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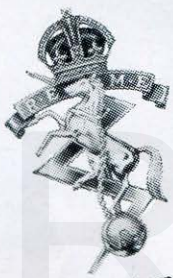
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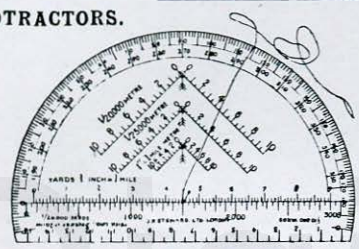
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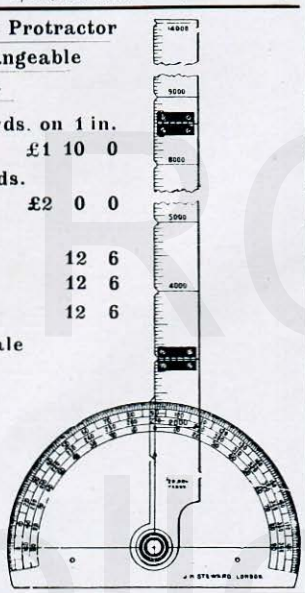
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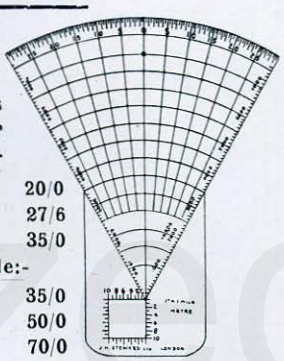
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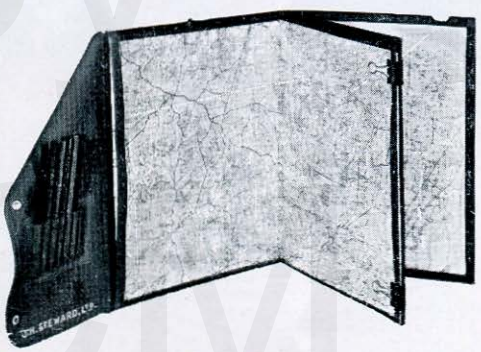
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CONTENTS.

APRIL, 1951.

	PAGE
"Field Artillery Equipment of the Future". By "T.F.K.H." ...	81
A Gunner with the Grey Funnel Line. By "J.B."	93
A Free Lance Gunner. By Sir Patrick Cadell, C.S.I., C.I.E., V.D. ...	97
The Survey Problem Now and in the Future. By "S.B."	101
The British Soldier from a German Viewpoint. Report from Major D. A. Garnier, R.A., Public Relations Rhine Army	109
The Greek Centuries in India and Bactria. By Lieut.-Gen. Sir George MacMunn, K.C.B., K.C.S.I., D.S.O.	112
More Haste less Speed. By Captain D. G. Miles, R.A.	118

(Continued—page x.)

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PAGE

The Royal Artillery at Surinam 1804. By Lt.-Col. M. E. S. Laws, O.B.E., M.C., R.A. (Retd.) 126

Beginners on the Baltic. By "M.H.S." 138

Random Reflections on National Service. By Major C. H. T. MacFetridge, R.A. 147

The L.A.A./S.L. Regiment. By Brigadier B. G. Wells 150

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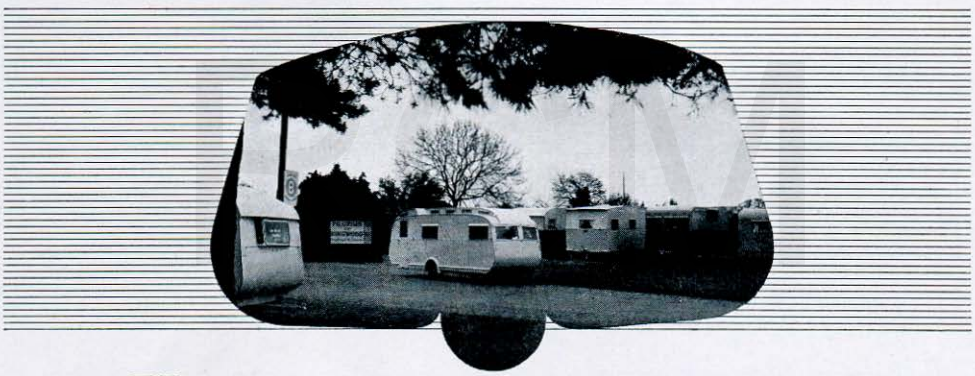
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ILLUSTRATIONS.

Facing page

Korea—A Russian mountain gun captured by Australian troops ..... *Frontispiece*

H.M.S. Gravelines entering Toulon 95

Suda Bay, Crete 95

Interior of St. Sophia, Istanbul 96

Leander Tower and Istanbul from across the Bosphorus 96

Married Quarters are comfortable 110

The N.A.A.F.I. during the canteen break 110

The author turning one of the many hairpin bends 120

Bdr. Brookes negotiating a water-splash 124

Joste was no ocean greyhound 138

The yacht basin of the Royal Danish Y.C. 138

Steering a compass course with varying results 142

Alongside the customs at Kiel 142

Landing a fish by canvas bucket 144

Method II—the washing-up basin 144

Method III—doing a Kon-tiki 144

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Korea.
A Russian mountain gun captured by Australian troops.

"FIELD ARTILLERY EQUIPMENT OF THE FUTURE".

By "T.F.K.H.".

NEW developments up to and including the Atom Bomb have left the man who fights upon his feet, with personal weapons in hand, the final if reluctant arbiter of battle. For as long as he fills this embarrassing role, which is for as long as anyone can now foresee, he will stand in need of ever more effective Close Support to help him overcome more potent weapons or techniques deployed against him. In theory this is undisputed, but recent realities disclose uncertainty, to say the least, about how to put it into practice. There are several reasons. One, perhaps, is the loose thinking, allied to the very proper wish to exploit machines instead of men, that has led to leaning overmuch on Air Support. Another, the laudable ambition, so much more in evidence between wars than during them, of Infantry to be able to look after themselves. A third, if less obvious, is that hitherto the task has been shouldered mainly by the Royal Artillery. Our proud motto carries with it the penalty of being looked to, and rarely in vain, to perform whatever job from Mounted Infantry to Anti-Aircraft may be deemed in most immediate need of doing. A maid of all work may be the mainspring of the household, but she cannot be expected to produce the touch of the master in all subjects, from flues to fancy pastry, without a bit of notice.

Furthermore, if the emphasis is laid too much and for too long on one subject, others are bound to suffer from neglect, and even the tools for doing them may be found to have been mislaid when needed in a hurry.

The astonishing spectacle of three Commonwealth Battalions in action in Korea for as many months, without a British Field Gun nearer than Hong Kong, is an example of how far things have been allowed to go. It is to be hoped that it will never be repeated or at any rate not until something definitely better than a British Field Gun has been produced.

The object of Close, as opposed to other forms of Support, is to enable Infantry to advance, withdraw or hold their ground at will, without undue embarrassment from such of the enemy with whom they happen to be in immediate contact. Though the surest way of achieving this is to cause the latter to die, such an obviously desirable solution is not always possible, neither is it absolutely necessary.

If the immediate enemy can be so disabled or discouraged that they are in no fit state either to manœuvre or to use their weapons with effect at the critical moment, then our infantry will be able, if other circumstances also permit, to complete their task with little trouble and no extra expense. In other words, while destruction is the ideal, neutralization is nearly as good, and if it is simpler to achieve may often prove more profitable to practise. This must always be borne in mind when considering possible improvements on present technique. The attainment of the object is complicated by three factors :—

(a) It must not do unto our own infantry what we would that it did unto the other chap's.

(b) It must be immediately available at any hour of any day or any night.
(c) It must be equally effective in attack and defence.

The first factor alone rules out any simple expedient like an Atom Bomb, and all three severely limit the choice of weapon to employ. Air Support, Tanks, Gas, Flame Throwers, etc., may each and all give useful and at times decisive aid, in certain circumstances. In others they may be unavailable, unavailing or worse. The only form of weapon that can at present be relied upon to do its stuff with reasonable certainty under all conditions and at all times, is a handy missile, launched from a stationary and well-protected projector, concealed from the enemy, well supplied with ammunition and capable of rapid and accurate control from the foremost areas.

This is a pretty fair definition of Field Artillery, and it is clear that, until some entirely novel weapon is produced to do the same job better, conventional Field Artillery, or something very like it, must still be looked to to provide the basic Close Support of Infantry. It follows that the way to get better Close Support is to get better Field Artillery.

It is no exaggeration to say that Field Artillery tactics were revolutionized during the last war by the development that took place in communications and control. Not only was striking power increased many times by the ability to apply concentrations of Div. or even Corps Artilleries, as a matter of course, with a speed and accuracy not far short of that normally expected of a single battery. Opportunities for using it were likewise multiplied. Air O.Ps. became O.Ps. in the air as opposed to doubtful strangers whose observations and specialized procedure were regarded by cynical G.P.Os. with almost equal misgivings. Normal O.Ps. could and did operate from any reasonable range, with a moral certainty that only getting shot could stop them getting through. Intelligent infantry could both call for fire and even control it themselves, when out of personal contact with an Arty. O.P. These, like all techniques, will doubtless be bettered from time to time, particularly, it is to be hoped, the last one. "Uncle" Targets, which can be fired in roughly a minute however, leave little scope for any but minor refinements, and any further substantial increase in effect must be looked for from improvements to the weapon itself rather than methods of using it. That there is room for improvement cannot be denied by even the staunchest admirers of the 25-pdr.

Some perhaps are due to the haste with which it was perforce produced in the throes of war, but more to the experience subsequently gained in action and to further technical developments that have since become available. Time may once again prove short, but none seems more appropriate than the present to put them into practice.

If the Regiment as a whole is maid-of-all-work to the Army, the Field Branch is equally maid-of-all-work to the Regiment. Good servants proverbially make bad masters.

In peace, if so-called specialist branches are short, the Field are milked to man them. In war, if unforeseen problems arise, it is usually the Field Branch who are called upon to thumb amendments or dig in their trails to solve them. The magic word "Anti" as a prefix appears to paralyse designers when it comes to simple attachments, like holders for Dial Sights or Sight Clinometers, to render these equipments readily adaptable to alternative roles, while special shell or charges for the same purpose are patently regarded as

anathema. On the other hand the recent tendency in more armies than one has been to design a new field gun to do a medium's work as well, with the inevitable result of all compromises that it is fully efficient for neither.

The first responsibility of field artillery is Close Support of the infantry of the field army. This, it can never be too strongly emphasized, is as specialized a task as any and more important than most. It can and will give valuable assistance in dealing with tanks, permanent fortifications and perhaps even aircraft, but any modification to these ends that will appreciably reduce its efficiency for its primary and, let it be said again, highly specialized task of Close Support, must be ruthlessly rejected.

A gun is built to throw a shell; a shell is made to do a job. The sequence of design must therefore be to define exactly the job or jobs to be done, second to specify the shell or shells to do them, and finally to consider how best to get them where they are wanted. There are many jobs to be done about a battle-field, but only three which it is essential that a Close Support weapon must be able to do :—

(a) It must be able to cause prohibitive casualties to troops in the open, behind solid cover or in open trenches.

(b) It must cause the enemy to go so deep underground, if they are to attain security during a bombardment, that they will be unable to use either their weapons or their eyes during it, and will be reluctant to emerge after it.

(c) It must permit our own infantry to operate, without undue embarrassment, not more than one hundred yards from the area being bombarded.

Job (a) could be done with petrol jelly in sufficient bulk, but the restricted carrying capacity of a shell renders this impracticable except for special targets of limited extent, which will be discussed later. Both shrapnel[1] and, to a lesser degree, ground burst H.E. are too directional in effect to be fully effective against troops behind solid cover or in open trenches. The splinter effect of low air burst H.E. is the most satisfactory means available at the moment. The devastating effect of ordinary 25-pdr. H.E. bursting on tree tops or branches, upon the occupants of slit trenches below them, must be witnessed to be fully appreciated.

The limiting factor in getting really accurate low air bursts, until recently, has been the lack of appropriately planted trees; a difficulty which has been largely overcome by the development of the proximity fuze. With its aid, provided that the M.P.I. and a reasonable amount of ammunition can be found, it is possible to render any area untenable for troops lacking overhead cover. Two apparent snags are Radar beams of the correct frequency and intervening crests near the trajectory. Both are liable to cause prematures which could not only render a shoot valueless in certain circumstances, but also highly embarrassing to any of our own troops who might be underneath. To insure against this a percussion fuze must always be available as an alternative in case of need, and the consequent reduction of effect or increase of ammunition expenditure against that particular target accepted.

[1] The persistent abuse of this term during the last war, both in conversation and in print, not excluding *The Times*, makes it advisable to stress, even in these pages, that by shrapnel is meant shrapnel as defined in the Concise Oxford Dictionary and as generally understood in previous wars and peaces, as opposed to any old air burst or even a splinter.

Job (b) like job (a) could be done with petrol jelly but with the same limitations and will normally have to be tackled with H.E. Any improvised roofs of tin or timber and a few inches of earth, as well as all ordinary buildings, provide reasonable protection against both air burst and percussion H.E. with instantaneous fuze. A fuze with sufficient delay action to penetrate a brick wall or, say, a foot of loose earth before bursting, is therefore needed to render normal residences undesirable, and really deep or solidly-roofed dug-outs a necessity.

Job (c) is made the more difficult by depending on two factors, the zone of the gun as well as the backlash of the shell. With a 50% zone of 50 yards and one of appreciably less cannot reasonably be looked for except at extremely short ranges, the latter must be nil. There appear to be two possible solutions :—

(1) An innoccuous shell with a cracker content, which Messrs. Brock could doubtless supply, giving the same noise as the real thing. This could be relied upon in attack to keep the enemy's heads down for the few minutes necessary for our own infantry to close in during the final stages of a barrage, but would have little if any stopping power in defence, for use in really close D.F.

(2) Shrapnel[1] with proximity fuze to ensure really low and accurate bursts. Its advantage as a knocker-off as well as a keeper-down of heads, in both attack and defence is obvious enough. It would of course be necessary to insure against prematures, as in the case of H.E., by having a percussion fuze available as an alternative. The premium paid in this case, in the shape of loss of effect, would be very much higher. To be able to disguise a change of ammunition during a fire programme, by incorporating a cracker content, would be an advantage if it did not take up an undue proportion of filling space.

To summarize; the basic requirements are two types of shell filling, H.E. and shrapnel; and three fuzes, proximity, instantaneous and delay.

In the interests of economy, both in cash and shell capacity, it will probably be preferable to have two or even three interchangeable fuzes rather than one triple-purpose one.

The disadvantages of having to use perhaps several types of ammunition during one shoot are obvious, but will be greatly reduced if all combinations of both shell and fuze have an identical ballistic performance. Like any other shell it could be adapted to take alternative fillings, from coloured smoke to propaganda, as desired, but as these would be employed for special targets only the question of identical ballistics is not quite so important.

The next, and one of the most difficult problems to decide, is the most effective size of shell to employ. In considering this it is particularly important that the eye should be kept firmly on the ball, which is first and foremost the highly specialized (with no apologies for repetition) task of Close Support.

The disadvantages of large H.E. shells when engaging close targets are obvious enough. That they are also less likely to cause casualties to the enemy is not so obvious and is therefore apt to be overlooked. Designing shells to decimate dream targets, which can be knocked over by almost anything anyway even if they do occur, is waste of time if they are not equally effective against hard realities. The hardest and the most real of these are scattered groups of small men, sometimes on the move but more often not, whose main object in

[1] See previous footnote.

life, in order to continue it, is to make themselves smaller still behind rocks, banks or in holes in the ground. The ones in the holes are usually the most important and always the most difficult to deal with. To hit a chap in a hole with a ground burst H.E. shell, it is necessary to hit the hole. With low air burst H.E. the tolerance is greater, but it is still necessary to burst the shell within that area of the sky which is visible from the bottom of the hole. The radius of this area, at effective height of burst, varies with the shape and the depth of the hole, but can normally be reckoned in digits of yards rather than decades. As long as the burst is in the right place, the probability of it causing a casualty is identical, in the case of a ground burst, and varies little in the case of a low air burst, whatever the size of the shell. To the casualty at the bottom of the hole the question of whether the splinter that hit him came from an 18, 28 or 38-pdr. shell is of purely academic interest. What does matter to him is that his chances of survival depend principally upon the number, as opposed to the size, of the shells thrown at him. Other things being equal the number of shells that are likely to be thrown at any given area in any given time will vary, for mechanical as well as economic reasons, more or less inversely with their weight.

If follows that, from an Insurance Company's point of view, the chap at the bottom of the hole is a worse risk if faced with a Close Support weapon firing a larger number of smaller shells than *vice versa*.

In other words, the generally accepted maxim that the bigger the bang the better, has got to be reversed. The limiting factors are ballistic performance for the required range, which will be discussed later, the kinetic energy to penetrate a brick wall or a foot of earth, and the chamber capacity to house the fuze and a lethal charge. It is suggested that in the last war we ourselves about reached the upper limit with the 25-pdr., and that both the Germans and the Americans exceeded it. To the layman it appears that these qualities could be obtained in a shell of certainly not more, and preferably a lot less, than 30 lbs.

Before considering ways and means of throwing the shell it is necessary to decide how far it must be thrown. From many points of view the shorter the range the better; communications and accuracy, to take but two instances, are both liable to deteriorate with distance. The minimum range however is practically dictated by the over-riding considerations of ammunition supply and concentration of fire.

As regards the first, it is obviously impracticable to handle the tonnage required in the foremost areas at any time, and furthermore the probability must be faced that gun areas in future may have to be sited appreciably further back than has been normal in the past.

Guns can be dug in or armoured to fight it out in unpleasantly exposed positions, but they are valueless, however brave, without ammunition. Even though the vehicles bringing it up may be "hard" the dumping parties to handle it are not. It has been possible hitherto to bring up ammunition almost anywhere under cover of darkness, with lucky or intelligent harassing fire as the only hazard.

With development of Radar this is no longer the case and, in position warfare at any rate, cover for the approach of supplies, even by night, may have to be considered as seriously as cover for the guns themselves by day.

Circumstances alter cases and one crest further back is a distance impossible to define, but where guns in the past would have been within a mile of F.D.Ls. they may in future have to be not less than two.

As regards concentrations, these are the essential basis of all artillery tactics. The Div. Artillery, as a fire unit, is the most powerful weapon at the disposal of the Div. Comdr. and any sector of the Div. front to which he cannot apply it as a whole, constitutes a sector in which he has surrendered a proportion of his initiative. If the minimum range for the regt. in immediate support of a Bde. sector is from three to four thousand yards, that for flanking Regts. will be considerably greater in any case. The more extended the front of the Div. may be, particularly if it is fighting a delaying action to cover a retreat, the more vital will become the ability to employ the whole fire power of the Div. Arty. in any sector of its front. In such a case a regt. on one flank may well be called upon to fire a D.F. task on the other at a range of 10,000 yards within 200 yards of the F.D.L.

To do this with any degree of confidence, its maximum range must be at least 40% greater, and this, it is suggested as a round figure, should be 15,000 yards. Faced with ranges of this order the question of whether the shell should be thrown by a gun or some other form of projector answers itself. Neither mortars nor rockets are sufficiently accurate and guided missiles, as a practical proposition, are not in prospect for many years, if ever, for this type of work.

The choice between a normal and a recoilless gun is a question of economy, tempered occasionally by necessity and always by convenience in action. A recoilless gun consumes approximately double the propellant charge of a normal one, and wastes half of it, to produce the same result. Until there is some revolutionary development in propellants, this would amount to between one and two cwts. wasted per Fd. gun per day, as a general average of the last two wars. As a matter of either transport or productive effort, this would very soon swallow any initial saving of a ton or so in the equipment itself. The disadvantages of a recoilless gun in action in a gun pit are obvious. It is evident therefore that so long as it is possible to get a normal gun into action in the position demanded by the tactical situation, it is the preferable equipment for reason of both economy and comfort. For special operations, where Jeeps or mules are the ceiling of motive power, recoilless weapons have an obvious role to play.

It would greatly facilitate the mounting of such operations if their equipment was a recoilless version of the normal gun, and with identical ballistic performance.

So far, reasoning backward from the shell to the gun, the following broad outline has emerged:—

Shell, as much under 30 lbs. as possible. Gun, conventional. Range 15,000 yards.

If these are accepted as a reasonable basis for discussion, refinements and improvements should be considered in the reverse order, beginning with the gun and its mobility, which is the limiting factor for most of them.

To design a gun to throw a given shell a given distance is simple enough; to marry it to a carriage so that the whole equipment may be moved with speed and certainly to within range of the target, is a bit more complicated. Before

attempting to do so, the designer must be told exactly what degree of mobility is necessary. For a Close Support weapon there can be only one yard stick to apply, and that is the mobility of the troops to be supported. In the case of Armoured Formations operating independently through or behind the enemy's main forces, moving across country and perhaps supplied by air, the accompanying artillery must have a similar cross-country performance and at least a comparable degree of immunity when on the move. For this, S.P. equipments with a certain amount of armour are essential.

In the case of the Infantry Formations, who can rarely fight a serious battle and never a prolonged one, beyond range of their own first-line transport, the mobility of the latter sets the minimum standard necessary. At times this may be on a jeep, pack or parachute basis. In the past these varying demands have been met by maintaining Horse, Field and Mountain Artillery, supplemented of late by Airborne as well.

In principle they all existed for the same purpose, the Close Support of the troops they accompanied into battle. In public they combined readily enough with each other, the heavier natures of artillery and even, at a pinch, with the A.A., in a common allegiance to the traditions of the Regiment *vis-à-vis* the more common sorts of soldiery. In private their tribal customs, both military and otherwise, varied as much as their equipment, and mainly because of it, to the benefit of unit *esprit de corps* perhaps but to the detriment of a common artillery doctrine.

With modern technique there is no need for such a wide diversity of equipment, and it is suggested that whether their guns be S.P., Towed, Recoilless or "Screw", the same shell should come out of the front end of all of them. That this would lead to economy in production and simplify the exchange of personnel, when necessary, is self-evident. It should also lead to a greater uniformity of outlook and doctrine, not only in the Regiment, but in the Army as a whole. This would benefit all concerned, more particularly perhaps infantry commanders of the future, without reducing that admirable sense of rivalry which has done so much to foster the fighting spirit of units in the past.

The equipments from which the shells are fired would vary from tracked and armoured S.P. mountings at one extreme to recoilless and probably screw gun types at the other. The call for these extremes however will rarely be on a large scale and, though important in themselves, the operations they will support must always be subsidiary to the decisive phases of any major war. The battles that really decide its issue will be fought out in future, as they always have been in the past, over tracts of honest agricultural land, varied by both sparse and more densely populated areas, across which modern commercial M.T. can move a load of several tons with ease to within a furlong or so of almost anywhere. Winching and a little ingenuity can do the rest in case of need. Weight, with low-pressure tyres, is less of a handicap than width, which can produce chaos in narrow streets and lanes quicker than anything else. Wheels, particularly with multi-drive and tact, can continue to avail themselves of farm tracks, culverts and causeways, that tracks would ruin at the first passage. They can also avail themselves of the same light bridges or ferries that will take the weight of Infantry 1st line transport, but nothing heavier. A towed equipment is far more economical than a S.P. either to produce, maintain or replace. It has a greater strategic mobility, without recourse to cumbersome transporters. It presents a smaller target in action

and can be endowed with greater security by solid earth and sand-bags than by the weight of armour that any S.P. equipment can afford to carry.

For the main battles therefore, with their movement of men and material in mass, without which the solid fighting that wins the war could never be done, a towed equipment, with at least a six-wheel drive tractor, is what is wanted.

Having told the designer the degree and general form of mobility required, it remains to give him a limit of the weight to be moved. All improvements have to be paid for somehow and most of them by weight. Now that six good light draught horses are no longer the limiting factor, a reasonable increase can be afforded. To start with there is the bonus of the existing 25-pdr. carriage itself. Originally designed for a gun of larger calibre, which was mercifully never produced, it is capable of standing appreciably greater strains than it has to. It is fair to assume that a new design of equal weight would be just as efficient in this respect or more so. In addition, so long as the width is not increased, which is important, there seems little reason why an extra half-ton or so should not be accepted as a price to pay for improvements that are worth while. It is true that the result would be proportionately more difficult to man-handle, but with modern winch gear this is rarely necessary and its importance is apt to be over-estimated, particularly perhaps by the detachment concerned. There is indeed little logical call for a field gun to be man-handled any more than a medium.

Assuming that the designer can be given the bonus of the existing carriage, plus a further half-ton to spend if necessary, it remains to detail the improvements that are essential, and to place in order of priority those that are desirable if they can be afforded.

Essentials (a) Shooting in the Upper Register is indispensable.

Its offensive value in mountainous, but not very unusual, country was amply demonstrated in Italy, where American 105's, unhampered by crest clearance problems, could not only get into action a thousand yards ahead of British 25-pdrs., but could also engage hostile mortars sited in deep ravines that the 25-pdr. could not touch. The defensive advantages of obtaining extra flash cover or even, where the lay of the land permits, occupying positions immune from hostile artillery not similarly equipped, are self-evident.

