

WEAPONS AND EQUIPMENT FOR EASTERN THEATRES*

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This is the second time that I have been asked to talk to a convention of Defence Scientists and I must admit at the outset that I am very flattered and a little overwhelmed at the invitation. At first I was hesitant of accepting but then I thought to myself that in all matters of defence equipment, defence research or defence development it was always essential to form a team comprising the scientist, the development technician, the manufacturer and user, all of whom had to work together most closely. In this closely knit team the user was by no means the least part and therefore in this capacity, there was some justification for me to speak. I would like to put before you certain personal views regarding the problems facing and types of equipment that may be required by the army of semi-developed industrial country fighting in an Eastern theatre. In order to avoid any misunderstanding I wish to emphasise that these views are my own and are not official in any way. In this respect I am rather like the novelist who says that his characters bear no relationship to anyone living or dead.

The countries to which I refer are the independent, semi-industrialised countries many of whom have come into being since the second world war; countries which have now got to solve their own defence problems instead of leaving them to a colonial power. Curiously enough, I feel that such a country, in planning its army and the defence industry to back it, has perhaps a certain number of advantages over the highly industrialised democracies or dictatorships with their wide political problems and consequently equally wide military commitments. This is an aspect which I feel is sometimes missed by those military enthusiasts whose main idea of military planning is to sedulously demand every new development from the West for inclusion in their own organisation and thus drive their Financial authorities into a frenzy in finding the funds to pay for it, as well as bewilder their Generals as to how to use it satisfactorily once it is obtained. I do not imply however, that trends in foreign development are to be ignored. Quite the contrary in fact. I feel that they must be closely watched and those developments, which are useful and practicable according to the particular needs of an army must be introduced. Incidentally, this scrutiny cannot be carried out at long range and selected experts must be allowed to visit foreign countries. These needs must be based on a long term plan which must take into account strategical necessity, the tactical plan, the financial cost, the possibilities for indigenous development and if incapable of indigenous development, the availability in time of war. This long term plan must however be flexible enough to accept modification and alteration to accommodate a particularly useful or appropriate new development. Purely from the scientist's point of view, it would seem to me rather a waste of time if much energy was expended in recapitulating what others have already developed. The efforts should be in adapting it to local conditions and improving on it for local use.

* Part of the address delivered to the symposium on Operational Research, held in Delhi on the 29th Dec. 1954.

At this stage perhaps I should clarify how I see a semi-developed country purely from the military point of view. Firstly, if it is not dependent on the continued charity of others which can only be a highly demoralising process the amount of money available for military equipment can only be limited. Planning must therefore be for essentials and must ruthlessly cut out frills and luxuries. Any equipment to be purchased from abroad must be vital and the rate of availability and stock pile holdings must be carefully calculated. To obtain this equipment it may be necessary to take severe financial cuts in other branches of the army and the budget must be carefully planned. While Government must have the ultimate say in how the money is to be spent, their advisers in regard to equipment must be the Chiefs of Staff on whom will fall the ultimate responsibility of fighting that equipment. In this matter the tendency of Finance to usurp the place of the General Staff, a tendency which appears prevalent in more countries than one, is to be deprecated.

Secondly, a semi-developed country is short of technical manpower and both in time of war and peace there will be big demands on the small pool available. Consequently, until such time as this deficiency is rectified, defence equipment must of necessity be simple of maintenance and repair. The highest grade equipment is only useful as long as it is working. Thirdly, and perhaps the most important, as much equipment as possible must be indigenously produced. In war it is obviously better to have a functioning bow and arrow than an atomic gun without the mighty atom. The planning of such indigenous defence production is probably the most difficult and most expensive item that will face a semi-developed independent country and a broad view of this matter must be taken if, not only rapid progress but any progress is to be made. Investment here may not show immediate dividend but they will certainly more than pay for themselves later. I have made a reference to bows and arrow to emphasise a point and I hope no one here has taken the actual equipment as seriously needing development. The currency of equipment must never be debased but must be put on the steel standard as quickly as possible.

