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MOBILITY: ITS INFLUENCE ON STRATEGY.

By Colonel F. N. MAUDE, C.B., Hampshire R.E. (Vols.), late R.E.

On Wednesday, 20th March, 1907.

General Sir J. D. P. FRENCH, G.C.V.O., K.C.B., K.C.M.G.,
in the Chair.

THE one abiding lesson to be deduced from the study of the South African Campaign is, the overwhelming importance attaching to the factor of "mobility" in determining the duration of the struggle. In every other respect, armament, discipline, organisation, and training, our troops were at least equal and, in general, superior to their antagonists; but because the latter could move in round numbers three times as fast as we could, it took us nearly a ten to one numerical superiority to force them to submission. Take away this superiority in mobility and, I think, it is quite safe to assert that the war would have lasted only as many months as it did years.

As the war progressed, I was so much struck with the hopelessness of the task confronting our generals—assuming that the Boers were able to utilise to the full the advantage conferred upon them by their mobility—that I went over the principal campaigns of history to determine specifically the share mobility played in the decision of each.

The result is indicated in the diagram A, which I will now briefly explain.

It will be noticed at once that the war in the Netherlands dragged on for years with no decisive results. Both sides were about equal in mobility, which was of a very low order, owing to the inordinate weight of the equipment each, following the custom of the times, considered it necessary to drag after him.

This was largely due to the number of fortresses which had to be reduced, and the fortresses in turn derived their importance from the geological nature of the country, a clayey loam, which made movement off the roads or by country tracks almost impossible.

The wars of Frederick the Great's day show a marked improvement. Though the general poverty of the country compelled both sides to rely essentially on magazine supply—this poverty was mainly due to the sandy nature of the soil—which, draining rapidly, made it possible for Armies to manœuvre, if not to march, freely about the country.

But for the enormous numerical preponderance of his enemies, many of Frederick's victories would have been decisive in the fullest sense, though the ultimate results might not have been so overwhelming as in those of Napoleon.¹

¹ See on this point a chapter of exceptional interest in "Geist und Haft im Kriege," by C. von B. K. Vienna.

The latter, however, found the surface of Europe almost transformed when he commenced his career of victory. Owing to the growth of population, agriculture, and industry generally, during the comparatively long spell of peace, all the Continent, except Prussia, had enjoyed, a network of great chaussées, usually paved, had spread all over the country, and agriculture having drained much of the land, armies could now not only manœuvre, but march freely in every direction.

The increase in crops and live stock further made it possible for the French to feed their forces by requisition, and thus reduce their provision trains to the barest possible limits, an example their opponents found it "inexpedient" to follow. The result is clearly indicated by the zigzag appearance of the curve between 1800 and 1815.

The remainder may be briefly summarised:—

Crimea.—Manœuvres impossible, decisive battles nil.

1859.—Both French and Austrians had lost their mobility; battles indecisive.

1862-4, America.—Country for the most part roadless and undrained; impediments on the northern side enormous. War protracted and battles indecisive.

1866.—Country fair; mobility of Prussians relatively good. Campaign lasted seven weeks.

1870.—Country cultivated; communications numerous and good. Mobility of the Prussians relatively high. Battles numerous and decisive at each phase of the campaign.

1878-9, Bulgaria.—Country undrained and mountainous. Communications very inferior; mobility on both sides low. Result: battles indecisive.

1905, Manchuria.—Communications indifferent; movements slow; battles indecisive.

This diagram, therefore, shows a clear connection between the general development of the theatre of war and the duration of the campaigns. Also on the tactics forced upon the combatants in each, for wherever we come upon an undeveloped country we find a recrudescence of field fortification, and an absence of great decisive battles in the open field.

The next point to open up is, what is it really which constitutes mobility? For in any one of the campaigns in which mobility played the principal part, the actual marching rate per hour of each respective arm must have been very nearly equal. There is no evidence to prove that, say, in the Marengo Campaign, an Austrian long service battalion could not have kept up with a French one, though latterly, indeed, the French undoubtedly could outmarch any troops in Europe.