A further advantage of considerable potential value is that a gun which is able to adopt a mortar trajectory at will, is able to do a mortar's job when wanted. A case can be made out for retaining something like a 2″ mortar for use as a purely domestic platoon weapon, controlled by direct observation from its firing position. To retain anything heavier or one calling for what are, in effect, artillery methods of control as an infantry weapon, is a misapplication of valuable transport to bring the ammunition up into the Bn. area, and of still more valuable infantrymen to man it.

In addition it must be remembered that amateurs can seldom compete with professionals, and the personnel of Inf. mortar plns., temporarily and probably grudgingly spared, or pared from understrength rifle coys., cannot reasonably be expected to attain the technical standard of professional gunners, however enthusiastic they may be. One extra O.P. party per Bty., i.e. one for each Bn., with communications to shoot both on their own observations and, through the Bn. net, those of the Inf. would give the latter better service and at a lower

cost than that provided by their own mortar plns. It would also provide an economical, natural and effective channel for the passage of Bn. counter-mortar information to R.H.Q. Here it could be collated with profit for the Bde. sector as a whole, and passed on to Div. for similar treatment at their level. The whole process would be smoother, and everyone concerned at all levels would be kept better in the picture than by any of the various, and rarely satisfactory, counter-mortar organizations improvised during the last war.

(b) Single motion loading and (c) independent line of sight, to increase the rate of fire.

The limit to the rate of fire which a really first-class detachment could develop, from the field guns produced by several nations during the 1914-18 war, was set by the time of recoil and run out between rounds. It was about thrice that obtainable to-day from the 25-pdr.; a sobering thought in this age of progress. Furthermore, with an independent line of sight and a good gun platform, searching and sweeping could be carried out at the same time, with a reasonable degree of accuracy. Such rates of fire are physically impossible with separate loading of shell and cartridge, but in the American "105" this can be done in one motion without apparent difficulty and there seems to be no adequate reason why our own designers should not give us a chamber, shell and cartridge case of similar efficiency. Rates of fire of from twenty to thirty rounds per minute can only be maintained for very limited periods and in any case require sufficient notice to prepare the ammunition beforehand. The ability to do so however is always useful and may sometimes be decisive.

With a trebled rate of fire one Fd. Regt. could cover nearly a mile, with a prohibitive "stonk", as opposed to the five-hundred yards or so at present. A Div. Arty. could deliver some two thousand rounds in the space of one minute, a devastating prospect for a worth-while "Uncle" target. If these were filled with petrol jelly, although each shell could carry comparatively little, the total should suffice to cook any tanks known to be firing from, or forming up for attack in, a wood or group of buildings several acres in extent. Similar treatment should make life problematic, to say the least, for occupants of the stoutest concrete pill-box.

These three improvements are considered to be essential. Any balance of weight available should be devoted to the following desirables:—

(a) *Higher M.V.*

There is no limit to the amount of extra range that can be usefully employed, but there is a limit to the stresses to which an economically-filled shell can be subjected. This limit however does not apply to solid shot and even if the full potential M.V. cannot be used with profit for normal shells, it will always come in handy for improving anti-tank performance. It is not suggested that normal field guns can ever provide the complete answer for anti-tank defence in all conditions. Given a reasonable amount of extra M.V. however, and suitable shot, they should at least be able to look after themselves. If every fd. regtl. gun area was *ipso facto* a tank-proof locality which, although it might be by-passed, could never be overrun by armour acting independently, the anti-tank defence of a Div. area and the life of a field gunner would both be simplified.

(b) *Overhead cover against Proximity Fuzed H.E.*

This is a problem that must be faced for a major war of the future. The only answer appears to be some form of armoured umbrella. For S.Ps. this could be provided as a permanent part of the equipment. For towed mountings such a solution would probably be too unwieldy and cumbersome. The alternative is a sectional structure to be fitted when coming into action. Its method of attachment and whether its components should travel on the carriage or be carried separately is a problem for the designer.

(c) *A.A.*

Any H.E. shell of reasonable capacity, fitted with a proximity fuze, is a potential menace to aircraft throughout its trajectory.

If the atmosphere is liable at any moment to be uncomfortably full of such missiles at anything from Zero to 10,000 feet this, in itself, provides an appreciable deterrent to low or medium height attack by aircraft in forward areas. By the same token the action of our own aircraft will call for the most careful co-ordination and, in their own interests, a standard of both map-reading and discipline higher than some of them have displayed in the past. Fully efficient A.A. performance however demands a specialized mounting incompatible with the primary tactical role of a field gun, and should therefore not be contemplated.

On the other hand telescopic sights and an improved top traverse present no major difficulty and would open up some interesting possibilities. In the first place they should enable Fd. Arty. alone to keep hostile Air O.Ps. at a much more respectable distance and/or height than our own, at any rate, have been accustomed to use in the past.

In the second they would materially improve anti-tank performance. For these two reasons they should be accorded a high priority in design. Further possibilities are controversial. Such an equipment would possess no mean potential power of self-defence against the direct approacher or receder targets presented by low-level air attack; but to avail itself of this power, without undue discomfort to neighbours, would call for drastic safety precautions, combined with the very highest standards of fire discipline and control. The priority to be accorded to the safety of third parties would vary from time to time with the air and general situation and would probably be decided at theatre level, The headache of applying them however would fall inevitably, and as usual, upon Sgt. Buggins the No. 1 and 2/Lt. Buggins the G.P.O.

Another problem, responsibility for which would not fall upon the broad shoulders of the Bugginses, is that of bolstering up the A.A. defence of back areas.

Fitted with a suitable self-destroying fuze, any Fd. Arty. that happened to be in the area could make a material contribution at any rate to an A.A. barrage over a V.P. If a normal A.A. fuze could be adapted for use with normal Fd. Arty. shell, the latter might provide a useful bonus on occasion. The production and supply of special ammunition for the purpose however would be an expensive undertaking of uncertain value.

It is now possible to tabulate a more detailed specification for :—

(1) *Normal Field Artillery.*

Ammunition.

Shell. Weight and walls. Adequate to range 15,000 yds.; should not exceed 30 lbs. and the smaller the better.

Fuzes. Proximity; Instantaneous; Delay.

Primary Fillings. H.E.; Shrapnel; Incendiary.

Others according to taste and demand.

Shot. The best possible A.P. shot, to be fired perhaps with a special supercharge as fixed ammunition.

Charges. Variable, in a Q.F. cartridge case adaptable to single-motion loading.

Piece and Recoil System.

Conventional and to permit a rate of fire up to 30 r.p.m.

Maximum M.V. The higher the better.

Carriage and Sighting System.

Towed type.

Weight. The lighter the better, but approximately 10-cwt. more than the 25-pdr. acceptable.

Upper Register Shooting.

Independent Line of Sight.

Improved Top Traverse and Dual Telescopic Sights for A.A. and A.Tk. shooting.

Overhead shield attachable in action.

Motive Power.

Six-wheel drive tractor and winch gear.

(2) *Special Equipments.*

(a) *For Support of Armoured Formations.*

Ammunition, Piece and Recoil System. Identical.

Mounting and Motive Power. S.P. tracked and with armour to taste.

(b) *For Airborne, Mountain or Jungle Operations.*

Shell, Fuzes and Shot. Identical.

Piece and Recoil System. Recoilless and probably "Screw".

Charges. Variable and appropriate.

Carriages and Sights. Appropriate.

Motive Power. Anything from Jeeps to Giraffes.

Should it be agreed that the suggested improvements, outlined above, are both desirable and practicable, it remains to balance their value against their cost. The latter is bound to be high in any case and is unlikely to be materially reduced by incorporating portions of the old equipment in the new.

The credit side, it is suggested, adds up to considerably more, but is even harder to estimate with accuracy.

(a) It is arithmetically simple to assess the increase of fire power available in emergency. This would be approximately trebled. It is arguable that wars are not a continuous series of crises, but ours can usually be relied upon to start with quite a few, and the value of this asset should not be under-estimated.

(b) The extreme range, though primarily demanded in order to give accurate Close Support at medium ranges, automatically increases the value of the gun for Counter-Battery and other long-range tasks. At a conservative estimate this, coupled with the higher potential rate of fire, would be at least 30%.

(c) The profit of infantry being able to operate closer to a barrage in attack, or D.F. in defence, is difficult to express at all in figures, and impossible to define with accuracy.

As a cockshy it is suggested that for every hundred yards that they can walk closer with confidence, a barrage could be counted as being 100% more effective. Alternatively it could be counted upon to produce the same result with half the ammunition.

(d) The comparative efficiency of low air burst and percussion H.E. against infantry in holes could be worked out mathematically if the size and the shape of the holes was a constant.

Again as a cockshy, it is suggested that the answer would vary from several hundred, to perhaps thousands, per cent. according to the intelligence and energy of the digger and the time and tools at his command.

(e) Increase of effect against distant tanks and concrete emplacements, attainable with heavy concentrations of incendiary shell, is infinity, because hitherto they were both immune to fd. arty. fire.

(f) The same is true of what might be termed mortar and A.A. potential performance.

(g) Normal anti-tank performance might be reasonably expected to show an increase of at least 30%.

Giving a weight factor of one each to the three most important functions. Emergencies, Close Shooting and Infantry in open trenches, and ignoring the rest, overall increase of effect works out at not less than 300%.

The problem of whether and when to re-equip the fd. arty. may be simply summarized as follows:—

Pros. (a) We should obtain the value of at least three old guns for the cost of one new one. (b) If the next prospective war is going to be as unpleasant as it promises, nothing but the very best will win it. (c) It is better to do it before a shooting war begins than after.

Cons. (a) It would cost a packet. (b) Our plate is pretty full already. (c) The 25-pdr. did a lot towards winning the last war, and there is life in the old dog yet.

Suggested solution. Do it now.

A GUNNER WITH THE GREY FUNNEL LINE.

By "J.B."

THE affiliation between H.M.S. Vanguard and the R.A. makes one wonder how many Gunners know of the R.A. Unit whose work is with the Royal Navy, and which spends a lot of time on cruises. The Bombardment Unit[1] is spread over the world and members of it were the first Commonwealth land forces in action in Korea. This article however is not an account of that campaign, nor about the technical aspect of naval bombardment. It is written to give an idea of life in a detachment in "peace" conditions, but before the life can be described a few words should be said about the way the bombarders work.

Detachments are placed under command of a convenient C.-in-C; for example in Malta under naval command, but in Trieste under Betfor. The detachments consist of two or three R.A. officers and varying numbers of R.A. driver-operators and R.N. telegraphists, the officers being trained as B.L.Os. and F.Os.B. The duties are twofold, to act as operational troops (N.B. Korea mentioned above) and to train R.N. and allied personnel in bombardment procedure both from the point of view of control on board and observation of fire ashore. There is also the usual T.A. commitment and short courses are run for active list R.A. officers wherever possible.

This close contact with ships soon gets one into naval ways, like drinking the loyal toast sitting unless there is a band, or attending the wardroom cinema show with cold buffet supper every Sunday night; this last is one of the few customs NOT going back to Nelson's time, but is firmly established despite this drawback. One custom (or is it a written law?) which took me a long time to master is the correct order for getting in and out of boats and on and off ships, though really it is quite simple: the senior officer is the first to board and the last to leave a ship, so it follows the order is reversed for boats.

Gangways as well as boats can be confusing. If used, forward gangways are for ratings, aft for officers; but again on flagships the starboard side is for flag officers, staff, etc., and port side is for other officers, but on a private ship it is starboard side for all officers and port side for ratings. Naval ranks can cause misunderstanding too; one might see a naval officer with one stripe and register him in the mind as a sub-lieutenant, only to find him about forty years of age and suffering under a clumsy-sounding rank such as "senior commissioned communications officer" or "commissioned mechanician". Since abolishing warrant officers the Admiralty has collectively named their successors "Branch Officers", giving each a rank describing him as someone commissioned into a certain branch of the navy, as these two samples show.

Visiting foreign warships can make one feel a little self-conscious at first as one is piped aboard, a salute reserved for royalty, flag officers, captains of ships and foreign officers. A thing one notices on a U.S. ship is the strict teetotalism; one soon feels that there is something lacking even though there is a

[1] Much of this article is based on experiences with "A" Troop, 267 C.O.B. Bty., R.A.

twenty-four hour service of iced or hot coffee with cream, iced or hot tea with cream, iced water with Coca-cola. An interesting foreign man-of-war I visited was the Turkish Yuzuv, for an excellent party given by the admiral. This ship was the German Goeben, built in 1912, and she still burns coal. She is the survivor of two battleships transferred during the First World War to Turkey, though they remained German manned. It should not be gathered from this that the Turkish navy is a museum piece—it has many modern ex-British and ex-U.S. units.

A feature of life in H.M. Ships is Sunday Divisions, when everyone puts on his best suit and medals to be inspected by the Captain; in a big ship divisions perhaps ending up by marching past. If on his own a B.L.O. would fall in with the miscellaneous officers or not at all, but if any troops were embarked he would fall in as a divisional officer.

One naval manœuvre which looks more frightening to the beholder than the victim is transfer by jackstay from one ship to another steaming alongside. B.L.Os. sometimes have to submit to this in the course of their duties. In some minds transfer by jackstay is closely associated with swimming from the ship's side at sea, but in fact there is something attractive about a voluntary swim with no land in sight. The ship stops, a sea boat is lowered, ladders and sometimes nets are put over the ship's side and hands are piped to bathe port (or starboard) side. Sailors must be more modest than soldiers, because even hundreds of miles from land very few bathe without trunks.

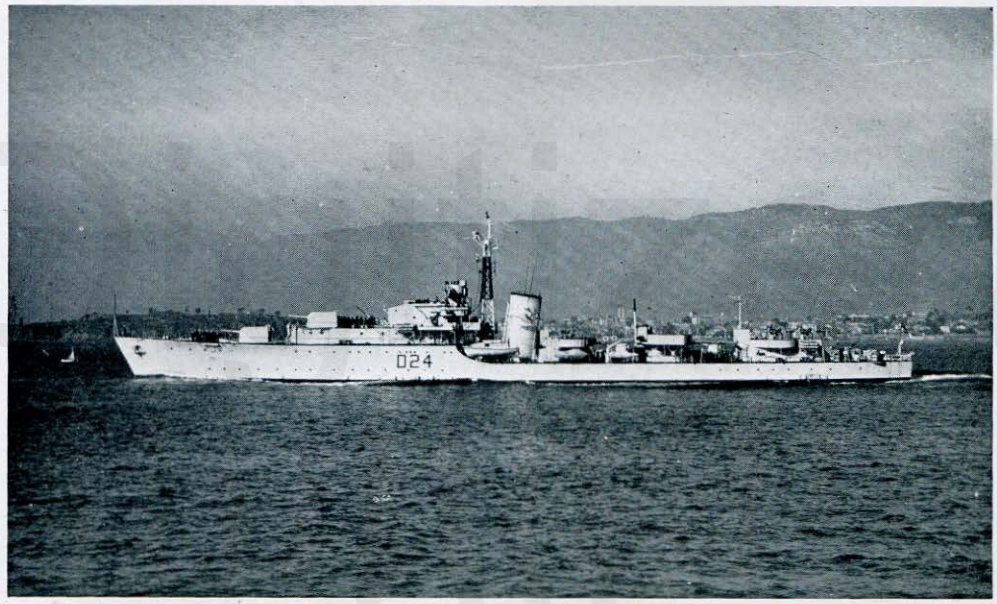
When a fleet does its bombardment "Annual Practice Camp" it is usually during a cruise and at almost inaccessible ranges like Cape Wrath or Cape Arnauti. This means the bombardment detachment must go on all or a large part of the cruise merely to get to the ranges. The detachment might be all in one ship or split between ships, and on board any ship the O.Rs. might be all in one mess or spread between messes. These cruises can mean much hard work for everyone, though I only mention this *en passant*, but being borne for duty entitles those O.Rs. who are old enough to draw a rum ration; if the main brace is spliced officers also draw a tot.

Besides carrying out bombardment exercises, the bombarders usually give a hand with the ship—the telegraphists being especially appreciated as the navy is short of these experts. The kind of thing the gunners can do is to keep clean a part of the ship, help to haul in recovered torpedoes and take turn as "cook", a naval term meaning mess orderly. Officers are less useful to the ship; my contributions have been limited to helping with social engagements, invigilating at examinations and captaining a cruiser's rifle and revolver team, which was soundly beaten. In mitigation I would add that our Danish adversaries sabotaged the team with schnapps and Tuborg before the match and between events, but gave us all a crested memento of the occasion.

The friendliness shown by foreigners in half-a-dozen countries I have visited in H.M. ships has been magnificent, but it was a little surprising when I visited one army mess to be told by the second-in-command "To-morrow I lend you my horse and my wife". Next day I did go riding and the wife accompanied me, after carefully explaining that her husband's English was poor!

The popularity abroad of the R.N. is hardly realized by those at home, nor is the consequent good these flag-showing visits do. Children's parties and Beating of the Retreat by the Royal Marines are better than thousands of

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H.M.S. Gravelines entering Toulon.



Suda Bay, Crete.

pounds worth of verbal or written propaganda. Things cannot always be perfect though, and in one foreign port a lieutenant was discoursing in French, to whom he thought was one of his hosts, about the evil ways of a certain power; too late he realized he was talking to the naval attaché of that power!

At Oran where one could perhaps expect some coolness, there was a welcome. It was near here at the French Amphibious School that I saw evidence of the closing of old breaches of friendship. At a dinner party given by the Commandant of the School in the old cruiser "Duquesne", I was sitting next to the second-in-command, a very keen colonel of artillery. Of course we discussed the war, and on my saying I had been to Madagascar he called to the commandant, who had been there also on the other (i.e. Vichy) side. I remembered him as a prisoner in the ship I was in and we discussed amicably the Diego Suarez affair, his clearest memory being of the discomfort of life in a slit trench after his sloop had been sunk. "Tell me" he said "How did you sink my ship?" "By artillery, I believe" (I meant gunfire). "Artillery! Impossible!" This brought the colonel to his feet. "Not impossible, artillery is the best, Vive St. Barbara" he said. This was an excellent cue for a toast and more champagne.

In Toulon each visiting ship had a "host" ship affiliated to it as is customary. The destroyer I was in was berthed alongside our "host" which meant many long lunches. The French navy treats lunch and not dinner as the big meal; the junior officer present says a few formal words, welcomes any guests, then reads the menu and wishes everyone a good appetite.

Despite Anglo-Vichy French differences, one expected to find the Entente Cordiale still cordiale. However, a post-war visit to Egypt, where we have recently been unpopular, was looked forward to with a great deal of interest, but the people here were (1950) friendly too. Once at least our soldiers were shadowed back to the docks by police, and of well over two thousand service visitors I don't think there was a case of molestation during the five days. Wartime habitués of Alexandria have probably heard that it is now very quiet there, though the Union Bar is still serving a very good meal from snails to quails. Prices in Alexandria are lower than in many Mediterranean ports, Athens and Istanbul being particularly expensive towns.

Athens is a clean, open, modern city, with famous antique appendages, but the first thing to strike one in Greece is the rate of exchange, a thousand drachmae being worth about fivepence-halfpenny. For the visit to Athens half of the soldiers were in H.M.S. Vigo, one of the two ships formally visited by H.M. King Paul. The whole detachment visited the Greek S. of A. in relays, where the British I.G. and his wife were delightful hosts. Although the entertainment provided was lavish, the bombardment soldiers were working hard providing a wireless link between the flagship, naval mission and garage; this link increased in importance when a telephone strike started.

There is a tale told of one officer who lost his miniatures and had to borrow some just before the Embassy Ball in Athens. Unfortunately the borrowed medals included an Italy Star to which he was not entitled, and when a senior personage asked him where he had been in Italy, he unwittingly replied "I spent my honeymoon in Taormina, Sir!"

Corfu contrasts with Athens and its countryside. It has clearly been a a charming place, but suffers badly from war damage and neglect. The

Reserve Officers' School there is an old British barracks, which still carries the V.R. monogram in places. Corfu island is well wooded, especially with venerable olives, the Venetians at one period paying a subsidy for every olive tree planted. There is a British Colony of about three thousand, of Maltese descent.

Paleocastritza at the northern end of the island specializes in large crayfish, which are kept in rock pools after they have been caught. The visitor chooses his lunch "on the hoof" and has it cooked while he bathes and lounges in an idyllic cove. The Greek Army kindly lent transport for the bombardment detachment to spend a day there.

Different from Paleocastritza is bleak Suda Bay, of sad memory to many. Anyone who was in the Crete campaign will be pleased to hear that the cemetery of about 1,700 graves is beautifully kept by a Greek, who was a guerrilla. Dominating the many wrecks in the harbour is that of the "York", one of whose guns, sawn in two, lies near the jetty.

Sebastopol was visited in 1947, but Istanbul is probably the most romantic place on the Mediterranean station. The R.E.M.E. of the British mission lent transport for sight-seeing, and Istanbul seems one of those towns very much as it is imagined: fine mosques, Byzantine and Ottoman monuments and remains, modern hotels and twisting dark alleys with semi-fortified houses, labyrinthine bazaars, the Golden Horn full of shipping and villas on the Bosphorus inhabited by people of all types and nationalities.

St. Sophia, now a museum, is magnificent, and will be even nobler when the restoration, or revealing, of the Byzantine mosaics is complete. The Sultan Ahmet or Blue Mosque is beautiful from the outside and well proportioned internally, though the famous blue tiles are very few and rather disappointing when compared with those in the Dome of the Rock, or some Persian work. It was in this mosque that some of the soldiers watched a Ramadan service.

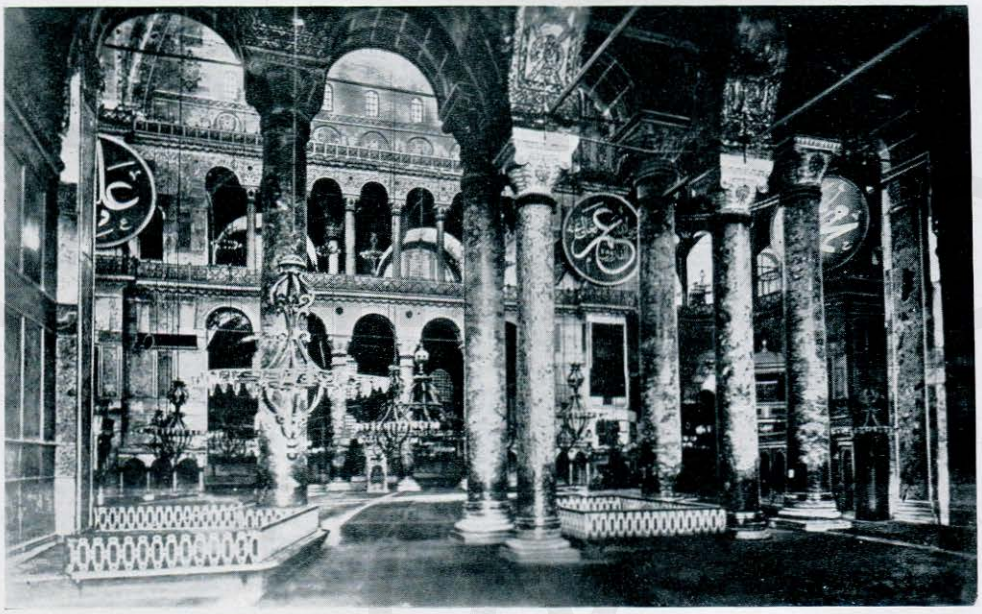
The Seraglio has many things to show. The kitchens which used to cook for 10,000 daily including the Sublime Porte's "Brigade of Guards", is now a germanic museum, with what must be one of the world's richest collections, being particularly strong in Ming. The armoury is interesting, especially one fine curved scimitar of a Sultan, the case of which bears the legend "Wilkinson".

The Grand Bazaar is probably the only place where one can buy at a reasonable price, and this takes plenty of time, patience and coffee. Once I was shown an article for seventy-five Turkish pounds, so I offered thirty; an aggrieved merchant told me, "But Sir, that is the fixed price—see the label". The label unfortunately showed a hundred and twenty pounds! Not to be shaken, he then informed me, "Ah! That is only for Americans".

We were disappointed in not seeing inside the ancient Turkish Baths, but the Turkish government like so many others needs plenty of paper, so uses the old baths as a Stationery Office depot.

Hospitality in Istanbul for the visiting naval units reached a "new high", including a wet canteen run and subsidized by the Commonwealth community, free rides on trams and buses and a trip to the Black Sea.

One is all the time conscious of being near the Iron Curtain, not only because of the presence of Russian and Rumanian shipping, but also to a certain degree by the security-mindedness of the Turks, extending I was told to



Interior of St. Sophia, Istanbul.



Leander Tower and Istanbul from across the Bosphorus.

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friendly missions. The only armament we saw were some ancient iron cannon near the scene of Byron's "Bride of Abydos!"

When we first anchored off the Dolma Banche palace we noticed flocks of birds flying up and down the Bosphorus about a foot above the water. Someone said they were cormorants, but they looked smaller. Just before leaving we were told the truth, they were the lost souls of the Bosphorus, those who left their bodies in the swirling waters off Seraglio Point, as Don Juan so nearly did. They never enter the Black Sea nor that of Marmara, though all their bodies must have been washed into the latter.

