to pay them after his death.

In 1755, the Company laid down the proper establishment of a company and recruited men directly to fill its ranks. The men served the East India Company henceforth; not individual contractors, sirdars, or Company's officers. The Company paid a salary of Rs 6 per month. Though the salary was small, it was paid *regularly*, and the men were conscious of the fact that they were the Company's servants.

The sepoys in the Company's service in the Bengal army were recruited from amongst the higher castes in Bihar and Uttar Pradesh. The emphasis in the Bengal army was on higher caste and good looks. In the Madras and Bombay armies, the men came from all castes though the majority was from lower castes. There was one thing common amongst the men. They were landless people. The landed gentry did not join the Company's service those days. It was after the majority of the princes signed the "treaty of perpetual friendship" with the East India Company around 1818 that the princes and landed zamindars took up arms on behalf of the Company. The landless had no source of income except to find work as ordinary farm labour. This was seasonal and payment was in kind. Cash, even a rupee, was hard to come by. Soldiers were in demand, and the young who could wield a sword joined the services of one or the other prince. Since the Company paid salaries regularly and was seldom in arrears, they preferred to join its army.

If the officers were mercenaries, the sepoys were no less. They too looked forward to regular pay, share of the loot money however small, and wore their uniform with some pride. They were governed according to certain rules and regulations. This was new to them. These rules did not depend upon the whims of their officers but were approved by someone above them. They were treated sternly but impartially. They did not understand their immediate masters and were afraid of them and their strange ways. But they perfectly well understood that if they obeyed their officers, they seldom lost a battle with the new weapons that they were issued with.

Discipline was strict. When the sepoys noted that their officers mutilated and got additional pay and allowances, they too attempted to copy them on more than one occasion. Whereas the officers were not blown away from guns the sepoys were.

The Company instituted a widows' fund for the sepoys. When the sepoys went overseas in the service of the Company, arrangements were made to remit part of their pay to their families in India. The disabled soldiers were paid a pension from the widows' fund.

The Mughal army was not predominantly muslim. It had in its ranks Muslims and Hindus of all classes. The Maratha army depended upon the Marathas to fill its ranks. But it had Rajputs, Baluchis, Rohillas, Arabs, and even Abyssinians also on its pay roll. The class composition of the three presidency armies is referred to above. Basically, the men served

their masters irrespective of their religion, caste or creed. There was no sense of nationalism that guided their choice of masters. This was not peculiar to Indians alone. It was the same with the European troops and officers in the Company's employ. There were many foreigners amongst them as well.

On joining the Company's service, the men were required to take an oath to serve the Honourable Company faithfully and truly against all their enemies, and never to forsake the Colours. This was a common practice those days in the Mughal and Maratha armies as well. If there were instances of soldiers remaining true to their oaths, many more could be cited when they conveniently or deliberately forgot them. If anything, it was quite a common practice to go back on the oath, particularly amongst princes. It was an accepted norm in the name of 'diplomacy'.

The Colours were the emblem of military honour to the sepoys so long as they were held aloft. One the commander was killed, the Colours proved a rallying point if only another strong leader came forward to defend them. The regimental spirit was non-existent. It was deliberately fostered in the sepoy battalions with appointment of colonels of the regiment at a much later date. It was after the reorganisation of the Indian Army in 1922 that this term assumed its present meaning. During the period under discussion, the term regiment was used for an infantry battalion as well.

It was mentioned above that the notion of nationalism was missing then. In fact it had died practically with Shivaji. A few years after his death, men fought to hold on to their property. Even in modern times, this notion can be interpreted to suit certain aims. For example, at the time of partition of India, a section of Muslims thought in terms of Pakistan as their nation. During 1971, Bangladesh was born because of change of concept of what a nation was. In a future conflict, who knows what it would come to mean? Neither the sepoys nor their adversaries of the late eighteenth century fought for any nation. The sepoys and their officers fought for earning their pay and allowances, and their adversaries to retain what they owned. The 'cause' for both sides was money, riches and real estate. No cause was greater than that secured bread. This was not peculiar to India. The French revolution of 1789 owes its origin to the exploitation of the peasants by the monarch, his nobles and the clergy. The women of Paris led a procession to Versailles to protest against the high prices of bread. The peasantry had become landless. It was this landless peasantry that brought out the revolution. The Russian

revolution of 1917 may be cited as another example of the change of values when landless peasantry is involved.

During this period of Indian history and even during later years till the end of British rule in India in 1947, the higher commanders made much of the bravery, courage and loyalty of the sepoys. Even when they lost battles, they praised the steadfastness of the sepoys. When the Bombay army lost the battle of Wadgaon against the forces of Mahadaji Scindia in January 1779, the Committee of Negotiation "loudly extolled the conduct of the rearguard (of sepoys) which was compared to a red wall, no sooner beaten down than it was built up again". When Tipu Sultan obtained the surrender of the garrison at Mangalore in January 1784, the Bombay Government published a general order in which it talked of "the most steady and exemplary valour and discipline" of the sepoys. Earlier, Coote and later Arthur Wellesley, and many others constantly praised the sepoys for their valour in battle. This is to belittle the bravery of Indian troops, but more to bring home the point that senior commanders tried to keep up the morale of the sepoys by telling them over and over again that they fought well under their leadership.