To elucidate this, it is necessary to break up the general idea of mobility into its several constituent factors, and broadly we can at once distinguish between "collective" and "individual" mobility, using the former term to indicate the potential mobility of the army as a whole, the latter the rate of movement of the ultimate units, squadron, battery, company, and finally of the individual man.

The "collective" mobility, again, may be split up into the following subheads:—

1. *The character of the commanders.* If a general knows his own mind with such certainty that, like Napoleon, he can, within

an hour from the receipt of his outpost reports, dictate the orders necessary to set some 200,000 men in motion, it is clear that he gains enormously over one who changes his plan and hesitates with each fresh rumour approaching him. This, of course, is largely an affair of character, but it is susceptible of immense development by a sound grounding in the Art of War as a whole, and practice in the conduct of strategical war games, which habituate the mind to grasp the essentials and neglect side issues.

The question, then, arises: What is a sound grounding? and the answer will be found if we contrast the different methods pursued by Napoleon from 1806 to 1815, and by Moltke in 1870. The former had realised in practice long before Clausewitz wrote, that in war the *independent will-power* of the adversary is the principal factor of uncertainty, and had devised a sound strategical method to paralyse his enemy's independent will.

The diagram shows the essential difference. Napoleon marched his armies, covered by a strong *avant garde générale*, capable of attacking vigorously and *fixing* his adversary, and about the point thus *fixed* he then manœuvred his masses, with results sufficiently apparent at Jena, Friedland, Lützen, and Dresden. It mattered not to him what the enemy was intending to do; the attack of his advance guard paralysed his opponents' will-power, and the "mass of manœuvre" decided the outcome. All he required was punctuality in his subordinates, and a readiness to die for their country in his men. Moltke, on the other hand, had never grasped the principle involved in this *avant garde générale*; he relied essentially on a cavalry screen which could only observe, not hold, and the situations from 6th August to the 18th show the insufficiency of his design.

Moltke reasoned out on insufficient and unreliable *data* what the enemy ought to do, but ignored the possibility of his making grave mistakes, as, for instance, on the 11th, 16th, and 18th August. Napoleon knew that the enemy might perpetrate blunders too wild for his own mind to conceive, and by attacking him rendered him immobile and incapable of any form of mischief.

Fundamentally, therefore, I should recommend that the Napoleonic method should form the basis of our instruction, and would suggest that the circulation of the works of the French General Staff, specifically those of General Bonnal and Colonel Foch, should form the first care of our Military History section when we get one.

2. Next in importance comes the preparation and circulation of orders to give effect to the Commander-in-Chief's decision. Primarily his staff must see the problem with his eyes, so that a mere phrase is sufficient to enable them to act upon; and, equally, each rank of the Army in succession needs to be tuned to receive the intended impression.

It was this faculty developed in the French Army which, together with its organisation in Corps and Divisions, gave it its enormous excess of mobility over the Austrians in 1805. The Austrians also were, on paper, organised in Corps and Divisions, but these were mere aggregates of battalions liable to constant change, and not an organic whole, each with its own staff and machinery for the circulation of intelligence. Battalion orders were still drafted by Army Headquarters, and on the morning of Elchingen—practically the decisive day in the Ulm campaign—Mack excused himself for his delay in moving to the support of Guilay by stating in his report

to the Emperor that at the moment the news of the French attack arrived he was so busy in writing the orders for his projected move—which necessitated 14 pages of foolscap, and did not contain a superfluous word—that he had no time to give the news the attention it deserved.¹

Fortunately this difficulty with us has long since been removed, and I look upon the institution of the examinations in (c) and (d) as by far the most important steps towards efficiency with economy that have as yet been taken.

The essence of these examinations is, that not only do they afford a means of selecting those who show talent in the appreciation of situations and the issue of orders, and to excel in this certainly does require talent, but it ensures that every rank throughout the Army becomes saturated with a knowledge of the conditions and limitations under which of necessity orders in the field have to be prepared, and this constitutes the very best guarantee for their loyal execution, which, again, implies promptitude and an increase of mobility.