Fourthly, in a semi-developed country and one which has perhaps been under colonial rule for a long time, I feel it is essential to educate as large a section of the public as possible in the problems of defence. War is no longer the sole prerogative of the politician and the soldier. It is, as has been amply demonstrated, the concern of the nation as a whole. As a corollary to this, I further consider that in peace it is important to get all branches of the administrative machinery thinking together of the problems of war and here I put forward a personal plea for the founding of an institution like the Imperial Defence College in the UK or the War College in the USA in our own country.

Finally, it is obviously necessary for a Government to lay down quite clearly their broad basic policy with regard to defence. While some part of this must be given as openly as possible, it may often be necessary to brief the Chiefs of Staff on some of the more confidential aspects. An army trying to plan without a clear cut and workable governmental directive cannot plan either accurately or economically. With regard to the actual planners themselves, I am sure they must formulate their tactics, organisation and equipment on the basis of the particular problem they have to solve and not imitate slavishly the ideas or organisation of any other country. For each nation the problems

involved are quite different, though the planners must not ignore the experience of others but must use that experience as guide and stepping stone in the solution of their own problems.

Though there are a number of other problems from the governmental point of view that affect the military development of a country, I have mentioned what I consider are the five most important ones. I would like to turn now to ground which is a little more familiar to me and to put forward to you certain views regarding the tactical problems one meets in semi-developed countries and how these problems affect equipment and organisation. Just before I do so however, I would like to discuss briefly what might be called unconventional weapons.

Among military writers and indeed among politicians in the bigger Western democracies, there seems to be a certain anxiety to prove that the possession of large quantities of highly efficient nuclear weapons is an actual asset to peace by being a deterrent to war. Whether this is correct or not, one thing is quite clear. It is not possible for the semi-developed countries who are building up their armies to include nuclear weapons among their ordnance. Any such thought must be resolutely put aside for some considerable time to come and perhaps experiments with atomic developments should be confined to the production of power for civil use, thus increasing the pace of industrialisation. I do not think however that the same restriction applies to the rocket types of weapon, together with the electronic devices to guide them, particularly in the short range group. Here is where I think there is much scope for development and I would suggest that this is a field which requires to be given a high priority. There is a simplicity about the rocket projectile which particularly fits it for manufacture and use in semi-developed countries and if it can be homed on to pre-set targets its value increases a hundred fold. You will note I have particularly mentioned the short range group, a group which I understand has many fewer problems than those of longer range.

I now come to the question of tactics and the equipment that is required to make these tactics successful. As the subject is an extremely large one and the time at my disposal is necessarily limited, I will, with your permission, confine myself to certain general remarks and then discuss the salient points regarding the various branches that go to make up an army. One of the things that immediately strike you when you look at a map of the type of country to which I refer, is the scarcity of those main lines of communications, roads and railways. Basically all wars must be fought along some sort of axis and this is usually a road. The speed of advance will also be related to the capacity of the road. Therefore, while there may be a number of fronts, because of the restriction of communications such fronts will be narrow and it will be the centres of communication which will become tactically important rather than geographical features. In such circumstances an army must emphasise its mobility, have the ability to hit hard on a narrow front and be prepared to hold ground for long periods with a minimum of administrative support.

One of the ill-effects of the last war has been the tendency to make armies too vehicle-conscious and, in my opinion, to achieve true mobility it is necessary to rationalise and in most cases reduce the number of vehicles rather than

add to them. Also, it is obviously necessary to bring down equipment to absolute essentials and do away with anything redundant or luxurious. It is those armies which are over-equipped and, over-pampered that are the slowest to move and quickest to get casualties. Further, in planning organisations, the staff must ensure that units and formations are correctly designed to meet all local situations and not designed to meet hypothetical situations which are never likely to arise. Organisations must also not be too lavish with technical equipment, technical personnel and leaders if there is an insufficiency of backing behind. In this matter of organisations, the assistance of the scientist with his operational research is obviously most useful as it must indicate what part does not pay dividends. I believe there is considerable scope for such reorganisation which, of course, must be worked on the basic plan to which I have referred before.