The French were the first to train sepoys and use them in battle. But they did not pay the soldiers regularly. Over a period years, the sepoys served their English masters better than they did the French. Insofar as French officers were concerned, they should have been a better lot than the British as the latter copied the French in matters of training, tactics, dress and so on. The French and the Prussians were the pace setters those days in Europe in all matters military.

It is made out that Indian soldiers fought for honour and *izzat* under the British. They preferred death to "showing their back to the enemy". This sort of analysis is most pleasing to read especially when it comes from a British author. But it does not stand either the test of history or logic. There are many other reasons and extenuating circumstances that lead to such cold display of courage. In the First World War, British, French and German soldiers laid down their lives deliberately as it were when serving under their own officers. The slush and mud of the trenches, the constant stench of dead bodies, the deadly accuracy and intensity of machine-gun and artillery fire, the near certainty of grievous wound or death—none of these made any difference to the soldiers as they died in hundreds of thousands. There was certainly something glorious for which they were fighting. The Indian sepoy was not fighting for his nation. On the contrary, he fought his own people to subjugate them under an alien rule. And as brought out above, his officers were not the considerate, good hearted types. The bond between him and

his officers was that of the helpless servant and his tough master. Once having joined the Company's service, he was bound by the Company's law which prescribed death for desertion. Living conditions outside were no better. To say then that he fought for his honour is hypocrisy.

Individually the sepoy was loyal to his master. Loyalty of a group becomes impersonal. It does not depend on personal relationship between two individuals. Loyalty also begets trust. Individually again the sepoy trusted his officer and vice versa. Collectively, they did not trust one another. The Company maintained a certain proportion of British troops in India, mainly to act as a check to the sepoys. This practice was followed by the British till 1947. One of the main reasons for their quitting India was that they were not certain of the continued loyalty of Indian troops, particularly after the end of World War II.

To summarise, the British conquered most of India during the last quarter of the eighteenth century with the help of officers who were mercenaries, self seeking, avaricious, corrupt, thoroughly dissatisfied with their service conditions in India, and prone to resort to trade union practices to obtain more pay, more allowances, and greater share of loot money. They were professionally competent, and their employers—the Honourable East India Company paid them their dues regularly though grudgingly. They were not well disciplined themselves but they did instil strict discipline in the sepoys whom they taught to obey their order by constantly drilling them and punishing them mercilessly when they disobeyed them. The sepoys came from landless peasantry. Living conditions in the villages were so harsh that they were prepared to serve any master so long as they were paid regularly. The Indian princes and *mansabdars* paid them inadequately and irregularly, and often not at all. So they turned to the Company which, in addition to pay, provided certain *security* to them and their dependants. Although senior British commanders praised the sepoys for their bravery, loyalty and other soldierly qualities, they did not trust them.

Notions of nationalism, honour, loyalty change with the times. With the development of communications in modern times, passions of people can be aroused and they can be influenced to change their notions. These become ideas which mean one thing to some and quite the opposite to others. In times of stress, these are exploited to the advantage of those who are in a position to offer security and better future to the people.

The conclusion from past history is: Pay the soldier well, let him feel secure in the service, give him an identity to be proud of, and keep him and the peasantry contented. These are primary factors to motivate him, others may be called variables.

THE AVENGING OF SHAH ALAM

LIEUT. GENERAL S. L. MENEZES

HC Fanshawe in "Shah Jahan's Delhi—Past and present" (1902) records, "...in less than twenty years Ahmad Shah the Pathan sacked Delhi for a second time, and when after the defeat of the Marathas at Panipat, he placed Shah Alam II, on the throne, that Emperor was absent from Delhi, and did not come back till ten years later. From his return, he reigned for over thirty years, wholly the puppet of various ministers and of the Marathas; and popular distich—

'Badshah Shah Alam
Az Delhi ta Palam'
'King Shah Alam (Monarch of the World)
From Delhi to Palam'

overstates the extent of the effective Imperial authority of the time rather than understates it."