3. Lastly, under this head comes the organisation of the Army itself in units of such size that they can in any given district make the best use of the network of roads available.

The problem in Western Europe is to secure that every road should carry the maximum number of combatants possible, and experience has abundantly demonstrated that the Army Corps best fulfils this condition. The attempt to work by Divisions made in Prince Frederic Charles' Army in 1866 broke down badly.² In India and Japan things are very different; but we may have to fight nearer home, and quite apart from the use of the roads, in the numerically enormous Armies of the present day, an intermediate link between the Army and the Division is a necessity.

We come now to the question of "individual" mobility. Setting aside for the moment the question of the weights to be carried, the mobility of a unit depends essentially on the "collective will power" of that unit, which in turn depends on the spirit of its training, the physique of the men, and ultimately on the health of each individual in the ranks, the four being so closely interwoven that it is difficult to arrange them in definite order.

Health, however, must be the starting point of the whole erection, for without health there can be but little will, and consequently no "collective will power," which is only another word for "discipline."

To us in England this question of health possesses a transcendent value, for no troops are exposed to such climatic vicissitudes as ours.

Briefly stated, a good digestion is the best antidote to all fevers and infectious diseases yet discovered. Good digestion means healthy blood, and if the blood is healthy, then any intruding bacillus receives but a very short shrift.

The first and greatest enemy of digestion is the sun. Those who have suffered from it will need no technical demonstration of the fact. It will be sufficient to state that excess of actinic rays produces certain disturbances in the great nerve centres, running

¹See introduction to "La Campagne de 1805." *Alembert et Colin*. Paris.

²See Bonnal's "Sadown."

down the spinal column, which react upon the stomach, and renders it more or less incapable of performing its proper functions. But as every photographer knows, the actinic rays can be filtered out by using a screen of suitable colour—anything in the colour prism between yellow and dark red. And acting on this idea some 25 years ago in India, I found that by lining one's hat and coat with any material of the proper colour I could render myself quite immune even to the sun of Scinde.

Ever since I have been endeavouring to get the idea taken up and practically applied in the Army; but though I am informed that the proposal now has the full support of the medical authorities—indeed has been warmly urged by several of them—no steps whatever have been as yet initiated, though the economy in men's lives and in invaliding can be shown to be some thousands a year, quite apart from the indirect gain in increased efficiency in marching power.

I hesitate to give expression to the explanations which some of my medical and scientific friends have given to account for the extraordinary supineness of the authorities in this matter; possibly the initial cost of the lining to hat and coat may have something to do with it—about 2d. a head; but if that is the case, then, I suggest that no lining is necessary at all. The men must have shirts, and a red shirt would cost no more than a grey one. More probably the cause is really the want of scientific education in youth, which prevents men of mature mind realising that there are such things as invisible rays in the spectra capable of extraordinary influence on human nerves.

Assuming, however, that this suggestion is ultimately adopted, the next great enemy the digestion has to encounter is fatigue—when pushed to the limits that the prolonged marching indispensable in modern operations exacts. The body, then, has absolutely no energy left to digest anything but the lightest foods, yet the only stuff we have to offer it is “beef on the hoof”—stringy and hopelessly tough—or tinned cooked meats of varying degrees of indigestibility, and all alike quite devoid of nutritive properties.

This latter deficiency is due to the fact that all these foods have been cooked before they are sealed up. Chemically they still seem to possess the same proportions of proteids, etc., as when raw; but under the microscope they show a very marked difference, which increases from month to month under the influence of the invisible rays transmitted to them through their metal envelopes. (Cordite cartridges—indeed, all chemical powders—deteriorate in the same way.)

Tin—or metal generally—is an absolutely essential covering to all foods for use in the field, simply because nothing else will stand the knocking about; but no food, whether cooked or raw, if put up with any moisture about it, can be relied on to keep even wholesome, let alone palatable, in tin cases.