Another feature of operations in semi-developed countries is that due to lack of resources the same type of formation may have to operate over two or three distinct types of terrain, such as flat rolling plains or the area of a river delta or an area where there are high wooded hills. I do not consider that it is necessary to have either different organisations or totally different equipment to meet these varying types of terrain. But what I do suggest is that the basic equipment must be so planned and designed that it is capable of functioning in various types of country and, what is more important, is largely capable of being transported in or on various types of transport.

Now we come to the actual Arms themselves. First of all, let us consider the Infantry which after all is the basic Army in any army. Unfortunately the Infantry which should be the most versatile of all forces has perhaps become the most immobile. And, what is worse, it has become very road-bound. I suggest that it is essential to restore to Infantry the mobility which it has lost and see that it operates quickly not only along the narrow road axes, but also achieves the power of moving round the flank. This again can best be done by reducing the amount of equipment they carry and making them more dependent on themselves rather than on a supply train of vehicles. The emphasis must be on lightness of weapons and equipment, lack of superfluity and compactness.

Here I would like to enlist the support of my colleagues in the Air Force. One of the important subsidiary tasks of any Air Force is to assist the ground forces to advance and I would suggest that in the planning of Air Forces, particularly the smaller Air Forces, sufficient consideration must be given, not only to the operational side of Army co-operation, but also to the logistical side. Improved air logistics is one of the main methods by which mobility can be restored to armies. Perhaps the proposition may sound at first sight to be an expensive one, but if the relative costs of logistical air support and logistical ground support are worked out, it may well be that the savings from one would go to provide the wherewithal for the other. In peace time this logistical air cover might be used for national works thus making for further economy. Perhaps our statisticians would care to work this out as an operational problem.

Next we come to Armour. In any highly industrialised country with the means to afford it, armies normally have a family of three tanks; a light tank for reconnaissance, a medium tank for exploitation and a heavy tank to support the Infantry on to its objective as well as function in the defensive anti-tank role. Semi-industrialised countries cannot afford this family of three and therefore they must function with one universal tank. This tank must accept the dual roles of exploitation and Infantry support, leaving reconnaissance to other types of equipment. If it is to perform these tasks with any degree of competence it must of necessity have the weight of armour and the calibre of gun to allow it to function. All these factors make for a medium heavy type of tank.

There is a school of thought that advocates the employment of a large number of light tanks instead of a smaller number of heavy tanks. While there may be something to be said for this in a Western type of war with the atomic problem and even here I think that this mass of light tanks must have a considerable backing of the heavier type, I do not think that for a semi-developed country this school of thought is correct. In such type of a country with its scarcity of communications and the lack of sustained air supply, the requirement is for the maximum of fire power with the minimum clogging of communications. I suggest that this is another argument for fewer but the more effective medium heavy type of tank. Incidentally, in making this suggestion I take into my calculations the increased repair, recovery and maintenance problems which will present themselves with the increase in the number of specialised vehicles big or small.

In dealing with the problems of reconnaissance and cross country mobility, I would like the views of my scientific colleagues on the merits of wheels versus tracks for the lightly armoured cross country vehicle. From the expense aspect, both of initial purchase and later maintenance, the wheeled vehicle is far cheaper than the tracked vehicle. From the point of view of cross country performance it is my belief that the modern wheeled vehicle has a comparable performance and a much greater range and therefore, it may be well worthwhile putting all reconnaissance on wheels.

As regards artillery, I have already put forward a suggestion on the development of rockets with a homing device if possible. These rockets cannot, of course, be the main artillery weapon but when working on a narrow front as one will have to do, there is a good case for increasing the range and accuracy of conventional weapons, particularly the heavy mortar. Coupled with this must be the reduction of weight of the launching device or carriage. There is a good deal of research and development going on with regard to this.