Fanshawe does not mention the blinding at Delhi of Shah Alam, but W. Francklin does in his "History of Shah Alam" (1798), and reproduces the elegy composed by the Emperor after he had been personally blinded with a poignard by Ghulam Kadir Khan, the Rohilla (Afghan) chief of Saharanpur, in collusion with the Emperor's Nazir (Superintendent of the Household), Mansur Ali Khan. The free verse translation by Franklin is worth reproducing in full as a record of the pathos in the life of a Mughal Emperor of that time (the first six lines of the translation are an addition and not the Emperor's own composition):

Where with bright pomp the stately domes arise,
In you dark tower an aged monarch lies,
Forlorn, dejected, blind, replete with woes,
In tears his venerable aspects shews;
As through the lonely courts I bent my way,
Sounds struck my ear, which said, or seem'd to say,
"Lo, the dire tempest gathering from afar,

In dreadful clouds has dimm'd the imperial star;
Has to the winds, and broad expanse of heaven,
My state, my royalty, and kingdom given;
Time was, O King, when clothed in power supreme,
Thy voice was heard, and nations hail'd the theme;
Now sad reverse, for sordid lust of gold,
By traitorous wiles, thy throne and empire sold.
See yon fierce Afghan with intemperate haste,
Gleams like a meteor through the palace waste,
Frowning, terrific, threatens with a grave
Thy progeny, O Timoor, good and brave.
Yet, not the treatment from th' inhuman foe,
Not all my kingly state in dust laid low,
Can to this breast such torturing pain impart,
As does, O Nazir, thy detested part;
But tho' too late, the day of reckoning come,
The tyrant whom thou serv'dst has seal'd thy doom,
Has hurled thee, rebel, headlong from the height,
Of power abused, and done thy sovereign right:
Chaste partners of my bed, and joys serene,
Once my delight, but now how changed the scene!
Condemned with me in plaintive strains to mourn,
The scanty pittance, from our offspring torn!
The viper, whom with fostering care I nurst,
Deep in my bosom plants his sting accurst;
Riots in blood, and heedless of his word,
Pants for the ruin of his sovereign lord,
Nobles ingrate, upheld by power and pride,
To whom our favours never were denied;
See to what misery and dire disgrace,
Your perfidy accursed, has brought a royal face:
Bright northern star from Kabul's realms advance,
Imperial Timoor poise thy avenging lance,
On these vile traitors quick destruction pour,
Redress my wrongs, and kingly rights restore;
Thee too, O Sindiah, illustrious chief,
Who once didst promise to afford relief;
Thee I invoke, exert thy generous aid,
And o'er their heads high wave the avenging blade,
And ye, O faithful pillars of my state,
By friendship bound, and by my power elate,

Hasten, O Asaf, and ye English chiefs,
 Nor blush to sooth an injured monarch's griefs;
 But stay my soul, unworthy rage disown,
 Learn to sustain the loss of sight and throne;
 Learn that imperial pride, and star clad power,
 Are but the fleeting pageants of an hour;
 In the true crucible of dire distress,
 Purged of alloy, thy sorrows soon shall cease;
 What! though the sun of empire and command,
 Shorn of its beams, enlightens not the land;
 Some happier day, a providential care,
 Again may renovate the falling star;
 Again O King, raise up thy illustrious race,
 Cheer thy sad mind, and close thy days in peace."

The 'Imperial Timoor' whose aid was sought after the blinding, and to whom the elegy was sent, was Timur Shah, then King of Kabul on his father Ahmed Shah Abdali's death, and who had been married to a princess of the Mughal royal family, themselves descendants of the earlier Timur, during the Abdali's last capture of Delhi. Their son, Zaman Shah, became thus a claimant to the Delhi throne.

The 'Asaf' appealed to was Asaf ud Daula of Oudh, Wazir of the Mughal Empire, who was at Lucknow. The Madhoji Scindia was the Amir-ul-Umra, who being unaware of the Rohilla Chiefs and the Nazir's intentions had withdrawn in 1787 to Gwalior to await Maratha reinforcements from Pune.

As to the events leading to the blinding of the Emperor, Franklin comments, "In these acts, Ghulam Cadir exhibited the symptoms of the diabolical spirit which designated the actions of his life. To him it was reserved to disgrace the house of Timoor, and to add the last outrage to the miseries of a long and most unfortunate reign" On Madhoji Scindia's withdrawal to Gwalior in 1787, Ghulam Kadir Khan was able to win over the Nazir, Mansur Ali Khan, who had been a confidante of Shah Alam from his earliest youth.

H.G. Keene records in "Hindustan under Free Lances 1770-1820" (1907), "The crimes of the Rohilla Nawab were a combination of treason, greed and cruelty, but their peculiar atrocity shocked the conscience of an age that was not squeamish. When he brutally asked the Shah, whom he had blinded, what he was looking at, the sufferer replied,

'Nothing but the word of God between me and thou' for the miscreant had (earlier) sworn on the Koran to protect and serve his helpless sovereign."