The only solution of the difficulty is to put up the food absolutely dry—like grain, for instance—and raw if possible, for only in that condition will it retain its full nutritive qualities. This problem has at length, after twenty years of experiment, been successfully solved by a British officer, and there is every prospect that for many years to come, we shall enjoy an enormous advantage under this head over all our possible enemies.

These foods—for he has treated all kinds—have these additional advantages over all others, viz., that they not only retain their full flavour and aroma, but can be eaten raw, half cooked, or fully cooked, and are, if anything, more digestible in the first than in the last case.

For men in the firing line, unable to think of cooking, they are quite ideal; but I would suggest that before any definite type is adopted, experiments should be made by adding to them any one of half a dozen convenient drugs, which, whilst not altering the flavour, would increase the proportion of nerve foods in their composition, and thus supply the tremendous drain on the nervous energy involved by the noise and excitement fighting necessarily entails.

Unquestionably, however, the best way of administering food to completely exhausted men is in the shape of a hot broth, and this end can easily be obtained by the adoption of the Siberian field kitchen, which is simply a tank surrounded by any non-conductor, such as felt, and mounted on wheels.

To cook the rations above alluded to, all that is necessary is to put in the food, fill up with boiling water, and let the mixture simmer, whilst the troop is on the march.

This seems to me a far more favourable use of transport than any of the suggestions for sterilising apparatus for water, which have been so freely put forward since the Boer War, for much of the water needed is thus carried in the food itself, and as for the remainder which a man needs to drink, if his digestion is sound, he can drink even unsterilised water with impunity.

To complete this food question I will here add that by the use of the same preparations I have been able to devise an emergency ration for horses, which can be given to them during short halts and under conditions of great exhaustion, and that, taking the cost of transport for men's rations alone, during our campaigns of the last thirty years, I have calculated that the direct saving would have amounted to about half-a-million sterling per annum, whilst the indirect savings, due to increased efficiency and diminution of the sick lists, would far exceed the above sum.

Further, had the Russians used them during the Manchurian war, the saving of railway transport would have enabled them to put at least 50,000 additional rifles in line at Liao-yang, with consequences which must have proved very far reaching. It would be interesting also to work out in detail the results in many situations in South Africa, if our mounted columns could have been sent out for a whole week carrying only 8 lbs. dead weight of forage and food for the rider.

It is not merely the extra muscular power, which is evolved by sufficient and suitable food, that has to be considered, but the increase of nervous energy or will power which remains available, and can be maintained in the troops already in the fighting line.

In the vast majority of cases, it is this nervous energy which gives way first, long before the actual physical strength of the men is exhausted. This is proved by the pace at which nervously-exhausted, and, therefore, panic-stricken troops can cover the ground in flight; but it is a point which has hitherto never received the attention it deserves, probably because the period of duration of the nervous strain, if more intense while it lasted—on the battle-fields of the past—was very much shorter, and even such a very crude

expedient as alcohol might meet the case; but nowadays, when a great battle can hardly last less than two days, and may last two weeks, this question of providing the man with the means of making good the principal element of waste, deserves the closest attention. We feed our race-horses on oats, to enable them to make good the waste of nervous tissue. Surely we can apply equal observation and attention to our men.

This food question is so vital that I would strongly urge the Government to acquire the secret of its preparation, for not only does it apply to troops, but to the whole problem of food supply in war time for the people of this country.

One cubic foot contains 1,000 rations; therefore a vessel of the "Cedric" or "Celtic" type, capable of carrying 20,000 tons of cargo, would convey in a single trip $40 \times 1,000 \times 20,000$ rations, or 800 million rations = 20 days' food for 40 million people, allowing full rations of meat and vegetables even to infants in arms.

The Government manufacture their own biscuits, etc., at the Clarence Yard, Gosport, and elsewhere; why not extend the principle and manufacture meat rations in Canada where meat is cheap?

