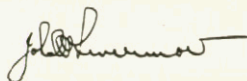# AUSTRALIAN

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A Periodical Review of Military Literature

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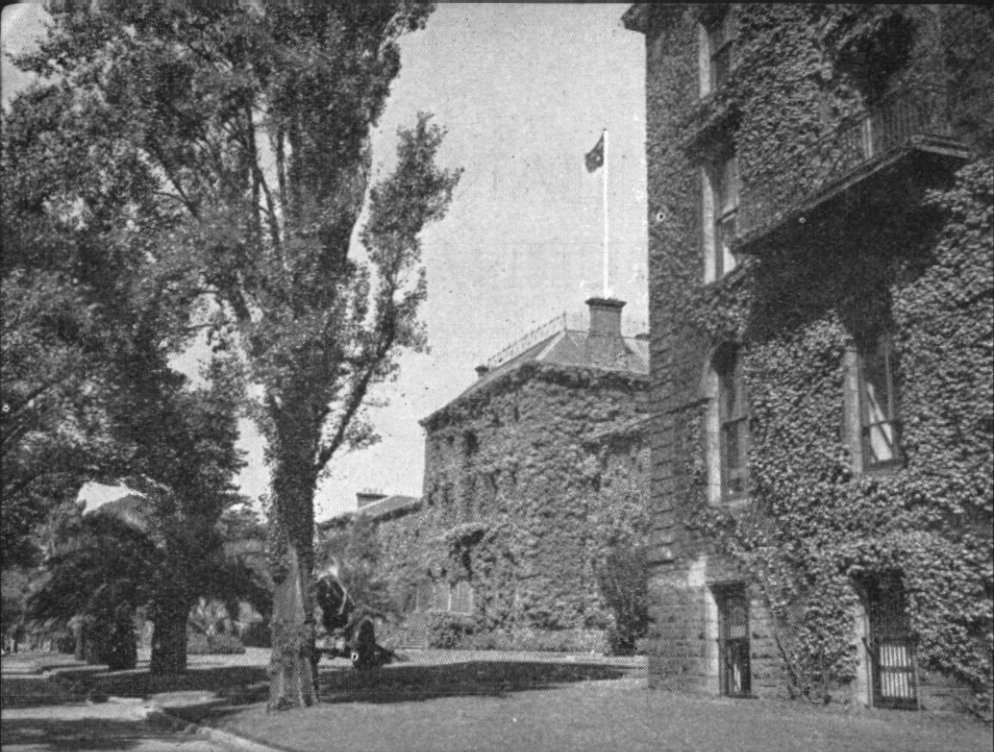
VICTORIA BARRACKS, MELBOURNE.

AUSTRALIAN ARMY JOURNAL

THE BAILEY BRIDGE
and its
DERIVATIVES

Major P. J. Greville,
Royal Australian Engineers.

Part I: The Bailey Bridge.

MANY of the "war win-ning" equipments developed during World War II have become obsolete due to further advances in tech-nology. The Bailey Bridge, too, has diminished in value, due mainly to the increase in weight and size of tanks.

As an interim measure, the Bailey Bridge was adapted to meet these new requirements, and subsequent-ly, a new bridge—the Heavy Girder Bridge (HGB)—was designed and production commenced. The HGB is a Bailey Type Bridge built to a larger scale.

This paper is in two parts. Part I states certain requirements of a military fixed span equipment bridge, and then describes the Bailey Bridge, showing how this equipment fulfils these require-ments.

Part II describes how the Bailey has been adapted to meet the heavier and wider loads. A short description of the HGB is included with some information about the NATO bridge classification scheme.

The Requirements of a Military Equipment Bridge.

General. There is no difference in the basic principles of design for civil and military bridges. How-ever, certain military factors (tech-nical, tactical and logistical) impose emphasis on certain attributes which are not required, or which are of less importance, in civilian structures.

Span. The equipment bridge must be capable of erection over a variety of spans and must be reasonably economical for all. Economy in this sense means:

(a) Saving in steel or other high-performance alloys which are always short in wartime and which are required for even more important items than bridges.

(b) Saving in materials means less weight and bulk; and therefore—

   (i) Less transport required from the factory to the bridge site;

   (ii) Less soldier labour re-

quired within the theatre to move and assemble the bridge.

Load. The designer must cater economically for variations in load. Military loads have increased in weight and size (width is usually the critical dimension, but, with through - type bridges, overhead clearance is also critical), and there seems to be no end to this expansion. Lieutenant-General Sir Giffard Martel, K.C.B., K.B.E., D.S.O., M.C., was speaking of 200-ton tanks when he was Commandant of the Staff College at Quetta in the 1930's. The Germans manufactured, but never used, 180-ton tanks (Pz Kpfw "Maus") in World War II. A possible limit to the load size of AFV's may be the design load for civilian bridges on main roads. The ideal military bridge would be capable of economical erection for all likely military loads.

Size of Parts. Until recently the criterion was "Can each part be manhandled?" The more recent bridges are designed to be erected and launched using machine power. However, one can never guarantee the availability of machines, and the parts of the HGB can still be manhandled in an emergency.

All parts should be capable of being packed in the current types of transport truck and transport aeroplane.

Time of Erection. Military bridges must be constructed in a few hours (or, in the case of very large bridges, a few days). A comparable civilian structure would take months to construct. Remember, too, that the hours referred to above are usually hours of darkness. To enable a bridge to be erected quickly in such conditions the following must be achieved:

(a) As few field connections as possible and these simple and foolproof. (Note: The fewer the field connections the larger must be the component parts, thus a balance must be achieved by the designer to satisfy the above with factors such as size of parts and ease of transport.)

(b) Sappers must be able to erect and launch bridge without the use of falsework or elaborate gear requiring much preparation.

(c) A reconnaissance officer must be able to make a quick and accurate design with simply calculated stores and equipment demands.

The Pre-Bailey Situation. Generally, as bigger and heavier loads were developed, a new bridge was constructed to carry the load. This resulted in an army requiring a number of different types of relatively unadaptable bridges. This situation had many disadvantages, some of which were:

(a) The manufacture of such a variety of bridges was uneconomical.

(b) The bridging stores required for a theatre were uneconomical, and presented many planning problems.

(c) The replacement of light class bridges by heavy class bridges was difficult and resulted in either:

   (i) Bridge site not in use while light bridge delaunched, disassembled and returned and heavy bridge e r e c t e d and launched; or

   (ii) Heavy bridge erected on parallel site requiring

new access roads and perhaps a less desirable site.

(d) It took more time to train sappers to use all types of bridges, likewise officers, NCO's and storemen.

Summary of Requirements. "A military bridge must, therefore, be built up from some sort of standard components which will be made in large quantities by many manufacturers. Further, all these components must be completely interchangeable and fit together without the use of force. Its manufacture, therefore, becomes a mass production job with tight tolerances and all the jigging and gauging that goes with them, but with this unusual feature, that, instead of machined parts, one is dealing in the main with black rolled sections."— *Sir Donald Bailey.*

The Standard Bailey Bridge.

General Description. The bridge is of the "through" type, the roadway being carried between two main girders. Each girder is built up from standard prefabricated units known as panels. Each panel is approximately 10 feet by 5 feet in dimensions.

The strength of the girders can be adjusted by arranging one, two, three (or even four, although not standard army practice) trusses, side by side. Furthermore, they can be varied in depth (and thus in strength) by placing one panel on top of another to form girders of double or triple storey construction.

The panels are connected end to end by means of panel pins, which lock the male and female panel jaws together. Connection between panels placed one on top of another is provided by vertical bolts, two per panel, called chord bolts.

Cross girders (or transoms) rest on the bottom chord of the bridge girders, and are held down by quick-action clamps. These transoms may be placed two per panel or four per panel, depending on the load class of the bridge. Prefabricated steel stringers rest longitudinally between the transoms and support the decking.

Individual panels are braced against horizontal forces by means of rakers, and in the case of multiple truss girders by horizontal and vertical bracing frames.

The bridge is braced against horizontal forces at deck level by means of the transoms and diagonal "sway braces." Overhead bracing is provided for triple-storey construction, and consists of transoms seated on special chairs, which are bolted to the top chord of the third storey, and of diagonal sway braces.

There is an end post at each end of the girders which is capable of transmitting the end reaction to the bridge bearings. The bearing is a welded steel assembly carrying a round bar, upon which the half-round bearing of the end post rests. This connection makes the necessary allowance for flexural deflection, which may be considerable even when not loaded.

The bearing rests on a tray-like base, which is fixed to the grillage, thus the bearing may move to a limited extent and so take up horizontal longitudinal movement.

The preparation of abutments may well be a lengthy task. Ramps are therefore provided to use when there is insufficient time to sink the bridge flush with the approach road.

All the materials and equipment required to make up any type of span have been arranged in standard loads carried by 3-ton lorries. Panel lorry, decking lorry, ramp lorry, accessory lorry and grillage lorry are all that are necessary for fixed span bridges. The stores demand for any bridge consists of the appropriate number of each type lorry load.

Launching. The normal method of launching is by the cantilever method, using a light skeleton nose made of panels and cross girders. The bridge is constructed on rollers on the home side of the gap and rolled forward until the launching nose is over a landing roller on the far bank. Rolling is continued until the ends of the bridge proper are over the prepared bearings, when it is jacked up off the rollers, which are then removed. It is then jacked down on to its bearings, ramps are added at each end and the bridge can be opened for traffic. The bridge proper is launched completely decked and its weight is therefore of use in balancing the light skeleton nose.

There are very few erection tools required—spanners, jacks, hammers, carrying bars. In addition, there is a davit for raising upper storey panels, and a chord jack and panel lever used to assist the positioning of additional trusses and stores.

The natural sag of the bridge is considerable, and to overcome this and difference in height of the banks, launching links are provided which are placed between panels to lengthen the bottom chord of the launching nose girders, and so tilt the nose upwards.

Load, Span Characteristics.

Bailey Load Class and Spans.

Load Class	Span in Feet						
	SS	DS	TS	DD	TD	DT	TTT
9	90	150[1]	170[1]	180[1]	200		
12	80	140[1]	160[1]	180[1]	190		
18	60	110	140	160	180	200	
24	60	110	140	150	170	200	
30	50	100	120	140	160	190	200[1]
40	30[2]	80	110	130	150	180	190
50		60	90	110	130[1]	160	180
60		50	80[1]	100	120[1]	130	160
70		40[1]	70[1]	90[1]	110[1]	120	150

[1]Subject to confirmation by test.

[2]Can be used up to 50 ft. span in emergency.

Thus, if a class 30 bridge is required across a gap, say, 120 feet wide, a triple-single (TS) bridge must be constructed. Triple-single means triple truss (girder) single storey. Other tables give length and type of launching nose.

Critical Dimensions.

Width of roadway .. ..   10' 9"

Width between inside panels .. ..   12' 4"

Height from roadway to underside of overhead bracing (in triple storey construction only) .. ..   14' 6"

Note: If this is critical, the roadway can be placed on the second storey instead of the first, in which case no overhead bracing is necessary.

Some Special Uses of the Bailey Bridge.

The Bailey Bridge was readily adaptable to Pontoon bridging because nothing protruded below the bottom chord. The Pontoon Bailey was generally constructed as Class 40 or Class 70.

Suspension Bridge. When operations commenced in the Far East during World War II, Professor Bailey experimented with a suspension bridge using Bailey panels as stiffening trusses. The requirement was for a bridge of 400 feet span capable of carrying 12-ton loads at 80 feet spacing nose to tail. From 1942-45 more than 20 Bailey Suspension Bridges were constructed.

Mobile Bridge. This was designed to be constructed in comparative safety, trundled to site on track units and then launched mechanically.

Bailey Rafts. Two types of rafts were in common use, both of them Class 40 and both capable of being made shore loading.

Miscellaneous. During World War II (and since then in civilian construction) the Bailey has been widely used in various types of construction, such as: Towers, conveyor frames, chinaman and revetment for roadways in steep, mountainous country.

An Example from North-West Europe, 1943-44. Numerous examples exist which show the amazing speed with which this bridge can be built for long spans and heavy loads. Here is one:

Class 40 Bailey Pontoon Bridge at Gennep, Holland.