Francklin continues, "The supineness of the Maratha Government (at Mathura) during the late disgraceful transactions has been deservedly reprobated, and is difficult to be accounted for on any principle of policy or advantage to the State. Indeed, the unhappy monarch, from a strange combination of circumstances, seems to have been forsaken by all his friends when he most needed their assistance, and it is much to be regretted that the state of British policies at that time did not admit of interference on the part of his old and, till now, faithful allies. Sindiah, when informed (at Mathura) of the late tragical events, ordered his general, Ranah Khan, to march forthwith to Delhi, expel the traitor, and liberate Shah Alam from his confinement. Those orders were obeyed with a willing alacrity by Ranah Khan. . . . Delhi was captured, but Ghulam Kadir Khan fled to Meerut, Meerut was captured, and he fled again, but was recognized, seized by some villagers, and handed over to the Maratha general. Francklin continues, "Ghulam Cadir, on his arrival in the Mahratta Camp, was carried into the presence of the General; when, after repeated demands to discover the place where he had deposited the plunder of the palace, and his refusing to comply, he was delivered over to a punishment terrible indeed. He was first placed in an iron cage, constructed for the occasion, and in this situation was suspended in front of the army. . . his nose, ears, hands and feet were cut off: and in this mutilated and miserable condition, he was, by order of Ali Bahadur (another of Scindia's generals) sent off to Delhi; but, on the journey, death relieved the miserable wretch from his sufferings, thus dreadfully atoning for the crimes of his savage and abandoned life! The Nazir. . . was trodden to death under the feet of an elephant. . . ." By Scindia's orders, Ghulam Kadir Khan's mangled body was laid before his sightless victim.

After these events of 1788, Francklin had an audience with the Emperor Shah Alam in 1794, and records, "...Shah Aulum nominal Emperor of Hindostan, is in his 75th year. His stature tall and commanding, his aspect dignified and majestic. . . the recollections of his misfortunes have impressed his features with melancholy. . . he is universally allowed to be an affectionate parent, a kind master and a generous patron. . . it may, without injustice, be pronounced, that, though Shah Aulum possessed not a capacity sufficiently vigorous to renovate the springs of a relaxed government, . . he unfortunately reigned at a time when the royal authority was in its most degraded state. . . ."

And what of Madhoji Scindia? H.G. Keene records, "Having restored the blinded Shah to titular sovereignty, the great Maratha became the actual director of administration, and peace and order returned to the affected land. Forty or fifty years ago old men still spoke regretfully of those halcyon days. The introduction of British rule, with its sure and inflexible methods, had for sometime the effect, however curtailed, of interrupting this welfare and producing a contrast. . . it was not to be wondered at if the people sighed for the days of Scindia and his French subordinates. . ." W. Francklin is as categorical, "At the close of 1793, . . . he was suddenly seized with a distemper, which terminated his existence at the age of sixtyseven. . . had his life been extended, he would, in all probability, have been a formidable antagonist to the interests of Great Britain, whose rulers were not unacquainted with his active spirit. . ."

EARLY BRITISH MANOEUVRES IN THE NAGA HILLS

MAJOR K. BRAHMA SINGH (RETD)

THE last of the invaders of Assam were the Ahoms who entered Assam in about 1220 AD. The Ahoms were an off-shoot of the great Tai or Shan race, inhabiting the northern and eastern hill tracts of Upper Burma and Western Yunan. As time passed the Ahoms came more and more under the influence of Hinduism and adopting Hindu way of life and Hindu names, they totally merged with the locals; ultimately severing all contacts with their original homes. During the 600 years of their rule they made Assam strong, and besides holding sway over the local rajas and chieftens and affording protection to the country from Moghul invaders (1615 to 1665), the Ahoms were also able to tame the hill tribes (particularly the Nagas) and thus put an end to their raids in the plains. Decay in the authority of the Ahoms, however, set in by the end of the 18th Century, and by the time Gaurinath Singh came to the throne in 1780 insurrections and revolts had begun to raise their heads in various parts of the country. In 1792 the wide spread Maomaria rebellion assumed such a threatening posture that Gaurinath Singh had to appeal to the British for help. The rebellion was soon crushed with British help in the form of six companies (each 60 strong) under Captain Welsh, but this also paved the way for the ultimate British take over of Assam.

Fresh opportunity for the British intervention in Assam came in about 1819 when the Ahom king Chanderkant Singh was deposed as a result of a court conspiracy. In order to regain the throne from his usurper, Purinder Singh, Chanderkant requested the Burmese for help but when the Burmese refused to vacate the country after installing him on the throne, he was compelled to ask for British help in evicting the Burmese from Assam. The Burmese were finally evicted from Assam in 1824 but for Chanderkant the exercise proved to be like falling from the frying pan into the fire. The British now decided to retain political control over the region and, in their characteristic manner, they handed over the country to its various rajas and chieftens after securing their allegiance to the

East India Company, while major portions of Assam which was ruled directly by the Ahom king were brought under the direct rule of the Company pending settlement of rival claims of Chanderkant and Purinder Singh to these areas. The question of restoring these parts continued to be discussed till as late as 1833 when it was decided that only a portion of Assam be handed over to the native ruler. Purinder Singh was preferred to Chandrakant Singh and whole of upper Assam except Sadiya and Matak (which were under their respective chiefs) was handed over to him while the British retained the lower portion comprising of what were later to be known as Golpara, Kamrup, Darrang and Nowgong districts. Cachar had, of course, been annexed one year earlier "in compliance with the frequent and earnestly expressed wishes of the people". Two years later the same pretext was used for annexing Jaintia and, thus, started a series of annexations. Purinder Singh was pensioned off just after 5 years of his rule over upper Assam in 1838. Sadiya and Matak were also annexed about the same time. With this process the whole of Assam gradually passed under the British rule.