But in spite of Royal Commissions, no one as yet appears to have realised the terrible situation of these islands, if, when war is declared or commenced, our arrangements for feeding the people are not ready to be applied at a moment's notice. There is the sure and certain gold panic and rush on the banks, entailing the ruin of thousands and hundreds of thousands due to the complete breakdown of credit.

Securities of all sorts will fall, not because they will alter in intrinsic value, but because there will be no gold to measure that value in, and the only thing that is absolutely certain to rise in gold value is "food!"

What will happen to people of fixed incomes when the source of most of their incomes dries up and food is at famine prices? The most pitiful cases of all seem to me to be those who have sunk their savings for life in insurance offices in the vain hope that whatever happened to them, their wives and children would be secure. But insurance offices will be amongst the first to go, for they will have to meet a double strain—depreciation of securities and increased death-rate.

On the minor details of reducing the actual weight carried by man and horse, I have written so fully and so frequently that I need not weary your attention. The whole matter can be summed up in a sentence: "It costs less to supply a new saddle than a new horse," and it would be cheaper also to serve out a complete kit once a week than to replace men broken down by the extra weight of a useless pack. These things had their justification once, in the bottomless mud of the Netherlands, for instance; but in these days of the motor lorry and traction engine, we can get along very well without them.

There remains, then, only the question of ammunition and entrenching tools to be considered.

The whole essence of tactics lies now, and always has lain, in the placing of one's troops in such a position relative to the enemy that they can destroy and break down his power of resistance more rapidly than he can break down yours.

The accompanying diagram shows at a glance the manner in which improvements in range and power of armaments have, by degrees, facilitated this task for the assailant.

It will be seen that in the days of the battering ram, the assailant was exposed to fire from both flanks and from above; in the days of the bastion trace, the breaching batteries were still in equally hard case, and surprise and concealment were both out of the question, whereas nowadays, it is the point of attack that is threatened on all sides, and concealment and surprise are both transferred to the assailant.

The same sequence is also apparent on the battle-field. In the early days of the musket, at most only a couple of hundred muskets could combine a fire of one round every two minutes, upon any given flank, and even in the Napoleonic time, his "*batterie de brèche*" could not be brought up to bear on the enemy's line, until the latter's fire power had been beaten down by a long continued fire action, in which the will power of the defenders was ultimately exhausted, and even then its really effective power depended mainly upon the accident of a convenient saddle or roll in the ground not more than 500, or less than 300 yards from the enemy's line (*vide* Waterloo). But nowadays it has become possible, by pre-arrangement, to concentrate the fire of many thousands of rifles and many hundreds of guns on any selected point from hollows and folds in the country over an area of many square miles.

Now, the denser the hail of bullets delivered, the shorter the time in which the given degree of destruction required can be executed, and the greater the number of weapons employed, the fewer the rounds that each individual weapon requires to fire.

Further, the more rapidly a given percentage of loss is inflicted, the less total loss is required to produce the requisite degree of demoralisation in the enemy's ranks. It is well known that troops, staunch enough to bear up against a punishment of 30 per cent. in a whole day's fighting, may be completely broken up by 5 per cent. of casualties inflicted in 5 minutes.

Therefore, it follows that if a sufficient degree of mobility can be attained by shedding weight to enable a general to place his troops in the relatively best positions against their enemy, *i.e.*, to give his men a target they cannot miss, then far fewer rounds need to be carried, and entrenching tools can safely be laid behind.

The extreme case, of course, occurs in the case of fast moving cavalry against relatively slow mounted infantry—the latter will always end by being "rounded up" about their led horses, and for given effectives, say about 2,000 mounted infantry against an equal number of cavalry, it can be shown by calculation that every bullet fired by the latter stands a 20-fold better chance of finding a billet than those fired from the centre towards the circumference.

This idea, of course, must not be pushed to its extreme limits, the circumstance under which troops may come into collision differ so widely that considerable allowance must of necessity be made; but I bring the point forward as a protest against the marked tendency there has been, since the South African War, in the Army to cry out for an increase in the very weights which lay at the root of our troubles.