Many people will know the Cape Wrath area, and some will have caught salmon there, but fewer will know Cape Arnauti in Cyprus, which is also used as a bombardment range. This area is a roadless state forest where the only transport is woodmen's donkeys. It is deserted and has ruins and remains of churches and villages, from which the inhabitants fled in past ages when Corsair raids were frequent. Most interesting features of the area are Fontana Amorosa where Aphrodite took her first drink after coming from the sea, and Aphrodite's Pool where Poseidon caught her bathing. To follow her example is said to increase one's sex-appeal, and although I have not found any difference in myself, many senior officers seemed to believe in the superstition.

I might have given the impression that a part of the Royal Regiment spends its service on long pleasure cruises. It should be stated that bombardment detachments are fairly hard-working, even on cruises, and the number of exercises and live shoots carried out annually would astonish most gunners.

A FREE LANCE GUNNER.

By Sir Patrick Cadell, c.s.i., c.i.e., v.d.

IN an Article published in the October issue of the Journal under the above title it was suggested that one Alexander Gardner was worthy, though not an Officer of the Royal Regiment, to be reckoned "in the brotherhood of good gunners". The object of the following lines is to show, as briefly as is compatible with full evidence, that this man is in no way deserving of being placed on that high level of respectability. His record was stained by an act of utter infamy, known to his contemporaries. Afterwards by his plausibility and his vivid imagination he imposed a romantic story upon some, mostly, if not all, civilians, who visited him in his retirement in the Jammu Hills. This story was a generation later embodied in an uncritical biography[1] by an officer of the British Service, without apparently any local knowledge. The story indeed was demolished in a book[2] written by an official long employed in the Records Office of the Punjab Government, and edited by the Keeper of these Records, an Officer of the Indian Educational Service. Publication in India has prevented this book being as well known in this country as it deserves. As the myth that

[1] "Colonel Alex. Gardner, Soldier and Traveller", by Major Hugh Pearse, 1898.
[2] "European Adventurers of Northern India", by C. Grey. Edited by H. L. O. Garrett, Lahore, 1929.

Gardiner (as apparently he should properly be called) was a "good gunner" has now been revived, it has once more to be destroyed.

It should at once be understood that the myth is based entirely on Gardiner's own story of his career, while the damning facts of his character are to be found in contemporary Official Records, and on the first-hand evidence, also contemporary, of so upright a man as Sir Henry Lawrence. Gardiner's story, as adopted by Major Pearse, seems entirely based upon notes made by two members of the Punjab Civil Service who visited him after he had left the Punjab. The first note, made by Mr. M. P. Edgeworth in 1852, is to be found in the Journal of the Asiatic Society of Bengal.[1] It was mainly concerned with Gardiner's alleged travels and need be noticed here only to show the variety of the statements about his origin and early life. The second visitor was Mr. F. H. Cooper in 1864. His notes do not appear now to exist, but on them Sir Richard Temple's laudatory introduction to Major Pearse's Biography seems to be based, as is that book itself. The remarks[2] of the soldier-administrator Sir Henry Durand seem also based on those notes though differing in detail. There is no mention of Durand having ever met Gardiner.

Previous statements by Gardiner as to his origin are to be found in the Life of Sir Henry Lawrence,[3] and in Gardiner's letter to the Punjab Government of 5th October 1850.[4]

Stated briefly, Gardiner alleged that he was born in 1785, a date accepted by Pearse, though not reconcilable with the dates of his service in the Punjab, nor with the attested burial certificate which gives his age as 76 at his death in January 1877. His father is said to have been Scottish, emigrated to America. His mother, daughter of an Englishman and a Spanish-American wife, with Aztec blood (Pearse): Irish, according to Durand. She had also, according to Pearse, relations and property in Spain, besides relatives in France; and spoke Italian fluently. Gardiner is said by Pearse to have been born on the shores of Lake Superior. According to Edgeworth his father was in the Mexican Service, and no mention is made of birth near Lake Superior. By Gardiner's own statement to the Punjab Government he was born in Philadelphia. His father died in 1812 (Pearse), in 1823 (Edgeworth). On his mother's death in 1807 (Pearse) he spent five years in Ireland "preparing for a maritime career", and thus, he says, acquiring an Irish brogue. He was for several years at a Jesuit College at Clongoose in Ireland (Edgeworth and statement to Lawrence). He was five or six years in the American Navy (Durand) and a Lieutenant in it (statement to Lawrence). He journeyed in 1813 to join his brother in the Russian Service at Astrakhan and remained there till his brother died from a fall from his horse in December 1817 (Pearse). Gardiner recovered £6,000 from the Russian Government, and later, through a French relative, got a further £12,000 from the same source. According to Edgeworth, on his father's death in 1823, he made his way to Astrakhan and found his brother living and remained there till 1829, when his "prospects were blasted by his brother's death".

[1] Vol. XXII 1853, 283, 431.
[2] Life of Sir H. Durand, II, 230.
[3] Vol. I, p. 320.
[4] Grey, p. 291.

These details are given merely to show the entire worthlessness of the data offered by Gardiner about himself.

As regards his travels in Central Asia, it is true that they have been accepted by some writers, but Yule, the best geographer of them all, regards them as apocryphal,[1] while even Pearse admits that he had great difficulty in tracing the route.[2] It is possible that Gardiner made some journey though the later and less improbable dates which he gave to Edgeworth leave him little time for it. But in his service in the Punjab Gardiner undoubtedly came into contact with several adventurers who had travelled in Central Asia. On their stories a man of Gardiner's brain and imagination could easily have woven a narrative of his own.

We now come to the portion of Gardiner's career which concerns us and which we can check through the cold pages of official records. According to Gardiner's account, he received, apparently at the end of 1831, an invitation from Sultan Mahomed, an Afghan Chief who held Peshawar under Ranjit Singh. The latter wrote to Sultan Mahomed desiring Gardiner's services, and on Gardiner's luckily passing a test with some new guns, enrolled him as a Colonel of Artillery, and placed him in charge of an Artillery Camp, where he instructed the principal Artillery Officers, each of whom presented him with a douceur of ₹500 or ₹1,000.

Now for the News Writers' Record[3]. "*15th December, 1831.* Messrs. Khora and Gardiner, Europeans about 35 years of age, presented themselves with a 'nuzzer' (gift) of five rupees each and were admitted to an audience. They said they were formerly serving on a ship of war but not being satisfied with their position, quitted it and proceeded from Bombay to Peshawar where Sultan Mahomed Khan entertained them on ₹3 a day. An allowance of ₹2 per day (temporary) has been fixed for them. They say they are Americans".

Gardiner's companion may be identified with the Irishman, Francis Kanara, shown in some of the Rolls as Kenny or Kennedy. He lasted till 1848 when he died a creditable death, trying to restrain his mutinous soldiers.

It should be explained that it was at this time almost "common form" for deserters from the British forces to describe themselves as Americans. This saved awkward questions as the British authorities objected strongly to any appearance of encouragement by Ranjit Singh of desertion.

The date of the News Writers' Report agrees almost exactly with Gardiner's own statement regarding the time of his entry into Sikh service. That his name does not appear in the Sikh pay rolls till November 1845, when he is shown as commanding a Horse Battery, is doubtless due to his being paid by Dhian Singh, one of the Dogra brothers, whose troops he joined soon after his arrival. This also accounts for no further mention being made of him for some years in the Official Records. In all probability he was the "man calling himself an American, really an Irishman, an officer in the Maharaja's artillery, not of that class called gentleman", who offered to the traveller, Baron Hugel, in 1836 to teach a young Indian English.[4] He certainly was the "adventurer who described himself as an American, who had been a Lieutenant in the

[1] Grey, p. 277, who shows how Pearse has misquoted Yule.
[2] Pearse, 150.
[3] Punjab Records, Book 137, Letter 49.
[4] Grey, p. 282.

Navy, yet somehow or other had been educated at a Jesuit College, though he had left school at the age of 12", who visited Henry Lawrence in February 1842.[1] In the same year Lawrence writes that he had been supplied with information by an adventurer, Mr. Gardiner, commanding six guns with Gulab Singh's artillery. This confirms the statement of Major Carmichael Smyth that his book[2] is "chiefly compiled from the notes of a Captain Gardner of the Seik Service who has for several years supplied important information to the British Government".

By Gardiner's own account, as related by Pearse, he was present at, if not concerned in, some of the worst outrages and atrocities which marked the Sikh Anarchy. At one of these he, dressed as an Akali, or Sikh fanatic, seems to have carried the head of one of the murdered men. It is sufficient to recount Gardiner's crowning act of infamy; not to be found in Pearse, but in the pages of the Calcutta Review.[3] "Jodha Ram was sentenced to lose his right thumb, nose and ears. He was a Brahman and no Hindu would do the deed. The Kotwal of Lahore, a Mussulman and no particular person, was ordered . . . and also refused, and we blush to record that the only man who could be found to execute the barbarous decree was a European. Mr. Gardiner or Gordona of the Sikh Artillery took a razor and with his own hands in cold blood, without personal enmity of any sort, inflicted a punishment which Sikhs, Hindus and Mussulmans had shrunk from with disgust. But he was made a Colonel, and 'Every man has his price'." This Article, though unsigned as were all the articles in the Review, was written by Sir Herbert Edwardes, and, if this were not sufficient authority, it is supported by official record.[4] "The instrument of Jawahir Singh is the European Gardiner, now a Colonel. I find it authentic that with his own hands he cut off the fingers, nose and ears of Jodha Ram". Still more decisive were the orders of Henry Lawrence himself. "Feb. 13th, 1846.[5] Jodha Ram came before me and complained that Mr. Gardiner had cut off his nose, ears and right thumb with a razor. He was awarded Rs500 compensation and his jaghirs (land grants) restored".

"Feb. 17th, 1846.[6] The European Gardiner, who obtained the rank of Colonel for mutilating Jodha Ram, is dismissed from the Khalsa Service, his jaghir being forfeited, and himself ordered to leave Lahore".

Lawrence repeated this judgment in his Article in the Calcutta Review,[7] reviewing Major Smyth's book already mentioned: "a hash got up between Major Smyth and a Mr. Gardiner, late of the Seikh service . . . the stigma of whose atrocious act has never been removed. Major Lawrence caused Colonel Gardiner to be discharged from the Seikh service. He has registered himself as an American, but his speech betrayeth him to be Irish".

It is true that Raynell Taylor[8] records in 1847 that Maharaja Gulab Singh was anxious for Gardiner's services, as he had a high opinion of him as an Artillery Officer. But Gulab Singh was not a very particular person as regards

[1] Life of H. Lawrence, I, 320.
[2] "Reigning Family of Lahore", p. xvii, 1847.
[3] Cal. Review, Vol. VI, No. 11.
[4] Punjab Records, File 16566, 1846.
[5] Political Diaries, Vol. II, p. 29.
[6] *Ibid.* p. 92.
[7] Vol. IX, No. 18. 1848.
[8] Political Diaries Vol., p. 52.

morals, and doubtless Gardiner was a useful instrument. It appears, however, that Gardiner was not allowed to enter Gulab Singh's service till about 1851.

What the writer of the Article under notice regards as "the strange adoption of the tartan of the 79th Highlanders by the Gunner-Adventurer in his old age", has a simple enough explanation. That distinguished regiment was on the North-West Frontier during the Sixties. Gardiner may well have acquired a roll of the tartan cloth from a kindly Quartermaster, or in some other manner.

In case it may be suggested that Henry Lawrence was too severe a critic, it may be pointed out that Gardiner could hardly complain on that score.[1] In more than one place, he is stated by Pearse to have referred to Sir Henry as "that great and good man (afterwards my well-known and honoured friend)". By the time Gardiner made these remarks, Lawrence had been lying for some years in the Residency Cemetery at Lucknow. Let us hope that his gallant spirit is unaware of the effort to place his fellow Irishman, whose character he abhorred, alongside of him in the brotherhood of good gunners.

[1] Pearse, 176, 241.

THE SURVEY PROBLEM NOW AND IN THE FUTURE.

By "S.B."

NOW that the tumult and the shouting have died there is time to take stock of the survey problems of the late war and the many and various methods used to overcome them. In doing so one is inevitably led to thinking of the future and to visualising in some measure the new problems which will undoubtedly arise.

Before any artillery survey problem is considered it is essential first of all to learn the lessons about the employment of artillery as a whole which five-and-a-half-years war have so amply provided. It is not necessary to delve too deeply into detail since a consideration of the broad principles which have governed the use of artillery will point the way to the problems of the future.

What then have these principles been? First perhaps is the increasing tendency to use concentrations of fire of many guns. This in many instances has only been possible by virtue of the increased mobility and speed into action of all types of artillery used in the field armies. Secondly the increased attention paid to the location and neutralization or destruction of enemy artillery. Thirdly the close liaison between the infantry and its supporting artillery and the continuity of close support without which the infantry almost invariably suffered heavy casualties. Fourthly, though it actually forms part of the first three, a great extension and improvement in communications between the various units and sub-units and the command.

All these have led, inevitably, to an increased demand for the accurate survey of positions, not only for the guns and O.Ps. themselves but for those points which are concerned with the location of the enemy weapons. Not only has this demand increased but also the speed with which results are required.

In the future it is reasonable to surmise that not only will the massed fire of many weapons continue to be brought to bear on any target at will, but that the speed at which this operation will be required to be carried out will be much increased. It is true that with the advent of rocket-firing weapons a heavy volume of fire may well be produced by fewer guns or projectors but they in their turn may be expected to be even more capable of moving quickly from one position to another than at present. The techniques of location of enemy weapons and their neutralization will take on an increased tempo and the demand for accurate fixation of positions will be continuous and may well be a deciding factor in the speed at which many actions involving the use of a heavy weight of artillery are fought.

Analysis of the results of concentrations of fire in the late war have suggested that though the effect has in many cases been demoralizing to a high degree there is considerable support for the suggestion that the same result might have been achieved had the fire been less in volume and more accurate in position. Bearing in mind the vastly increased problem of ammunition supply when fire of this nature is employed there is every reason to suppose that in the future increased attention will have to be paid to the problem of accurate fixation and that an increase in the standards of accuracy rather than a decrease will form part of the problem with which artillery of the future will be faced.

Let us turn now to the problem and the methods of the present before we examine any suggestions which may be part of the survey in the future. For convenience, let us look at the artillery survey problem in a Corps together with the resources available. Assuming the Corps to have the minimum of two divisions we have the following units, all of which require survey data of some kind.

(a) Two Divisional Artilleries (not less than 3 regiments each).

(b) An Army Group Royal Artillery (2 to 5 regiments).

(c) Flash Spotting and Sound Ranging elements of the Corps Survey Regt.

This implies the fixation of some 15 to 25 points in the area of deployment of the Corps and probable observation at two or three times that number in order to produce such a result. The time available for the production of the data on the ground will seldom exceed the daylight hours of two days and is much more likely to be restricted to the daylight of one day. Of this time perhaps 25% will perforce be spent in reconnaissance leaving at best some 8 hours of daylight in which observation and measurement must be done. Survey at night has not been much used and no progress of speed and accuracy has so far been achieved.

Assuming that a certain amount of trigonometrical data exists on which the survey for the Corps is to be based, and leaving for the moment the domestic survey in the gun regiments, the task outlined above is the responsibility of the survey resources of the Survey Regiment, R.A., now the Corps Observation Regiment, R.A.

Let us see what these resources are. Primarily they are three survey troops each of 3 officers and some 45 men of which only about half are actually surveyors. These surveyors are divided into 6 pairs of observers and 8-10 computors. In emergencies the officers and the 3 senior N.C.Os. can form

another two observing pairs or assist in computing. The problem confronting them means that each observing pair will have to take observations at two points at least—more probably three or four—in order to produce the necessary data, and in addition, some of them will have to do some form of direct measurement of distances. Taking into consideration the time taken up in reaching the points at which observations have to be made, identification and observation of other points, and the transmission of the data to the computing centre, it can be assumed quite reasonably that the observations will take at least one hour per pair per point visited.

For any scheme therefore involving some 50 points the observations alone will take some 3 hours in good conditions, i.e., good visibility, good terrain, good communications and no observing errors. Add to this the minimum time for computing and the production of data for the users, i.e., not less than two hours, it is obvious that the time available for incorporating the data into their own schemes by the users is inconveniently short.

Battlefield conditions seldom approach the conditions assumed for the purposes of the foregoing argument which also implies that the requirements are well known in advance. If one adds to the above times the delays imposed by the weather, traffic congestion, mines, shelling, bad terrain, etc., it is at once obvious that artillery survey at the moment is operating successfully by a very narrow margin and that future increases in demands for data may render that margin non-existent. That it has so operated speaks volumes for the foresight, skill and energy of all artillery surveyors.

Turning now to the methods of the present we shall do well to cast a critical eye on the progress achieved during the late war. The requirement of all users of survey data is that some point near them shall be fixed in relation to the map and grid in use and that bearings from that point to a number of others shall be known. To achieve this, the artillery surveyor has himself to start from some such point and relies in the main on data supplied to him by the Surveyor Directorate of the Corps about various points and marks which are identifiable on the ground. To carry this data from such a point to others at which it is required, the familiar methods of angular and distance measurement are used. To measure angles, theodolites are used; distances may be measured by direct measurement over the surface of the ground, or they may be computed in various ways. Whatever method is used, be it triangulation, traversing, intersection or resection of positions, the necessity for visual observation from point to point remains. To obtain this, the surveyor must seek high points, open spaces and clear lines of sight, and must use such aids as beacons, flags or other marks to identify his stations and maintain the accuracy of his observations. Reconnaissance must be done, observers directed to their stations, beacons and markers erected, and observations completed. The results then must be sent to some central point where they can be sorted, checked, and data in relation to each point computed. All this takes time and time is the greatest single enemy of the surveyor. Bad conditions of visibility, paucity of data, difficult terrain, etc., can all in their turn be overcome only at the expense of time. The methods themselves are not new and the fundamentals do not admit of great improvement, so it is only in details that we must look for progress in defeating the time factor. What progress has been made? Instru-

ments have been improved so that it is no longer necessary to take a large number of readings to obtain an accurate result.

The mobility of the observers has been enhanced by that invaluable vehicle the Jeep.

Computation processes have been speeded up by the use of calculating machines and the gap between completion of reconnaissance and orders has been narrowed by the use of wireless.

Beyond this little progress has been made and this applies more particularly to the latter years of the war. It appears then, that artillery survey has in the late war kept pace with the demands upon it albeit by a very narrow margin. There are few recorded instances of delay in the mounting of fire plans by reason of the comparative slowness of survey. How much this is due to the foresight of the artillery surveyors themselves in anticipating demands, and how much to the knowledge of survey timings on the part of commanders and their staffs it would neither be profitable nor possible to discover, but it should be the aim of the surveyor to remove all doubt on this score by seeing that the production of data keeps pace with, if not exceeds the speed of, deployment of divisional artillery.

Looking into the future let us now try to make an estimate of the probable demands for survey data and then go on to suggest some means by which increases may be met and the production of results made speedier. Considering the problem on the basis of a Corps we can assume that we shall have somewhat as before.

(a) Two Divisional Artilleries (not less than 3 regiments each).
(b) An Army Group Royal Artillery (2 to 5 regiments).
(c) Flash Spotting, Sound Ranging and Radar elements of the Corps Observation Regiment).
(d) Radar Elements of the Divisional Locating Troop, R.A.
(e) Gun and Radar Positions of A.A. Artillery.

In (c) the Sound Ranging elements are an increase of one third over the present and the Radar elements completely new. In (d) there is a new demand as there is in (c) which has been included on the assumption that Field Army A.A. Artillery fire will in the future be entirely radar controlled and at much greater ranges than at present. On the assumption that artillery fire of the future will be at much greater ranges and that technique will improve its accuracy it is not unreasonable to suppose that more accurate observation will increase the demands in (a) and (b) since additional data will always be required in O.P. areas instead of sometimes as at present.

One method of improving the accuracy of fire may involve the more accurate fixation and heighting of targets from air photographs and it is probable that additional ground control for this in the form of intersected positions and heights in enemy territory will be required and this itself will represent a considerable increase of survey work though some might well devolve upon the observation troops.

It will be at once obvious that the total demand for survey data has considerably increased in volume and if one takes into account the vast increase in destructive power of the weapons of the future, of which the late war has already given us a glimpse, it is reasonable to assume that the area in which

this demand will have to be met will itself be much greater. Increased mobility too, may well be expected to decrease the time available for the production of data.

It seems then that there is a good reason to doubt that present methods and the personnel available will be able to meet this increased demand and it behoves the artillery surveyor to ensure that in any future war he is not found wanting from the outset.

One method which immediately suggests itself is to increase the number of men and instruments available for the task but beyond a certain point this becomes uneconomic and difficulties of control might well vitiate any advantage gained. Some increase will no doubt have to be made but this in itself will present no solution.

Recourse must be had then to improvement of methods and this might well be considered from two basic points of view, the improvement of existing methods and the creation of new ones. The fundamental processes in present methods do not themselves admit a great improvement so the possibility of decreasing the time elements involved must be examined.

Probably the largest single time-wasting factor is the transmission of the observers results of work to the computing centre and next the difficulty of control of observers once they are scattered over the landscape at the commencement of most survey schemes.

The transmission of results by normal methods is also a factor of uncertainty which has harassed many artillery surveyors at some time. The observers may work and produce their results, hand them to a D.R. for transmission and he may set off, but his arrival at the computing centre is often uncertain. The timings in such a method are also inefficient since it is often difficult for the individual in charge of the computing centre to know at what stage to assume that something has gone amiss and take action with his limited resources to find out, and remedy the affair. Should all go well and the results reach the computing centre with the minimum of delay, a check of the observers' work may reveal that a mistake has been made which will necessitate further work at the same station. More time will inevitably be wasted since by the time this is discovered the observers will probably have gone to some other station and it may be some considerable time before more observations can be done to correct the mistake.

With the improvement of wireless communication, e.g., reliability, lightness, and ease of operation of small R/T sets the means to put all this on a sound efficient basis lies ready to our hands. Let us try to see some of the ways in which it might benefit control and speed up work. Supposing each pair of observers each field No. 1, and officer has a small easily-operated R/T set with ranges of say 6 to 8 miles, and there are one or two sets at the computing centre for transmission and reception of messages to and from these outstations. Pairs will set off after their original orders and on reaching these appointed stations will report their arrival. Thus at the very earliest stage there will be a set of timings on which to base any future decisions. Results of observations can be sent within a few minutes of completion, or indeed, very important ones could be sent before the remainder of the work is completed. A quick check will reveal errors and the observers could be directed to re-observe. If difficulty

is experienced at any particular station it can be reported and in any case will be obvious to the time-keeper whose task it will be to keep tally of the expected times of arrival not only to the observers but of the results. Changes of plan can be communicated at once to all observers and control of the whole operations of the troop will be very much quicker and more flexible. Complicated codes will not be necessary since most of the information passing over the air will be meaningless to an enemy monitor and simple map reference codes and station names will be adequate from the security point of view. Initial orders could be simpler since precautionary devices often now included to off-set possible errors or omissions could be left out. Experiment will show the proportion of time which can be expected to be saved by this form of improved transmission of results and control, but examination of present timings suggests that it cannot be less than 25% and may well be very much more.

As a result of this improvement it may be possible to revise the methods by which the information reaches the user. For instance the exact grid bearings of certain rays could be communicated to observers at a very much earlier stage of the computing and with this information users adjacent to the observers could at once incorporate this into their own schemes. Subsequent information concerning fixation would then be a simple matter of arithmetic and would involve no awkward calculations for grid swings.

The use of hand-operated calculating machines has enormously decreased the time taken to compute results but there is still room for improvement in this direction. The machines themselves are ordinary commercial types which do not lend themselves easily to problems involving bearing and distance, and consideration might well be given to the design and manufacture of machines which solve the survey problem direct without recourse to tables of trig. functions. This incidentally is exactly the type of machine required in gun regiments for the solving of normal gunnery problems for the engagement of targets. It should be possible to feed the information into the machine in the form in which it is gathered, i.e., as angles, distances or co-ordinates, and obtain the results in the same terms.

These then are two ways in which existing methods might be improved and there is no doubt that the progressive artillery surveyor can devise more.

Now let us consider methods of solving the problem which might be used in the future. There seems no doubt that if the number of stations which have to be manned for observations can be reduced that the whole process will be quickened. Suppose then that a survey troop was able to see all the positions required to be fixed from three points, a situation which might arise if all these positions were in a valley overlooked by the three-point base. In such a situation with suitable beacons or signals on the points to be fixed, the survey problem in a division would be solved within the hour by the intersection of all three points and the passing of bearings and fixation to them. In practice, however, such pleasant conditions seldom arise, but if we can in some way create them we shall have gone a long way to the solution of the problem of quick survey, and rendered the control of massed artillery a good deal more flexible and rapid than it has been hitherto. Since the three-point base is controlled by the existing data and will always be earthbound, the solution seems to be to put the points to be fixed up in the air where they can easily be

observed and intersected. There seem to be two ways of doing this ready to hand (a) the use of shellburst in the sky, which has already been tried and suffers from the defect that it is not possible to put them exactly where they are required, and a further process, this time of resection, must be gone through before obtaining a fixation on the ground, and (b) the use of a helicopter to hover vertically over a point to be fixed and provide a kind of aerial beacon. Since it is unlikely that such an aircraft will be able to maintain its position for long over any one position it would be necessary to use some kind of plumb sight in it and to have some method of signalling to the ground observers when it was in fact over the correct position. If it were being followed in the observers instruments the duration of accurate hover would not need to be more than a few seconds.