Total length of bridge .. ..   4,008 feet

Comprising—

    Western viaduct .. .. ·.. .. ..   2,231½ feet

    Bridge proper .. ..   816 feet

    Eastern viaduct .. ..   960½ feet

Timings—

    East bank of Maas captured but not cleared .. .. ..   Feb. 11, '44

    Cleared .. ..   Feb. 12, '44

    Sudden thaw resulting in change of plans .. .. ..   Feb. 12, '44

    Bridge completed during night .. ..   Feb. 19-20, '44

Total weight of bridge .. ..   1,288 tons

Transported to site in .. ..   126 vehicles

Number of vehicle loads   628

There were 1,509 Bailey Bridges built during the campaign in North-West Europe. Of these, 8 per cent. were Class 70, 80 per cent. Class 40, and 12 per cent. less than Class 40. The total length of Bailey bridge was 29 miles, in addition, 3 miles of floating Bailey Bridge was built.

It is little wonder that Major-General Sir Eustace Tickell, K.B.E., C.B. M.C. (one time E-in-C British Army) was moved to declare that on the engineering side the difference between the campaigns in the Middle East and North-West Europe was that one was fought without the Bailey Bridge, and the other fought with the Bailey Bridge.

Conclusion.

The Bailey equipment can be assembled quickly in different ways for various loads and spans of fixed and floating bridges. It is simple to erect and launch, all parts can easily be manhandled, and all fit in a 3-ton lorry. A bridge strong enough to take the vital transport and support weapons can be put across early in the assault, and strengthened later in situ if heavier loads must be carried.

There is no doubt that the Bailey Bridge fulfils the requirements of a military equipment bridge, and although the bridge itself has become obsolete because current loads are too wide to cross the bridge, the principle of design will probably be retained for many years, perhaps until new materials and production techniques dictate a different design.

Part II: The Bailey Derivatives.

The Bailey Bridge was satisfactory for most World War II loads. Towards the end of the war, however, certain wide vehicles were developed which could not be taken on the standard width carriageway.

The Improvized Widened Bailey Bridge.

To accommodate these vehicles, an improvized form of widening was first adopted whereby the trusses were spread further apart (it was necessary to drill new dowel holes in the transoms). The new inner truss position was fixed 18½ inches from the normal third truss position, thus giving an extra 8½ inches clearance on either side. The decking was widened by placing longitudinal baulks on either side. One such bridge was built over the Twenthe Canal at Delden by two Canadian Army Troop Engineers.

The Standard Widened Bailey Bridge.

Later a more finished form of widened bridge giving a 12 foot 6 inch roadway was designed. It incorporated specially made long cross girders of increased depth at the centre so as to retain the same stiffness as the normal transom. An extra stringer unit and longer and thicker chesses were used in the deck system.

This later form was called the Standard Widened Bailey Bridge (SWBB). This bridge can be constructed using four trusses, which is known as the quadruple truss construction. The fourth truss is in relatively the same position as the inner truss of the Improvised Widened Bailey Bridge, i.e., 9½ inches from the centre truss.

Load Classes and Spans.

Load Class	Maximum span in feet								
	DS	TS	QS	DD	TD	QD	DT	TT	QT
50	60	80	100	100	130	150	140	170	190
60	40	70	90	90	110	140	1	150	180
70	30	50	80	80	100	120	1	130	180
80	30	40	80	70	100	120	1	120	160

1. These spans are all equal to or less than TD spans, since shear is the criterion.

Extra Wide Bailey Bridge (EWBB)

Object of the Bridge. The introduction of still wider vehicles required a wider bridge than the SWBB. Pending the production of a new equipment bridge, the EWBB was developed. The adaptation of the Bailey Bridge to take these extra wide loads has, of course, resulted in a design which can only be regarded as a good expedient. There is a lack of basic economy due to the use of units designed originally for smaller loads. However, in view of the stocks of Bailey available, it is an economical adaptation.

Main Difference from Bailey Bridge. The EWBB uses the SWBB transom suitably modified to receive the inner trusses at 16' 3" centres. The bridge can be built in the single, double or triple truss. The three trusses are in the same position as the outer three trusses of a quadruple truss Standard Widened Bailey Bridge. The decking system has been modified and consists of longer chesses 4 in. thick which rest on two button and five plain stringers. In order to take Class 80 loads, it is necessary to stagger the stringers (longitudinally), thus long stringers are required for use at the ends of the bridge.

Load and Span Characteristics of the Bridge.

Load Class	Maximum span in feet						
	SS	DS	TS	DD	TD	DT	TT
30	50	80	110	130	150	180	200
80		50	70	80	110	110	150

Note.—(a) Load class based on short tons (i.e., 2,000 lb.).
(b) Class 30 spans built with Class 30 decking.
(c) Load Class 80 does NOT include a 50-ton tank on its transporter, but includes tracked vehicles up to 71.5 long tons (i.e., 2,240 lb.).

Critical dimensions are as follows:
(a) Width between trusses, 15' 8".
(b) Width of roadway, 13' 9½".
(c) Clearance from decking to underside of overhead bracking, 14' 5".

All parts of the EWBB can be manhandled, and therefore it is suitable as a divisional bridge. The Extra Wide Bailey Bridge is used as a pontoon bridging.

EWBB Class 80 (Cen). In order to enable EWBB to take a Centurion on its transporter it has been found necessary to introduce chord reinforcements to i n c r e a s e the strength of double-storey bridges in bending, and distributing beams to support the ends and increase their strength in shear. Reinforced bridges are thus:

Double truss, double storey, reinforced (DDR).

Triple truss, double storey, reinforced (TDR).

The Centurion on its transporter is Class 120. The total load and distribution of weight on the axles result in bending moments and shears approximating to those produced by the standard type vehicles of Class 120. However, its maximum axle weight is considerably less than the maximum of Class 120, and is, in fact, only a slight overload on the transoms and stringer of EWBB. The vehicle is, therefore, acceptable on EWBB, provided the main girders of the bridge for any particular span are strong enough for it. For spans over 90 ft., and not more than 130, this is possible by reinforcing the chords and supporting the ends on distributing beams.

Reinforced spans would not, however, take vehicles over Class 80 whose axle or wheel loads are in excess of the maxima for Class 80. Therefore, they cannot be marked with any classification higher than 80. As a compromise, it has been decided to mark such bridges "80 (CEN)" to signify that they will take all normal loads up to Class 80, and, in addition, a single Centurion on its transporter. NOT MORE THAN ONE LADEN CENTURION TRANSPORTER SHALL BE ALLOWED ON A CLASS 80 (CEN) BRIDGE AT ANY ONE TIME. Since the Centurion on transporter is too high to pass under overhead bracing, triple - storey bridges may not be built for Class 80 (CEN).

Heavy Girder Bridge.

Object of Equipment. The equipment was designed to permit the rapid building by crane, or other mechanical aids, of bridges capable of carrying Class 100 loads at 100 ft., nose to tail, over gaps up to 150 ft., all components being transportable in 3-ton GS lorries. Spans of the same capacity, up to a maximum of 275 ft., can be built, but at a slower rate.

General Description. The Heavy Girder Bridge (HGB) is a through-type panel bridge, the roadway being carried between two main girders made up of panels 12' 6" long, which are pinned end to end. Depending on the strength required of them, the girders may be of single, double or triple truss construction. In the double or triple truss form, the trusses themselves may be of single or double storey construction and both these constructions may be strengthened by the addition of chord reinforcements to the top and bottom chord of each truss. The bridge construction is described by stating:

(a) The truss form of the girders —single, double or triple.

(b) The storey form of the trusses —single or double, and by adding the word "reinforced" if chord reinforcements are fitted.

Connecting the girders on each side of the bridge are cross-girders spaced at 6' 3" intervals and spanning from cross girder to cross gir-

der are a number of deck units forming the bridge roadway. Kerbs fitted to the outer deck units prevent traffic fouling the inner trusses. Footwalks are cantilevered from the ends of the cross girders for pedestrian traffic.

Roadway Width.

Two widths of bridge and roadway are possible:

Bridge	Width of Roadway	No. of Deck Units Across Bridge	Centres of Inner Trusses	Load Classification (Normal Spacing Nose to Tail is 100 ft.)	
				Single Lane	Double Lane
Wide (Standard) .	18' 10"	6	21' 3"	100 (S)	50 (S)
Narrow	15' 6"	5	17' 11"	100 (S)	

In the narrow bridge short cross girders, short nose cross girders, short sway braces, and few deck units are used, otherwise the wide and narrow bridge construction are the same.

Main Dimensions.

    (a) Width between trusses .. ..   20' 10"
    (b) Width of roadway .. .. .. ,. .. ..   18' 10"
    (c) Overall width .. ..   31' 9½"
    (d) Weight of transom for wide bridge   .. ..   1200 lb.
    (e) Panel length .. .. ,. .. ..   12' 6"
    (f) Panel height .. .. ,. .. ..   6' 6"
    (g) Weight of panel .. ..   1500 lb.

Erection and Launching. Each component can be manhandled but the bridge is not designed to be constructed by hand. There are two main types of crane used in construction:

    (a) The Bridging Crane (a crane with a high, strong boom).
    (b) The Fork Lift Truck.

The technique of construction and launching using mechanical equipment demands training and practice for officers and NCOs, in addition to the training of many more plant operators in bridge building units.
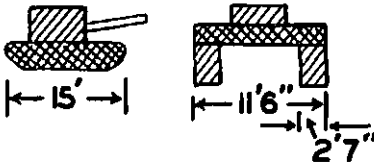
The New Classification System.

The classification of bridges and vehicles has been standardized by the defence organization of the NATO countries. There is little information available about this new system and none of it is official. It would appear that 16 load classifications have been agreed upon, viz.:

    4, 8, 12, 16, 20, 24, 30, 40, 50, 60, 70, 80, 90, 100, 120, 150.

Each of these classes is represented by a hypothetical tracked and wheeled vehicle. The class number is the weight of the hypothetical tracked vehicle in short tons. For the tracked vehicles, track pressure, track width and length, and overall width are specified. The wheeled vehicles constitute a train system for

purposes of design, in addition to weight (shown in long tons), wheel and axle loadings, wheel spacing and tyre sizes are specified. Thus, for design Class 70, the bridge must cater for:

Tank.		Wheeled Vehicle.		
		Total Wt. 71.9 ton (L)		
Wt. 70 short tons		Axle loads	Max Axle load	Min wheel spacing and tyre size specified here
		"A"	22.8 tons Max 8.9 tons per wheel	

INSERT IN "A" UNDER AXLE LOAD
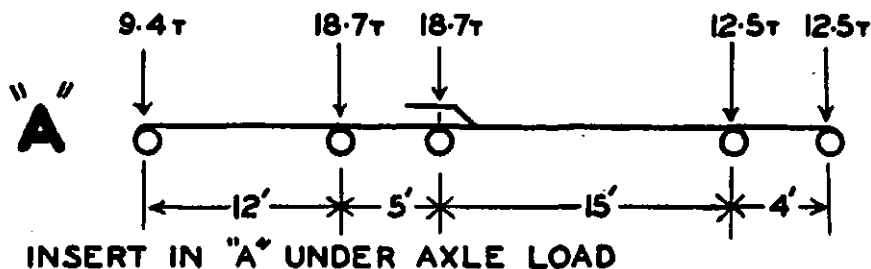
Road widths are specified for all load classes as follows:

Class	Width	Remarks
4-12	9'	Class 12 includes all divisional motor transport.
16-30	11'	Class 30 includes all divisional traffic except tanks and transporters.
40-60	13' 6"	
70-100	15' 6"	Class 70 includes all present-day tanks.
120-150	22'	Class 100 includes all present-day tanks and transporters.

Note.—A bridge which is narrower than 11' 6" MUST NOT be classified Class 70 no matter how strong it is.

Bailey Type Bridges Under the New Classifications.

(a) Normal Bailey is only 10′ 9″ wide and therefore is good for up to Class 30 only.

(b) SWBB is only 12′ 6″ wide and therefore is not wide enough for Class 40, and consequently it has been made obsolete.

(c) EWBB roadway of 13′ 9½″ is wide enough for Class 60 and also Class 80 (Cen) provided Centurion is on a narrow transporter. This is the normal divisional set at the moment.

(d) HGB is only 18′ 10″ wide and therefore will only be classed as Class 100. The wide version is also classified as a two-way Class 50 bridge. Although the bridge is classified Class 100 it may be possible to load the bridge to Class 150.

The effect of this classification on bridge users generally may be summarised as follows. If a bridge is classified Class 70 and your vehicle is Class 70 or less than 70, then you can be sure that the bridge will not only support your vehicle but also that it is wide enough to take it.

Officers designing new equipment bridges will use the train loading for that class of bridge required. Similarly, when classifying existing bridges, the EUDLL tables used must be those equated to the new load classes. Design data for equipment bridging will be modified accordingly and the Provisional User Handbook for Heavy Girder Bridge Fixed Spans 1953 contains design data based on this new classification.

Conclusion.