We suffered punishment because we were slow, and now we clamour for more ammunition, entrenching tools, heavier artillery,

etc., which would all make us slower, and the need for which would never have been felt had we been able to outpace our opponents.

In European warfare the future belongs to that army which resolutely focuses its principal efforts on securing in all arms the utmost possible mobility, not only by the adoption of a sound system of strategic instruction and attention to staff duties, as set forth above, but by lightening to the utmost ounce the weights carried or dragged by men or horses when in contact with the enemy, loading up everything which can be dispensed with for a few days at a time, on motor transports of various sorts, fast, medium, and slow. The shortening of the column of route, which would result by the elimination of all horses, at present employed for transport service, would almost double the rapidity of concentration for battle, and I cannot conceive of a single article at present carried in our innumerable store carts, ambulances, etc., which troops cannot very well dispense with for forty-eight hours.

I would suggest, as an interesting study for our next war game season, to work out a number of cases in which a highly mobile force is opposed by a more numerous, but slower enemy, and from the comparison of a number of results we might obtain some invaluable data. I have tried the experiment in several instances, allowing the infantry of one side to march at the rate of the Bersaglieri and French Chasseurs against the normal speed, and have always found that the sudden appearance of the former, far in advance of where the latter expected the meeting, has demoralised the opposing commander altogether.

Captain C. SLACK:—I should like to ask one question with reference to the emergency rations. Were they not tried in the South African War, and was it not the fact that, although they were sustaining to a certain extent, they lacked filling properties, that is to say a man never felt he had a good meal? To put it to the test, should not these emergency rations be tried in peace times? Would it be fair to try men on them for a week, because that would show the value of these emergency rations?

Colonel H. B. JEFFREYS, C.B.:—I think the lecturer has opened a very interesting train of thought to us by means of his diagrams on the influence of mobility in attack and defence, and I only regret he did not carry his enquiries into the historical question somewhat further on that line of thought. As regards what he did say, I should like to make two remarks. I do not think Napoleon intended Davout at Auerstädt to blunder right against the main Prussian Army; I think it was rather an accident. He ran a far greater risk than he intended to take, and there was a very great chance of Davout's army being destroyed while Napoleon was winning his own battle at Jena. There is another matter as regards the mobility of the Boers that has not been touched on by the lecturer, in regard to the great difficulties we experienced in bringing them to book. I think there was another factor in that case which was of even more importance than mobility, namely, that the Boer towns were of no value. The Boers would not stand and fight for any particular locality except in Natal. There they had some fair and square fighting, but as soon as our Army was working on proper lines they had no difficulty in breaking through the Boer defences. The enquiry into the food supply of the United Kingdom was perhaps rather beyond the scope of the subject of the lecture. I think most of us would hardly go so far as to agree with

the lecturer in his views of our extreme danger from starvation. I think it is impossible, in these days of fast steamers, to cut off the food supply of the United Kingdom, though undoubtedly in case of a big war against us by a combination of Powers the price of food would go up enormously; and it would then be the business of the Government, at whatever sacrifice, to ensure food being sold at a reasonable price to the inhabitants. The question of why we did not use the emergency rations more has been raised. The reason is a very simple one, that in South Africa we had an emergency ration, but after we ate it there was not another to replace it. It could be used for one hungry day only and no more.

Colonel Lord LONGFORD:—May I ask the lecturer whether the emergency horse ration has been practically tried?

Colonel MAUDE:—It is being tried now.

Colonel Lord LONGFORD:—With entirely satisfactory results?

Colonel MAUDE:—As far as they go.

Colonel Lord LONGFORD:—If that is so, it would solve every difficulty that we have.