Whatever other views one may have on the procedure adopted by the British for the annexation of Assam, there is little denying the fact that immediately on taking over the territory, they gave it sound administration and consequently brought peace and stability to this troubled area. With the peace and stability, came its economic growth. The tea industry started by Mr. Bruce in the first tea garden at the mouth of the Kundil river near Sadiya about 1832 spread all over Assam and Cachar. Coal and oil were discovered, while the forests were found to be a source of valuable timber produce and with improved communications Assam gradually became a very different country from what it was in 1826.

In the initial stage economic growth of Assam was however, threatened with a peculiar danger; that of transfrontier forays. Most of the tribes inhabiting the mountain region were in those days absolute wild and they came sweeping down the hills into the plains for arson and pillage. These raids besides breaking the peace of the British held territories, seriously threatened the tea industry.

The only effective method of stopping these marauding raids was considered to be by retaliatory incursions into tribal territory. But for such small expeditions regular troops were found to be too elaborate and costly an instrument. A requirement for a police force that could perform military functions with minimum logistical and consequently financial

backing was, therefore, felt and thus originated a Cachar Levy that over the year ultimately developed into the present fine force of the Assam Rifles. Although initially it was mainly on financial grounds that this force was created, the consequential tactical mobility that it attained made it the most suitable and effective force for dealing with the light footed tribal. Besides this tactical mobility, the force, over a period of time, acquired a specialised knowledge of the ground, the tribals and their tactics, so vital for conducting military operations in these areas. No wonder that this military police played important roles even when larger expeditions with regular troops became necessary. Later when the process of annexation of tribal territories was started this force not only contributed materially towards the actual annexation of these territories but also towards their consolidation by holding posts deep within, and affording protection to the civil authority right upto the remotest corners of tribal areas.

The first unit of the new organisation-The Cachar Levy was raised by Mr. Grange, in civil charge of the Nowgong district during 1834-35. The strength of the Unit at the start was 750 all ranks viz. Inspectors, head constables and constables. The duties of the Cachar Levy were to guard the then eastern frontier of Assam from the Brahmaputra river to Cachar, supported at each end of this line (some 250 miles) by strong detachments of troops at Nowgong and Silchar. In between and along this line, which ran many miles through the great Nambhor Forest near the foot of the Naga hills, and through the North Cachar hills to the plains of the Surma valley east of Silchar, the Cachar Levy held posts at Borpathar, Dimapur, Mohun Dijoa, Mahurmukh, Hosang Hajoo, Mailong, Guilon, Goomaigajoo, Hangrung, Baladhan and Jirighat. At Asaloo (16 miles east of Haflong) a small administrative Headquarters was established in 1845. Thereafter the Levy's strongest detachment was located here. All these posts were in the heart of dense forests and among hills; path connecting which got blocked with thick undergrowth. The Cachar Levy had, therefore, to carry out constant patrolling along these paths as much for intercepting the marauding tribals as for keeping them clear of the undergrowth. Most of the unimportant posts gradually fell into disuse and consequently the places completely disappeared from the map, but the important ones like Dimapur, Mailong, Mahurmukh and Asaloo that lay on the routes most used by the Nagas for trade, or raids into the plains, still remain.

Due to the external threat of the Burmese and possibly from the Chinese the other portions of the border in the north and north east continued to be guarded by the troops for many years more.

There are very few records of the earlier existence of the Cachar Levy. Whatever records there are show that life for them was often solitary and monotonous, cut off as they were from civilisation by long distances and difficult country. Their occupation lay in constant patrolling in between posts to their left and the right, in parties of four to ten depending on the strength of the post from where they were taken out; in keeping their posts in a complete state of repairs and readiness in defence; in escorting ration or treasure parties; in sending assistance to neighbouring posts; or in acting on information regarding impending or an actual raid in their area of responsibility.

The European officers in command could hardly visit these posts once a year, if at all, due to the spread of these posts and their preoccupation with district work. The junior Commanders had, therefore, to act mostly at their own initiative. Due to poor means of communications with their Headquarters, many small actions by these junior commanders and their men went unrecorded and unnoticed and it is most likely that many incidents of gallant service by the men went unrewarded. There is, however, no evidence of any frustration among the men on this account. They appear to have psychologically fortified themselves by treating all good work as part of their duty.

As the British got more and more involved with the tribals, they got convinced that the permanent solution to the tribal problem lay in annexing their territories. The greatest need was felt for extending British influence over the Nagas. As a prelude to the final annexation of this territory the British wanted to start exercising their influence over the tribe before someone else did. So in 1838 when the British got wind of the intention of the Raja of Manipur to bring the Naga hills permanently under his rule they decided to enter Naga hills first and lay some sort of claim over the territory. Thus started some stirring and interesting times for the Cachar Levy under the command of Mr. Grange who has been called the: "Father of Frontier Police."