From a design point of view the adaptation of the Bailey does not entirely fulfil the requirements of a Military Equipment Bridge (see Part I). However, these adaptations have made possible the utilization of large stocks of normal Bailey which are available. In addition, the British Army has had suitable bridges in use during the period required to design and produce the Heavy Girder Bridge.

STANDARD BAILEY BRIDGE
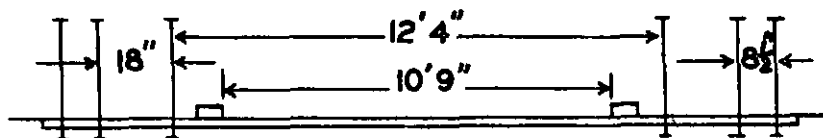
IMPROVISED WIDENED BAILEY BRIDGE
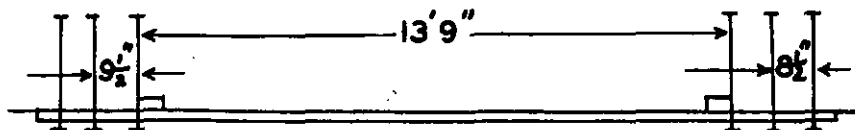
Normal Bailey parts, transom is drilled to receive inner truss 9½ inches from centre truss. Wooden balks are used to cover the additional roadway.

STANDARD WIDENED BAILEY BRIDGE
(TRIPLE TRUSS)
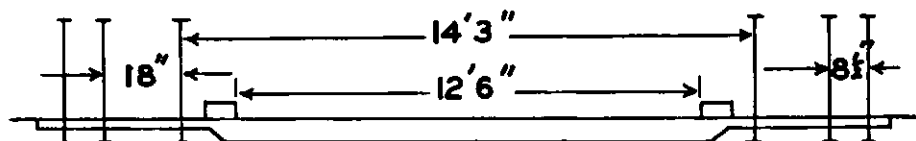
Trusses are at normal Bailey spacing. Transoms are longer and of larger section at the centre than the normal Bailey transoms. One extra stringer and wider and stronger decking are provided.

STANDARD WIDENED BAILEY BRIDGE
(QUADRUPLE TRUSS)
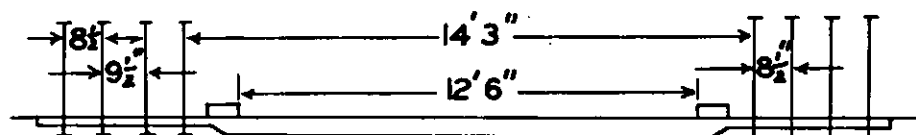
The SWBB transom is drilled to receive a fourth transom in the same relative position as the inner truss of the Improvised Widened Bailey.

EXTRA WIDE BAILEY BRIDGE
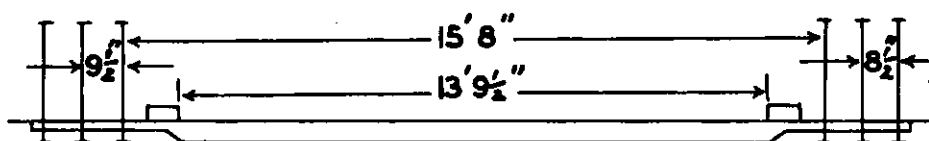
This bridge developed in a similar way to the Improvised Widened Bailey. That is, the EWBB is the same as the SWBB except that the inner truss is 9½ inches from the centre truss. The holes were already there (to use in quadruple truss construction), but the inner holes were sealed by welding. Seven stringers are used (SWBB uses six) and the chesses are longer and stronger.

COUNTER BOMBARDMENT

Lieutenant-Colonel A. D. Watt, Royal Australian Artillery.

COUNTER Bombardment is not a closed gunner shop. It is very much the problem of infantry and armoured commanders. The technical details of CB constitute a vast study, but they are the province of the gunner and are not considered in this article.

No commander would consider launching a large-scale attack without a close support fire programme. Moreover he would take considerable pains to explain exactly what he wanted in the way of covering fire. He would also give quite definite instructions on preparatory bombardment. But what of CB?

In peacetime exercises there is a tendency to allot to CB whatever artillery is left after the rest of the programme has been planned in detail. The result in many cases is that only one or two regiments are allotted to CB for an entire operation, this allotment bearing no relationship whatever to the actual requirement. This is an unsatisfactory method of allotting the artillery effort and such an attitude towards CB is positively dangerous.

CB must be given the same careful consideration as any other type of fire.

The truth of the matter is that there is probably more danger to our assaulting troops from enemy artillery fire (guns and mortars) than there is from small arms and anti-tank weapons. After all, a fragment of a shell or bomb is just as effective in stopping a man as a bullet. What is the use of the most meticulously worked out covering fire plan if enemy defensive fire is raining down on our assaulting troops—especially if it is airburst. One of the lessons which the Chinese must have learned in Korea is that an attack against an enemy strong in artillery is bound to fail unless that artillery is kept quiet during the attack. And having regard to the number and the range of guns and mortars in the formations of a likely enemy, it is important that we, too, should learn this lesson.

CB must be considered by the supported arm commander in his appreciation. Before an operation the CCBO will produce a CB appreciation which he will give to the CCRA, who will then represent the CB position to his commander, who, in turn, considers CB as a factor in his appreciation. The CB position will almost certainly affect the

choice of H hour, the line of approach and the allotment of deployment areas. It will certainly affect the allotment of artillery to the various types of fire.

What is the aim of CB in the attack? It is to help the advance of our own troops by reducing the enemy defensive fire from his guns and mortars, and also reducing the threat from these weapons during reorganization. The assaulting troops are most vulnerable when crossing the start line and obstacles, and during reorganization.

Now there is no doubt that the most effective time to neutralize the enemy guns and mortars is during the actual assault. But this is the very time that the need for covering fire is greatest. It is most unlikely that there would be sufficient guns to do both jobs properly at the same time.

If then we cannot neutralize all his guns during the actual assault can we hit them so hard before H hour that they will be non-effective for all or part of the assault? The answer, with reservations, is "Yes".

These reservations are:—

(a) A large number of guns must be available.

(b) Adequate time must be available before H hour.

(c) RAAF must be available for strikes on heavier batteries which our guns cannot reach or which can be reached by only a few of our guns.

Although not included in these reservations, a pre-requisite for any CB programme is good information. There are many sources of information and they are not all artillery sources, but it is a gunner responsibility to get the information on which a CB programme is based.

Consider first the number of guns. The neutralizing effect of artillery fire lasts only whilst the rounds are falling. At predicted fire this calls for concentrations of the order of 3 guns to 1. Demoralization (against a well trained enemy) is an effect achieved only by the expenditure of an enormous number of rounds in a given time. However, experience has shown that, provided a ratio of 20 or 30 guns to one is employed, a measure of "lasting neutralization" may be achieved. The period during which this effect lasts' will depend on the number of guns employed, the weight of fire, the accuracy of location, the morale of the enemy, and the nature of his protective arrangements. Therefore, without going into figures it is clear that the bulk of the artillery must be available for CB if a pre H hour CB programme is to keep enemy guns silent during all or portion of the assault.

This means a very light or very short preliminary bombardment and limited artillery support for a cover plan. This is a problem to be resolved by the Commander.

Next consider time. It is quite clear that if the ratio suggested (20-30 to 1) is to be applied very few enemy gun positions can be hit at once. This means that they must be hit in turn. The minimum amount of time required before H hour then is the time required to deal with all the more dangerous positions at least once. In fact the most dangerous ones should be dealt with again just prior to H hour. The time the programme must start will depend on the number of enemy gun positions and our own artillery and air resources. As a guide a pre H hour CB programme might take an hour.

The Commander, of course, will

wish to achieve the maximum amount of surprise, but he will be taking a grave risk if he does not allow, before H hour, the time required by his artillery commander for CB (unless of course the attack is to be silent).

There is one way that the difficulties can be greatly eased. It will be obvious that, if the size of the concentrations needed could be reduced, more hostile batteries could be hit at once and less time would be required before H hour or alternatively each battery could be hit more than once before H hour. But can these concentrations be reduced? The answer is "Yes — providing the concentrations can be adjusted by *observed fire.*" This means Arty R and Air OP, but above all it means daylight. Therefore a commander who might otherwise have decided on a night or first light attack, might be led by considering the CB factor to start at such a time as would permit observation of the pre H hour CB programme.

In defence the enemy can stand well back with some of his guns so that he can fire onto our assault but our guns cannot reach his RAAF must be available for such tasks, and in the event of inclement weather the commander may have to decide whether or not to postpone an operation rather than commence without RAAF strikes on enemy gun positions.

The CCRA will indicate to the commander on a "Gun Density Trace," the number of enemy guns of each type which can bear on any part of the front. This information may well influence the Commander in his choice of approach.

Finally a word on deployment of our own artillery. To make the best use of the range of our guns we must get them as far forward as possible. This applies equally to heavier and lighter natures. Also, since the effect at the target end is best when fire converges from widely varying directions, g u n s should not be in one central group. Also the number and range of the enemy guns demand dispersion of our own. However, whilst the demands of CB call for special deployment of our artillery we must be careful that we do not prejudice the requirements for covering fire, for example close supporting fire is better when it comes generally from behind the assaulting troops. From the infantry commander's point of view the important thing is that deployment areas may have to be made available well forward, even for the heavier natures of guns and that, instead of a few large gun areas as in the past, quite a number of smaller areas may be required.

Conclusion

(a) The bulk of the artillery should be available for CB before H hour.

(b) Sufficient time must be allowed before H hour for the more dangerous batteries to be hit at least once with the required concentrations.

(c) If at all possible H hour should be selected to permit observation of pre H hour concentrations.

(d) Maximum assistance must be obtained from RAAF in the way of air strikes on enemy gun positions.

(e) Some guns must be available for CB during the actual assault.

(f) Our own artillery must be deployed with due consideration for the CB requirement.

This article has merely touched on a few aspects of CB in one phase of war. The aim has been to present something of the problem and to indicate how essential it is for CB to be given full consideration by supported arms commanders. The necessary command decisions having been taken, the problem is then one for the gunners.

Failure to appreciate the importance of CB in peacetime will cost us dearly in the event of another war.

Professional competence is more than a display of book knowledge or of the results of military schooling. It requires the display of qualities of character which reflect inner strength and justified confidence in one's self.

— *Lieutenant-General M. D. Taylor, U.S. Army.*

PALESTINE

Captain J. W. Leigh-Cooper, BSc, FFCA, Royal Australian
Ordnance Corps.

1 — From Alexander of Macedon to Antiochus IV

ALEXANDER of Macedon invaded Asia in 334 BC and in the following year his victory at Issus brought about the downfall of the Persian Empire. A new and virile power had arisen. So far as Palestine was concerned, the victory of Issus and the destruction of Tyre led directly to the occupation by Alexander of the coastal plain, the highway of all the armies that had struggled for the mastery of Asia and of Africa. The only resistance was at Gaza, which held out till the siege-train could be brought forward from Tyre. (It is interesting to note how often Gaza occupies a place of importance through the early ages and during the 1914-18 War).

Alexander died in 323 BC and the division of his conquests made Palestine once more the cockpit of Asia. For the first hundred years after his death Judea remained in great measure autonomous, while on the coast of Syria Greek culture spread rapidly. The Ptolemies tolerated and perhaps encouraged this separatism; it was with the aggression of the Seleucid kings of Syria that trouble began.

Antiochus III of Syria (223 BC), though defeated, after initial successes, at Rophia (Rafa) in 219 BC, routed the Ptolemies at Paneas (Banyas) on the north frontier in 198 BC. Once again only Gaza held out in the far south.

During the first years of the Syrian period Palestine was happy in being without history, for Antiochus III continued the policy of the Ptolemies, nevertheless, hellinization spread with the planting of the Greek Colonies.

A change came with the accession of Antiochus IV in 175 BC. To suppress Judaism, Antiochus set himself to destroy the Jews. His attempt led to the Maccabean Revolt (168) in the course of which the Syrian armies were repeatedly defeated and the country gained complete independence from Syria. The heroes of the revolt were the Hasmonian family, Mattathias and his five sons. Guerilla warfare was the prelude to more regular operations, in the hills the Graeco-Syrian troops could not withstand the attacks of the Judeans hiding behind rocks and in the gullies.

The revolt of Mattathias and his five sons began a war for religious liberty and to preserve the way of life that made this liberty possible. These aims were secured but the desire for political independence followed, and when this was pre-

cariously achieved there followed an imperialist desire, not merely to control neighbouring lands but to annex them. But the Hasmonian family fell generation by generation and with it political independence. It was finally extinguished by murder. Only two centuries later even the Jewish religion, for whose sake Mattathias and his sons had drawn sword, faded from the land where it was born and survived only among the Jews of the Dispersion.