The system of signalling could be wireless on the same net as the observing stations, a light, or some form of pulse-sending device supposing the intersection to be made by a radar set. If at the conclusion of its hovering over certain ground positions the aircraft now took up a position from which it could easily be observed from these ground positions, and this would be largely a matter of increased height, then observations from them all could be taken by the observers manning them (probably the regimental survey party of each regiment) and a bearing calculated as soon as this last position was known.

The ground stations, it is suggested, would be the regimental bearing pickets of the various regiments established and suitably marked for the helicopter pilot by the regimental survey parties and it should be possible to fix upwards of six such points within an hour from a previously established three-point base somewhere to the rear manned by the survey troop of the observation battery.

The present bearing accuracy of field artillery radar makes its use for the observation of the helicopter position somewhat doubtful since while it would provide ample accuracy for fixation, e.g., 10 yards, the bearings obtained by the method would not be accurate enough for divisional or corps grids. Given the improvement in bearing accuracy to 2 minutes or less the improvement in fixation would be such that bearings could be deduced with the required accuracy. This argument assumes that the helicopter is fixed from two or more stations. Given an improvement in both bearing accuracy and range determination to the order of 2 minutes and 2 yards, then the prospect would be very rosy indeed and it would only be necessary to man the single base station from which all subsequent fixations could be made. The advantages in time to be gained by such a method would fully justify the use of a helicopter solely for this purpose.

No doubt the question of security will immediately be raised if hovering over regimental bearing pickets is suggested but since the helicopter is likely to be a common sight over the battlefield of the future there seems to be little objection from this angle; moreover there is no need for the regimental bearing pickets to be nearer than 500 yards to any gun position and if the enemy thought they were, so much the better. If it should be possible to use radar, the same problem could be tackled at night with equal facility though the helicopter pilot might need the assistance of some homing device to find the positions to be fixed.

It is to be hoped that radar will be improved to the extent suggested since it is easy to visualize other ways in which positions might be fixed. For instance the regimental survey might project a "window" scattering bomb from a vertical projector so that it burst say 500 ft. vertically above their position and was at once fixed by radar. The projections from the various regiments could be done for the observers in a suitable position and at a height which would ensure it being observed.

The helicopter might also be used in the same way as the shell bursts in the present system of airburst fix which suffers from various defects, e.g., the difficulty of taking accurate observation on to a shell burst, and the comparative inaccuracy of the final fixation of the mean point of burst. This latter defect coupled with the inaccuracies inherent in resection makes the scheme useless for the deduction of bearings and this is where the helicopter would show a decided improvement since it is very much easier to fix for position and the observers who subsequently resect their positions are able to make much more accurate observations by following the aircraft until the exact moment of fixation after the manner of an observer taking a gunshot. The improvement both in the fixation of the aircraft itself and the subsequent fixation of the various observers' own stations might well be such as to allow the deduction of bearings of sufficient accuracy for a divisional or corps grid. If this should prove to be so and there seems to be no reason why it should not be, the saving of valuable and perhaps vital time would be such that the method needs no other recommendation.

Since the present bearing accuracy of radar does not come within the desired limits of accuracy for use as a survey aid it would appear that the methods outlined must wait for their final improvement until it does. There is no reason however why they should not be used with very great effect while making use of ordinary visual methods of observation.

The effect on the work of the survey troop would be very great since their responsibility in the first instance would be the selection and manning of a three-post base from which to intersect the positions indicated by the aircraft. By comparison with the present survey problem in a division this is simple and could always be done well ahead of requirements. The subsequent intersection and computation of results would be very rapid and could be done on similar lines to flash spotting observations with line or wireless intercommunication between observation posts and the computing centre. Results could be sent to the various regimental survey parties by wireless in code immediately they become available or if security did not allow this then D.Rs. could be standing by to take them at once.

On grounds of accuracy and reliability it would no doubt be necessary to establish four posts when only visual observation and intersection were being done since there would be no check which a radar intersection would provide in the form of a known distance. This arrangement would still leave two pairs of observers spare however and they could be used in any way which was necessary, for example, in running a bearing traverse to some regiment which was outside the scope of the observations from the base or in the fixation of further points for use in the future.

Changes of position by regiments would not necessitate drastic changes

in the survey plan since it is reasonable to suppose that the scope of the fixation base would cover the area of possible deployment of the divisional artillery. On a slightly higher level the link-up between two divisional grids would be rendered much easier since it would often be possible to fix points in adjoining divisional areas from the outset of operations and the grids might well be in sympathy before the gun regiments had occasion to use data supplied by the survey troops at all. Thus making the institution of a corps grid a matter of orders only.

These then are some suggestions as to the manner in which the fundamental problems of control of massed artillery from the survey angle might be solved. The problem let it be remembered is one of providing accurate bearings in the shortest possible time. Fixation of position is not so important and there seems no doubt that present radar holds the key to this aspect, either in conjunction with shell bursts, window scattering bombs or the helicopter.

Other methods of obtaining bearings however should not be overlooked and the possibility of unit gyros or the reception of radio signals from some radio-bearing beacon suggest themselves.

In conclusion there seems to be no reason why the methods suggested and others which will no doubt occur to experienced artillery surveyors should not all be tried and tried again until a solution to this fundamental problem is found. It will not be found by conservatism or by theorizing and the artillery surveyor should beware lest any future war finds him wanting, as it assuredly will unless the answer is not only found, but is familiar usage to the whole of the artillery.

THE BRITISH SOLDIER FROM A GERMAN VIEWPOINT.

Report from Major D. A. Garnier, R.A., Public Relations Rhine Army.

MANY reports have been circulated on the life of the British Soldier in Germany. Some have been published in newspapers and periodicals, while many more come from the returning soldier who has tales to tell his family and friends.

Not unnaturally, the German individual has built up his own picture of the British Soldier. His acquaintance with him is limited; be it as a clerk or driver for the British Forces; a shopkeeper whose wares attract those who wish to send presents home, or simply as a friend in whose company the romantic may spend his off-duty hours; for each of these there are many others whose contact is no more than those of British civilians with the American Air Force now in England.

The circumstances of the Occupation of Germany are rather different from those of the American "occupation" of Britain, and it is therefore not unnatural that the German citizen would want to know more about the British Forces than he hears from local gossip. The Editor of the "Dusseldorfer Nachrichten" has now given his readers a viewpoint on the 19th Field Regiment,

R.A., which is stationed in a suburb of that town. Accompanied by a photographer, he visited their barracks and published an article in an issue dated 15th December 1950, of which the following is a translation :—

"Even Gunners Live Simply.

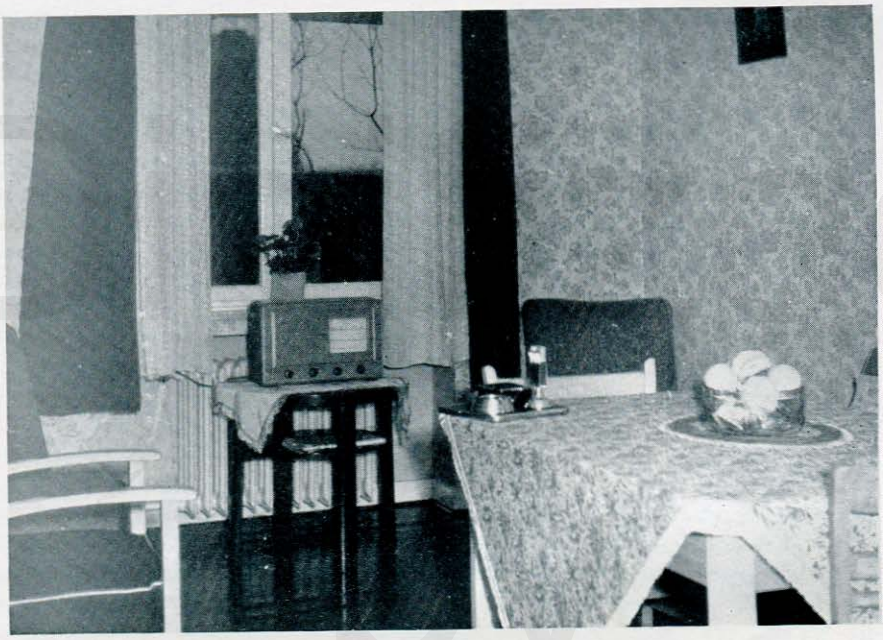
"In the background of the English soldier on guard there are barracks in which British soldiers do duty on German soil. There are both young recruits and veterans and if you look into their faces you will discover that they are people like you and me. But they are called Forces of Occupation and it is understandable if a conquered country regards them with mixed feelings. But to-morrow when these soldiers will perhaps be partially responsible for our security this feeling will undergo a change if we are to be fair. We will no longer discover any difference between their faces and ours when Europe is at stake. And this 'to-morrow' may arrive soon.

"The 19th Field Regiment Artillery has been stationed in Dusseldorf-Lohausen for four years, four years on the periphery of our civilian life, unnoticed and almost unknown. Just as unknown as all the British soldiers who stayed away from the streets from the day they arrived, or crossed them with reservation. May be this 'hide and seek' was a mistake, perhaps a closer contact between both sides would have disclosed earlier that human troubles and desires are the same everywhere, that a British soldier feels the same way as we do. And, starting from plain life human understanding might long since have built a bridge and brought about fairer judgments. Assumptions and rumours replace, or rather distort, facts which are solely valid.

"A thin rain was drizzling between the barrack blocks of the former Luftwaffe Airport in Lohausen, when we stopped in front of the guard-room of the 19th Field Regiment. We had driven out there to form our own opinion on how plain English soldiers live in Germany, what their leisure pursuits are, how they are accommodated, what they eat and drink, and how much money they receive. This day in the barracks passed as usual; the Officer commanding the Regiment (Lt.-Col. Shoolbred, O.B.E.), and his Adjutant (Captain Lyon) put their cards on the table, and the three soldiers with whom we talked replied without hesitation.

"The time between 6.30 hours and 17.30 hours is filled with duty for the approximately 400 men. Reveille, breakfast, and then the first parade. One half-hour break at 10.15 hours. The canteen serves tea for six Pfennigs (1½d). Lunch starts at 12.45 hours and duty ends at 16.30 hours. One hour later the clothing which had received rough treatment during the day is re-conditioned and the leisure-time offers itself for useful employment.

"When we asked Lance-Bombardier Pinion, who has been a Regular for eight years, about the useful employment of his leisure-time, he laughed and said, 'if there has just been pay-day, there is no difficulty at all". And otherwise? The Education Corps maintains a library of scientific books, ranging from chemistry to history, in the barracks, and the English Book Fund has made available entertainment literature in the canteen and in the mess. In addition, there is the possibility of learning German. Theatres, Cinemas and Conversation Evenings with German guests—one every three weeks for the men, and three per week for N.C.Os—also provide the necessary relaxation.



Married quarters are comfortable.



The N.A.A.F.I. during the canteen break.

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"Furthermore there are sports for which a large grass ground, a hockey ground, tennis lawns and a gymnasium with basket-ball and boxing facilities are available.

"The canteen is equipped with billiards, a writing room, piano and wireless set. The gunners were reading their newspapers deeply buried in armchairs. Beer for the men and, in addition, sherry and red wine for N.C.Os. are the alcoholic concessions within the barrack area.

"But nevertheless, as everywhere in the world, nothing but money provides the right basis for all the leisure-time activities. He who has received this full pay on Fridays can say that the weekend is now his. Gunner Faulkner has been serving for six months and receives 38/- a week, of which he saves 5/- and pays 2/6 into the National Health Insurance Scheme. If he refuses to do so, his doctor (even the military doctor) would have to go on strike in the event of his falling ill. This leaves approximately 12.-DM (approx. £1) for the whole week. Lance-Bombardier Woolridge, whose two years of service will end in six months, receives the pay of a regular soldier during the last six months. This is 63/- or about 38.-DM.

"In principle, every regular soldier can arrange for his family to come out and join him. This is worked out on a points system, and the available dwelling space which is often not available. These points are allocated according to the length of service abroad, and when there is dwelling space available, he who has the greatest number of them at the particular time, can arrange for his family to join him after about 6 weeks. There is no separation allowance for the interim period. The only mitigating feature is leave, of which the regular soldier has 3 weeks twice a year. Soldiers doing their National Service are worse off. Two weeks leave after completion of basic training in Britain, two weeks after 8 months service in Germany and two weeks after another six months.

"Although the Federal Republic has to provide the accommodation the British soldier does not live in it gratis. He pays a rent of between 11 and 16 DM (approx. 18/9—£1-9/-) per week according to the number of children. The accommodation he gets for this is, however, ample : One or two bed-rooms, one dining-room, one living-room, 1 kitchen and bathroom.

"In the barracks there is an exchange bureau, which provides for all necessities. While canteens and messes only accept £ s. d., any transaction outside British shops will cost Deutsche Marks. And when the cigarette allowance—20 for 1/- has been smoked, the only solution is German cigarettes. This in itself will explain why many a soldier changes his money. But only the barest necessities are bought outside, for the English prices to-day are slightly more favourable for the gunner than the German prices. Thus, shaving cream costs about 1/7, gents' socks about 5/-, chocolates between 3/1—3/6, tobacco between 2/3 and 3/2—provided you buy it in the canteen.

"Two of the gunners live in a small room, furnished austerely but neatly with camp-beds, lockers, chairs and a table. Four times a day they have a copious meal in the canteen. Dinner is almost a la carte. Every day they can choose between 2 dishes. We saw mutton, vegetables, sauce, followed by maccaroni puddings or roast meat, potatoes with carrots, vegetable and sauce, with the same dessert course. In the morning there was porridge, sausages, potatoes and vegetables cooked together, tea, butter, bread and jam. Tea which

was served at 16.30 hours consisted of fish, potatoes, beans and pudding with syrup. The evening meal (after 18.30 hours) comprised soup, bread, cheese, baked potatoes, vegetables and cocoa.

"The life of a British soldier, i.e. clothing, pay, small arms, food and accommodation, costs an average of £500 per year. It is expected that the Federal Republic will have to contribute about 2/5ths towards food and accommodation by way of occupation costs.

"19th Field Regiment have been in Dusseldorf-Lohausen for four years. For even a longer period than that we have been living alongside British soldiers, and many of us have not known until now how they live: not very differently from the average among us; the money is just as scarce; but—and this should not be overlooked—far away from home, where everything is always easier".

* * * * *

Perhaps there is a moral in this story which the British soldier will not be slow to grasp.

[Lieut.-Colonel J. L. Gardner-Brown has taken over command of the 19th Field Regiment since the article was written.]

THE GREEK CENTURIES IN INDIA AND BACTRIA.

By Lt.-General Sir George MacMunn, k.c.b., k.c.s.i., d.s.o.

PART II.

Seleucus invades India.
Magadha and the Mauriyans.
The Greek conquest of Northern India.
The end of Eucratides and Bactria.
The last hundred years and the Sacas.
The people of Bactria and India under Greek Rule.

Seleucus invades India.

What Bactria did in the few years of this interregnum does not matter. But we know that very soon after 311, Seleucus returned to Bactria with the intention of regaining what Alexander had overrun. He swept down to the Punjab making good of course, the territory between the Hindu Kush and the Indus and reached far down the Ganges to the heart of the Kingdom of Magadha which was now ruled by Chandragupta (Gr. Sandrocottus) who had told Alexander of its wealth and wanted the latter to put him on the throne there. Chandragupta had now obtained the kingdom by his own efforts and the advance of Seleucus had over-reached itself. Withdrawing rapidly towards the Indus and beyond, he was glad to surrender his elephants and give Chandragupta a daughter in marriage, make peace, and withdraw west of the Hindu Kush. It was also agreed that he should send an ambassador to Pataliputra (Patna)

the Indian capital. The Ambassador, Magasthenes, spent some years there and gave a most valuable account of the ways and manners and wealth of this great kingdom of the Mauryas. It seems that the Hindu King after this was more or less possessed of the country up to the Hindu Kush and the Parapamisidæ, viz. :—the valleys north of Kophan (Kabul).

Bactria continued under various Seleucian satraps, and as Seleucia waxed weak so was the allegiance less effective. This state of affairs endured till about 228. Diodotus II, the son of satrap Diodotus I, was the first to break away, as his coins show, about B.C. 228, a century after Alexander's conquests, as the successor to Darius. Diodotus I had married a Seleucian princess and his daughter by her was married apparently to Euthymedes, a general and sub-satrap. Diodotus II, no doubt to save himself against a reviving Seleucia, allied himself with the Parthians and attacked the eastern parts of Persia. Before long Euthydemus murdered him as an enemy to Seleucian ideas and set up as King himself. He strongly fortified his capital, Bactria, and when Antiochus III, one of the greatest of Seleucus's successors, endeavoured to recover Bactria, Euthydemus was besieged for two years and then threatened to call in the Scythians (Sacas). On this, apparently Antiochus agreed to acknowledge him as king and gave him a daughter in marriage and apparently withdrew in friendship. Euthydemus at any rate respected the Persian provinces of Seleucia and there was probably some nominal suzerainty but there is, however, no detail of all he did between, before the start for India some time after 187, in which year, the Romans had gained the great victory of Magnesia which left Bactria free of known concern in the Persian direction.

An outline of Magadha and the Mauriyan Empire.

It is necessary here to turn aside for the moment to the Indian side of the picture and see the Mauriyan power of Magadha that had sent Seleucus back faster than he had come in his raid to the Ganges. It was as far back as 311, that Chandragupta had taken the Indian power back to the Hindu Kush, soon after he had seized the throne of Magadha. Reference has already been made to the report of its majesty by Megasthenes, the ambassador of Seleucus.

In 267, the famous Asoka, grandson of Chandragupta, succeeded his father and ruled the greatest Indian realm in history save for the Moguls and the British. His story of great wisdom and power is largely part of the history of the rise of Buddhism in India. The Greek story is also a good deal concerned with the rise of this kindly way of life. It should be noted here, that beginning over 500 years before the Christian era, it took 500 years to reach its zenith and 500 years to spread to the Oxus and then pass away over the mountains to Tibet and China. Asoka became a Buddhist and with his numerous rock edicts that are still being discovered gave the faith an immense stimulant, as Constantine's conversion did to Christianity.

Asoka died rich in name and fame and peace in 232 and his successors slowly let his Empire dwindle, until in 184 the last of the Mauriyas was murdered by his commander-in-chief Pushivamitra, who seized the throne.

All during the days of Mauriyan greatness, the Greeks in Bactria with plenty on their hands, abided by the Seleucian treaty, developing a more than prosperous and wealthy Bactria. With the decay of Magadha and the

usurpation of Pushivamitra, the stage was now re-set for the great conquest of the Euthymede Demetrius.

The Great Greek Conquest of Northern India.

We have now come to the story, which is far more of interest even than what must be accepted as the splendid story of Bactria. When Euthydemus had got rid of Antiochus III he must have devoted himself to extending into Ferghana and did not disturb his relationship with Seleucia itself. But somewhere after 187, the date of the Roman victory of Magnesia over the Seleucian power just referred to, he started his great enterprise with his son Demetrius and his two generals Manander (his son-in-law) and Apollodotus. He died, however, soon after, and it was Demetrius and his generals who swept over northern India. The invasion was not, as Indian historians liked to make out, merely an easily defeated invasion, but an entirely successful conquest. Demetrius, as had Seleucus more than a century earlier, reached far down the Ganges, but far better supported, he captured Pataliputra and remained there. Appollodotus went down to Broach and was equally successful and, it may be said that the Greek conquests ranged from Patna to the Indian Ocean in crescent-wise form down the Punjab rivers.

But ancient and modern habits of the Greeks to quarrel among themselves remained, for while Demetrius was in India, a Seleucian General Eucratides invaded Bactria on behalf of the Seleucian ruler, it is imagined about B.C. 169. As the Bactrian Army was largely in India, he over-ran the kingdom with ease and conquered all west of the Hindu Kush. Demetrius returned north to meet the danger, but was finally defeated and killed about 167, twenty years after his conquest of northern India.

Menander's Empire.

On his way northwards, Demetrius had apparently ordered Menander to draw his frontier back up the Ganges to Mathra (Mutra), which was to be the main point in the eastern Greek frontier for many a year. The defeat of Demetrius, whose two sons also disappeared in the storm, enabled Eucratides to pursue his ambition of conquering all the Greek possessions in India. Appollodotus commanded on the Indus and Jhelum provinces and away down to Broach and Menander, the eastern zones, but Apollodotus was killed opposing Eucratides, about the year 162 or 163 and the latter took Gandhara and crossed to Taxila. Then it was Menander, who from east of the Jhelum fell on him, beat him handsomely and drove him back into the Afghan hills, finally making peace and agreeing that the Indian kingdom except for the Parapamisidæ should reach to the Hindu Kush.

Then it was that Menander who had married, it is believed, a sister of Demetrius, in want of any better or effective claimants among the Euthemedes, assumed the throne of Greek-India. This he held with little change till his death some twelve years later, between 150 and 149. He was succeeded by his son Strato I, a boy of fifteen, with his mother as regent. History is now very obscure; but we know that Strato I ruled for many years and was succeeded by his son, Strato II for Menander had left a good savour as organizer and

administrator, and the rule went on and on without much apparent loss of power or territory till about the year 100 B.C. when the pressure of invaders began to be felt.

Menander himself is the hero of many legends, and there is a much debated book known as the Milinda-Paha, which seems to come from Buddhist sources and appeared in Chinese, three hundred years later. It means "The Questions of Milinda" (Menander) and is written in much the same style as the accounts of the Buddha's teaching and records a series of interviews between the King and Buddhist sage Nagas. It is a subject of much debate among the experts; but that it should have been written at all shows the place he had in Indian and Buddhist memories. India is a country which remembers acutely, if not always accurately and the frequency of Sikundar Badshah[1] on the tongue of village folk in the north probably owes much of its vividness to the days of Menander.

This is a sample from the "Questions":—

Said the King—Bhante Naghsena—"What is the reason that men are not all alike, but some long-lived, and some short-lived, some healthy and some handsome, and some ugly, some powerful and some weak, some rich and some poor, some of high degree, some wise and some foolish?"

Said the Elder—"Your Majesty, why are not trees all alike, but some salt, some bitter, some pungent, some astringent, some sweet?"

"I suppose, Bhante, because of a difference in the seed".

"In exactly the same way, your Majesty, it is through a difference in their *Karma* that men are not alike. Moreover your Majesty, the Blessed One (the Buddha) has said 'all beings, O youth, have Karma as their portion and their Karma allots beings to meanness or Greatness'."

"You are an able man Bhante Naghsena".

The End of Eucratides and Bactria.

Eucratides accepting his defeat at the hands of Menander returned to Bactria with invasions from the Persian side to contend with, dying or being killed about 159—several years before Menander passed away. His dynasty, however, remained and, after Menander's death, the Bactrians seem to have once again fought their way down to the east, acquiring Gandhara and Taxila. In Bactria however, their hour drew near, for after being for generations the bulwark of India and East Persia against nomads on the Jaxartes and the Oxus, the pressure from vast hordes of the almond-eyed, known to history as the Yuchi, became too great. They were completely overcome about 130, leaving little sign, at any rate till Bactria can be "dug". It is thought that their leaders and the Bactrian barons may have been destroyed in one great Agincourt. Whether the survivors were absorbed or whether they got away to their provinces east of the Hindu Kush is not recorded, probably many did. Others doubtless fought their way into mountain valleys to mix and die out.

The stories of survivors and the traditions probably belong to the kingdoms

[1] Often when buying artillery mules in the Punjab, have I put back repeated attempts to foist an aged beast on me, with the remark that I was not buying the leavings of Sikundar Badshah, always a remark to be received with much laughter and understanding and chaff for the seller.

of the Eucratidæ and the Euthymedes east of the Hindu Kush which did not disappear till a century later.

The last hundred years and the era of the Sakas.

To somewhere about 100 B.C. the successors to Menander and Strato I ruled their Greek Kingdom in India in some security, though at the mouths of the Indus the Sacas from Sacastan or Seistan had already begun to impinge on their rule. About 120, these Sacas, whom the Greeks would call Scythians entered India. They had been settled in Seistan by their Parthian allies and overlords and entering Sind about 120, had established their rule in Kathiawar which cut the Greeks off from the open sea. By 80, they were pressing in their fleets up the Panjnad Indus, defeating the Greeks in a hard engagement commemorated on the Saca coinage and by 77 had secured Taxila. Their invasion by the passes, rather than up the river, is now discredited. This conquest and the rule they had acquired along the great rivers, separated the Euthidemic kingdom of the East from that of the descendants of Eucratides on the West. They seemingly drove into the Afghan north, secured Kabul and the route *via* the Helmund and Ghani (Alexandria). Their kingdom in Kathiawar was now a strong one with capital at Sarausthra which endured 300 years till the days of the Guptas and they are undoubtedly represented by several races on the West Coast and in the Punjab, a staunch and worthy contribution to the eventual Indian make-up. Now and again we hear of Greek naval victories; but by 30 B.C. all was over with the Greek kingdoms both east and west and probably with the help of Greek and Greek-trained Indians, the conquerors managed their provinces well enough. A few of the local Greek Governors and sub-kings may have made their way up into the high valleys and the snowy regions towards the Pamirs and above Swat. Dr. Tarn, the historian of the period, thinks that the claim of the Mirs or Thums of Hunza and Nagyr to be of Alexandrine descent may have some basis, if for Alexander we understand of Hellenic origin, or even, if the latter were of Euthymede origin, a real connection beyond the mists of time. The disproved legend of the Kafirs of inaccessible Kafiristan as a relict, as we used to think of a Macedonian pocket is now recognized as but the tale of one of the many "bits and pieces" of ancient races to be found tucked away between the Oxus and Northern India.