The strongest and the most trouble-some of the Naga Tribes in those early days were the Angami Nagas from Mozema, Khonoma, Jotsoma, Kohima and Kekrima Villages. All these villages containing 700 to 800 houses each, were well defended. The nearest to the British Border and also the most influential ones were Khonoma and Mozema. It was these two villages which for a long time were the principal offenders for breaking the peace of the border by raiding into the districts of Nowgong and Cachar. The British decided to put an end to all this by

punishing the offending villages. Consequently Mr. Grange was directed to conduct the first expeditions into the Naga hills to make the British presence felt in this area. In January, 1839 therefore, Mr. Grange set out with 50 men of the Cachar Levy and a small detachment of 1st Assam Light Infantry. He marched via Daboka to Mohun Dijoia, and reached Berema by entering southern Naga hills via Semkhor and Henema. There was no actual fighting enroute but hostility was evident all the way. On one or two occasions there was a little firing but the Nagas generally remained elusive striking only during unguarded moments. A number of men were speared and killed while out singly for water and two sentries were stalled and cut down at night. This together with sickness in the higher ranges, weakened the small force by the time it reached Berema. Feeling not strong enough to move against Mozema to punish that village Grange decided to instead summon the 2 Headmen for talks. The headmen took an oath not to molest British villages again. The oath was taken in the tribal manner by the headmen holding one end of a spear while Grange held the other. The spear was then broken in the middle. Thereafter Grange left the Naga hills via Jalookama, Samaguting, Dimapur without involving himself with the Nagas any further.

After this first expedition the Government now took the line of visiting Naga hills annually to meet the Naga headmen, as a means for acquiring influence and power over the clans and thus frustrating Manipuri designs. Consequently in 1840 Grange was again deputed to enter the hills. This time he was also to meet a deputation from Manipur State to discuss the boundary and also for seeking their cooperation when the Nagas gave trouble.

Having learnt a lesson from his first expedition, Grange set out with a stronger force this time comprising of detachments of the Cachar Levy and 50 men of the Assam Light Infantry. Some of the Jorhat Militia, were utilised for securing Samaguting which did not appear to be very friendly then. The force marched via Raziphima, climbed the western slopes of the Barail range through Lemhama and Chama, over the Poana ridge and crossing the Zulhein valley reached Paplong hill where they were to meet the Manipur delegation. Grange waited here for a few days and as Manipuris failed to arrive he marched further up for 2 days to Togwema hoping to meet the delegation there. Here he came to know that the Manipuris had come upto this place and not finding him had turned back. He also found here that contrary to earlier beliefs, the Angamis evinced great hostility towards Manipur which suited the British fine.

Grange now turned back towards Khonoma. He had had no trouble so far but as soon as he started up the Typhini valley the Nagas began attacking him. Series of fight ensued and the column was much harassed and the march interrupted, with Nagas setting fire to the long grass and rolling rocks down the hill side on to these men. The force, however, reached Chakvema village which it attacked and destroyed. Three other villages were punished similarly but there was no let up in Naga attacks on the column. The biggest ambush was laid by them near Paplongmai. A fierce fight took place which continued right upto village. The village was then destroyed with all its grain and property. In this fighting both sides suffered heavy casualties. Eleven prominent Naga leaders were captured.

Without having been able to reach his objective Grange withdrew to the plains in mid March 1841. He had been compelled to do so because of the large number of wounded that his force had suffered. Leaving his wounded at Dimapur he re-entered the hills to punish the nearer villages of Piphema and Sephema for having joined in the earlier attacks on his force. After two short skirmishes both the places were destroyed.

Although much had been achieved by the expedition by way of impressing on the Nagas the futility of fighting against the superior arms of the British, the British too has learnt their lesson, that the Nagas even though armed only with spears, dhaos and a few muskets were by no means a foe to be despised. As a matter of fact routine annual visits to the hills were now considered not worthwhile and henceforth, while visits to hill areas not far from the border were made with some regularity, deep thrusts into tribal territory were made only when necessitated by Naga actions.

Between 1841 and 1845 only 2 routine visits into the hills were made by Lieut. Bigge and Captain Eld, who followed Mr. Grange as civil officers in Nowgong one after the other and consequently in command of the Cachar Levy. Neither, however, penetrated far into the hills. During these visits not far into the Hills agreements were made by various Naga leaders with the Government but these they never kept. In a bid to induce the Nagas to a healthier occupation of trade with the British Lt. Bigge opened a salt depot at Dimapur. During this period there were also two punitive outings into the hills. One, a very small one, was led by Captain Eld himself but was of little consequence. The other was necessitated in 1844 when the Levy post at Hosang Hajoo was attacked by some tribals causing considerable loss of men and mate-

rial. The responsibility for the raid having been traced to the villagers of Asaloo assisted by those of Mozema, Mr. Wood, Sub. assistant at Nowgong, with 70 men of the Cachar Levy and 50 of the Assam Light Infantry went over the border and burnt both the villages without opposition.