2 — The Roman Period

Rome had been induced or obliged to intervene between Syria and Egypt, the latter an ancient ally, the former a bad neighbour to Roman Cilicia. Roman influence over the Hasmonian house had been considerable, even before the invasion of Syria by Pompey in 64 BC. The dominion of Alexander Januacus (103-76 BC) had extended from the Southern Shore of Lake Huleh to the borders of the Nabataean country in the south and from the coast and the Kishon, on the west, to Rabbata Ammon (now Amman) and beyond on the east. The whole of this territory was Jewish, with the exception of the free city of Ascalon.

Pompey broke this unity to five fragments. The whole of the coastal plain, Samaria, Indumaea in the south and Gilead across the Jordan, were annexed to the new Roman province of Syria. All cities were declared "free" and self governing. Most of the Moabite country went to the Nabataeans of Petra. The district east of Lake Tiberias and the upper Jordan became a part of the Ituraean Confederacy. Hyrcanus, the Jewish High Priest and Ethnarch, retained only Judea proper.

Herod the Great

Further changes came after the death of Julius Caesar when Mark Antony governed the Eastern Provinces, in concert with Cleopatra of Egypt.

Throughout the Hasmonean period the head of the State had been the High Priest, sometimes enjoying the dignity only, at others joining it to that of civil head. Herod returned to the older precedent, by which the civil and religious offices were kept entirely separate. He was the first ruler of Judea who was not fully a Jew in blood.

Thus under Roman control but through a local prima, the customs, art and language of the Greek World at last imposed themselves on Palestine.

Revolt Against Rome

After Herod the Great died in 4 BC, his kingdom was divided beween his three sons, but none of them inherited his statesmanship or diplomacy and they soon sank to be Roman office bearers.

Popular resentment was covertly fomented by the priesthood and the Pharisees against direct Roman administration, until a rebellion broke out in AD 66, which lasted four years. The revolt ended with the capture and sack of Jerusalem by Titus in August AD 70.

Only in one centre did the Jewish resistance survive the fall of Jerusalem for a moment. Masada, the fortress on the Dead Sea still had a Jewish garrison which fought as if final victory were within their grasp. When at length it was obvious to the most fanatical defenders that their cause was hopeless they killed themselves, men, women and children, rather than surrender.

ROMAN
PALESTINE
A.D. 400

ROMAN ROADS ——————
'' '' ''(UNCERTAIN) ----
CAPITOL OF PROVINCE ·····CAESAREA
(UNCERTAIN)·····DORD GAZA

TYRE

L. SEMECHONITOS

PHOLEMAIS

L. GENNESERAT

HIPPOS

TIBERIAS

DIOCAESAREA

MAXIMIANOPOLIS

CARSAREA

SEBASTE

NEOPOLIS

APOLLANIA SAJUSA

ANTIPATRIS

IOPPE

DIOSPOLIS

JAMNIA

JERICHO

AZOTUS PORALIUS

NICOPOLIS

ORIENE

AZATUS HIPPENUS

ASCALON

ARTHEDO

DIOCLETIANOPOLIS

ELEUTHEROPOLIS

MAIUMUS

GAZA

RAPHIA
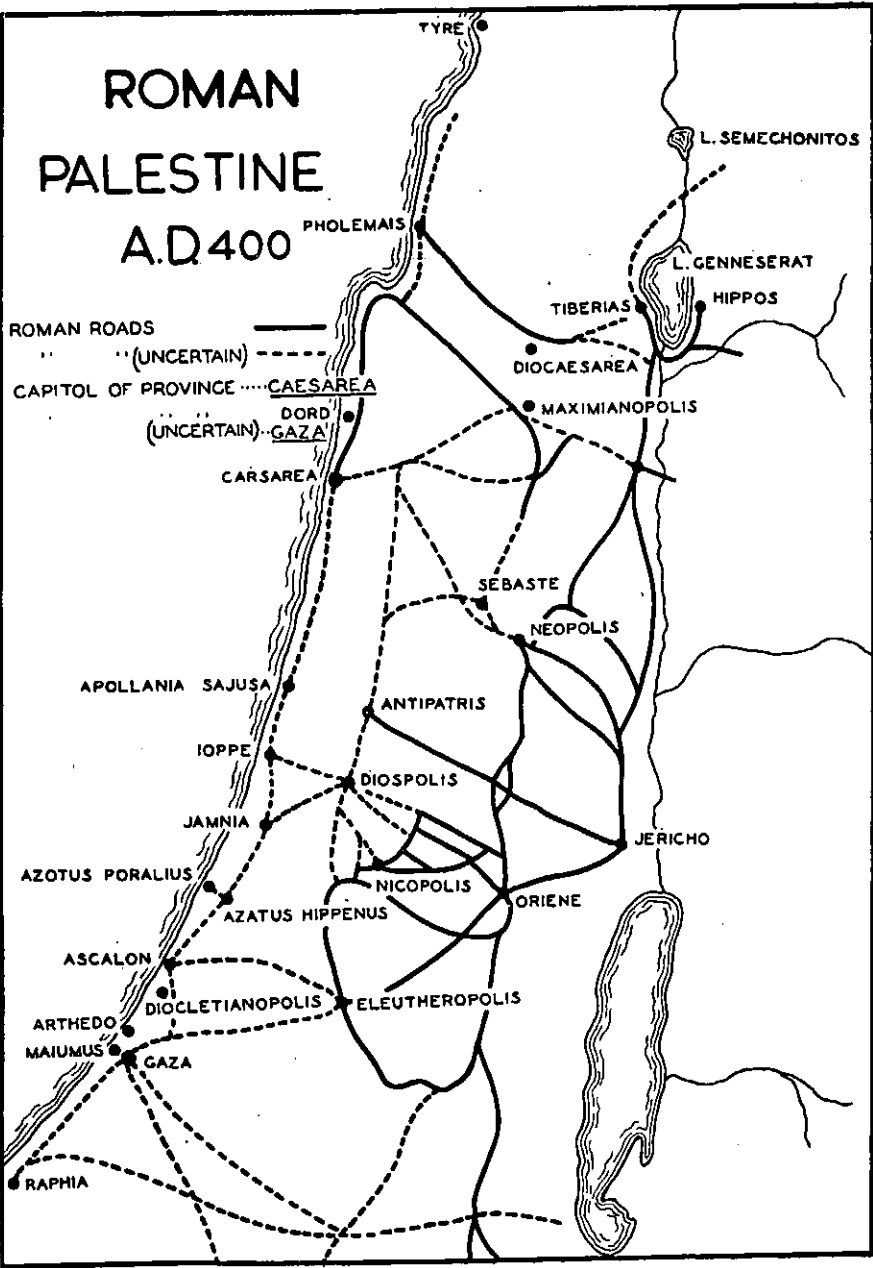
But despite Roman massacres and expulsion, there was still a Jewish population in the country which revolted again in 132 under Simon Bar Cochba. This revolt caused the Romans considerable difficulty for three years, and was suppressed ruthlessly at Bethar, now Battir (still known as Khirbet Ez Yehud— "The Ruin of the Jews").

3 — Arab and Latin Rule

There had long been a large caravan traffic, both between Mesopotamian and Syrian centres and from Yemen by the west coast and Arabia to Egypt and through Palestine northwards, as well as east of the Dead Sea from Petra to Damascus. To protect these important trade routes the Romans had supported Hasmonean and the Herodian dynasties. Later the Ghassanids, vassals of Rome, and the Lakhmids, subsidised by Parthia, controlled the wide desert region between Parthia and Roman Syria; both were Christian. But by the Seventh Century these frontier states had decayed.

What changed the whole situation was the creation of a new trading centre at Mecca, on the western road by the Koreish tribe. This depended, as did the old centres, on the security of the caravan routes, by which caravans reached Gaza or Damascus.

Mohammed and his adherents intercepted the north-bound traffic at Medina in 622. Mohammed's teachings called for surrender to the will of God, prayer, fasting and pilgrimage. On the ground of surrender to God, every Moslem found brotherhood. This system, after the Prophet's death in 632, was administered by the elected Caliph. Universal military service, brought to high efficiency for the defence and attack of a caravan, supplied the needs of the fighting force by organised raids, and recruited the warrior caste by voluntary enlistment of conquered peoples, with the result that the warrior class, which paid no tribute, tended to constant growth.

Abu Bekr, the successor of Mohammed, attacked South Palestine with large forces in 634, while Khalid Ibu Walid raided the Persian outpost of Hira, further east, and then, crossing the desert westwards, threatened Damascus. The Byzantine Army in Palestine was defeated between Jersualem and Gaza. (Gaza once again in the news.)

When Abu Bekr died, the new Caliph Omar Khalid in 635 received the surrender of Damascus. Mesopotamia was overrun in 637, Egypt conquered in 640, Persia defeated in 641 and the Byzantine fleet destroyed in 655.

The Arab victory was of supreme importance for the future of Islam and therefore for the history of the world.

Henceforth, for almost 1,300 years, with the exception of the brief Crusade period (1099-1291), Palestine was a Moslem Province, under Arab rule and later under Turkish. Christians and Jews alike had only religious liberty and limited civil status. For the full political and civil rights of Islam were entrusted only to Moslems.

4 — The Crusades 1097-1291

The first Crusade falls into two parts. The earlier was a Peoples' Crusade, excited by wandering preachers, of whom Peter the Hermit is the best known. It was in five divisions, three of which were ·destroyed before they reached Constantinople, and two in Asia Minor by the Seljuk Turks. The other

part, the Crusade of the Princes, was more successful. Of its many contingents, the most important were those of Lorraine under Godfrey de Bouillon, who reached Constantinople on 23 December 1096; the Provencals under Raymond of Toulouse and the Papal Commissary Bishop Adhemar. Others under Hugh of Vermandor, a brother of the King of France, Robert of Normandy and Count Robert of Flanders joined them. The size of their armies was estimated at numbers between 200,000 to 400,000, but only 40,000 reached Palestine.

The route of the invaders was through Asia Minor and Syria. In May 1097 the Crusaders crossed the Bosporus and took Nicaea (now Iznik), and marched south-east towards Heraclea. Here Tancred and Baldwin turned southward into Cilicea, the main army turned northeast and later south-east, following the route of so many earlier, conquerors and then, turning inland, besieged Jerusalem, which submitted after a month's siege on 15 July 1099. The capture of Jerusalem was celebrated by a massacre of all the Moslems and Jews in the city. Palestine became the kingdom of Jerusalem.

It is usual to speak of a series of separate Crusades, but the whole period of the Latin Kingdom comprised one continuous Crusade.

The Third Crusade, which touches English History most closely, began in 1189. Like the First, it was a war for the recovery of the Holy Sepulchre. It was led by the three great Kings of Europe, Philip Augustus of France, the Emperor Frederick 1 of Germany and Richard Coeur de Lion of England. The rivalries between these monarchs precluded success. The one place in Palestine that remained in Christian hands was the foothold of the army that for two years had been besieging

PALESTINE OF THE CRUSADES
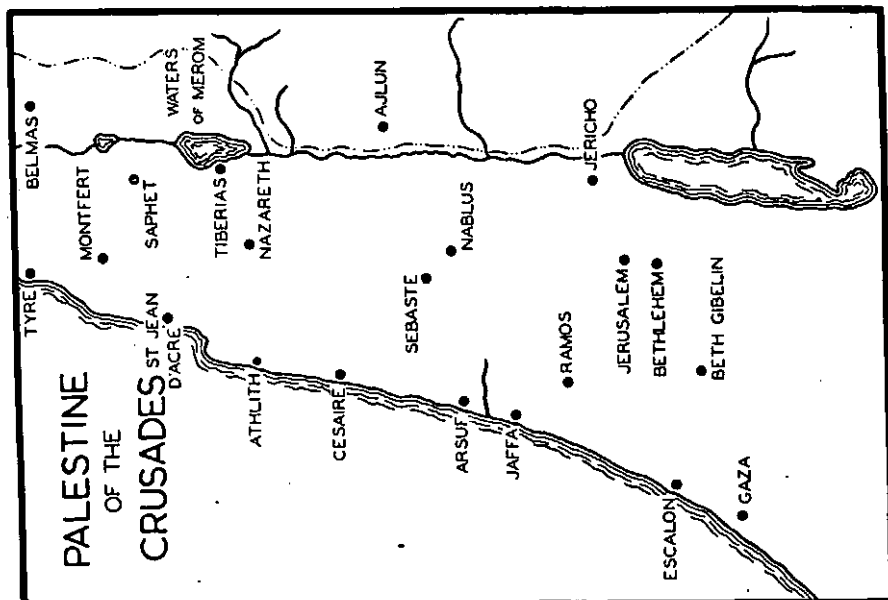
Acre. This army was the focus of the new Crusade. Frederick's Army left Regensburg in May 1189 and marched west of the route of the First Crusaders in Asia Minor. On the River Salef (Gok Su in Cilicea) Frederick died after an accident and the army marched on — only a thousand men reached Acre.