What this three hundred years of Greek rule stood for and what it has done for India is worthy of a brief consideration. It is well, too, to remember that the Greeks were not submerged by any uprising of the people they ruled. Had it not been for the determined practice of the Greeks to quarrel among themselves and had there been but one Greek ruler free from rebellion, from the Oxus to Mathura, this astounding and apparently acceptable domination might have lasted for more than those three hundred years.

The Sacas, however, were not to enjoy the northern part of their conquests for long, but what follows belongs to the story of the Parthian and the Kushan rule which more or less held Northern India and Bactria safe till the terrible days of the Hun deluge. The final stories of the Indo-Greek kingdom and the struggle between the Yavanas (Javan) and the Sacas is told at some length in the Puranas (Hindu) especially the Yuga Purana, and also in the Maharrata. They are confusing accounts, but taken with Greek remnants and the story of

the coins, can be identified. Greek names are Hinduised, and it is not hard to see that Demetrius turns easily to Dharma-mitra and so forth.

The People of Bactria and India under Greek Rule.

During these three hundred years of Greek rule, whether east or west of the Paraponisus, what was the condition of the subject peoples, and what in fact were these western overlords? Were they decadent and Eurasian? Was the result of much mingling extensive and because of the mingling less virile as was once supposed? The more definite information that we have entirely opposes these ideas. Mingling there may have been; but after the first great quarrel in Bactria between Greek and Macedonians, there is little doubt that there was plenty of migration along the great roads of Persia and Seleucia by the Greeks of Asia Minor. The story of fertile pleasant Bactria would seem to have brought colonists for many generations. The Armies of Bactria will no doubt have included many of the local inhabitants; but with a considerable cadre of western-born or pure west-descended Greeks. Doctor Tarn even thinks that there was no miscegenation, at any rate for a long period, and that the Greeks had too great an opinion of themselves to indulge therein. If the imigration of Greek women was adequate this may have been so, especially among the officer grades; but soldiers are soldiers and men are men, and it is almost impossible to imagine that there was not a considerable half-breed population settled in the districts around the Greek cantonments, whose garrisons were not of mixed breed. Tarn, however, fortifies his view, with the expression "mix-hellene", which he has found in ancient script. But when the Greek kingdom of India was cut off with the collapse of Seleucia, the Europeans must obviously have formed Indian connections. In Bactria there were Greek colonies, but in India, mostly Government centres and garrisons, with Indian troops and a European nucleus. Since there were practically no Indian local rebellions, we may fairly assume that the rule was good and strong. In fact, most conquering waves, save those with Hun, Tartar or German prediliction of mass murder, will protect and administer reasonably all who submit.

What was the effect generally on India? They may have left behind a tradition and machinery of good administration for such successors as needed such. The Parthians and Kushans did, and must have been the gainers. Of the Greek influence on Indian civilization generally and especially on Indian art the controversies and theories are innumerable, the many carvings in Gandhara, those Greek figures and scenes, gradually turning to more Indian ones. One thing seems certain, viz. that Greek sculptors first carved images of the Buddha, later copied in India and put the memory of the Great Enlightener into the shape of a divinity to Buddhists and the Greater Vehicle. The Museums of Taxila show much Greek influence at various stages of the long connection. The Græco-Buddhist carvings and frescos of Gandhara seem to have been much developed in Parthian times, owing to their philo-Hellenic proclivities already alluded to. It was the Irish doctor describing his visit to one of the ruins, said "Ye could tell the figures were Græco-Bactrian by the Roman Tōgas (a very broad 'o') they were wearing".

MORE HASTE LESS SPEED.

By Captain D. G. Miles, R.A.

IN September 1949 I rode my Triumph 500 cc. motor cycle in the International Six Days Trial in Wales, and won a Bronze Medal, despite my inexperience. As Great Britain won the main award, the 1950 trial was due to be held in Wales again, and I decided to try to win a Gold Medal in this event. I also decided to enter a regimental team to compete for the club team award.

There were two or three riders in the unit capable of putting up a reasonable showing in this trial, but none of them could afford a suitable mount for it. Our only chance was for some motor-cycle firm to loan us three machines. On 16 June 1950 I heard from A. E. Perrigo, the competition manager of B.S.A. Cycles Ltd., who agreed to loan us three 500 cc. machines. The C.O. was most enthusiastic, and I started preparing for the trial immediately. I had already sent for regulations and entry forms, and on 8 August I sent in our entry, consisting of myself, Bdr. W. G. Brookes and L/Bdr. L. Hill.

Briefly, this trial consists of an attempt to cover a route of about 250 miles each day for five days, mostly over fairly rough roads and tracks, at a set average speed (30 m.p.h. in the case of 500 cc. machines). On the sixth day there is a short route followed by about one hour's high-speed test on a closed road racing circuit. There are time checks at various points on the route, normally between 12 and 25 miles apart, and one mark is lost for every minute late at each check. The motor cycles are taken into a closed control each night and may not be touched again until the next morning, when each competitor is allowed 15 minutes for maintenance before he starts the day's run. This is the only time allowed for maintenance. Any rider losing no marks during the week wins a Gold Medal, up to 10 marks winning a Silver Medal, and between 10 and 50 a Bronze Medal. Team awards include the International Trophy for teams of five, the International Vase for teams of three and a Club Team Award for teams of three. The latter is the award for which we entered our team.

The British teams were due to be chosen by a preliminary trial on 12 and 13 August, and I obtained permission to follow round in this to give Brookes and Hill some idea of the trial. Unfortunately we were unable to do this in the end. However we collected the three machines from the B.S.A. factory on 11 August, and between then and the start of the trial we put in a fair amount of practice on parts of the route near our camp. The machines were fully prepared when we collected them, but I arranged to return them to the factory on 11 September, one week before the start of the trial, for a final check over.

We collected the bikes again on Thursday, 14 September, and, leaving Birmingham at about 5 p.m., we set off for Llandrindod Wells, the centre for the trial. We arrived in Llandrindod Wells at about 8.15 p.m., and found our lodgings, which I had booked some time previously. We soon settled in, had a very good meal and then parked our bikes in the local garage for the night. After this we went round to the Metropole Hotel, the headquarters of the trial, where we met a number of riders and officials, including many friends from the previous year. One of these was Capt. H. G. Little, of the Ministry of Supply, who was to ride one of the new W.D. Triumph twins in the trial.

After breakfast on Friday morning we went down to the Automobile Palace, a large garage well known to anyone connected with these six days trials. There was complete babel here as riders from almost every European country made last-minute preparations for the trial. The various trade representatives had gathered here, including the Dunlop Tyre fitters, who filled our tyres with puncture-sealing compound. We also collected a selection of tyre levers, repair outfits, valve cores and caps, etc., which Dunlop's supply free to all competitors. Leaving the garage we dodged the autograph hunters as best we could and returned to our lodgings for lunch. In the afternoon we went out to the speed-test circuit on Sennybridge Ranges to put in a few practice laps, and to get the feel of the circuit. Although we lost our way on the way out, and spent an hour wandering around the ranges, we eventually found the circuit, got in some fairly fast laps and thoroughly enjoyed ourselves, despite a miserable drizzle and a very cold wind.

Brookes was due to weigh in at 4 p.m. on Saturday, and Hill and I on Sunday morning. We spent Saturday morning cleaning the bikes and making final adjustments. At 4 p.m. we accompanied Brookes to the weighing in, where he had an oil change and filled up with the 80 octane petrol supplied for the trial. He then wheeled his machine into the scrutineers' tent, where every part was checked and marked, to ensure that nothing should be changed during the week. His bike was then parked in the drill hall, which was used to house the machines each night during the trial. That was the last he would see of the bike until Monday morning. On Sunday morning Hill and I went through the same procedure.

Brookes' number for the trial was 159, Hill's was 208 and mine was 218. There were altogether 232 entries, of whom 167 were British. Other nationalities entered included Austrian, Belgian, Dutch, Irish, Italian, Norwegian, Swedish, Swiss and Czech, though the Czech team were not allowed this side of the Iron Curtain, and so did not compete in the end. Great Britain, Austria and Italy each fielded a team for the International Trophy, and 30 teams entered for the club team award.

Riders were started in pairs at one-minute intervals on Monday morning, Brookes starting at 8.20, and Hill at 8.44, whilst I started at 8.49. We walked down to the start at 8 a.m. and Brookes got his bike out at five minutes past. We saw him start before collecting our bikes; he looked quite happy and his bike sounded very healthy. The three of us all started with no trouble, and at last the trial was on. I soon found that it was to be a very different event from the 1949 trial. The schedules had been tightened, and the route was very wet and muddy, quite apart from the heavy rain which fell continuously all week,

in contrast to the previous year's continuous sunshine, when dust was the biggest enemy.

After some three miles of main road from Llandrindod, the route turned down a cart track. The rear springing on the B.S.A. helped considerably here, and I found that I could keep up a good average speed, despite the rough surface and the endless succession of sharp bends. Later on, however, there was some rather slower going. After some twenty miles of winding Welsh lanes, sometimes tarred, but mostly loose surfaced, the route turned down a very muddy, rutted track, which promised to last for about four miles. I got into one of the ruts, which could hardly be avoided, and carried on in it quite happily until I found another rider, travelling considerably slower, in the same rut. I chose as shallow a part of the rut as possible to pull out and pass him, but the rear wheel refused to leave the rut, the bike spun round, and off I came, diving head first into the mud. Every stop on this sort of trial loses valuable time, so I got going again as quickly as possible and, choosing a different rut, I soon passed the slower rider, shortly afterwards arriving at the first time check at Sarn, with about ten minutes in hand. I had a quick look over the bike and then a few words with Hill, who had also arrived in good time, and who seemed to have settled down well. I found that I was far from being the only victim which the muddy track had claimed.

The check point at Sarn was on a main road through the village. About 100 yards after the check the route turned down a lane to the right. As I was just putting down my goggles after leaving the check, I did not notice the turning, and carried on along the main road. It was some minutes before I realized my mistake, and by the time I had turned round and got back on to the route I had covered six extra miles and I was ten minutes behind schedule. This section was 26 miles long, and we were allowed 56 minutes in which to cover it. I had already judged from the route card that it would be a fairly tight section, so I concentrated on making up my lost time as soon as possible. The route followed rough cart tracks and paths over the mountains, with loose or muddy surfaces. Whenever I came within fifteen yards of another rider I was showered with mud from his rear wheel, and I had to pass twenty other riders to regain my original starting position. The frequent rain showers did not help matters, and in passing other riders I frequently had to take to the roughest part of an already rough track. Despite these difficulties, I managed to overtake one rider after another, and I found that I was really beginning to enjoy myself. The B.S.A. was pulling perfectly, its engine packed a terrific punch on the 80 octane fuel, and it handled beautifully on this type of going. After a very enjoyable "blind" over this section I arrived at the time check at Knighton with eight minutes in hand, giving me plenty of time to check the bike, clean the mud off my face and my glasses, and smoke a cigarette.

It was after this that I really settled down to the trial. I found that I could ride with a bit in hand all the time, and yet arrive at each time check with five or six minutes to spare. Hill had also settled down, and was arriving at each check with the same margin. The route for the rest of the morning consisted of winding lanes and rough tracks, sometimes climbing up to 1,000 feet over the mountains, sometimes keeping to the bottom of the valleys. The continual bends and hills meant constant gear changing, right down to bottom,



The author turning one of the many hairpin bends.

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then up through the gears to top, only to have to change down again almost immediately. One could seldom use any one gear for more than a few hundred yards at a time. The brakes also came in for a good deal of use. One had to ride fast, with little or no let up between check points, but I found that I could keep that little extra in hand all the time. I arrived at the lunch check at Crickhowell at about 1 o'clock to find that the three of us had had a trouble-free morning, and that we all had clean sheets. The half-hour lunch stop gave me a chance to talk to Brookes, whom we had not seen since leaving Llandrindod, as he was always, of course, some 25 minutes ahead of us. He seemed to have settled down to the trial very well, and was evidently riding well within his capabilities.

After lunch the route followed an old Roman road over the mountains, and in places it seemed doubtful whether anyone had used it since the Romans first built it. It included rock-strewn paths, grassy and muddy sheep tracks, and sections of bog. There was a short stretch of tarmac road at the beginning of this section, and 7½% extra time was allowed on the schedule, but 27½ m.p.h. seemed quite a high enough speed to average over this type of going. Due to a mistake on the part of the starter at the lunch check, I was sent off some three minutes early, despite my protestations that I was not then due to start. As a result, I arrived at the end of this section eight minutes early, which gave Hill a great surprise, until I explained what had happened. In fairness to the organizers, I must say that this was a most unusual mistake. The whole organization of the trial was really first rate, and this type of trial takes a lot of organizing.

For the rest of the afternoon the going was much the same as we had encountered in the morning. On the tarmac roads one could always tell when there was a particularly sharp corner ahead by the skid marks on the road. Sometimes, on the sharper corners, wheelmarks running up the banks would tell the story of someone who had come into the corner too fast. As the afternoon wore on the wheelmarks ran higher up the banks. In one place someone had gone straight up a four or five foot bank, and through the hedge at the top. A few yards farther on he had come back through the hedge and down on to the road, leaving two large holes in the hedge, and a trail of torn and mangled shrubbery in the roadway. Any large gathering of spectators also indicated a probable danger spot, usually a hairpin bend, or a hump-backed bridge, possibly followed by a sharp corner. Another favourite spot with spectators was a watersplash, of which there were many. It payed to tackle these slowly, as some of them were really deep. Two or three times I passed unfortunates who had presumably entered the water too fast, and had "drowned" their motors. The weather during the afternoon was far from ideal, with frequent hard showers, sometimes coming down like stair rods in one's face. Despite all this, I can honestly say that I enjoyed the afternoon. The B.S.A. was a real beauty to ride, and seemed to have the legs of most of the other machines in the trial. I continued to reach each time check in ample time, and arrived back in Llandrindod Wells unpenalized. The ride into the town is always something to remember, with the police openly encouraging one to exceed the 30 m.p.h. speed limit, and the streets lined with cheering crowds. I was glad to find that neither Brookes nor Hill had lost any marks during the day, and we went off, tired but happy, for a bath and some tea.

Later that evening we went round to the Metropole Hotel, to see the day's results. Although it had undoubtedly been a stiff day, the results surprised us. Of the 213 starters, 41 had retired, and only 87 riders had lost no marks. Of the teams for the International Trophy, Great Britain had a clean sheet, Austria had lost 133, and Italy had lost 269. Of the 30 club teams, only five remained unpenalized, and ours was one of those five. We went to bed that night well pleased with ourselves.

On Tuesday morning the weather showed promise of being slightly better than Monday's, but there was still a blustery wind, which carried a threat of rain. Once again we all started without trouble, though it took a few more kicks to start the B.S.A. than on the previous day. Seven miles from the start I passed Major Lloyd of the Army M.T. School, who was standing beside a very muddy lane, where he had had to retire with a broken rear wheel spindle. After the usual mixture of mud, rough tracks, and winding lanes, I reached the first check with my normal five or six minutes to spare. Soon after leaving this check we climbed into a thick mist, or, more properly, a low cloud. This reduced visibility to about 25 yards, which, combined with a muddy, rutted track, with frequent rocky outcrops, made the task of passing slower riders no easy one. After climbing over a sizeable mountain, we dropped down out of the cloud again and soon reached the next check point near Trecastle.

About a mile after the Trecastle check the route turned left over a bridge, and immediately right at a T junction. Being colour blind, I did not notice the red card marking the right turn, and carried on up a lane to the left. I soon had doubts as to whether I was on the correct route or not, but before very long I saw tyremarks on the ground, and very shortly afterwards I came across the route marking cards again. After following the route cards for some time, it struck me as being very odd that I was not overtaking any slower riders, and that none of the faster riders was overtaking me. I suddenly realized that I had somehow got on to the previous day's route. I turned smartly, and raced back to try to pick up the correct route again. I took two wrong turnings on the way back, and when I did eventually regain the correct route I had covered an extra 35 miles. It was quite obvious that I could not make up all my lost time, and I was infuriated at having lost all chance of a Gold Medal so early in the week, and by such a stupid mistake. However, I determined to make up as much time as possible, so that the team might still stand a chance. I rode as I have never ridden before or since, in an effort to make up time. On two occasions I overdid it. Once I came too fast into an unexpected bend in a muddy track, left the track, and dived over the handlebars to land head first in the mud. On the second occasion I was racing downhill on a main-road part of the route, when I once again failed to pull up in time for a bend. I stayed on the bike this time, but I had an exciting 100 yards of rough moorland going before I got back on to the road. All the other competitors were, of course, ahead of me now, though I must have been rapidly gaining on the tail end of them. Although I passed a few unfortunate retirements, the local population had evidently decided that all the "racers" had gone past. The roads are not closed to public traffic for this trial, but most of the locals are inclined to keep out of the way whilst the riders are passing. They were now coming out on to the roads in force again. This caused me one or two minor excitements. By

the time I reached the town of Brynamman a fair-sized crowd was still waiting to see us pass, so I felt that I must be gaining ground. I do not know what the policeman on point duty in Brynamman thought when I shot round the hairpin bend in the town at fantastic speed. He seemed to be completely unperturbed.

After a nightmare ride, I eventually reached the next time check, though I have no idea how late I was then. I checked in, had a very quick fill up at the nearby petrol depot, and tore off up the road again. A mile or two farther on I was very surprised to find Hill sitting beside the road, with his bike in the ditch alongside him. Apparently a spectator had signalled him to slow down as he came into a corner, and he had got into a skid. The machine had slid into the ditch and then fallen on him, breaking his left leg. This was indeed bad news, and I felt that it was hardly worth carrying on. However, Hill implored me to go on, and as a travelling marshal was looking after him, I did so.

Soon after this the route followed another very rough, rocky track over the mountains, with occasional cross gullies. For a while I managed to maintain a fair turn of speed along this track, though the bike was more often airborne than not. Eventually the track got even worse, and once again I overdid things by approaching a particularly rough patch too fast. We hit something with an almighty bump, and I heard ominous noises coming from the front wheel. I stopped, and found that the wheel was buckled into something approaching a figure 8, and spokes were sticking out in all directions. This was the end of the trial for me. I could not hope to finish the course with that wheel, let alone catch up on my lost time. Feeling thoroughly browned off, I sat down and smoked a cigarette before riding very gingerly down to the next check point to retire.

After a very welcome bread and cheese lunch with the check marshals, who were Metropolitan Police on leave, and a very friendly crowd, I rode very gently back to Llandrindod Wells by main road. I expected my front wheel to collapse at any minute, but it did not do so. I arrived in time to see Brookes check in. He was, of course, very surprised and discouraged when he heard my news, though he had realized that something must be wrong when he did not see us at the lunch stop at Llandovery. Despite a very tough course in the afternoon, he had still managed to keep a clean sheet. There had been a further 30 retirements, and another wholesale loss of marks during the day.

On Tuesday evening the 90-mile night run took place. This was intended to test the motor-cycle lighting systems, but was really hardly worthwhile. A very easy course, combined with a very easy schedule, gave competitors ample time to change complete headlamps, if necessary, at the check points. I went out to the last time check, to meet Brookes, and took a flask of hot coffee. The first some 60 riders were waiting at the check point. The fact that this was the first time that a night run had been included in any six days trial accounted for the partial lack of success of this night run. Anyway, the riders had earned an easy run by now. Despite some slight dynamo trouble, Brookes again returned to Llandrindod Wells without loss of marks.

On Wednesday morning, after seeing Brookes off from the start, I took Hill's kit down to him in hospital, near Swansea. He seemed to be very cheerful, and was already looking forward to riding again. As I had now

changed my damaged front wheel for the one off Hill's bike, I was fully mobile again. In the afternoon I went up to a check point on the mountains near Brynamman, to see Brookes arrive, still in good time, and still with a clean sheet. It was very cold and bleak on top of the mountain, and I felt very sorry for the check marshals and the petrol men, who had to spend the whole day up there. Once again I got back to Llandrindod Wells before Brookes arrived. He had time for an oil change before checking in for the night.

On Thursday and Friday I joined the ranks of the innumerable spectators, who followed the trial so keenly. On Thursday I went to the lunch stop near Denbigh, where I met a number of friends who had come out to watch. On Friday I went to the top of the once famous test hill, Bwlch-y-Groes. The time check here was at the end of one of the stiffest sections of the week, consisting of $11\frac{1}{2}$ miles of very rough track, over the Eunant Pass, between Lake Bala and Lake Vyrnwy. The track had apparently been washed away in places by the rain, and a gang of men had had to work all Wednesday night to rebuild it for the competitors to pass that way on Thursday. I was one of the first to arrive here, but a fair-sized crowd quickly grew, and settled themselves in the vast natural amphitheatre alongside the rough, rocky and watery track, which stretched away over the hills, until it disappeared from view some two miles away. The first man to arrive was an Austrian, S. Cmyral, riding a 250 cc. Puch. He seemed to be going very well, and rode over the rocky surface very neatly and competently. From then on, the remainder of the field, now reduced to about 85 riders, arrived, and passed through the time check, in very varying conditions. Many of the motor cycles and riders were very tired by now. One machine had no rear mudguard, one had shed its exhaust pipe, several were very bent, and many of the engines sounded very flat and woolly. Brookes arrived, looking quite at home, with about six minutes in hand, more than most of the riders had achieved here, and immediately set about adjusting his rear chain. Chains took a lot of punishment from mud and water during the week, and needed constant adjustment. He then took a quick look round his bike, swallowed some coffee from my flash, and set off again, his machine sounding as healthy as when it first left the factory.

On Saturday, a short but stiff run in the morning was followed by the speed test on the Eppynt road race circuit, on Sennybridge Ranges. Again I saw Brookes off from the start, and then dashed round by main road to arrive before him at Eppynt. Many riders were having great trouble starting their machines by now, and Brookes took the best part of two minutes to get away on Saturday. The weather was appalling for the speed test, and just before the 500 cc. machines were sent off a large cloud drifted along and settled over the circuit, reducing visibility to about 50 feet. I had arranged a simple form of signal to let Brookes know how he was going, and I waited anxiously for him to complete his first lap. Although he was last off the line at the start he was well up in the field when he came round again. Nevertheless he was some thirty seconds behind his schedule. He recovered these seconds on his next lap, and he continued to gain slightly more on each lap, so that in the end he covered one extra lap in the allotted time, and thus finished without losing a single point during the week, so winning a very well deserved Gold Medal.

At the end of the speed test the machines were again checked by the



Bdr. Brookes negotiating a water-splash.

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scrutineers, to ensure that no part had been changed. When Brookes had had his bike checked, we rode gently back through the rain to Llandrindod Wells. At 9.30 that evening we attended the prize-giving. After several speeches, the various trophies were presented, and each successful rider received his medal, engraved with his name. Of the 232 entries, 38 riders won Gold Medals, 15 Silver Medals, 12 Bronze Medals, and 16 riders finished but got no award, having lost more than 50 marks. Great Britain won the International Trophy, the team having lost no marks. Austria came second, with a loss of 1,224 marks, and Italy third with 2,582. We also won the International Vase with the loss of no marks, Holland coming second in this, with a loss of 300.

Despite the reduced entry fee for Services riders, it was disappointing that only twelve Army riders competed in the 1950 trial. As a means of advanced training for Army motor-cyclists, nothing could be more valuable than to compete in a trial of this nature, teaching one as it does to maintain a high average speed over frequently very rough going, at the same time saving one's machine so far as possible. The 1950 trial was probably the stiffest on record, and yet our regimental team of three absolute novices succeeded in beating many teams of old hands on the first day, and Brookes, with less than two years' total motor-cycling experience, won the highest possible award. The 1951 trial is apparently to be held in Italy, which will, no doubt, make it very difficult for Service riders to enter privately, though there can be no reason for not entering an official Army team, and possibly teams to represent the various arms. The Royal Artillery provided 7 of the 12 riders in 1950, and should be able to field a very reasonable team. With any luck, the 1952 trial may be held in this country again. If so let us hope to see many more Army riders competing, both as private individuals and in unit or corps teams. There must be a great many riders in the Army capable of performing with credit in a six days trial. Any such rider who does enter will be almost certain to enjoy himself, and will want to repeat the dose next year, as much as Brookes, Hill and I want to.

It is interesting to note that F. M. Rist, who captained Great Britain's successful team for the International Trophy in 1950, rode in his first International Six Days Trial as a member of a Royal Armoured Corps team. Perhaps the Royal Artillery can produce a rider capable of leading the British team to success in some future trial.

THE ROYAL ARTILLERY AT SURINAM 1804.

By Lt.-Col. M. E. S. Laws, o.b.e., m.c., R.A. (Retd.).