During the period 1841 to 1844 the North Cachar Hills area also remained in a disturbed condition keeping the Cachar Levy actively engaged for atleast an year and a half. Tularam Senapati whom the British had helped in acquiring a tract of land in North Cachar hills during the days when Cachar was under its Raja, laid his claim to the whole of Cachar at the death of the Raja in 1832. This claim had not been accepted by the British who had then annexed Cachar allowing Tularam to function as a mere "Jagirdar" in the North Cachar hills. Although Tularam outwardly accepted his new position, he had never been reconciled to it. As he now advanced in age he made his last bid at altering situation by letting loose his gangs and creating disturbed conditions for the British. These gangs were effectively dealt with by the Cachar Levy till 1844 when Tularam died. His sons who succeeded him were too weak themselves to be able to create any trouble for the British. This territory was finally annexed in 1854 and merged with the North Cachar sub Division.

As a consequence of these disturbances, Asaloo was decided on as a place from which these hills, so remote from Nowgong, would be administered. A small staff with a strong detachment of the Levy was, therefore, now located here.

Nagas dwelling south of Sibsagor, and who had been quite peaceful otherwise also began to create trouble in 1844. Captain Bordie had, therefore, to lead two minor expeditions into this area with his Jorhat Militia to enforce law and order. There does not appear to have been any fighting in either of these expeditions. It was now clear that blockade of their hills when trouble was probable was sufficient to make these tribals to see reason.

In 1845 Captain Eld was succeeded by Captain J. Butler as the Principal Assistant at Nowgong and as incharge of the Cachar Levy. This officer was ultimately to have the unique distinction of not only himself serving with the Cachar Levy for a continuous twenty years but also of having been succeeded by his son in the same appointment just after a gap of 3 years after his retirement. The Cachar Levy benefited the most from Butler's long and interrupted Command. He set into motion a number of schemes for the betterment of the Levy and then saw them

through to their successful conclusion. To start with he got for the Cachar Levy a uniform different from that of armed civil police which they had been wearing hitherto. They were now given black serge trousers and jackets with white metal buttons. The weapons and accoutrement were of the Waterloo days viz. the old muzzle loading Brown Bess musket with a long bayonet, two broad black leather cross belts supporting the bayonet on one side and a large expense pouch on the other; both kept from swinging loose by a black waist belt. A short sword attached to the belt was also carried for a good number of years untill about 1865 when the more useful Khukri was substituted in its place. For head dress the black *Kilmarnock* cap was worn. Native shoes, if at all, were worn. Spare kit and food etc were carried on the back in a bundle wrapped in a "chudder" (sheet) in the typical Gorkha fashion.

A change in the recruitment policy was also made by Butler. Nepalese, Kacharis and Shans were now enlisted in the Levy as being better men for hill and jungle work. However, the ranks continued to be known by their police titles.

Butler first visited the Naga hills in 1848. He went to Khonoma where he received tributes in the form of ivory and clothes. Oaths were taken at usual but never kept by the Angamis (again as usual). They continued off and on depredations into the plains. As a result of this a small permanent Levy post was opened in the hills at Samaguting. In the hope of stimulating trade with the tribals, and with trade bringing about peace, a market, was opened at Samaguting. To facilitate trade and also for maintenance of these posts, cart roads from Borpathar and Mohun Dijoa to Dimapur were opened in the same year. A bridle path was also cut to Samaguting. This British policy of conquering territories through trade was, however, not to succeed at least with the Nagas who took little notice of the bait and continued to harry the British as ever before.

When the new post and the market were completed, a capable Police officer, one Bogchand Daroga was placed in charge of Samaguting. This officer had been at Dimapur for some time and in 1847 had been sent to Mozema and Lokema with 40 men of the Levy to enquire into some acts of aggression committed by these villages. While returning he had been ambushed and it was with great difficulty and after suffering many casualties that he had managed to return to the plains. Now Bogchand as in charge Samaguting kept on representing for the establishment of a post at Mozema. His proposal was agreed to at last in 1849 when he was allowed to proceed to Mozema both for arresting some known offenders as well

as for establishing the sanctioned post. He set out for Mozeina with small escort of 22 men from the Levy and a party of friendly Nagas. The establishment of the post was agreed to by the headmen of Mozema village and they even ordered the villagers to start construction of stockades. However, there was a ferment when Bogchand arrested the wanted men. Feeling unsafe in the village Bogchand decided to postpone the establishment of the post and to only take away the much wanted prisoners this time. While he halted for the night at Piphema, he was attacked by a large number of Angamis. The friendly Nagas deserted him and as the ammunition ran out, he along with most of the 22 of his men was killed fighting on the spot. Those who escaped from Piphema were subsequently cut up in the pursuit.

News of the disaster reached Butler who considering an impending threat to the new post at Samaguting withdrew it to Dimapur. The outrage could not go unpunished and the Government sanctioned a punitive expedition into the Naga hills. To produce a better effect a military expedition under Captain Vincent with 150 men of the 2nd Assam Light Infantry and a detachment of the Levy was organised by the end of 1849 itself but this proved to be a failure. Captain Vincent fell ill and the expedition returned after losing large amount of stores at a camp to which the Nagas had set fire.