The English and French contingents travelled together by sea and after a winter in Sicily Philip Augustus and Richard quarrelled and separated in the spring. Philip sailed straight for Acre, Richard captured Cyprus on the way and reached Acre on 8 June and within five weeks Acre was captured. Quarrels between Richard and Philip broke out again and Philip returned to France, leaving Richard as the leader.

Richard took Arsuf, Joffa (Jaffa) and Ascalon and arranged for a three-year truce, which left the coast from Tyre to Jaffa in the hands of the Crusaders, but the Crusade had failed and Richard never entered the Holy City.

The subsequent Crusades accomplished very little.

5 — The Ottoman Empire

The Ottoman Turks had been driven out of Central Asia, and in 1227 were given land near Ankara by the Seljuk Sultan of Kings.

Osman 1 (1288-1326) made himself powerful and independent. His son Orkham captured Brusa (1326) Nicomdia and Nicaea and secured footholds in Europe (1335) at Gallipoli, Bulair and Rodosto.

In 1453 Mohammed II captured Constantinople and reorganized the Ottoman Empire, which lasted 400 years.

Napoleon's Invasion

Napoleon occupied Egypt in 1799. He was threatened by Turkish forces organized in Syria by Ahmed el Jazzar; at the same time a British fleet was off the coast. Having pacified Egypt temporarily, Napoleon determined to strike before he was attacked, so he sent four divisions, about 13,000 men in all, across the desert of Sinai with instructions to join forces at El Arish. For his heavy artillery the desert seemed too difficult, and despite the British blockade, he decided to send it by sea by taking advantage of the shallow coastal waters where the British frigates could not close the land. El Arish was easily taken and the Army entered Palestine. At Gaza, forward enemy troops were dispersed and the town submitted without opposition. Napoleon boasted that he had beaten the enemy on the very spot on which Samson had carried off the Gates of Gaza.

Jaffa was more vigorously defended and at a cost of a thousand men it was stormed after a fierce fight, the defenders fighting from street to street. It illustrates the heterogeneous collection of peoples in Palestine that the garrison consisted of men in various costumes and of all colours, Magharabeh from North Africa, Albanians, Kurds, Anatolians, Damascenes, natives of Aleppo and black men from Tekrour. Five thousand troops surrendered when Jaffa fell. Napoleon had those prisoners who belonged to the towns on his prospective line of march set aside, the remainder were butchered in cold blood. Jaffa was made the base of the invaders.

The problem before Napoleon was now the same as that which has confronted all invaders from the south,

before and since. To reach Damascus and northern Syria it was necessary to strike inland over Carmel and the hills and to secure the Jordan crossings. The communications to these pass through the Plain of Esdraelon, which is open to the west at the Bay of Acre, and they are secure only if the invader has command of the sea. Napoleon had not that command and was therefore forced to divert part of his strength required for the conquest of Syria in order to seize Haifa and the key fortress of Acre.

The double task in a hostile country proved too much. Kleber's division occupied Haifa without opposition, but a British naval squadron under Sir Sidney Smith blockaded the port and on 16 March captured the artillery which was being sent by sea for the storming of Acre. The result of the attack was that, after 10 days of preparation, the assailants were beaten back with heavy losses and Napoleon had to settle down to siege warfare.

Meanwhile other French forces under Murat and Junot, engaged in clearing the way to the Jordan crossings, were continuously harassed by Jazzar troops and irregulars. Junot was surprised at Nazareth and driven out, Kleber was in difficulties in the same neighbourhood, the French in Safad were suffering a minor siege. Murat alone was successful at Jisr Banat Yakul, the Jordan crossing south of Lake Hulah. To resolve these difficulties Napoleon had to intervene with troops required for the capture of Acre and thus gave time for reinforcements to be brought up by sea for its defence.

Napoleon's policy of striking terror into the population by burning their villages and massacring the inhabitants cowed the survivors for a time and enabled him to resume the siege of Acre, but it was too late. British marines and the captured guns were now taking part in the defence. Assault after assault was driven back with heavy loss. After two months of siege a breach was made and for a short time the French flag flew on a part of the ramparts. However, the French were routed by British seamen supported by gun fire from the ships and by fresh Turkish reinforcements which had arrived by sea at the critical hour. The tide had turned. A last desperate assault led by Napoleon was decisively beaten.

The defeat before Acre was the ruin of Napoleon's hopes. The whole country was against the invaders, and Napoleon had to face the truth that without command of the sea he could neither conquer the country nor hold it. There was no alternative but retreat, and the siege was raised on 20 May. The wounded and such guns as could be removed were embarked at Jaffa but were captured by the British.

The line of retreat to Gaza was strewn with dead, and the column was harassed by Arabs and by British who landed in small boats from the sea. Everything on the line of march, including the town of Jaffa, was destroyed by the French and as far as Khan Yunis the plain looked like a sea of fire from the burning crops. Gaza had conducted itself peaceably and was spared, though its fortifications were razed to the ground and a fine of £1,000,000 was imposed on its inhabitants.

This ended Napoleon's attempt on Palestine and Syria. Years later,

contemplating the past in his exile on St. Helena, he dated the beginning of his decline and fall, not from Morcon, but from Acre, the scene of his first defeat.

In the confused years that followed, Mehemet Ali, an Albanian in the Turkish service, became ruler of Egypt and made himself indispensable to the Sultan during the Greek War of Independence. When the Sultan suspected and attacked him in 1831, he invaded Palestine and Syria, stormed Acre in 1832 and defeated the Turkish Army at Nizip in 1839.

From this period Britain, Germany and Italy developed a political interest in Palestine, cloaked in religious, educational or archaeological wrappings. Following Shaftesbury's suggestion, British protection was granted to foreigners in Palestine, almost without exception Russians who were refused protection by their own Government.

6 — Jewish Immigration

From about 1880 the Jews became a political factor in Palestine, Russia, while oppressing Jews at home, was anxious to keep control of Russian subjects who found their way to Palestine. Britain also claimed an interest in the well-being of the Jews in Palestine. Above all, Zionism, in so far as it was a political as opposed to a cultural movement, a nationalism like the other new nationalisms, threatened to establish a new state — at the best, a second Lebanon — at the expense of the Ottoman Empire. The Sultan did not want another Lebanon and stipulated that the immigrants should abandon their previous citizenship and become Ottoman subjects.

The Young Turk Revolution in 1908 raised hopes in Palestine, as elsewhere, and the "Young Arabs" joined the "Young Turks," which resulted in Palestinian Arabs being given high and responsible office in the new administration.

7 — The War in Palestine 1914-18

When war broke out in 1914, the Suez Canal was, in effect, Egypt's military frontier on the east. Britain was prepared to remain passive, but not so the Turks, they sent their main force through the Beersheba-Auja-el Hafir route and crossed the desert to within striking distance of the canal by February 1915. The Turks made their attack on 2 February and put three pontoons across the canal — all men who crossed were either killed or captured. A further attempt on 3 February met with similar failure and the Turks withdrew.

There was no new move on either side for almost a year, when the British crossed the canal and advanced into the desert. From this line, under Sir Archibald Murray, they advanced eastwards, fought three successful engagements and by 9 January 1917 reached the Palestine frontier at Rafa. The original intention was not to invade Palestine but to secure the Egyptian frontier. But with the successes gained, this decision was abandoned and Murray was ordered, for political reasons, to advance to the conquest of Palestine. He did not, however, receive the additional forces he required, instead one of his four divisions was withdrawn.

Following on the track of every previous invader of Palestine from Egypt — along the coast road — Murray's army took Rafa and ad-

vanced to the outskirts of Gaza, accompanied step by step by the railway and a sweet-water pipe line. In the latter, an old popular expectation seemed about to be realised, that when the Nile flowed into Palestine, Turkish rule there would cease. The road was blocked at Gaza by Turkish forces. Murray's plan was to cut off Gaza from reinforcements from the north and east and then to take it by storm. The attack was made on 26 March but failed, although success was very near. The British advanced again on 17 March, but the assault failed and operations settled down into trench warfare.

In July 1917 General Murray was relieved by Sir Edmund Allenby, whose instructions were to capture Jerusalem as soon as possible. On 31 October Allenby struck the Turkish left at Beersheba and captured the town before dark. The next day his left wing assaulted Gaza while his right exploited the success won at Beersheba. The defence crumbled, and by 16 November Allenby, after a vigorous pursuit, occupied Jaffa. The Turkish army was cut in half, part being north of Jaffa and the remainder preparing to defend Jerusalem.

Allenby did not allow the Turks to recover. His main forces turned east towards Jerusalem by roads that the Philistines and Antiochus had trodden many centuries before. Anxious to avoid fighting in the immediate vicinity of the city, he planned to envelop it. Jerusalem surrendered on 9 December, and two days later Allenby entered the city on foot. This success gave great encouragement to the Arab Army of the Emir Feisal based on Aqaba, and to his supporters east of the Wadi Araba and the Dead Sea.

The Turks made an ineffectual attempt to recover Jerusalem before the end of the war and after its

PALESTINE TODAY
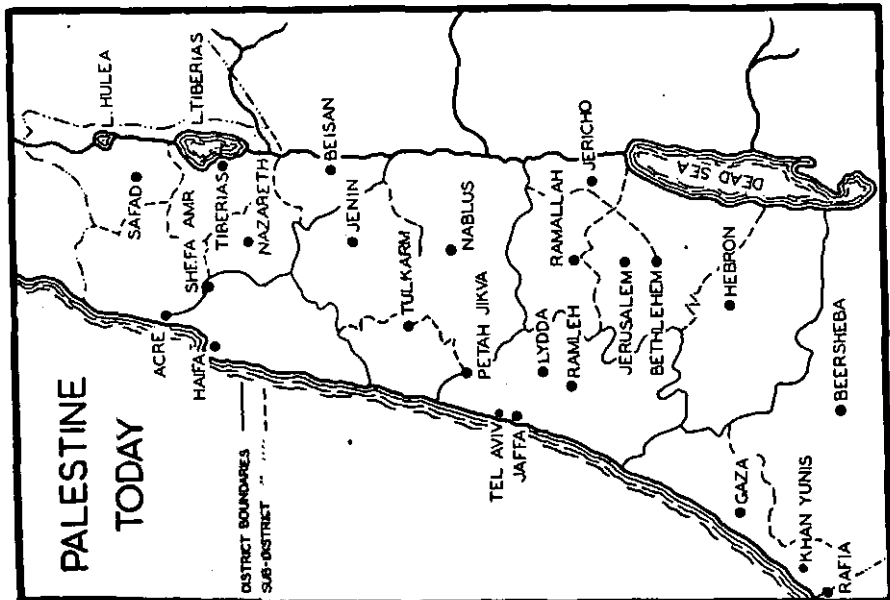
defeat Allenby advanced the whole of his front — which had been extended from Jaffa to Jericho — by a few miles. For some months there was a discussion in London and Paris between the advocates of concentration on the Western Front and of the exploitation of "Side-Shows." In the end the advocates of an advance in Palestine won and the preparations were being pushed forward when the great German attack in France in March 1918 necessitated the withdrawal of every man who could be spared and further advance was consequently delayed.

The beginning of the end came in September 1918. On the morning of the 19th Allenby's forces a few miles north of Jaffa attacked the Turks. Within three hours the enemy's lines had been pierced. The cavalry swept on beyond Carmel to the historic plain of Megiddo. Within 24 hours Nazareth, the headquarters of the German Commander-in-Chief, was taken. By the capture of Affula and Beisan the line of withdrawal of the Turkish forces north of Jerusalem was cut. All the German and Turkish troops in Palestine were being driven towards Nablus, from which the only road open led down the mountainside into the Jordan Valley, still known as the Valley of Death. The Army was supported by the Royal Air Force. With command of the sea, there was nothing to fear from the west. On the other side, in Transjordan, the Arab Forces of Feisal and Lawrence were waiting. Few Turks escaped. Haifa was occupied on 23 September. Two days later there was a fierce battle at Samakh on the southern shore of Lake Tiberias. At its close there was no longer any organised hostile force in Palestine and a few days later the same could be said of Syria.

After four centuries Ottoman rule had come to an end.

BOOK REVIEWS

COMMUNIST GUERILLA WAR-FARE. By Brigadier C. Aubrey Dixon, OBE, and Otto Heilbrunn. (George Allen and Unwin).