DURING the course of what an older generation called "the long war with France" from 1793 to 1815, the British were called upon to undertake a large number of minor overseas expeditions. Most of these were to some extent amphibious operations, but they presented a surprisingly varied array of problems for the commanders concerned. The capture of the Dutch Guiana colony of Surinam in 1804, though almost ignored by the military historian, had its own peculiar difficulties, and throws an interesting sidelight on the method of conducting overseas expeditions a century and a half ago.

When in 1793 Revolutionary France declared war on England, the British Government, in accordance with its treaty obligations, sent an expeditionary force to the Continent to fight in conjunction with its Dutch and Austrian allies. By the winter of 1794-95 the allies had been driven out of Holland, which became the not entirely enthusiastic satellite of France. The British Government was then confronted with the problem of what action should be taken in connection with the Dutch overseas colonies, which it was manifestly undesirable should be permitted to fall into French hands. The question was, indeed, in essentials precisely that which re-appeared in 1940 after the fall of France.

The exiled Stadholder ordered Dutch colonies to admit British troops for their own protection against the French, and thus placed the onus of making a very difficult decision on each of the Governors concerned. Generally speaking, the colonies only wished to be left in peace, provided that private property and trade were protected, and gradually the various overseas possessions came under British control. Thus in 1799 Surinam was captured virtually without opposition, and a British garrison was introduced.

Surinam was a fertile and flourishing colony of over five hundred plantations producing sugar, coffee, cocoa and cotton. It supported a population of barely 2,000 Europeans, about 1,000 "persons of colour" and some 40,000 native Indians. Its annual production was estimated at 24,000 barrels of sugar, 12 million pounds of coffee, 3 million pounds of cotton and 350,000 pounds of cocoa, but since trade with Holland had ceased since 1794, the colony was badly in need of imports and of a new market for its produce. Owing to the very heavy rainfall and to the lack of natural drainage, cultivation was mostly confined to the coastal area, and the only means of communication inside the colony were by water. The rest of the territory was rendered impassable to troops owing to the thick jungle and swamps. The climate was not healthy for Europeans.

A preliminary peace treaty with France was signed in London on 1 October 1801 and was in due course formally ratified. Under the terms of this

settlement, Britain agreed to restore all her conquests since 1793 except Ceylon and Trinidad, and accordingly the British garrison was withdrawn from Surinam. The authorities in London were evidently not very sanguine as to the permanency of the peace, and issued orders to the British commander at Paramaribo that, prior to evacuation, he was to collect all possible information relative to the navigation of the Surinam River and to its fortifications, and in particular a set of maps and charts. These charts were therefore deposited at Barbados—the headquarters of the Windward and Leeward Islands command—when the British troops were withdrawn from the colony.

The transports carrying the new Dutch garrison, which was sent out from Holland to occupy Surinam, were driven into Plymouth by stress of weather, and the British military authorities probably got a very good idea of the details of the units concerned. In fact, the new garrison consisted of a single company of artillery, 5th Battalion of Chasseurs and four companies of the 8th Battalion of Chasseurs, totalling perhaps 1,500 all ranks. When therefore on 16 May 1803 war between Britain and France again broke out, a considerable amount of information concerning Surinam was available.

Since Holland—or more correctly, the Batavian Republic—was still a French satellite power, the British Government ordered immediate action to be taken against both French and Dutch possessions in the West Indies area. The British commander at Barbados had already made preparations to that end in anticipation of war breaking out, and when in mid June, definite news of the rupture arrived from London, an expeditionary force sailed almost at once against the French at St. Lucia and Tobago. The swift capture of these two islands was followed by a similar descent on Demerara, Essequibo and Berbice, all of which surrendered on favourable terms without fighting. But after providing garrisons for these conquests, the British were unable to muster another expeditionary force without reinforcement, and it was decided to postpone the attack on Surinam till early in 1804.

Towards the end of 1803 two strong British battalions—the 16th[1] and 46th[2] Foot—reached the West Indies, followed in March 1804 by a new Commander, Major-General Sir Charles Green. Though an unexpected and, indeed, unexplained order had reached Barbados from London in January 1804 suggesting if not definitely ordering the cancellation of further offensive operations, Sir Charles Green began immediate preparations to attack Surinam. The British undoubtedly had agents in the colony whose reports indicated that little opposition was to be expected.

According to secret correspondence[3] later captured at Paramaribo, the Republican Government in Holland was convinced that Surinam would not be attacked owing to the political instability of the British Government and to the serious situation facing England in Europe. Indeed it was hoped that Dutch forces from Surinam would shortly be able to reconquer Demerara and Berbice, though there seems to have been little justification for such optimism in view of British naval superiority in the West Indies.

Despite the optimistic reports of his agents, the British commander had a

[1] The Bedfordshire and Hertfordshire Regiment.
[2] 2 Battalion, The Duke of Cornwall's Light Infantry.
[3] War Office: Series I, Volume 148, Pages 21—23 in the Public Record Office.

difficult problem to solve. It was particularly desirable that the attack should be made in considerable, and preferably overwhelming, strength so as to convince the Dutch of the futility of resistance. Moreover it would be dangerous to commit the only available reserve so far to the south while the French still held Martinique and Guadeloupe in considerable strength. Though the British were supreme at sea, there was no guarantee that a French force might not arrive from Europe (as indeed occurred in 1805) and play havoc with weakly-defended islands. It was therefore important that operations against Surinam should be conducted with speed and secrecy so that the British expeditionary force should not be tied down far from its base for a lengthy period.

The Royal Artillery in the Windward and Leeward Islands command at that time consisted of the following six Companies :—

Designation in 1804.	*Later Designation.*
Capt. J. Sheldrake's Coy., 1 Bn.	Disbanded 31/1/1819 as Capt. H. Light's Coy., 1 Bn., R.A.
Capt. W. Wilson's Coy., 4 Bn.	Became 40 Field Bty., R.A., on 1/4/1947.
Capt. G. Lindsay's Coy., 7 Bn.	Became 12 (Martinique 1809) Field Bty., R.A., on 1/4/1947.
Capt. G. Mann's Coy., 7 Bn.	Became 69 Field Bty., R.A., on 1/4/1947.
Capt. G. Gold's Coy., 7 Bn.	Disbanded 28/2/1819 as Capt. J. R. Clement's Coy., 7 Bn., R.A.
Capt. C. Waller's Coy., 7 Bn.	Disbanded 31/1/1819 as Capt. W. Cleeve's Coy., 7 Bn., R.A.

In addition there were two Companies of Royal Foreign Artillery in British pay—those of Capt. L. Prevost and Capt. H. de Villicy. All these eight companies were much below establishment, and though they mustered at Barbados, all had detachments in one or other West Indian colonies such as Antigua, St. Kitts, St. Lucia, Dominica, Trinidad, St. Vincent, Grenada, Tobago, Demerara, and Berbice. The number of artillerymen actually present at Barbados and available for the expedition against Surinam was therefore small, and was made up of parties from the different Companies. Fortunately, however, the transport Eclipse arrived at Barbados from England on 21 March 1804 and landed Lieutenant-Colonel E. Stehelin, Lieutenant W. Webber and a draft of artillerymen for Companies R.A. as follows :—

Unit to Join.	*Sgt.*	*Bdrs.*	*Gnrs.*	*Total.*
Capt. J. Sheldrake's Coy., 1 Bn.	—	2	32	34
Capt. W. Wilson's Coy., 4 Bn.	—	—	32	32
Coys. of 7 Bn.	1	3	36	40
Total	1	5	100	106

Lieut.-Colonel Stehelin, who relieved Captain (Brevet Major) W. Wilson as C.R.A., found on his arrival at Barbados that an expedition was about to sail for an undisclosed destination. He made "every possible application to accompany the expedition", but without success, and he was ordered to remain at Barbados and to allow Major Wilson to act as C.R.A. for the expedition.

Early in April 1804 the expeditionary force embarked at Carlisle Bay composed as follows :—

Commander. Major-General Sir Charles Green.
16th Regiment (The Bedfordshire & Hertfordshire Regiment).
64th Regiment (1 Bn., The North Staffordshire Regiment).
Rifle Company, 2 Bn., 60th Regiment (The King's Royal Rifle Corps).
Rifle Company, The York Light Infantry Volunteers.[1]
6th West India Regiment (Disbanded 1817).
Detachment Royal Military Artificers.
Detachment of Black Pioneers.

In addition there was a detachment of the Royal Artillery composed as follows :—

Unit.	*Capt.*	*Capt.-Lts.*	*Lts.*	*Sgts.*	*Corpls.*	*Bdrs.*	*Gnrs.*	*Total.*
Capt. J. Sheldrake's Coy., 1 Bn., R.A.	—	—	—	—	—	1	15	16
Capt. W. Wilson's Coy., 4 Bn., R.A.	1	—	2	1	2	1	10	17
Capt. G. Lindsay's Coy., 7 Bn., R.A.	—	—	—	—	1	3	15	19
Capt. G. Mann's Coy., 7 Bn., R.A.	—	—	1	—	—	—	12	13
Capt. G. Gold's Coy., 7 Bn., R.A.	—	1	—	1	—	2	16	20
Capt. C. Waller's Coy., 7 Bn., R.A.	—	1	—	—	—	—	17	18
Capt. L. H. Newton's Coy., 3 Bn., R.A.	—	—	—	1[2]	—	—	—	1
Total Royal Artillery	1	2	3	3	3	7	85	104
Capt. L. Prevost's Coy., Royal Foreign Artillery	—	1	—	—	—	—	1	2
Total Artillery	1	3	3	3	3	7	86	106

The officers of the detachment were Captain (Brevet Major) W. Wilson, Captain-Lieutenants J. Armstrong (Waller's Coy.) and J. Beausire (Prevost's Coy.), Lieutenants J. P. St. Clair (Mann's Coy.), J. Brown (Wilson's Coy.) and W. Webber (Wilson's Coy.). The detachment was organized in three "Brigades" (i.e. batteries) and took with it the following guns: two 3-pdrs., six light 6-pdrs., four $5\frac{1}{2}$-inch howitzers, four $5\frac{1}{2}$-inch mortars, one 10-inch mortar, one 8-inch mortar and four medium 12-pdr. guns.

The troops embarked at Carlisle Bay, Barbados on 4 and 5 April, the Royal Artillery detachment being accommodated on board transports while other units were detailed to warships. The expedition sailed on 7 April under convoy of Commodore S. Hood's squadron consisting of H.M.S. Centaur (74), Pandour[3] (44), Serapis[3] (44), Alligator[3] (28), Drake (16) and Unique (10). The voyage was uneventful, and on 25 April the expedition arrived off the mouth of the Surinam River where H.M.S. Emerald (36) and Hippomenes (18) joined the squadron.

[1] A foreign corps in British pay raised in September 1803 and chiefly recruited up till then from Dutch prisoners of war taken at Demerara.
[2] This Sergeant had been left behind in the West Indies when his Coy. (which became on 1 April 1947, 8 Field Battery) was sent back to England with the other Companies of 3 Bn.
[3] Armed *en flûte*—that is, not carrying full armament.

The defences of Surinam consisted of a series of forts as follows, so sited as to command the river channel:—

Braam's Point Battery	7 guns (18-pdrs.)
Frederick Battery	12 guns
Fort Leyden	12 guns
Fort Purmerend	20 guns
Fort Amsterdam	80 guns
Fort Zealandia	10 guns

For the defence of the colony were available some 1,300 regular troops, a European militia of rather over 100 and nearly 400 native militia. In addition the Dutch frigate Prosperine (32) and sloop Pylades (18), the schooner George (10) and seven gunboats were moored in the Surinam River; their crews totalled 241 all ranks. But the chief asset of the defence lay in the great difficulty of navigation in the Surinam River and in the fact that the country was largely jungle and swamp, which forced an invader to move only by water.

Sir Charles Green's plan was to send a small force under Brigadier-General Maitland to land at the mouth of the Warappa Creek, some 15 miles to the east of Braam's Point. There it was hoped that boats would be procured and the force would move southwards by water into the Commewyne River and thence westwards to a point just short of its junction with the Surinam River. There contact was to be made with the remainder of the British force under Brigadier-General Hughes, which in the meanwhile was somehow to have got past Frederick Battery and Fort Leyden. The combined force was then to attack Fort Amsterdam and thus clear the passage for the warships to sail up river to Paramaribo, the capital and seat of government.

On 26 April, Brigadier Maitland's force, composed as follows, was embarked on four transports and sailed under the protection of H.M.S. Hippomenes to the eastward:

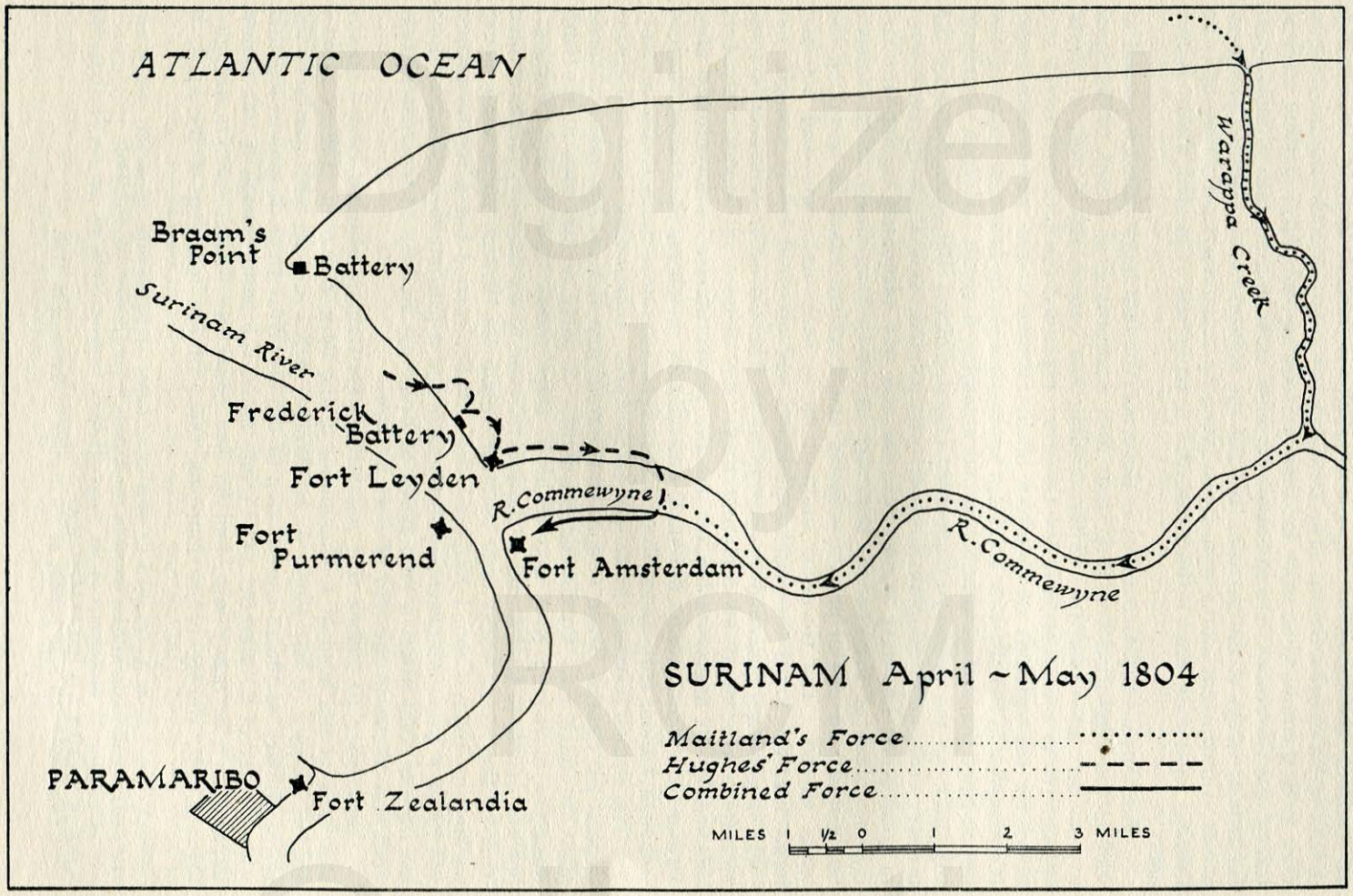
Detachment (one brigade), Royal Artillery.
H.Qs. and 4 Coy., 16th Regiment.
Flank Coys., 64th Regiment.
Detachment, 6th West India Regiment.
Detachment of 85 ratings of H.M.S. Guachapin.[1]
Detachment of 20 ratings of H.M.S. Desperate.[1]

The troops were put ashore on 30 April at the mouth of the Warappa Creek after driving off a subaltern's party of the enemy with two guns which opposed the landing. The British then set about collecting boats for their passage to the Commewyne River.

Meanwhile the Dutch battery of 7 guns at Braam's Point was attacked on the evening of 26 April by H.M.S. Emerald, Pandour and Drake. Twenty minutes firing was enough to silence the enemy's guns, and the fort then surrendered and was occupied by a party of the 64th Regiment from H.M.S. Pandour. The Dutch garrison consisted of 1 Captain and 44 other ranks, mostly artillerymen.

While the British ships were working into the Surinam River, a summons to surrender the colony was sent to the Dutch Governor on the evening of

[1] These two ships were too far to leeward to join Commodore Hood's squadron, but the majority of their crews embarked in ships' boats and pulled fifty leagues to join the expedition!


ATLANTIC OCEAN
Braam's Point
Battery
Surinam River
Frederick Battery
Fort Leyden
Fort Purmerend
R. Commewyne
Fort Amsterdam
R. Commewyne
Warappa Creek
PARAMARIBO
Fort Zealandia
SURINAM April ~ May 1804
Maitland's Force
Hughes' Force
Combined Force
MILES 1 1/2 0 1 2 3 MILES

27 April by the hands of Captain Maxwell, R.N. and Captain Drummond, A.D.C. to Sir Charles Green. The terms offered were generous; the inhabitants were to be guaranteed security for their persons and property, existing officials (except the Governor) were to remain in office on taking an oath of allegiance, the regular troops of the garrison (but not the militia) were to become prisoners of war, Government stores were to be given up and religious freedom and the existing legal code were to be retained. A reply was requested within twelve hours.

The Commissary General (i.e. Governor) P. Berranger called a council of war[1] at the Plantation Voorburg (near Fort Amsterdam) at 4 a.m. on 28 April to consider the summons. After opening the proceedings "with a prayer appropriate to the occasion", the Governor explained the proffered terms and called for the opinions of members of the Council. The naval commander (Commander W. O. B. van Treslong) spoke strongly in favour of rejecting the terms, since the British were not in overwhelming strength. He was vigorously supported by the military commander (Lieut.-Colonel Batenburg) and by the artillery commander (Captain Slicher), who pointed out that the garrison were in good heart, had very strong defences and was adequately equipped. The civil members of the council, however, feared that an unsuccessful defence would lead to a loss of private property and therefore voted for accepting the terms offered. The Governor summed up in such ambiguous and defeatist terms that the naval commander protested and observed tritely enough that "war is generally attended by calamities". The Governor concluded a most unedifying peroration by declaring that "the dictates of honour were best satisfied by an anxious solicitude for the public welfare". Eventually after further heated protests by the naval and military members, the Council decided —though without enthusiasm from the civilians—to refuse the British summons.

The British received the refusal on 28 April. Commodore Hood and Major-General Sir Charles Green at once transferred[2] into H.M.S. Emerald and made plans to attack Fort Purmerend by night. A party of 100 men of the 64th Regiment moved up river that night in ships' boats from H.M.S. Pandour, but was unable to land owing to the low tide and to the marshy, jungle-covered bank of the river. Next day, however, while the British ships were slowly working up river, Colonel Shipley,[3] the C.R.E., carried out a reconnaissance and found a negro who revealed the presence of a path on the east bank which led from a point about a mile north of Frederick Battery to the rear of that work and thence to the rear of Fort Leyden.

Soon after 10 o'clock that night Brigadier-General Hughes landed on the east bank at the head of a detachment of the 64th Regiment (139 all ranks), Colonel Shipley, R.E., Lieut. J. R. Arnold, R.E., and 20 other ranks of the Royal Military Artificers and 10 men of the 6th West India Regiment together with a party of 30 seamen. The guide found the path, though it was almost impassable from heavy rain, and for five hours the British column struggled forward, till, shortly before half-past three in the morning of 30 April, it

[1] The Minutes of the Council of War were found at Paramaribo when the colony surrendered; a translation will be found in the Public Record Office (W.O.1/146).

[2] Owing to the shallowness of the water, H.M.S. Centaur could not get up the river, but a part of her crew was lent to other ships.

[3] This officer had been present at the capture of Surinam in 1799.

emerged just in rear of Frederick Battery. As the British deployed, they were met by a heavy fire of grape and musketry, but the attack was pushed home without hesitation and the enemy were speedily driven out of the battery. As they left, however, the fugitives fired the magazine and the resulting explosion caused a number of casualties to the British. Brigadier-General Hughes quickly rallied the men and set off once more along the jungle path to attack Fort Leyden. Though under a brisk fire, the attackers swept into the fort and resistance was soon overcome. Four officers and about 120 prisoners were taken and some thirty of the garrison escaped. As a result of this night action, the eastern bank of the Surinam was cleared and the British were within artillery range of the main Dutch defences at Fort Amsterdam.

The next day British Gunners were landed at Fort Leyden and soon got two mortars into action against Fort Amsterdam. Information was also received that Brigadier-General Maitland's force had made good its landing at Warappa Creek and might be expected to make its appearance in the Surinam River very shortly. The next two days were therefore spent in working the ships further up river till they were nearly abreast of Fort Leyden and in landing the remainder of the troops who occupied the northern bank of the Commewyne River near its junction with the Surinam River. During this time the Royal Artillery kept Fort Amsterdam under steady fire and gradually silenced the enemy's guns.

The loss of Frederick Battery and of Fort Leyden seems to have convinced the Dutch civilians that further resistance would only lead to much destruction or confiscation of their property. The Governor retired from his plantation near Fort Amsterdam to Paramaribo, having decided that "our presence in this place appears unnecessary". The European militia company refused to serve under a regular officer, but consented to take over the defence of Fort Zealandia with the evident intention of ensuring that the town of Paramaribo should not be endangered by bombardment as a result of a stubborn defence of the fort. Later the Comptroller-General refused to comply with an indent for food duly signed by the military commander, who also complained that his engineer officers could get no assistance in any form from the civil authorities. Seldom can a garrison commander have received less assistance from the civilians he was trying to protect.

On 3 May Maitland's force appeared in boats rowing down the Commewyne River, and landed on the southern bank some two miles east of Fort Amsterdam. The boats were then sent across the river and were used to ferry over Hughes' troops—including the Royal Artillery and the rest of the 16th Regiment—to join Maitland's force. Soon after 3 p.m. on 4 May, the combined brigades of Maitland and Hughes moved westwards along the south bank of the Commewyne River intending to invest Fort Amsterdam. Before this was completed, however, a flag of truce appeared from the fort asking for terms of surrender.

The Dutch military commander had two days earlier warned the Governor that surrender seemed inevitable, but had received so non-committal a reply that he had threatened to surrender the naval and military forces only and to make no terms for the colony. In his subsequent official report Lieut.-Colonel Batenburg complained bitterly of "the unconcern manifested by the Executive Government with regard to the interests and honour of the Republic, of the Colony and of the Military", and made it clear that the devastating artillery bombardment of Fort Amsterdam made further defence hopeless.

The terms of surrender proposed by the Dutch commander required the British to allow the garrison to march out with the honours of war and to be sent to Holland at British expense, though undertaking not to serve again against Britain or her allies. In particular, no Dutch troops were to be taken into the British service, as had been done after the capture of Demerara in 1803. These terms were refused by Sir Charles Green, who explained somewhat naïvely that His Britannic Majesty only accepted volunteers in his service. Lieut.-Colonel Shipley, R.E. and Captain Maxwell, R.N. returned to Fort Amsterdam with the flag of truce, and at 6 p.m. a capitulation was signed by them on the terms originally proposed by the invaders on 27 April. Next morning the Dutch laid down their arms and the British took possession of the forts and of Paramaribo.