Communications within the army are another aspect of equipment where I will ask you to consider some perhaps rather unorthodox views. I have stressed the need for mobility but this tangle of signals wire that we get mixed up with, wire which is continually being reeled out, reeled in and repaired, seems to me to be the very antithesis of mobility. I suggest there is a very good case for all communications forward of Divisional HQ being by wireless alone and as much as possible of that use of wireless by radio telephony. If a record of conversations or orders are to be kept, there has been considerable development

on the portable tape recorder some types of which can, I believe, be carried in a pocket, while for security purposes a simple scrambling device might be used. I suggest to you that there is considerable scope for carrying out some original research in this matter, with an actual active formation and the statistical experts. With the development of VHF, SHF and UHF frequencies, there is a possibility of one set using a large number of channels and this development can help to reduce the amount of equipment carried by an army.

Army engineers operating in Eastern theatres will always have as one of their main problems the question of quick bridging. There seems to be necessity for the developments of pre-fabricated bridging which can be assembled quickly. Here is another field where the scientist and the engineer might combine with good results. Further if a suitable bridge can be found, it could well be used in peace to open up communications within the country itself.

So far I have been dealing with the hardware department and as my last item on equipment I propose to move to the tailor's shop. I would suggest to you that there is considerable scope for the development of a suitable fighting kit for the soldier to meet the particular needs of the terrain over which he will be operating as well as all the other requirements that a soldier's uniform demands. This attempt to make the same uniform to be a smart walking out dress in peace and a satisfactory battle dress in war seems to me to be quite ludicrous and in point of fact expensive to the State. Let the soldier have smart walking out dress designed by a tailor for his more peaceful functions and a proper battle dress designed by the scientist for war. The former will bring in the recruits and catch the eye of the girls while the latter will allow the battle to be won easier.

In the suggestions I have made for the possible equipment and organisation of a local army that is to operate in semi-developed countries, I have stressed the importance of simplicity, standardisation and the minimum of equipment. There are two corollaries to this which must, however, be borne in mind. Firstly with the simplicity of material, such an army can only function effectively if the standard of training is extremely high and, therefore, no extraneous problems should be allowed to interfere with training if an effective army is to be maintained. This simplicity means that there is more responsibility on the individual officer and man and if he is to accept this responsibility, he must have confidence in himself, his leaders and the weapons with which he is fighting. Secondly, the actual soldier himself must be physically tough and mentally conditioned to accept long periods of considerable hardship without any luxury whatsoever.

Before I end my talk, I would like to put a personal view across as to how these weapons are to be obtained and manufactured. I have already stressed the importance of indigenous manufacture and I cannot overstress this particular aspect. Admittedly, some equipment will in the beginning have to be imported from abroad but it is obviously better to accept the second best temporarily, provided it is manufactured indigenously, rather than rely on outside sources of supply for vital equipment. Here we look to our scientists and development engineers to speed up this process of indigenous manufacture. I further suggest that a country faced with the problem of re-equipment must

set up some kind of effective machinery to ensure that all resources within the country are utilized and that production is based on a mutually agreed schedule between the government, who have to finance it and apportion resources, the scientist, the engineer and, last but not least, the user. Like there are considerable dangers in accepting completely the military organisation of another country, I submit there are equal dangers in accepting completely the production organisation and lay-out of another country. This must also be worked out from a basic long-term plan founded on actual conditions in existence.

In conclusion, I would like to say that the main points I have tried to bring out are:—

- (a) the need for original thinking;
- (b) the need for a sound long-term plan for re-equipment and re-organisation based on local conditions and requirements and not based on a general principle;
- (c) the need for mobility and the excision of anything that hampers this mobility;
- (d) the need for simplicity and standardization thus making the technical handicaps easier to deal with; and
- (e) the need for the closest team-work between the soldier, the scientist, the development engineer and the production engineer, all linked together and working to a clear directive given to them by their government.