This is a completely new book produced after painstaking research into the Russian guerilla campaign against the occupying German forces in the Second World War. Waging war is a skill that is forever changing, and in his foreword, Lieutenant-General Sir Reginald Denning acknowledges that "... Guerilla warfare has come to stay. It has revolutionized the conception of war. A regular army with guerillas as its auxiliaries not only has a hard-hitting fighting force, but also an outstanding intelligence service 'on the other side of the hill' which makes it practically impossible for the opponent to conceal his troop movements and intentions."

The Russian guerilla bands were very successful, and in their first two years of operations they killed an estimated 300,000 German regular soldiers. The authors highlight the efficient tactics of these bands and compare them with those used by the communists recently in South-East Asia. In this comparison there are many useful points from which we might benefit.

The interest in the book lies partly in the detailed and exciting descriptions of Russian guerilla action and partly in the sound conclusions drawn from this campaign as a military study. Brigadier Dixon and Dr. Heilbrunn have drawn mainly on captured German documents for their facts — "The German soldiers . . . were prolific writers of war diaries, situation reports, orders, directives and instructions. In spite of the terrific bombing by British and American aircraft the Wehrmacht archives in Potsdam and Berlin, which used to hold these documents somehow managed to survive . . . an amazing collection escaped unscathed. They now form at the Pentagon Building in Washington DC, a valuable source for military historians and a treasure trove for the student of guerilla strategy and technique."

The authors have been able to supplement this documentary evidence with the testimony of senior Wehrmacht officers who had first-hand experience of Soviet guerilla warfare. They conclude that in any future conflict guerilla activity will play an important if not dominant role and that we must start training for this type of warfare now if we are to survive. Some interesting rules of guerilla activity are recorded and deserve the study of all concerned with preparation for war.

Modern guerilla warfare was

developed in 1937 by Mao Tse Tung when he published in China his now famous contribution to partisan battle-craft — "Guerilla Warfare." Mao advocated a simple organisation with regional guerilla formations acting independently with a central control to provide unified strategy. The Soviet adopted this type of organization and developed their campaign from the rules laid down by Mao and discussed by the authors. Briefly they are:—

(1) Avoid superior forces.

(2) Surprise is the main element of successful guerilla tactics.

(3) Careful planning.

(4) Attack inferior forces.

(5) Speed in action is essential.

(6) Disperse freely if conditions are unfavourable.

(7) Concentrate when the enemy can be destroyed.

(8) Guerillas must master the tactics of deceit.

(9) Partisans must always move secretly.

(10) A friendly local population is essential for guerilla success.

The Russians had made no preparations before the German invasion on the 22nd June 1941. They were unprepared for partisan warfare when eleven days after the invasion Stalin issued his now famous "Order to the Soviet Russian People."

"In areas occupied by the enemy, guerilla units, on foot and horseback, must be formed and division groups created to combat enemy troops, to foment guerilla warfare everywhere, to blow up bridges and roads, to destroy telephone and telegraph communications, to set fire to forests, depots and trains. In occupied territories conditions must be made unbearable for the enemy and all his collaborators — they must be pursued and annihilated wherever they are, and all their measures must be brought to nought." As a result of this order there was built a very successful partisan organization.

In discussing the German countermeasures the authors point out how little thought the German General Staff gave to the planning of anti-guerilla measures in their otherwise elaborate plans for BARBAROSSA (military invasion of USSR) and OLDENBURG (economic exploitation of USSR). This phase is covered by the simple dictum "Guerillas will be ruthlessly liquidated by the troops in combat or whilst trying to escape." Many months were to pass and many German soldiers to die before the invaders gained any measure of control over the Soviet guerilla forces which rapidly became well organized and a constant thorn in the German side.

It took the Germans a full five months to grasp the need for some form of anti-partisan organization. The first German commanded to attempt any practical measures was the C-in-C of the 11th Army — Von Manstein.

During Von Manstein's court martial he was asked by his defence council why he had ordered the setting up of an anti-partisan staff. His answer was: "It was necessary to direct the anti-partisan combat from a central point in order to co-ordinate and make fullest use of information we gathered *in the same way as the partisans on their part must have had some hidden control directive.*" For such a Ger-

man commander to pay the Russians the compliment of following their example is high praise.

The German campaign on the whole was not very successful, there was poor overall control and each unit decided the best field technique to be used again the guerillas. Confusion often resulted. Some special units such as the Jagdkommandos were trained and fought with distinction but the partisan band was ever there ready to burn and kill the enemy. Had the Germans allowed their tactics to be dictated by military reason and clemency rather than by hate, terror and mass reprisal they might have controlled the partisan threat.

The Germans eventually, in 1944, issued a manual on "Warfare against Bands" for all Services of the Armed Forces; it was their last effort to organize and standardize their anti-partisan warfare. Twelve months later the war was over and the Russian partisans had contributed in no small part to the German defeat.

The manual came too late, but it is a very interesting document and the authors do a service to produce it as an appendix. This manual, together with the conclusions drawn from the Russian and German operations form the basis of a rational survey of guerilla warfare.

Mao Tse Tung and his followers have been successful in following the concept of organised partisan warfare. We must now regard it as a phase of normal warfare which must be mastered. Time may be short and this study of Communist Guerilla Warfare directs us in the way to train if we are not to fail. As such this book must be regarded as one of the most significant military publications of 1954.

— *Major J. G. Sloman.*

SUCCESS AND FAILURE IN WAR

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IN the 19th century the study of military history was one of the chief subjects in a "staff" course. It remained on the curricula of staff colleges, in a place of declining importance, until the last war. It has now been crowded out by the increasing load of technical studies. The three lectures on Military History in this course cannot "teach" any military history. As I understand it, the intention is that the lectures shall demonstrate to you the importance of military history and give you some guidance in its study.

But many of you are destined for administrative posts rather than for command. One of the students on a previous course asked why staff officers should study military history. I have not time to deal with that question fully, but I would suggest one reason which is often neglected but which is, to my mind, the most important reason for studying history. The study of history (and therefore of military history) has very important values for.

the training of the mind, values of a kind which cannot be developed in a technical course of this nature. It is the same in other professional courses, as, for instance, in medicine, in engineering, in architecture, or in law. In these highly specialized, modern days there is danger that specialists will think according to strict patterns and within narrowly conscribed fields and will therefore lose flexibility and breath of vision. History, properly studied, is one of the few things which can provide the necessary corrective. I therefore believe that, just as the modern trend in all the professional schools in the universities is to introduce more of the humanities for certain values of "mind-training" which professional and technical courses do not possess, so the Army officer must study military history for general mind-training and for cultural value as well as for professional gain.

I wanted to make this point by way of introduction because, as I conceive my assignment, "The Influence of the Character and Personality of Great Captains on the Course of War," my task here is to give you guidance in the study of military history.

The characteristics of leadership,

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and especially of the great captains who have made history, is a subject more usually assigned to a distinguished general than to a professor of history. A historian looks at military history from an angle different to that of a general, and differs with him on the uses to which it can, and should, be put. I am not referring here to that perennial disagreement between historians and military leaders which arises because historians frequently accuse generals of distorting the raw material of history for the sake of posterity by such tricks as writing battle orders after the battle! What I do refer to is the fact that, while a general wants his history neat, clear, and full of obvious meaning, the historian knows that it must be full and complete, and (all too often) confusing.

This difference of approach is illustrated by an anecdote about General Eisenhower. The chief of his historical staff in 1945 received a minute asking for a complete history of the war on two pages of paper. The historian was nonplussed but, being in uniform, dutifully sent up an outline. It came back the next day minuted, "The General said two pages, not three."

Historians and generals approach history from a different angle in another aspect. For example, some historians are unkind enough to suggest that battles are never won but are always lost through the errors made by the generals on the defeated side. That is an exaggeration. But it is certainly true that soldiers tend to study victories rather than defeats—and sometimes only victories won by their own country. History is thus confused with, or used as, propaganda for the build-ing of morale. Such a use is not altogether illegitimate if the history is not distorted. But, on the other hand, many generals would consider that to study defeat would be unthinkable—perhaps even immoral.

Therefore, the approach of the successful general to this question of personality in war is usually to try to deduce from history those personal characteristics which make for good leadership. That kind of lecture has its place and its importance—but it sometimes becomes mere propaganda and not history.

I feel that in addition to drawing your attention to those personal qualities of great captains that have brought victories in the past, as a historian I must do several other things as well. I must show you the necessity for understanding the character and the personality (whether good or bad) of opponents, allies, and colleagues during present warfare, and also I have to impress upon you the fact that the study of character is necessary not only in actual warfare but also when you read and study military history merely in terms of masses of material, or of numbers of men, or of tactical formations and movements, or even in terms of the enduring strategical principles of war issued by the Chief of Staff. These are only part of the story, and not necessarily even a predominant part.

It was a distinguished general, who was also a good historian, Field Marshal Lord Wavell, who put this point most lucidly in his famous lectures at Cambridge University on Generals and Generalship, which I am sure you have already read: "When you study military history, don't read outlines on strategy or the principles of war.

Read biographies, memoirs, historical novels. Get at the flesh and blood of it, not the skeleton." In another place in the same series of lectures Lord Wavell said that he hoped he had succeeded in persuading his hearers of the importance of a "flesh-and-blood" study of history; and that "war is not a matter of diagrams, principles, or rules."

Lord Wavell cited as illustration of this argument the electric effect of Napoleon on the army of Italy. Napoleon's proclamations made that ragged mob into a conquering army by words which spurred them on to perform unbelievable feats of heroism despite frightful privations and hardships. You can find the same sort of thing in de Guingand's account of General Montgomery's impact on the Eighth Army just before El Alamein. I am sure you will all be familiar with that tremendous story. It was the personal magnetism of these two men that brought victory in these campaigns. You can't understand the campaigns unless you take the personal factor into account. While these are, of course, outstanding examples in all other military studies, it is just as necessary, in order to understand a campagn fully, to study the personal characteristics of the leaders.

As in the study of military history, so in war itself, study of character is most important. Captain Liddell Hart tells us a story about General Montgomery which illustrates the importance of a general understanding of the personal characteristics of his opponent. He says that General Montgomery was so determined to understand his opponent, Rommel, and to get inside his mind, that, in addition to other methods of studying him, he collected photographs of him and pinned them around his desk. When Rommel was appointed to command in Normandy, Montgomery knew him so well that he was able to tell his officers what Rommel would do. "Last February Rommel took command from Holland to the Loire. It is now clear that his intention is to deny any penetration. Overlord is to be defeated on the beaches. Rommel is a determined and energetic commander; he has made a world of difference since he took over. He is best at a spoiling attack; his forte is disruption; he is too impulsive for a set-piece battle. He will do his best to Dunkirk us—not to fight the armoured battle on ground of his own choosing, but to avoid it altogether by preventing our tanks from landing, by using his own well forward. On D-Day he will try to force us from the beaches and secure Caen, Bayeux, Carentan. Thereafter he will continue his counter-attacks. But, as time goes on, he will combine them with a roping-off policy and he must then hold firm on the important ground which dominates and controls the road axes in the bocage country." This remarkable forecast, made some weeks before the landing, was possible because of a thorough character-study and an intimate knowledge of the personality and mode of thought of his enemy. Incidentally, after Rommel killed himself, Montgomery is said to have taken down the Rommel pictures and replaced them by those of Von Rundstedt. I don't believe that the photographs had much real information about Rommel's character, but they probably served as a kind of peg on which General Montgomery could hang all the other information which he collected.

Having established that the inves-

tigation of personal characteristics is important both in the study of military history and in war itself, I want to warn you that the examples quoted are among the rare clear instances. More often it is difficult to make so clear an appreciation. Character study is always difficult; but it is especially difficult to make an accurate appreciation of the personality and characteristics of military leaders. For the purposes of building military and civil morale, any new appointment to an important command in war is always described in glowing terms. Think of the reputation of General Gamelin in 1939 and of what followed. Do you remember the eulogies with which General Auchinlech was appointed to the Middle East Command? Petain's terrific reputation at Verdun in the First World War and his "They shall not pass" produced in the darkness of France in 1940 a glimmer of hope that he would save the country. When Pétain showed nothing of his great reputation, the military columnists suddenly discovered that it hadn't been Pétain who had saved France at Verdun after all. Thus you can see that the reputation of military leaders is held artificially high; and that their failure leads to a corresponding, and sometimes exaggerated, decline in their personal reputation. For their contemporaries, and even for later students of military history, this smoke-screen of propaganda makes character-study difficult.