Lieut.-Colonel A. DUNCAN, I.M.S. (retired):—I should like to say a few words with regard to the question of sunstroke. Perhaps you will pardon me being egotistical; but I received a severe attack of sunstroke during the Afghan War, for which I had two years' leave. I had no sooner gone out to India again before I had a second attack, and in the succeeding hot weathers I used to suffer from intense headaches. My third attack was in the Black Mountain Campaign, for which I had another two years' leave. On going back to India again, I read an article one morning in the *mess*, signed by "An Executive Officer," whom I subsequently found was Colonel Maude, in which he described the good effects of lining the helmet with red. I immediately adopted this manœuvre, and during the rest of my service in India, I never felt the sun in the slightest degree. I used to wear a red shirt; I had a red lining down the spine of my back; my helmet was lined with red, and I was perfectly free from any feeling of malaise in the sun. Since I have retired from the Service several patients have consulted me with regard to what they should wear for preventing sun effects. I have always advised them to use red lining, and from subsequent enquiries I have found they have always been perfectly free from any effects of the sun. So that I am perfectly certain from my own experience, and the experience of others, that Colonel Maude's suggestions in that direction are right, because I formerly used to wear various kinds of helmet, sun spectacles, etc., without the slightest effect. The actinic theory of sunstroke is the correct one.

Colonel F. N. MAUDE, in reply, said:—I have only a very few questions to answer. With regard to the emergency rations, those that I have exhibited here to-day were not tried in South Africa. I know that none of the types served out in South Africa were satisfactory, and that is the reason why these were made. The new emergency rations will be issued to the troops to be experimented with shortly, so that we shall know more about the subject presently. They have, however, from my own knowledge, stood any amount of travel. As regards the question raised by Colonel Jeffreys about Davout and Jena, that was so. The point rather is that it showed the strength of Napoleon's formation. If his advanced guard, as it happened in that case, fell on the bulk of the army instead of only

part of it, at any rate, Davout could not have been destroyed in less than something like twenty-four hours' fighting, and whilst he was being destroyed, Napoleon was destroying the other wing. In was part of the principle, and everything worked out correctly. The beauty of the thing was that the Prussians, the very afternoon they heard of the mere threat of the appearance of that advanced guard, proceeded to separate their armies into two divergent parts and to offer them up to destruction in two sections, part to Davout and part to Napoleon. Whatever happened to Napoleon, he was ready for the danger wherever it came from. With his "battalion square" of 200,000 men he marched through it all. I quite agree with what Colonel Jeffreys said about South Africa, which is mainly open country, where there are no towns and no points which you can compel the enemy to hold. If you have something in the nature of a city or towns which fixes the enemy, well and good: but the Boers had an irregular, broad veldt, over which they could rove pretty well as they pleased, and with no means of communication to trouble themselves about.

The CHAIRMAN (General Sir J. D. P. FRENCH):—I suppose there is no subject which demands greater attention, on the part of soldiers, than that which has been chosen by the lecturer, and so ably dealt with by him. Whether in the rôle of strategy or in the sphere of tactics, the side which possesses superior mobility, in the hands of a commander who takes that mobility into account, must in future, spell success; and it is needless to emphasise the fact that the larger the force and the greater extent of ground embraced by any particular set of operations, the more, a thousand-fold, will this great attribute make itself felt. In the latter part of his remarks Colonel Maude has mentioned the action of fast moving cavalry against relatively slow mounted infantry as an instance of the great power of mobility; and he has described this as an extreme case. I do not think it is necessary to take an extreme case as an illustration of this great principle. In a theatre of war we find obstacles abounding in every direction in the shape of river lines and, sometimes, mountain ranges. No one who has given any heed to the study of how to deal with such obstacles can fail to understand the enormous value which superior mobility will be to that side which possesses it, and it has been only by the power of mobility that the great captains of history have effected those wonderful strategical strokes and those lightning movements which have decided the fate of many a campaign. If we come to the field of battle a very simple illustration of the value of mobility is to be found in that form of tactics which so often led the Duke of Wellington to victory, that which is known as the offensive defensive, wherein the launching of a powerful counter-attack decides the day. The point whence the counter-attack can best be launched can only really be known when the enemy's attack is developed, and then the one essential is to move with the utmost rapidity to that point. But when we come to think of the extent of battle-fields in these days, twenty, thirty, or forty miles, and sometimes more, where are we to post the force with which we intend to make the counter-attack? If we post it in the centre, how can it possibly, without the utmost mobility, get to the decisive point at the right moment? It is these almost everyday instances in the practice of strategy and tactics which show us so clearly the immensely increased value of mobility. I wish to say one word on the parallel which has been drawn by the lecturer between Napoleon and von Moltke. I do not think we are quite justified in saying that Moltke had never grasped Napoleonic principles. It is to be remembered that his work was done under totally different political conditions to those which governed the work of Napoleon, and that the employment of the