A fresh expedition was organised in March 1850. Vincent, Butler and Lieut Campbell now entered Naga hills with a stronger mixed force from the Assam Light Infantry, Cachar Levy and Jorhat Militia. Samaguting was set up as a firm base to support the expedition. The force attacked Mozema and Khonoma and burnt the two most troublesome "Khels". By now Butler had found that the Naga villages were not formed of an entire community working harmoniously together. It had been found that in a village there were always one or two 'Khels' who were prepared to help the British in their attacks on other 'Khels'. A policy of divide and rule had, therefore, been set in motion and only some "Khels" in a village, rather than the whole village, were now punished.

After this success, Vincent and Campbell established themselves in a strong stockade on the Bassoma spur overlooking Khonoma, in the great loop made by the present Jotsoma-Khonoma road. Using this as a firm base columns were sent out from here to punish more distant villages which were known to have been connected with the raids. Mozema village had been totally subdued so much so that the stockade was maintained only by their help but Khonoma continued to hold out and its hostility,

mounted as the force became weaker due to casualties and sickness. Determined to subdue Khonoma once for all, Vincent after several months stay in the stockade called for reinforcements. The reinforcement arrived in December 1950 under Major Foquett. It was a much stronger force comprising 500 men from 1st and 2nd Assam Light Infantry, 200 men from the Cachar Levy and the Jorhat Militia. Foquett moved straight up to Mozema leaving behind posts to keep the lines of communication open. Butler with more of his men also joined him enroute.

On 10 December making Mozema as its base the force launched its attack on Khonoma. By now Khonoma had been rebuilt and strongly fortified with loopholed walls round the perimeter of the upper portion of the village. There were also many barricades and "Sangars" at intervals, up the spur, making it a strong defensive position 700 yards in depth which was estimated to have been held by 5000 Angamis. The advance was resisted stoutly at every step and it was only after the guns opened up and battered the defences that the troops could move up the spur. Even then the Nagas made the troops fight for every inch that they gained on the spur. By night fall the Nagas were forced to abandon their lower defences and withdraw to the upper ones. Major Foquett harboured for the night over the captured ground and made preparations for the final assault. However, having realised the futility of fighting against such heavy odds the Nagas decided to give up without further fighting and abandoning their defences they slipped into the jungles during the night under cover of darkness. Next morning the village, reputed to be the strongest among the Angami clans was burnt and its defences destroyed. Of course, it was not the end of the story but so it seemed at that time. The total casualties suffered by the force were 36, and dead alone of the Nagas were estimated at 200.

The bulk of Major Faquett's force returned to the plains but Captain Vincent with 2 other officers, 250 men of the 2nd Assam Light Infantry and the Cachar Levy and 2 guns stayed back to make further tours and punish certain other villages which had assisted Khonoma. Jotsoma, Kohima, Kigwema and Kezuma were visited and punished appropriately with little or no opposition from these villages. All the villages in Mao area submitted except one which was destroyed. There was a little fighting near Kezuma.

An interesting incident took place at Kezuma which illustrates the state of mind of the Nagas in those days and their warlike qualities and how they treated war as a game. Here 2 Nagas from Kekrima met Captain Vincent and handed him over a challenge from their village to a fight.

Vincent showed them his guns but they were not impressed and in turn showed him their spears and Dhaos. The aim of the British at that time being to subdue the Nagas through a show of superior force, Vincent could not afford to decline the challenge, so he advanced towards Kekrima. He was continuously attacked all the way up to the village and when he reached near the village he found his way barred by a larger mass of Nagas arrayed in the manner of Macedonian Phalanx; rather an usual way for the Nagas to fight. The troops were received with hurling of spears and abuse but as the Nagas prepared to charge the guns opened up causing considerable casualties among them (estimated about 250). Even as the shells were bursting among them the Nagas made a heroic assault on the gun positions, but in vain, and they were forced to flee into the jungles. The village was then destroyed. The Nagas must certainly have sacked their general for this original but suicidal tactics and while the troops harboured for the night in the vicinity of their village, they reverted to their old tactics of snipping, stalking and stealthy attacks that suited them better. The troops suffered three killed and twenty wounded.

Having thus defeated the Nagas of Kekrima, Vincent made his way back to Kohima without facing any further opposition and after staying there a few days returned to the plains by March 1851.

For some time these operations in the Naga hills, which had lasted for about an year, produced a salutary effect on the tribes but in a year or two the Nagas were back to their form again. The Government, unwilling to incur further expenses of Military expeditions, readily agreed to Major Butler's (since promoted) views that the tribals be left alone. Consequently Mozema, Samaguting and Dimapur posts were withdrawn and the frontier line withdrew to its original position; Borpather and Mohun Dijoa becoming once more the advanced posts. This policy continued for the next 12 years and all these years the emboldened tribals raided the plains at will.

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