Here is a good example of incorrect contemporary interpretation of the character of leaders caused by the smoke-screen of wartime propaganda. As a result of Alamein and of the magnificent successes of his armies in the desert, General Montgomery earned a reputation as a daring, unorthodox and dashing commander. Later, somewhat to the astonishment of the British public, he was accused of being "defensively-minded," of being over-cautious, and of delaying unnecessarily long so that he could pull up his administrative tail. Far from being "unorthodox," he was actually the master of the "setpiece battle." The Australian writer, Allan Moorehead, says of him, "He emerged as the successful player, not because he broke the rules of war or invented new ones, but because he paid the most painstaking attention to the rules and because he had that kind of professional patience which never gives way to an emotional impulse, but waits for the eventual loosening of the will of the opponent. His outward appearance was showy and dramatic; the core was unromantic logic." These facts I present not with any intention of interpreting them, but simply to show how difficult it can be to form a judgment of the character of a great leader, either during the war, or even afterwards.

There is much more evidence of the way in which the distortion of the facts makes the evaluation of character difficult. Here is just one example. Earl Haig built up a reputation as a simple honest soldier plagued by self-seeking, scheming politicians, which he maintained throughout his life. Recently Haig's letters have been published. They suggest that Haig was far from being as disinterested . . . as he had formerly seemed. What seemed before to be simple truth is now clouded with doubt.

One more way in which smoke-screens are built up to hide the true character and personal character-

istics of wartime leaders must be mentioned. A pretence of harmony between high commanders is always maintained in public. But history shows that the petty squabbles between great leaders are on a par with those of temperamental prima-donnas in other fields. General McClellan said of one colleague, "I don't know whether Scott is a dotard or a traitor"; of another, "I have a thorough contempt for the man and regard him as a treacher-ous miscreant;" of a third that he was "a scoundrel, a liar, and a fool who, in seeking to ruin me, has killed himself." Here is another in-stance. The Russian defeat at Tan-nenberg has been attributed to a personal feud which began at Muk-den in 1905, when one Russian officer boxed the ears of another. Nine years later, to get even, the victim, now a general, failed to bring up his troops in support of his old as-sailant at a critical moment in the battle. Take another example. General Joffre, just before his own retirement, put Foch on the retired list on grounds of ill-health; and he was never forgiven. Even after both Marshals had died, their widows passed each other on the street without speaking.

In this last war it was regularly said that, unlike the situation in 1914-18, there was good feeling be-tween all the allied commanders. De Guingand records that, after the desert campaign, General Mont-gomery gave a series of lectures on war to which he invited American officers who at that time had had little operational experience. De Guingand says that Patton, when asked what he thought about a lec-ture on "The High Command in War," said in his southern drawl, "I may be old. I may be slow, I

may be stoopid, and I know I'm deaf, but it just don't mean a thing to me."

De Guingand was, of course, a professional lubricator of squeaky joints and was always pouring oil on troubled waters. He was one of the men who made Anglo-American co-operation a very real thing. When he wrote this rather uncharacteristic anecdote in 1945-46, he carefully prefaced it by saying that after-wards Patton was enthusiastic in his praises of General Montgomery and of the lectures. De Guingand went on: "Poor George Patton, what a great man he was, and how we came to respect and admire him dur-ing those next three years." It is difficult to believe that the British generals really thought that way about Patton, whose character is portrayed very differently by Ches-ter Wilmot. According to the latter, Patton was an egotist who treated his own countrymen only a little less cavalierly than the British.

De Guingand is, of course, a great hero-worshipper as well as a diplo-mat. He rarely criticized his boss. But even De Guingand admits that on the occasion of the re-grouping necessitated by the Ardennes offen-sive, his chief was "naughty" at a meeting of the staffs of the Ame-rican divisions which he had taken over. Later books from the American side show that the American gen-erals at the conference were far more disturbed than that word would suggest. On the other hand, the same American books reveal sus-picions of British motives, and show a bias of American nationalist feel-ing, which is very different from the alleged harmony of the war years. You may remember Patton's alleged comment when advancing to join up and close the Falaise gap, namely,

that he would "Dunkirk" the British in the process. These things have only appeared when the light of history has been thrown on them. At the time they were quite properly hidden by a smoke-screen. My purpose in referring to them here is not to re-awaken old antagonisms, but merely to show you that that kind of smoke-screen makes the interpretation of character difficult both at the time—and even afterwards when you are reading military history. (I want to add that, despite these occasions of personal and national rivalry, the harmony between the British and American leaders was a tremendous advance on anything that had gone before in history, even on that remarkable unity achieved under the leadership of the great Duke of Marlborough).

Before I try to list the battle-winning qualities which have been found common to great captains, I should like first to say something about some personal characteristics that led to failure and about other cases in which personal weaknesses were apparent but did not affect the course of war.

General Gamelin was the model of the well-informed soldier and a great student of military history. He knew so much about Napoleon's campaigns that he was said to be able to repeat *verbatim* every order that Napoleon ever gave. Yet, although he admitted that he had anticipated the crisis of 1939-40, he was completely ineffective in overcoming it. It is not a sufficient excuse that the fault was that of the politicians. Gamelin should have resigned if he believed that politicians were endangering his country. The real reason for Gamelin's failure was that he was merely an academic soldier. Lord Gort put his finger on

Gamelin's weakness. He said, "He was not a fighter."

Gamelin had immersed himself in the detail of past military history but had not paid sufficient attention to the modern trend in warfare. He had given only a passing attention to de Gaulle's *Vers L'armee de metier*. During the phoney peace, combat officers who came to his HQ were compelled to listen to erudite discussions of philosophy and art when they should, instead, have been commenting on their own front-line experiences.

A contemporary of Gamelin's who had a similar reputation for being a military intellectual is Lord Wavell. It is interesting to contrast Gamelin's failure with Wavell's success. We shall see that Wavell regarded the "fighting spirit" as the "root of the matter" in leadership.

On the other hand, some dashing soldiers of a very unacademic type, who certainly would not have merited Gort's scornful description, were failures. Take Prince Rupert, a young man with a wide experience of war on the Continent, who at Edgehill charged the opposing cavalry wing with such verve that he drove it right off the field. When he returned the enemy had mopped up his infantry! Among the enemy was Oliver Cromwell, then a novice in war. Cromwell learned several important lessons at Edgehill. According to John Buchan, one of those lessons was that "Attack—swift and resolute—was the true way; assault was the only defence. But attack must be disciplined and regulated, for Rupert had flung away the battle by pushing it (his attack) beyond its tactical purpose."

We must also note that some of the greatest captains of history have possessed faults which led them on

occasions to defeat. General Lee, often claimed as one of the greatest generals of all time, said after the slaughter of Gettysburg, "It's all my fault, I thought my men were invincible." He had failed, as Captain Liddell Hart shows, because he had become over-confident. He matched the spirit of his men against a fire power which he did not really understand.

A second example comes from Napoleon (from whom also it is much more usual to get examples of virtues that led to success than of weakness that led to defeat.) Why did Napoleon suffer ultimate defeat? Of course there were the political reasons, for instance, that he had aroused a nationalism throughout Europe which eventually •destroyed him. There was also the personal factor, namely, that he had kindled in himself a fire of ambition that consumed him. But, according to a recent article in *Atlantic* by C. S. Forester, there was also a basic weakness in Napoleon's military methods caused by his mentality. Napoleon failed because he had developed nothing new in war. He had climbed to success on weapons that had been in use for a century and on tactical methods that had all been invented by his immediate predecessors. The tactical methods of the French revolutionary armies, developed because of the fervour and indiscipline of the revolutionaries, had succeeded against the other European armies because the latter had lacked morale and because they had therefore been compelled to follow the French and adopt the tactical column. The British had not suffered the severe defeats which had compelled their allies to resort to the column. Their regulars had therefore stuck to the line. But

Napoleon did not meet the British personally between Toulon in 1794 and Waterloo in 1815; and he refused to learn from the experiences of his Marshals in Spain. When he came up against British tactics at Waterloo and found that they were defeating his methods, it was too late for him to change.

Forester supports his case by other arguments. For instance, he shows that although shrapnel had been invented as early as 1784, Napoleon did not use it. At Waterloo shrapnel would have made havoc of the British squares, which he could not break in any other way. With this and other arguments, Forester makes a good case for a completely new interpretation of Napoleon as a military leader. He is portrayed as being conservative rather than a brilliant innovator, and eventually that defeated him.

There are many other examples of weaknesses in generals which have brought defeat. McClellan's hesitation is notorious. Eventually Lincoln had to replace him. Antony's infatuation with Cleopatra decided the fate of civilization. Montcalm and Vaudreuil, the military and civil leaders in New France, were at odds. A recent book suggests that the blame was Montcalm's, not Vaudreuil's; but in any case this personal dispute settled the fate of Canada. . . In each case it is possible to say that the personal qualities of an individual contributed to defeat or failure.

In some cases, however, personal weaknesses have not brought illsuccess. Thus, Nelson's infatuation for Lady Hamilton caused him to refuse to send ships to help his C-in-C in the Western Mediterranean. He admitted afterwards that it was because he was "sicilified"; in

the corrupt Neapolitan court. But it turned out that the preservation of the existence of Naples as a base for operations in the central Mediterranean was essential to British success. Nelson's personal weakness thus came to have good results for his country.

When Blücher was appointed to command the revitalized Prussian armies by Gneisenau, everybody from the King down thought that the appointment was wrong because Blücher was over 70 and known as a reckless talker, a wild gambler, and a psychiatric case. He sometimes thought that the French had bribed his servants to heat the floor of his apartments so that he had to walk about on his toes, or jump, to avoid burning the soles of his feet. To work up his feelings against Napoleon he had had an image made of wood and he would set about it with his sword. On one occasion, when ill in bed, he signed an order upside down; and one of his colleagues said, "One sees that the old man is insane again." . . . Great commanders are traditionally expected to have peculiarities and idiosyncracies and a certain degree of irascibility, but Blücher's is an extreme case. However, on the fundamentals he was sound, and after his defeat at Ligny he completely baffled Napoleon by retiring to concentrate with Wellington and to win the battle of Waterloo.

Grant was denounced to Lincoln as a drunkard. The President replied, "Find out what brand of whisky he drinks and I will send a case to each of the other generals." A story with the opposite moral is told by the historian Willams about Fighting Joe Hooker. Hooker was a hard drinker, but at Chancellorsville he had been off the bottle for several days. The result was that his capacities were made even worse than they might otherwise have been. George III was once told that Wolfe was mad. The King said, "I wish he would bite some of my other generals." Thus personal weaknesses do not necessarily subordinate military genius when other more important qualities are present.

There are many examples of great leaders who have triumphed despite physical or emotional handicap. Marshal Saxe, of Fontenoy, was so ill from dropsy that he had to be carried to the field in a chair, chewing a bullet to relieve his thirst. Despite the great physical pain, his mind was as agile as ever.

Napoleon's letters show that, before the invasion of Italy, he was wracked by the torment of jealousy caused by a not unwarranted fear of what the attractive Josephine was doing in his absence. But, despite a human failing of showing off her picture to all official visitors on every possible occasion, he never let his personal problems affect his directions of operations against the Austrians.

We have seen that it is important in studying war to take into account the characteristics of leaders, that the assessment of those characteristics is difficult and susceptible of error, and that it is possible for leaders to have noticeable weaknesses without destroying their genius. Amidst all these complications, what are we able to find from history about the qualities which have led to success?

I would refer you again to Field Marshal Lord Wavell's lectures on *Generals and Generalship.* Wavell gives first place to "the quality of robustness, the ability to stand the

shocks of war," not merely the physical shocks, but the mental shocks. De Guingand puts this first also when describing his own chief's characteristics. He said that General Montgomery was, to use the General's own phrase, a "non-belly-acher," nothing worried him, and he accepted responsibility with the greatest of ease. He could sit back and avoid getting immersed in the detail while getting on with things that really mattered. In so doing he radiated immense confidence. John Buchan found the same thing in the character of Cromwell, who had "the gift of many highly strung temperaments of acquiring in the heat and confusion of battle a strange composure, thus enabling him to see every detail in the light of reality." This is the basic quality of top-level leadership.

Wavell goes on to list these as the qualities of a successful general:

1. Courage, health, and youth (the latter with qualifications which may have been the result of the fact that in 1939 he was himself no longer a young man).

2. "Character" (by which he meant that the general should know what he wants and have the courage and determination to get it).

3. A knowledge of, and interest in, men.

4. And (Wavell says, most important of all) the fighting spirit, the will to win.

5. Among mental qualities, Wavell listed "common sense" (or a knowledge of what is and what is not possible).

6. A really sound knowledge of the "mechanism of war," i.e., of topography, movement, supply, all the aspects of administration. Wavell believed administration to be the real foundation of military knowledge and not strategy and tactics, as most people before him had thought.