As soon as the British had assumed control of the colony, a check was made of the prisoners of war with the following results :—

Unit.	*Fd. Offs.*	*Capts.*	*Lts.*	*2/Lts.*	*Sgts. Maj.*	*Sgts.*	*Cpls.*	*Ptes.*	*Dmrs.*	*Total.*
Artillery	—	1	1	2	—	6	7	85	2	104
Engineers	—	1	3	—	—	—	—	—	—	4
5 Bn. Chasseurs[1]	1[2]	8	8	13	1	35	61	608	14	749
8 Bn. Chasseurs[3]	—	3	2	5	—	20	36	334	8	408
Total Regular Troops[4]	1	13	14	20	1	61	104	1027	24	1265
European Militia[5]		1	1	3	—	7	5	92	—	109
Native Militia[5]	1[6]	5	7	7	1	11	21	315	—	368
Total Militia	1	6	8	10	1	18	26	407	—	477
Grand Total[7]	2	19	22	30	2	79	130	1434	24	1742

The militiamen were at once released, but offers were made to the regular troops to enter the British service, either in the York Light Infantry Volunteers, the Royal Artillery or the Royal Military Artificers. Major-General Sir Charles Green had only recently been appointed Colonel of the York Light Infantry Volunteers, a new foreign corps intended for West Indian service. By its Letter of Service, this regiment was not to be placed on the establishment of the British Army until it had been recruited up to its preliminary establishment of 10 companies each of 80 rank and file; later the companies were to be increased to 100 rank and file. It was therefore very much to Sir Charles Green's financial advantage that the regiment should be recruited as early as possible to full strength, since the Colonel's perfectly legal emoluments were directly concerned with the commissioning of the officers and the clothing of the other

[1] Also 1 Surgeon-Major, 4 Surgeons and 4 Surgeons' Mates.
[2] Lieutenant-Colonel.
[3] Also 2 Surgeons' Mates.
[4] Total does not include 1 Surgeon-Major, 4 Surgeons, 6 Surgeons' Mates, 13 women and 11 children.
[5] Also 1 Surgeon and 2 Surgeons' Mates.
[6] A Major.
[7] This total does not include the Medical Staff—1 Surgeon-Major, 6 Surgeons and 10 Surgeons' Mates.

ranks—in fact, the continuance of the unit in the Service. Moreover, it was very difficult to find recruits at Home for West Indian service, and the Continent as a recruiting ground was at that time denied to Britain. These were the factors which led the General to refuse the proposed clause in the suggested capitulation which would have forbidden recruitment among the Dutch prisoners of war.

Every effort was therefore made to induce the Dutch regular troops to enlist in the York Light Infantry Volunteers, a company of which unit was included in the British expeditionary force. Many of the Dutch prisoners from Demerara had already joined this regiment. A bounty of 23 dollars a man was offered, and non-commissioned officers were to be permitted to retain their rank and pay. In addition the men had an assurance that they would continue to serve together with their compatriots in the new corps. The engagement was to be for five years or the duration of the war, whichever was the longer, and a free passage to Europe on discharge was guaranteed.

The Board of Ordnance appears to have been left behind in the scramble for Dutch recruits, and when at length permission was given to enlist artillerymen in the Royal Artillery, many of the Dutch gunners had already taken service in the York Light Infantry Volunteers. However, Major Wilson managed to get 1 Sergeant, 3 Corporals, 4 Bombardiers and 49 Gunners by paying a bounty of £8/8 each. In addition, 17 Dutchmen joined the Royal Military Artificers and no less than 22 Sergeants and 581 rank and file joined the York Light Infantry Volunteers[1]. Thus nearly 38% of the Sergeants and rather under 60% of the rank and file preferred to serve with the British rather than face the monotony and discomfort of a prison ship at Barbados.

The Dutch artillery recruits were enlisted into the Royal Artillery with effect from 26 May 1804, and were posted to Companies R.A. in the West Indies so as to even out the strength of those units[2]. They embarked on board H.M.S. Serapis on 8 May for Barbados and arrived there on 25 May for an intensive course of training in British drill and procedure. Five months later the C.R.A. Barbados protested vigorously against a suggestion that his Dutchmen should be transferred to one of the two Companies of The Royal Foreign Artillery. The men, he explained, would object to such a transfer, and he added that they were "pliable and good and the best men we have".

The British casualties during this short campaign were as follows :—

MILITARY.

	Killed.	*Wounded.*				
Unit.	*Rank & File.*	*Fd. Off.*	*Lts.*	*Sgts.*	*R. & F.*	*Total.*
Staff	—	—	1	—	—	1
Royal Artillery	2	—	—	—	—	2
Royal Engineers	—	—	2	—	—	2
Royal Military Artificers	1	—	—	—	—	1
64th Regiment	2	1	1	1	7	12
Total Military Casualties	5	1	4	1	7	18

[1] The regiment was, in fact, completed to full establishment very quickly and was placed on the establishment with effect from 25 April 1804. It had an excellent record during its service and was disbanded in 1818 after serving at the capture of Martinique and the Saintes (1809) and of Guadeloupe (1810).

[2] Only three were posted to Captain W. Wilson's Coy., 4 Bn., R.A.; the remainder were posted to the Companies of 7 Bn. in the West Indies.

NAVAL.

	Killed.				Wounded.		
Ship.	*Lt.*	*W.Os.*	*P.Os.*	*Seamen.*	*Lts.*	*Seamen.*	*Total.*
H.M.S. Centaur	1	—	1	2	2	4	10
H.M.S. Pandour	—	—	—	—	—	1	1
H.M.S. Drake	—	1	—	—	—	—	1
H.M.S. Unique	—	—	—	—	1	—	1
Total Naval Casualties	1	1	1	2	3	5	13

On 14 May, Sir Charles Green with his staff re-embarked on board H.M.S. Centaur and sailed for Barbados, leaving as garrison the 16th Regiment, two companies of the 6th West India Regiment and a detachment of Royal Artillery —in all about 1,500 men. The detachment of the Royal Artillery left in garrison at Surinam was composed as follows :—

Unit.	*Capt.-Lt.*	*Lieut.*	*Sgts.*	*Corpl.*	*Bdrs.*	*Gnrs.*	*Total.*
Capt. J. Sheldrake's Coy., 1 Bn.	—	—	—	—	1	5	6
Capt. W. Wilson's Coy., 4 Bn.	—	1	1	1	1	2	6
Capt. G. Lindsay's Coy., 7 Bn.	—	—	—	—	2	9	11
Capt. G. Mann's Coy., 7 Bn.	—	—	1	—	—	5	6
Capt. G. Gold's Coy., 7 Bn.	—	—	—	—	—	9	9
Capt. C. Waller's Coy., 7 Bn.	—	—	—	—	—	12	12
Total Royal Artillery	—	1	2	1	4	42	50
Capt. L. Prevost's Coy., Royal Foreign Artillery	1	—	—	—	—	1	2
Total Artillery[1]	1	1	2	1	4	43	52

The remainder of the detachment of artillery of Sir Charles Green's force returned to Barbados. Though the campaign was not one which offered much opportunity for artillery, Sir Charles Green mentioned in his official report that "Major Wilson, commanding the Royal Artillery, and the officers and men under him have fully sustained the reputation that excellent corps has invariably enjoyed".

The unexpected feebleness of the Dutch resistance is explained by the fact that the Governor and the civil officials were more concerned for the safety of their own plantations than for the national interests. Previous experience of British occupation had reassured them as to the treatment they would receive, and they freely expressed their satisfaction as soon as the terms of surrender were signed. The invaders also had a great advantage in their detailed knowledge of the enemy's defences and resources and in particular of the intricacies of the Surinam River navigation. Yet the British naval and military commanders deserve credit for the boldness of their plan of attack and for the skill and determination shown in its execution. Both Services co-operated admirably the one with the other, and as a result the operations were successfully concluded with remarkable speed and precision and at the cost of but thirty-one casualties.

[1] The officers were Captain-Lieutenant J. Beausire and Lieut. J. Brown. Lieut. J. P. St. Clair remained at Surinam as Acting Engineer.

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Ships' Logs. Admiralty. Series 51. Vols. as shown in brackets after the ship's name. H.M.S. Centaur (1530), Pandour (1498), Emerald (1530), Serapis (1448), Alligator (1509), Hippomenes (1519); Logs of H.M.S. Drake and Unique are missing.

Note:—Duncan in his "History of the Royal Regiment of Artillery" does not mention Surinam.

BEGINNERS ON THE BALTIC.

By "M.H.S."

THIS is the story of a fortnight's cruise in the Baltic by four gunners and an infantryman. I write it mainly for my own amusement. If it amuses others or, better still, if it should point the way to any who would like to cruise but have not yet had the opportunity, it will have achieved a double aim.

We were possibly as inexperienced a ship's company as ever left Kiel, which is saying quite a lot. Paddy was a qualified small boat helmsman on our local lake. The experience of John, Brian and Ronnie ranged from a few Sunday afternoons on the same lake to "a sail in a dinghy on the Norfolk Broads at the age of twelve". I was the only member of the party who had ever set eyes on a chart, a "local acting" skipper and rusty at that.

Mid-October was not the ideal time for such a venture, but we had no choice. It was then or never. So we booked "Joste" for a fortnight from 7 October. Throughout the almost ceaseless rain which attended this September's manœuvres we hoped against hope that the weather would improve. Fortunately it did.

While we had some doubts about our own ability, we had confidence in our ship. "Joste" is a good steady Bermudian ketch, fifty-foot overall, beamy and with considerable freeboard but nevertheless graceful lines. Her sail area is somewhat small for her size and, being a ketch, no individual sail is too large for two men to handle. Short overhangs, lifelines, a boomed jib, and rows of reef points in mainsail and mizzen complete her picture as a seaworthy cruiser, but no ocean greyhound. Below decks she has a foc'stle with two cots, a double cabin and a saloon, together with two hanging cupboards, various lockers, an improvized calor-gas galley, a w.c. and an auxilliary engine.

The great moment had come at last. It was 10.15 of a cloudy October morning with a fresh southerly breeze. We started the engine, cast off our stern warps and nosed our way out of our berth in the British Kiel Yacht Club's Olympia Hafen, then, swinging round on the bow warp, headed out of the harbour. Under the critical eyes of the Club hands ashore we hoisted the reefed main. We fumbled in casting off the sheet (someone still thought a sheet was a sail!), and the sail got caught up in the runners but it went up somehow. We switched off the engines and swung round before the wind bound for Sonderborg, some forty miles away. We were off!

Kiel fjord slipped by while we checked the magnetic variation of the binnacle. As we cleared the land the wind freshened and our speed increased to six knots. The crew were introduced to the art of steering a compass course, with varying results. The grey coast of Schleswig Holstein unrolled itself to port. By 1400, abeam of Schleimunde, the wind had veered westerly, so we set the jib and mizzen. Shortly afterwards we sighted land ahead, the promised land of Denmark. At 1500 we changed course for the Flensburg light vessel.

In Flensburg fjord we got lost! A suspicion that we were approaching the



Joste was no ocean greyhound.



The yacht basin of The Royal Danish Y.C.

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Middelgrund shoal caused us to make an unexpected tack at short notice. Chaos broke loose below. Clothing, tins of bully, books, the milk can, the chart and half-a-pound of porridge oats careered around the cabin floor, while "Joste" thrashed along through a short, choppy sea with her lee decks awash. We soon discovered the causes of our troubles, which were simple enough. We were lost because the West Middelgrund buoy was not in position. The mess below was due to the locker doors not being strong enough to hold their contents unless wedged with pieces of paper. With some relief we identified the red roofs and towers of old-world Sonderberg, and eased off the sheets to run into the entrance channel. Our first shake down had done us good.

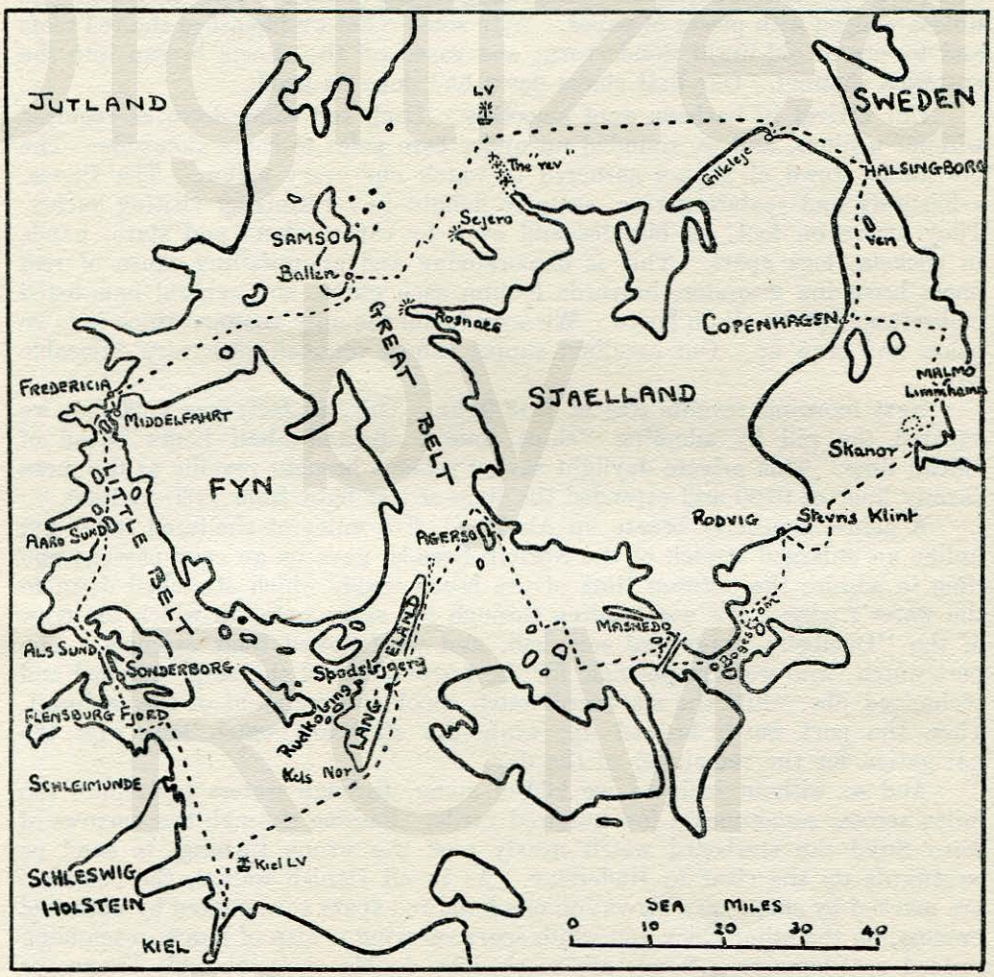
Our arrival in harbour went smoothly. Each sail came down as required without a hitch, and we rounded up under bare poles to come alongside. The inevitable crowd of gapers gathered to watch our every action. The Danes, a leisurely and seafaring race, seem to delight in scrutinizing visiting yachts. They arrive on foot, on bicycles and even by car to stand and stare, hands in pockets, legs apart. This is demoralizing and an unfailing cause of reef knots becoming grannies, halyards fouling each other, and general ham-fisted embarrassment by all on board. We soon found the only answer, which is to go below and brew up. Our excellent supper ashore rounded off a very enjoyable day.

Next morning reveille was at first light. This, in fact, was 0530 but we sugared the pill by adopting "ships time", one-and-a-half hours ahead of official time. This private daylight saving scheme brought reveille to the more seemly hour of 0700 and extended the time of last light from 1730 to 1900.

A gentle southerly breeze up Als Sund, five miles of sheltered water not unlike an enlarged stretch of the Norfolk Broads, gave us an easy passage and time to admire the autumn tints of the beech woods which stretched down to the water's edge. We were sailing through the same water in which the crew of the "Ducibella" practised sail drill, and we followed their example. The port watch, who were responsible for the forrard half of the ship, changed and rechanged jibs, while the starboard watch shook the reefs out of the mainsail. Then the port watch brewed up, while the starboard watch took over the navigation for the remainder of the day.

And so without incident we lobbed along, through waters sometimes ten miles across, sometimes a few hundred yards. Passing through the narrows of Aaro Sund the starboard watch nearly took the wrong turning, to send us westwards up the river to Haderslev. As in all Danish waters, the channels are marked by small spar buoys; on one hand red spars surmounted by upturned brooms, on the other black and white spars carrying a wisp of straw, resembling padded coat-hangers. Bends are marked by double or even treble brooms or "coat-hangers", and forks in the channel by a combination of both.

At one time it looked as though we would be benighted in poor visibility in these narrow waters. But after tea the breeze freshened and the visibility cleared to reveal land two miles ahead. A shout from the helmsman of "which side of this headland do I go" gave the starboard watch some hectic moments with compass and protractor, but they selected the right opening, and sunset found us slipping quietly through the lovely waterway which leads to Middelfahrt. At dusk we passed under the impressive road and railway bridge which joins Fyn to the mainland, and shortly afterwards identified the red light of


JUTLAND
SWEDEN
LV
The "rev"
Gilleje
HALSINGBORG
Ven
SAMSO
Ballen
Sejero
Rosnaes
COPENHAGEN
MALMO
Limhamn
FREDERICIA
MIDDELFART
GREAT BELT
SJAELLAND
Skanor
FYN
LITTLE BELT
AARO SUND
AGERSO
RODVIG
Stevns Klint
MASNEDO
ALS SUND
SONDERBORG
Spodsbjerg
ELLAND
LANG
FLENSBURG FJORD
Rudkobing
Kiels Nor
SCHLEIMUNDE
SCHLESWIG
HOLSTEIN
Kiel LV
KIEL
SEA MILES
0 10 20 30 40

Middelfahrt harbour. By 1930 we were alongside and, thanks to the foresight of the port watch, supper was ready as soon as the sails were stowed.

Next morning the sun shone brightly, and a fresh south-westerly breeze gave us an easy early morning sail to Fredericia, which we had selected as our shopping centre. Denmark looked more attractive than ever. Mellow red brick buildings and white thatched cottages nestled among the folds of the gently undulating countryside. The sheltered waters of the Little Belt, here only half a mile broad, sparkled in the sunshine.

In Fredericia, as in every Danish port we visited, we found the people kind, helpful and friendly. The harbourmaster advised us where to shop, asking us at the same time to "stand to our skib", as the Customs Officer would be along shortly. He came in a few minutes and was more interested in the "skib" than in our property. We invented a little game, which was to hand in our five passports together and see if he could tell which was which from the photographs, a game which, incidentally, we always won. And so ashore, where a passing farmer gave us apples from his cart and the local ships' chandler stocked us with excellent provisions and lent us his buckets to top up our water tanks, sending his boy to show us the tap. Only coffee, butter and sugar were rationed, and even these generously. There is a great moral uplift in visiting a free country, unscarred by war and unfettered by restrictions.

At 1330 we set sail for Halsingborg, 115 miles away, carrying reefed mainsail only. The wind was dead aft (W.S.W. strength 4) and the glass was high and rising. The sun shone from a blue sky flecked with cumulus clouds. We foamed out of the harbour so fast that the gapers had to break into a smart double to keep up.

For the rest of the day we drove along at a steady six knots. As we cleared the land "Joste" started to roll, so an issue of little white pills was ordered. These were most effective, and in all our cruise only two slight cases of seasickness occurred, and they could have been avoided had the victims taken another pill in time. The mainland of Jutland faded away astern. By sunset the island of Samso lay half-a-mile to port. We ghosted into the little fishing harbour of Ballen at dusk, where we had supper. We made this break in our passage as we were travelling so fast that we were in danger of reaching the busy waters of the Sund before the long night was over, and also because arrangements for cooking at sea in "Joste" are somewhat primitive, not only the pans but the stove itself being free to career around the galley.

Fortified with hot stew and grog, we set sail again at 2200, drifting out between the red and green lights on the harbour moles. We still had a reef in the mainsail, but now carried jib and mizzen, and we found plenty of wind once clear of the land. There was no moon, but stars twinkled merrily in the crisp autumn air. Phosphorescence sparkled in the wake and bow wave. The night was cold, but not uncomfortably so, thanks to winter woollies, tank suits, a following wind and frequent brews laced with rum. Our only anxiety was caused by the navigation lights, which were electric and could not be persuaded to work. There was nothing for it but to do without them. The sea ahead was as black as midnight but on the port bow Sejero lighthouse was flashing groups of three, and to starboard we identified the red occulting light of Rosnaes. The starboard watch were ordered below to rest, while the port watch learned quickly the art of steering a course by night. The propeller started to throb. We were doing six knots.

At midnight Rosnaes light changed from red to green. We were now clear of the unlighted shoals to port and free to gybe and head northwards. We were also in the shipping lane. A steamer overtook us well clear to starboard. Another passed going in the opposite direction, green to green.

A large steamer was coming up on our starboard quarter, showing her red light. Two more red lights showed close together, two points on the starboard bow. They remained directly under a certain star, their bearing unchanged. Soon we could hear the "chomp chomp" of diesel engines. It was indeed time to "stand to our skibs", but which way could we go? To port lay the shoals, to starboard the large steamer. The two red lights were now rising and falling visibly on the waves, the noise of their engines reverberating through the ship. We gybed almost all standing and came up close hauled on the starboard tack, heading back on our course, lee decks awash. All three ships passed safely red to red, and we took advantage of a lull in the passing shipping to slip across to the other side of the shipping lane.

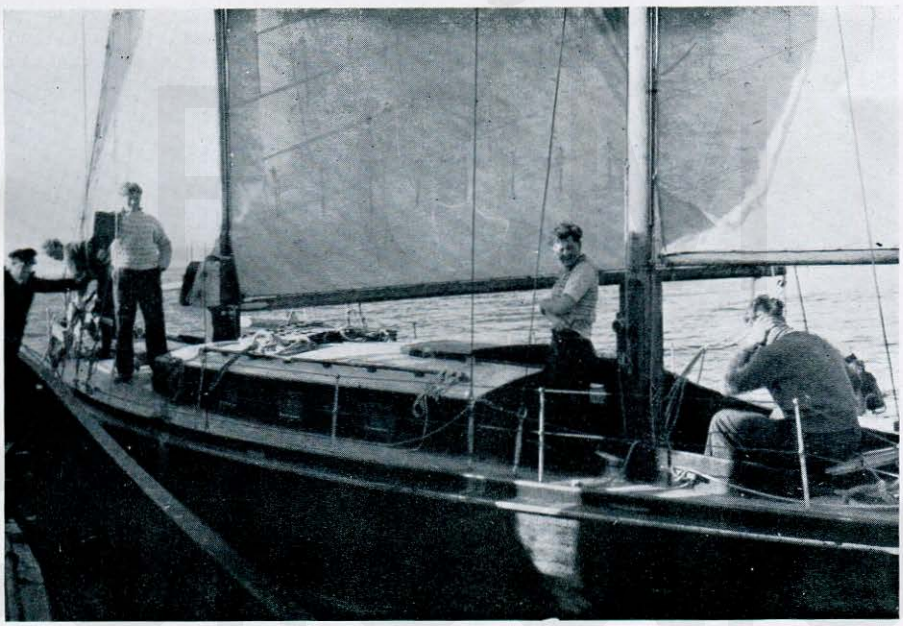
The watches changed, and still we foamed along. Avoiding ships presented no problems, now we were clear of the shoals which confined us to the shipping lane. Even so we navigated carefully, because to starboard lay the five-mile long Sjaellands rev. "A narrow dangerous reef", to quote the Baltic Pilot " . . . the sea breaks over the whole reef in the least wind . . . in calm weather the outline of the reef can be seen from a considerable distance owing to the race . . . the reef dries over a considerable part . . . a red tower stands at the outer end. The room on the upper part of the tower will accommodate from six to eight persons and is supplied with provisions, blankets, etc. . . . There is also a flag . . . to indicate there are shipwrecked people in the tower".

We identified the S.W. Kattegat light vessel and the lighthouse on the rev and passed between them, rounding the rev and heading eastwards at 0225. From now on it was plain sailing. We had one more game of hide and seek with a fishing vessel which kept changing course, presenting her red and green lights alternately. About 0630 I awoke from a snooze in the cockpit to find a perfect dawn was breaking. Ahead were the blue mountains of Sweden. We closed in to the cliffs of Sjaelland to starboard and at 0730 slipped into the tiny harbour of Gilleleje, having averaged almost six knots since leaving Fredericia. After an excellent breakfast we shook out our reef and had a most enjoyable sail down the Sund to reach Halsingborg at lunch time. Since leaving Kiel we had covered over 200 miles in 72 hours, including two nights in harbour and a morning's shopping.

We had quite an adventure that afternoon in Halsingborg harbour. The wind had freshened and our berth was uncomfortable, so we decided to shift. The engine was used for the third and last time. It died on us in the middle of the harbour. ("Thank Heaven that thing's finished with" is reported to have been my comment.) We had the jib and mizzen up in no time and picked up under sail a berth between two other yachts, each of us being bow on to the quay, stern warps to moorings, and broadside on to the wind. As they were lying only some twenty feet apart, this was a rather tricky manœuvre. We achieved it unaided and without bumping the quay or either of the other yachts, and felt we had indeed made progress since our first amateurish efforts to hoist sail in Kiel. A special mention in dispatches must go to the starboard watch for their deftness in attaching the stern warp to the mooring as we swept in,



Steering a compass course with varying results.



Alongside the Customs at Kiel.

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and their use of it to take the way off the ship, skinning their hands and nearly getting pulled overboard in the process.

Shopping in Sweden was easy. We laid in good supplies of butter and coffee and filled a large biscuit tin to the brim with some 25 lbs. of sugar. Nothing appeared to be rationed.

Next morning we awoke to the howling of wind in the rigging. A strong southerly wind was blowing and a strong adverse current was running in the Sund. Apart from these uninviting conditions, a dangerous choppy sea in the outer harbour and the fact that we could not possibly extract "Joste" from her berth with a strong wind abeam kept us in Halsingborg for the morning. At lunch time, however, the wind moderated and veered westerly. We warped out of our berth and set off at a great pace for Copenhagen under storm jib, double reefed mainsail and reefed mizzen.

Abeam of the island of Ven, a remarkable black cloud blew up, obscuring half the sky. We lowered the mainsail and soon had our lee decks awash under storm jib and reefed mizzen only. After the cloud had passed we hoisted the mainsail again and foamed through sheltered water into Copenhagen. We tied up alongside in the lovely yacht basin of the Royal Danish Yacht Club at 1800.