DIAGRAM TO ILLUSTRATE THE NAPOLEONIC SYSTEM.

The advantages gained by increased range of weapons for attack will be seen in each case to be proportionate to the amount of cover between the limits of best range and extreme range.

DIAGRAM SHEWING RELATION OF ATTACK AND DEFENCE AND ITS DEPENDENCE ON MOBILITY DURING THE LAST THREE CENTURIES.

ATTACK AND DEFENCE—INFLUENCE OF TECHNICAL PROGRESS.

"*avant garde générale*" in the strategic deployment of the armies of to-day would involve a far greater risk than that incurred by Napoleon, although, as history several times tells us, the risk was by no means absent even in his time. I should like to emphasise, in the strongest possible manner, the remarks of the lecturer on the subject of collective mobility, and particularly when he talks of the necessity for penetrating, and, if possible, paralysing the independent will-power of the adversary. This, in fact, is what we mean, in its fullest sense, when we talk of "moral power" and "moral effect" in war. This great principle is brought out so well by the late Colonel Henderson in his "*Science of War*," that I cannot bear quoting one short passage, which will emphasise and illustrate the lecturer's meaning far more than any words of mine could do: "War is more of a struggle between two human intelligences than between two masses of armed men. The great general looks beyond his own troops and across the enemy's lines until he comes to the quarters occupied by the enemy's leader, and then he puts himself in that leader's place, and with that leader's eyes and mind he looks at the situation; he realises his weaknesses, the points for the security of which he is most apprehensive; he considers what his enemy's action will be if he is attacked here or threatened there, and he sees for himself, looking at things with the enemy's eyes, whether or no apparent risks are not absolutely safe. "It is to be ignorant and blind," wrote the German biographer of Hannibal, "in the science of commanding armies, to think that a general has anything more important to do than to apply himself to learning the inclinations and character of his adversary." " I agree entirely with all the lecturer has said as regards individual mobility, and the necessity for reducing the weight carried by the man and horse. The question of rations and forage does require a great deal of threshing out; but the subject has engaged the lecturer's attention, I know, for many years now, and I think I am right in saying that some of his experiments are now under trial at the War Office. There is one point I do not quite understand about the rations and forage he has referred to to-day. Do they expand on being treated like our own rations?

Colonel MAUDE:—Yes.

The CHAIRMAN:—That is to say, you can pull a small thing out of your pocket and make a beefsteak out of it.

Colonel MAUDE:—Certainly.

The CHAIRMAN:—I do not think you have brought that out quite clearly in the lecture. I do not think the tendency has lately been to increase weights, in fact I know a great deal has been done in the other direction. Since the close of the South African War, we have all, I think, been very much alive to the necessity of relieving both the man and the horse of the weights they carry, and we have gone a great way in that direction. It is a point that requires very careful watching, and I am sure will always receive our utmost attention. There was one very interesting point which Colonel Jeffreys brought out with regard to Napoleon. The great lesson to be learned from that is that Napoleon was really strong at the decisive point, *i.e.*, Jena; and although it was better for him that Davout should have been successful than that he should have been defeated; still, had Davout been defeated it would have only meant defeat, whereas had Napoleon been defeated it would have meant absolute disaster. I am sure I am only expressing what you all feel when I say how very grateful we are to Colonel Maude for his most interesting and instructive lecture; and I beg accordingly to move a hearty vote of thanks to him for it.