We spent two days in Copenhagen. The first was according to plan, the second the will of Allah who sent us a flat calm and an adverse current in the Sund. The fishing line, so to speak, broke its duck during this time. Having been towed more than 200 miles without catching anything, it first retrieved Paddy's towel from the bottom of the harbour and later, drifting in the calm, it actually caught a small cod. Ashore we revelled in hot baths and juicy steaks and explored the shops and sights of this, the loveliest of capital cities. We found a friendly hotel to dry out our clothes and bedding. We also had the batteries recharged, and John and Brian wrestled earnestly, but without success, with the navigation lights and the engine.

At 9.20 on Saturday we finally took leave of the peaceful yacht harbour and of Hans Andersen's mermaid statue nearby, and headed out into the Sund. Wind and tide were again adverse, so we stood across close hauled on the starboard tack to the Swedish coast, crossing the southern extremity of the Middelgrund, scene of the Battle of Copenhagen. The British ships must have run aground on the very shoal we were crossing, and there astern of us were the grey forts they had bombarded. It was hard to believe that there could ever have been a state of war between Britain and Denmark.

A fresh beat in bright sunshine and sheltered waters brought us close past the towers and cranes of Malmo into Limmhamn. Here we had lunch, laid in a stock of unrationed butter, took in a reef and set off for Skanor. It was blowing quite hard now, so we kept close inshore and picked our way along the Lehracksrannan Channel, which we could just fetch on the port tack, leaving the formidable Bredgrund shoal to seaward. The mizzen tore and had to be taken down. As a result "Joste" carried considerable lee helm.

It was getting dark as we approached Skanor. The harbour looked inviting but terribly small, in fact we had some difficulty in spotting the entrance. Standing in "Joste" twice grazed the ribbed yellow sand which showed all too clearly beneath us, losing her speed and with it the chance of shooting up into the harbour mouth. An attempt at short tacks failed, for lack of the mizzen

to pull us round, and we found ourselves hard and fast on the sand just inside the harbour mouth. Longshoremen came in a motorboat but demanded 100 Swedish Kroner (£7.10.0) to tow us off. John and Paddy, being men of action, jumped over the bows into the water and started to push. The longshoremen, fearful of losing their prey, made fast their warp and pulled. Meanwhile wild bargaining was going on in no known language. "Joste" came clear and, her sails filling, careered out of the harbour, towing the pirate craft stern first. The pirates opened up their throttle; the warp parted; the pirates surged forward and themselves ran aground! Eventually we lowered our sails, and the pirates towed us into the harbour, where we found John and Paddy none the worse for their dip. The pirates came aboard, and we lowered a bottle of rum, offered them a bottle of gin or 20 Danish Kroner (£1), and were relieved when they took the former. In parting they demanded the money too. This we refused unless they would return the gin. I suspect that they had the last laugh, being no doubt in league with the sailmaker, who charged an exorbitant price for mending the mizzen.

Next morning we warped out of the harbour in a flat calm. It was a fine sight to see the crew, having pulled lustily on the warps, flying through the air sea boots and all, to land like four young elephants on the deck as we grazed past the end of the mole. As we drifted almost to a standstill a hundred yards outside the harbour mouth, a friendly holiday-maker going fishing in his motor-boat towed us to a safe distance off shore, where we anchored to await a breeze. Being by now suspicious we fixed our price beforehand, but our friend was no local shark and would only accept a packet of cigarettes under pressure.

A light breeze towards evening took us across to the Danish coast. Here we spent an anxious foggy night drifting across the cliffs of Stevns Klint in light variable airs, playing the inevitable games of hide-and-seek with passing steamers. "Red light to port coming towards us", reported Brian on one occasion. "It can't be if its a red light", I thought, but the all too familiar sound of a diesel engine approaching contradicted my thoughts, so I took a look. Not far off on the port bow was a misty green light. We spun round and headed away from danger, sounding our fog horn and flashing a torch on our sails. The vessel passed fifty yards off. "Oh yes" said Brian afterwards, "several people have told me I'm colourblind".

Another perfect dawn found us becalmed five miles south-east of Rodvig. It took us until tea-time to drift to the harbour. On the way we caught a six-pound cod. Landing the monster was no small problem, the gut not being strong enough to haul it in. We tried to lift it out by the tail Kon-Tiki fashion. The fish wriggled too much, so we tried in turn a canvas bucket, the ship's, bucket, the washing-up basin and a kit-bag, all without success. John then, as one inspired, dived below to reappear with the springs of his bunk. We dissuaded him from whatever drastic method he was planning with this strange landing net and returned to our original plan of "doing a Kon-Tiki". The fish, by now, had had enough and was lifted almost without protest out of the water tail first, by hand. It was indeed a fine fish and fed all five of us for two evenings, the starboard watch producing excellent cod steaks the same evening and the port watch, not to be outdone, a masterpiece of fishcakes and parsley sauce for supper next day. Thus started a culinary rivalry between the two watches, which went from strength to strength for the remainder of the trip.



Landing a fish by canvas bucket.



Method II—the washing-up basin.



Method III—doing a Kon-tiki.

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Space forbids a full account of the next few days. Of how, when I was up the mast in Rodvig, the starboard watch dropped the handle of the winch and couldn't put it back again for laughing; of how we tacked down the Bogestrom, a channel only eight feet deep by thirty yards broad, the starboard watch navigating in real earnest and with consummate skill; of how we failed at our first attempt to get under the mighty bridge at Vordingborg against a strong wind and tide, and nearly missed stays in going about, while the water seethed round a concrete pillar a few feet away; of the great kindness of the Danish friends we met in Masnedo. But our arrival in Agerso was so perfect that it must be recorded.

A lovely sunset had faded into twilight as we rippled northwards up Agerso Sound, the narrow waterway which separates the tiny island of Agerso from Sjaelland. A skein of geese passed overhead, a Peter Scott picture came to life. Lights twinkled from the cottages ashore and on the port bow a steady green light marked our harbour entrance. Darkness fell. We headed in for the harbour. A broad lane of silver ripples stretched across the water to port. A sailing vessel at anchor off the harbour mouth lay in black silhouette against the moonlight, her riding light glowing. We slipped past her in silence and drifted gently on into the tiny harbour.

No cruise is complete without a gale. Ours came next day. We had experienced strong wind on the way to Copenhagen, and again in the Bogestrom, but the Great Belt next day was to be our testing ground.

But first let us take a stroll in the early morning round the fishing hamlet of Agerso, typical of so many we visited. In the little harbour a dozen small craft are snugly berthed, bluff little white motor-boats and converted smacks. "Joste" occupies almost half one of the harbour walls. The harbour mouth is twenty-five feet wide, according to the Baltic Pilot. Beside it, on the mole, is a small gaily painted tower mounting the green light which guided us in. Ashore a large white windmill turns steadily, the main landmark on the low horizon. The single gravel street winds its way through an avenue of chestnut trees from which the leaves are falling fast. Every cottage is colourwashed and thatched. The only shop has new home-baked bread to offer. At the dairy, men in white overalls are busy with hundreds of gallons of milk. We find one who can spare the time to sell us a litre, and take it back on board where the watch have breakfast ready. The sun is rising above the woods on Sjaelland across Agerso Sound.

We slipped out of the harbour hastily under jib and mizzen, as the daily ferry steamer was about to arrive and we were lying in her berth. No sooner were we outside than the light north-westerly wind freshened rapidly. White-crested waves appeared as if by magic. The mainsail refused to go up, owing to a defect in the track (the cause of my excursion up the mast in Rodvig). We thrashed northwards, close hauled, lee decks awash, under jib and mizzen.

Coming out of the lee of the island we found a strong wind and a moderate sea. The mizzen tore again, and almost at the same moment the jib split with a resounding crack. We lowered both and headed back down the Sound under bare poles.

By the time we had double-reefed the mainsail and set the storm jib, we were almost back at Agerso harbour. We hoisted and set off again making a great pace up the Sound. As we came out into the open the wind was howling

in the rigging. We had a fair dusting tacking to round the northern end of the island. The waves were steep and appeared to be seven or eight feet high, definitely higher than a man. Above us the sun shone merrily; below was chaos unimaginable. The cabin table had somehow come adrift. Our reinforced locker doors were inadequate and the bilgewater was soon enriched by most of our groceries, a bottle of rum, our litre of milk and half-a-dozen broken eggs. But on deck we were having a wonderful sail. The wind was W.N.W. and as we later found out from our friend the pilot of Rudkobing, force 8.

We were unable to weather the tip of Langeland, our next turning point for Rudkobing. Reaching the coast which is steep to near the Lohals lighthouse we stood in very close to the land and tacked in sheltered water. We made good progress until we cleared the island, when our buffetting began again.

We were within five minutes of tacking to round the buoy, a white can surmounted by three downturned brooms, which marks the northern extremity of Hov sand off the tip of Langeland when the mainsail split from luff to leach at the seam by the top batten. "What now?", said curious, not to say anxious faces, evidently reckoning the time had come to start firing Verey lights.

But "Joste" was fully equal to the occasion. On a beam wind, under our only surviving sail, the storm jib, we headed southwards to regain the shelter of Langeland and sped down the coast one cable offshore. Lohals and Tranekjaer are lighthouses on this coast exactly ten sea miles apart. We covered the distance between them in ninety-one minutes, rejoicing in our more or less upright position and steady motion. John was the first to recover sufficiently to put a brew on. Finding an almost unlimited supply of broken eggs, he fed us for the better part of an hour on cocoa and hot scrambled egg sandwiches. After which we sorted out the mess below.

We covered, in this fashion, seventeen miles from the scene of our mishap to Spodsbjaerg harbour, the propeller throbbing merrily all the way, as if to confirm our speed. Towards the end the wind headed us, and I had visions of running on through the night before whatever wind might blow, a modern Flying Dutchman unable to make any port. But again "Joste" rose to the occasion, and we found it possible to tack into the harbour mouth, no mean performance for a ketch under storm jib only.

In Spodsbjaerg we found the kindest of strangers who befriended us. The harbour engineer, having checked that there was nobody in the village equipped to repair our sails, telephoned to the pilot in Rudkobing (who was also sailmaker and harbourmaster) and made arrangements for us. We took the sails in by the one coach train which wanders across the waist of Langeland next morning, and were met at Rudkobing station by both the harbour engineer and the pilot. The latter inspected the damage and undertook to have it repaired by the evening. He was as good as his word and brought the sails to us by taxi, having been unable to finish them in time to catch the last train. They arrived at 2030.

We laced them immediately by moonlight and being already fortified by supper ashore, set sail at 2130 for Kiel. This last night's passage was the loveliest of all. In bright moonlight we coasted down the island, keeping close in to avoid an adverse current. Rounding Kels Nov at 0100 we made a fast passage to the Kiel lightship, which we left well to port, thereby keeping clear of

shipping. Turning southwards we identified Friedrichsort light, just as day was breaking.

Once again the sun came rising straight out of the sea into a clear sky. My glass stood at "set fair", 30.55 inches, the highest it had ever recorded. The wind died, and we drifted for a time on the glassy water of Strande bay. Then a northerly air came to waft us home. The city of Kiel, the last of many horizons, took shape among the morning mists ahead.

And so our story ends, except in memory where such days live for ever. It remains only to thank our kind friends of the British Kiel Yacht Club, who maintain and administer a fine fleet of cruisers and ocean racers that we, who live inland, may sail. And possibly to point the moral, which surely is that the lovely waters and harbours of the Baltic are open to all who serve in Germany, previous experience (as they say in advertisements) being possibly a help, but by no means an essential.

RANDOM REFLECTIONS ON NATIONAL SERVICE.

By Major C. H. T. MacFetridge, R.A.

I HAVE just completed two years commanding a Training Battery at Oswestry and, on posting to Middle East Land Forces, I find myself in charge of a Troop Deck of National Servicemen (N.S. men) *en route* to Service Regiments in the Middle East on completing basic training in Training Regiments at home. I am prompted to jot down these reflections concerning National Service on the ship in the Mediterranean Sea.

By the National Service Acts the N.S. man is obliged to serve for 2 years in the Regular Army (or Royal Air Force but I am confining myself to the N.S. man in the Royal Artillery) and $3\frac{1}{2}$ years in the Territorial Army. The cycle of the N.S. man's military service is Army Cadet Force for about 3 years (perhaps, for this is voluntary), Regular Army for 2 years and the Territorial Army for $3\frac{1}{2}$ years, and it is hoped that he will volunteer for many further years as otherwise there will eventually be no senior officers, W.Os. and N.C.Os. in the Territorial Army. The Regular Army element consists of 2 weeks in a Selection Regiment, followed by 8 weeks in a Training Regiment and later service in a Service Regiment at home or abroad to complete 2 years in the Regular Army.

Too often the service in the Territorial Army is forgotten or overlooked, although it is almost twice as long as that in the Regular Army. Certainly many N.S. men do not seem to grasp this commitment during their basic training and very few can answer where their local T.A. Centre (the new term for Drill Hall) is and what the designation of their local T.A. Regiment is. Training Regiments, and later Service Regiments, can bring this commitment home by encouraging them to call on their local T.A. Centres. Indeed, the N.S. man may be regarded as a T.A. soldier who is called up for a course of 2 years with the Regular Army. It would, therefore, seem logical that he should be conscripted first in the Territorial Army at the age of 18 years, or as soon as

leaving school after reaching this age, and then be called up as soon as convenient for 2 years training (or course) in the Regular Army. He would return to the Territorial Army (in most cases to the same Territorial Regiment as before) on finishing his service in the Regular Army in order to complete the minimum of $3\frac{1}{2}$ years total Territorial service. This system would have the following advantages :—

(a) From the start the man's loyalties and *esprit de corps* would be centred in his Territorial Regiment. This would result in a better and more balanced attitude. For instance the N.S. man in the Regular Army would probably visit his T.A. Centre when on leave; at present he rarely does so.
(b) The Territorial Regiment would have a real and close interest in its future "members" and be able to follow them in the Regular Regiments.
(c) It would be easier for Territorial Regiments to forecast as they would know —in many cases, personally—who is likely to join and when.
(d) There would be no gap between reaching 18 years of age, or leaving school after reaching this age, and starting National Service. At present, there is a gap of some weeks and this is nearly always time wasted; it could at least be used in military training. It would be an even greater asset to youths who defer for months call-up to the Regular Army, owing to apprenticeships and other obligations, but could start part-time service in the Territorial Army.
(e) Certain elementary training, especially in gunnery which is not taught in the Army Cadet Force, documentation, issues of clothing, and medical inspections could be done in the Territorial Regiments before call-up to the Regular Regiments. This would speed up procedure in Selection Regiments.

The service in the Territorial Army should be considered in the selection of N.S. officers and N.C.Os. An essential quality in the potential N.S. officer is that he promises to be a keen *T.A.* officer: unless he is prepared to do more than the compulsory minimum in the Territorial Army[1] he will not be adequate as an officer. When assessing potential N.S. officers the real question is "Is he likely to become a keen *T.A.* officer?" Sometimes a N.S. man, graded as a potential officer, shows surprise and reluctance at the thought of (say) instructing Technical Assistants twice a week at his T.A. Centre before Practice Camp and he should not be recommended, however excellent his record and academical qualifications. In my experience the best potential N.S. officers are fully conscious of their responsibilities as *T.A.* officers. A N.S. officer spends less than $1\frac{1}{2}$ years in the Regular Army as an officer and he is a poor investment for the taxpayer and the Regular Army unless he repays his Regular Army training while he is in the Territorial Army.

The N.S. N.C.O. who is keen on the Territorial Army and prepared to be a volunteer should receive particular encouragement for he will form the source of W.Os. and senior N.C.Os. in the Territorial Army. Regular Regiments should by now readily accept N.S. men as N.C.Os., even as Serjeants and a twenty-first birthday party in the Serjeants' Mess should be a normal, and not abnormal, occurrence. Continental Armies with longer experience of conscription have always relied heavily on N.C.Os. of about one year's service to carry

[1] This is only a 15-day camp every year and 15 days out of camp training, spread over the first three years.

out elementary training and maintain discipline. The pre-1939 German Army had a call-up once a year and conscription for two years and the N.C.Os. to train a call-up were largely drawn from the previous call-up. I suggest, however, that promotion to Serjeant in the case of the N.S. man should be reserved for the N.C.O. who is likely to be a Serjeant in the Territorial Army. The part played by the Army Cadet Force in producing officers and N.C.Os. should be remembered. A N.S. man who has been (say) a C.S.M. in the Army Cadet Force and has failed at the War Office Selection Board should be fit for a stripe as soon as he has finished his basic training, i.e. after 10 weeks in the Regular Army. Incidentally, it is a pity that so very few Army Cadet Force Battalions try to follow the careers of their boys in the Regular Army. Indeed, I should like to see potential L/Bdrs. posted from Training Regiments with a stripe on their arms because the Training Record for R.A. Personnel, A.F.B. 2097, is too often put carefully away by the clerks and sometimes N.C.Os. i/c Drafts have to be found from drafts of N.S. men (as on this ship).

It is convenient here to say a few words about Personnel Selection. This is done during the first two weeks at a Selection Regiment, and it works remarkably well. The N.S. men are graded as potential officers, technical assistants, clerks, signallers, drivers, operators fire control, tradesmen of various sorts, and gunners (Fd. and A.A.) according to their innate abilities, education, civilian employment and physique, and they are trained accordingly in Training and Service Regiments. This process of fitting N.S. men into "round holes" is important from the aspect of morale and with very few exceptions "round holes" are found. Potential officers who fail to pass the War Office Selection Board—and most do fail—are re-interviewed by the Personnel Selection Staff and re-graded as technical assistants, surveyors, clerks or operators fire control. The system errs, if anything, in letting any N.S. man with the slightest chance appear before the War Office Selection Board. Continental Armies do not have such refined Personnel Selection and their methods are much more rough and ready. The brilliant French student—brought up in an atmosphere where at least one generation has known conscription—may willingly accept his lot as an ammunition number but not so the British student, and still less his parents.

The N.S. man is often unaware that he has certain personal advantages to gain from his service in the Regular Army, besides the satisfaction of knowing that he is doing a job for his country, and there are at least these three advantages :—

(a) He normally gains in physique during his service in the Regular Army, due to regularity in feeding, work, sleep, physical training, games and medical inspections, more than if he had remained in civil life. He puts on weight—except he is too fat and he then loses weight—and records kept in Training Regiments prove this.

(b) He should make some real friends. Barrack-room life may at times, especially at the start, be painfully intimate but it does breed real friendship and selflessness. Many soldiers who rejoin give as their reason for doing so that they missed in civilian life the comradeship of the army. It is very satisfying to see a squad of N.S. men, including all types from a Winchester scholar to a Poplar barrow boy, pulling together in the same barrack room. I do not wish to imply that the Winchester scholar and the Poplar barrow boy become real friends but they do pull together.

(c) He should learn discipline which is needed in national life, particularly in industry, as well as in the Services for one recognized leader must give the orders and the rest must obey if combined effort is to achieve anything.

He should be told these advantages which may well offset the disadvantage of having his training for a career interrupted for two years.

If a N.S. man is dissatisfied the certain reason is that he has not enough to do. In Training Regiments he is kept busy throughout the day and often goes to bed tired; he is consequently happy and his 8 weeks there fly fast. I believe, however, that this is not always so afterwards in Service Regiments. George Bernard Shaw said "The secret of being miserable is to have leisure to bother about whether you are happy or not". How true—no amenities, N.A.A.F.Is., or leave can replace purposeful work. Over 1,800 years ago Juvenal told the Romans that they devoted themselves far too much to "panem et circenses"—cake and cinemas—and he would tell the British Army the same to-day. The problem is to keep the N.S. man busy until the day he leaves the Regular Army.

THE L.A.A./S.L. REGIMENT.

By Brigadier B. G. Wells.

THE L.A.A./S.L. Regiment was designed in 1943 to meet certain requirements which no longer exist. It is a thoroughly unsatisfactory organization under modern conditions. However much it is "fiddled" it cannot be made to fit present tactical and technical requirements and, I suggest, it should be done away with.

Its primary function is supposed to be to enable 40 mm. guns to destroy enemy aircraft at night. This it could do when the maximum expected speed of attack was of the order of 350 m.p.h. With the need now to assume attacks from any direction by aircraft at speeds up to 450 m.p.h. or more and at heights up to 2,000 feet, it can no longer achieve its object because there are not enough searchlights in the regiment to give adequate all-round illumination to enable guns to engage, i.e. a minimum of three searchlight beams simultaneously illuminating a target.

Without going into details, generally speaking this is so because, against faster targets, searchlights must be sited farther out from the protected area and, therefore, to maintain an adequate close spacing for three-beam illumination, many more searchlights are required.

The present organization provides for 9 searchlights for every 12 guns in each battery. The requirement is at least one for one. It is not merely a matter of increasing the number of searchlights to the required number as the regiment then becomes grossly unwieldy.

From the tactical aspect it must be remembered that searchlight troops are useless by day except in so far as their on-mounting searchlight radars are useful for local warning of the approach of enemy aircraft.

It is known that the predisposition of a potential enemy is for low-flying daylight attack. He is not well equipped for, and lacks experience in, the delivery of low-flying, night-intruder attacks. Many targets that require protection by L.A.A. guns would be extremely difficult to locate accurately by night or, if found, would be unlikely to suffer damage which could not be minimized merely by dispersion. The present trend of thought in the R.A.F. is to discourage the deployment of searchlights round airfields.

By far the larger number of key points in any theatre of war, including Great Britain, will require only daylight protection and yet, in 1949, a very high proportion of our existing L.A.A. regiments were converted to L.A.A./S.L. regiments, doing away with three troops of guns per regiment in the process.

It is submitted, therefore, that operationally the L.A.A./S.L. organization is unsound and that tactically there is no requirement for the large number of L.A.A./S.L. regiments that now exist.

That is not to say that there is no requirement for combined L.A.A. and searchlight defence. In many places at home and overseas it will be essential, such as in an anti-minelaying role, or for the defence of some very vital defile, such as the defence of the Maas and Rhine bridges in the last war, which is comparatively easily identifiable by low-flying aircraft at night. If the enemy adopted low-flying intruder attacks on our airfields on a large scale, the necessity for L.A.A. and searchlight defence would probably be acknowledged and demanded.

It is suggested that this requirement could best be met by having a certain number of S.L. regiments, trained in the anti-low-flying role, which could be deployed in the necessary numbers to co-operate with any L.A.A. regiment given such a task.

The training aspect does not present any great difficulties. The technique of firing L.A.A. guns at illuminated targets is no different from the normal daylight engagement, and the presence of guns is not necessary for the training of searchlight detachments. If all L.A.A. practice camps are equipped with searchlights, L.A.A. gun layers will have the opportunity of practising night engagements periodically. To obtain any worth-while combined training in the tactical aspect of the L.A.A. and searchlight lay-out, a complete defensive lay-out is necessary, with large-scale air co-operation. This is not achieved at present except at rare intervals when special trials are organized. The inclusion of searchlights within the L.A.A. regimental organization does not facilitate this form of training as regiments are not at sufficient strength in searchlights to make it possible.

The argument that the presence of searchlight radars provides a useful daylight local warning for the guns is of course true, but this requirement would be much better met by providing L.A.A. regiments with their own local warning radar. Mounting a radar set on a 150-cm. searchlight is not an economical way of carrying it in a unit which may have no night role to perform and it reduces the number of men available to man guns.

It is also argued that the converting back to a purely searchlight role of regiments recently converted to the dual role would have a bad effect on unit morale. When the potentialities of modern searchlight equipment are considered there seems to be no justification for this attitude. The frustration of the war years when searchlight equipment was so out of date as to make the

illumination of targets almost a matter of luck no longer applies. The modern equipment is well able to compete with present targets, and their illumination is almost a certainty. The present role of searchlights against purely low-flying targets is likely to be far more exciting. Moreover, in this role, the wide dispersion and isolation of searchlight detachments occasioned by the war-time anti-high-level attack role is no longer necessary. It has been proved that against low-flying, high-speed aircraft, illumination by searchlights can in itself prove lethal owing to the dazzle of the pilot. In the field, searchlight regiments can be trained to operate in the secondary role of providing movement light in rear or forward areas.

It is beyond the writer's scope to suggest the required scale of searchlight regiments since any such scale must be based on an assessment of the number of key points vulnerable to low-flying attack by night. In the field, searchlight regiments would probably be Army troops allotted to Army Groups, R.A. (A.A.), in Corps areas as required. Searchlight batteries would be self-contained units able to operate for extended periods away from their present regiment. The well-tested organization of searchlight regiments into three batteries each with 24 searchlights should be retained.

It is suggested, therefore, that L.A.A. regiments recently converted to L.A.A./S.L. regiments should, in modern parlance, be de-searchlightized and that a certain number of homogeneous searchlight regiments, to train solely for the anti-low-flying role, should be retained. The planners, it is certain, would welcome such a change. They are faced with the problem at present of having to allot searchlights for the defence of key points which do not require them because they are an integral part of the L.A.A./S.L. regiments they must nominate, there being not enough purely L.A.A. regiments to go round. Consequently, sufficient searchlights are not available where they are wanted. The split would lead to much greater flexibility.