John Buchan's list of the qualities of a successful general, based on his study of Cromwell, is surprisingly like that of Wavell's:

1. "A practical man's power of organization [which he had] acquired in his ordinary life, a kind of training given to few soldiers."

2. A knowledge of the hearts of his countrymen.

3. A knowledge of horses.

4. The supreme gift of judging the crucial moment and the critical point in a battle (what has been called the *coup d'oeil* of the soldier).

5. The flexibility of plan necessary to take advantage of it; and

6. Lastly, the "supreme gift of the soldier, the power to simplify amid confusion . . ." which, once done, makes everything seem easy and unquestionable.

The emphasis which Buchan placed on mental agility seems to me to be more positive than that made in Wavell's list. In view of Wavell's own intellectual status, this is surprising. De Guingand placed "clarity of mind" as one of the first of Montgomery's qualities, and noted that his chief had the great capacity to simplify, some people said to over-simplify, an issue. He said that after Montgomery had done this, he himself was frequently surprised to find that a problem which had formerly seemed very obscure had become relatively easy, and that Montgomery's solution seemed obvious. De Guingand appears to support John Buchan, and I think that Wavell underestimated the importance of intelligence in generalship. Something he said at the end

of his lecture seems to confirm this. "No method of education . . . no amount of common sense ability, is of value unless the leader has the root of the matter in him—the fighting spirit." While that is obviously true, the converse is equally true. No amount of fighting spirit is of value without a well-trained mind and a sound grasp, qualities developed by education and training.

Jomini, after listing many of the same qualities as these others (namely, in this order): (1) Moral courage capable of great resolution; (2) physical courage; (3) knowledge which may not be vast erudition but must be a thorough understanding of the principles of war; (4) personal qualities of gallantry, justice firmness, uprightness, and freedom from jealousy, added by way of conclusion the following, "A general thoroughly instructed in the theory of war but not possessed of military coup d'oeil, coolness and skill, his defeat will be probable. If he be a man of character he will be able to diminish the evil results of his failure, but if he loses his wits he will lose his army."

These, then, are the qualities which history has suggested that great commanders must possess and which those who would aspire to command must develop. Although some men are more gifted with them than others, these are not qualities which can be acquired without perseverance. All officers must strive to build them. A "flesh and blood study of military history" can help the officer to develop his own character from the examples of the Great Captains.

In this regard, may I conclude by pointing to one aspect of character development which is often neglected. A soldier's character is inevitably shaped by his career and training. Naturally some individuals react differently from others to the same influences asserted by their career. It might be useful to the officer to be conscious of these influences.

Automatic obedience, personal courage, dash and bravery, a liking for ceremonial, qualities which are developed by military training, are not without value; but they are not the most important aspects of a Great Captain's mentality, and they may actually impede the development of that flexibility of mind which the Great Captain must acquire. Military training develops many other fine qualities, for instance, patriotism, and a sense of responsibility that is much beyond that of most civilians; but even patriotism can become misguided; and a sense of responsibility can become officiousness. Military training develops great self-confidence; but that can become overweening pride and bombast, and over-confidence. Military organization is necessarily based on a hierarchy of command from above which brings efficiency in the crisis of war; but power corrupts, and the use of military power in peace-time conditions may not always be wise or judicious; in war, a misguided use of power can be disastrous. Military men develop great steadfastness and reliability because of a fondness for tradition; but carried too far that fondness can become empty conservatism and resist necessary change. War demands flexibility as well as resolution.

The British historian, Wingfield Stratford, has suggested that the qualities brought out by military

training are not necessarily those required for high command in war, and that the qualities which earn promotion on the battlefield are not necessarily those which prepare a man for high level leadership. The fact that some of the Great Captains like Cromwell and Cæsar were really civilians, and that others clearly rose to fame despite the fact that they had unorthodox careers, serves to give some colour of truth to this idea. It seems most probable, however, that the most important factor is the young officer himself. Different individuals react differently to their environment. It is especially important, therefore, that the officer should be aware of himself, of his own characteristics and personalities, and of the forces operating on them. He should seek to keep in check those influences which might hinder the full development of his abilities, and foster others which lead to excellence in leadership.

Here I can refer to a recent speech by an Australian general who declared that the only quality which he could find common to all great leaders was integrity. Integrity gives character s t r e n g t h, and strength makes possible resolution. A great leader needs the determination to carry on through all adversity: "Wavell's "robustness" and "will to win," and Montgomery's "non-bellyaching." I cannot help thinking, however, that the most important quality of all is clarity of vision. Buchan's "freedom from confusion," Jomini's "preservation of the wits," and Montgomery's "power of simplification," these are the qualities without which victory cannot be achieved. And these qualities are fostered by the training of the mind. The study of military history, as a "flesh-and-blood" study, is one of the best methods of training for military leadership.

SOURCES OF INFORMATION AND BOOKS FOR FURTHER READING.

Field Marshal Earl Wavell, *The Good Soldier* (London, 1948)(especially the three lectures on "Generals and Generalship").

B. H. Liddell Hart, *Thoughts on War* (London, 1944), (especially Chapter II, "Command in War").

B. H. Liddell Hart, *Reputations* (London, 1928).

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H. A. DeWeerd, *Great Soldiers of Two World Wars* (New York, 1941).

E. Wingfield Stratford, *They That Take the Sword* (N.Y., 1931).

A. Vagts, *A History of Militarism* (N.Y., 1937).

Major-General Sir Francis de Guingand, *Operation Victory* (London, 1946) (especially Chapter XVIII, "Conclusions").

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John Buchan, *Oliver Cromwell* (London, 1937).

NON-MATERIAL STANDARDIZATION

Major Allan E. Younger.
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It is astonishing how obstinate allies are, how parochially minded, how ridiculously sensitive to prestige and how wrapped up in obsolete political ideas. It is equally astonishing how they fail to see how broad-minded you are, how clear your picture is, how up to date you are and how co-operative and big-hearted you are. It is extraordinary.
— *Field Marshal Sir William Slim.*

NON-MATERIAL standardization between the English-speaking nations has been continuing since 1942, but its impact on our Armed Forces is so widely misunderstood that one can hear the Department of the Army being blamed by United States officers for accepting too many ."British" procedures and, on the other side of the Atlantic, British officers complaining that too many "American" procedures are being accepted. This is a clear echo of the difficulty in seeing both sides of a question inherent in all international dealings and so crisply illustrated by the remark of Field Marshal Slim, quoted above.

What are the facts and potentials of the nonmaterial standardization programme?

First, it must be explained that although nonmaterial standardization is directly influenced by the material standardization programme it has little or nothing to do with material matters and their related

technical procedures, or with research and development. It covers all operational staff and logistical procedures and touches on doctrine, organization, and training. Significant progress has been made in the procedures field and in some aspects of doctrine. Organization and training present obvious difficulties and it is probably too early to start work on them yet.

Throughout the centuries, the advantages of alliances have been offset by misunderstandings between allies, but one does not have to go beyond World War II for illustrations of the need for standardization. General Omar N. Bradley, describing the original allied headquarters in Algiers in *A Soldier's Story*, writes, "In the supply and administration organization it became necessary to establish parallel British and United States staffs because of the disparities that exist in equipment and procedures of both Armies."

At present our military planning

is directed toward preventing a third world war, with its inevitable disaster to both victor and vanquished. Never in history have the two sides in struggle been so clearly defined. Already in peacetime, the majority of the nations of the world have made up their minds on which side they will stand should the need arise, and are preparing individually and collectively to meet the threat. Consequently, we are faced not with a problem of two nations setting up parallel staffs, but with many nations, all of whose independence we respect, and all of whom have different procedures if not different languages. The size of a multinational staff under these conditions approaches the point where it becomes too unwieldy to operate against a single-minded enemy.

This wasteful and dangerous situation leads directly to the aim of standardization which is "to ensure that there will be no operational, material, or technical obstacles to prevent co-operation among the armies of the countries concerned and to obtain the greatest possible economy in the use of combined resources and effort."

Different Programmes.

All military commanders recognize the need for a high degree of standardization within the forces they command. This is obvious and elementary. However, when armies of different nations prepare to act together in war, standardization has certain definite limits.

The very nature of the population of two countries may be different; one, perhaps, with a widespread mechanical knowledge and aptitude, another, hardy, tough, and accustomed to the open air. Again, the type of training and equipment which is best for, say, Norway, with its mountains, long coast line, and Arctic interests, is not necessarily the best for its near neighbour, Holland.

Our standardization must, therefore, be such that it develops and makes full use of diverse types and tendencies and does not stultify national abilities developed over generations.

Following logically from this, it is quite proper that there should be several standardization programmes. There is no reason to suppose that the degree of standardization possible throughout the North Atlantic Treaty Organization (NATO) is identical to the degree possible between the United States, the United Kingdom, and Canada. However, the advantages of different programmes to suit different needs, traditions, and experience must be set against the difficulty of co-ordinating a multiplicity of programmes.

Legal Aspects.

While no country is legally bound to accept any particular standardization programme or item against its will, there are logical reasons and a strong moral obligation to consider the views of others during standardisation and to make the completed agreement apply as widely as possible.

This becomes evident when an attempt is made to "localize" standardization geographically. For instance, if the United Kingdom accepts a NATO standard procedure for use in Europe only, troops being redeployed from Europe to another theatre may use procedures and terms that are unknown in the new theatre. This will certainly be confusing and may be very dangerous.

Also, troops from one country operating in another allied country must not be put in a position where it is impossible or even illegal for them to act in accordance with a standard agreement. This situation will arise if, for instance, France ratifies a route marking agreement and Belgium does not. French troops on Belgian soil may then be contravening the law of Belgium by implementing a standardization agreement.

However, responsibility toward others is fundamental to democratic government and is nothing new. Once any individual decides to join a group, his responsibilities increase to the same degree as his advantages.

Terminology.

In this century, and in the nineteenth century, material development has proceeded along parallel lines at a tremendous pace in the United States, Canada, and the United Kingdom.

It is not surprising in these circumstances that the technical languages evolved have been different. During World War II, lists compiled on either side of the Atlantic of identical supplies might not contain a single item marked by the same name on each list.

The cumulative result of the thousands of different words and meanings forms an insidious and continuing threat to international understanding.

Regardless of whether the nations of the English-speaking world are allied or in direct opposition to each other, nothing but harm can come from misunderstandings between them.

The Armed Forces of the United States, the United Kingdom, and Canada must accept a heavy responsibility as they are, by far, in the most favourable position to tackle the standardization of the English language.

No other group or agency, international or otherwise, has such widespread detailed interests and such an opportunity. By a phased programme over a long period they could play a significant part in international understanding which would have a world-wide·effect. In no field are the advantages of standardization so marked.

An initial inertia has to be overcome before any change can be effected. Field Marshal Earl Wavell, speaking on allied co-operation, said, "There is no doubt of the principal stumbling-block to good relations and fruitful combination of resources: it is national pride and susceptibility."

There are two types of argument often directed against change. First, "It was good enough for Nelson so it's good enough for me," and, second, "It is the British way of doing things and I am proud of being British." Both are really variations of a single theme—nationalism— but neither has any part in command or in staff work in the system of alliances to which we are committed today.

The various procedures developed by individual nations may well be the most suitable for their individual national characteristics, although this is not always necessarily so. They may also be the best solution for adoption by an international force. The best solution for all the allies must be the aim, and the worth of any procedure must be proved before it is so adopted. Unfortunately, of the largest nations

of NATO, neither the United States, the United Kingdom, nor France is particularly famous for accepting outside ideas. All are justifiably proud of the parts they have played in past wars and peacemaking, but in the future all must accept standard procedures to a greater degree if any long-term security against the Communist threat is to be established. If we miss the fleeting opportunity given us by this threat to draw permanently closer in our understandings of each other, we are missing a chance that may never occur again until, the need has been re-emphasized by another war.

New techniques, tactics, and procedures are continually being evolved by alert organizations. With these new ideas, new words or new connotations to old words appear. We have mentioned already that the parallel development of new ideas has made the English language diverge on two distinct lines. By standardization we hope to make those two lines converge, although it will take a very long time before they meet unless some exceptional factor intervenes. Exchange officers and international representation can play a big part in preventing any future tendency for them to diverge again by ensuring that new ideas are described in the same words in different countries. However, the existence of exchange officers is not enough, and the lack of a conveniently placed officer must not be made an excuse for unilateral action within the alliance. Officers in all countries must maintain a truly objective attitude of mind when considering the adoption of any new term likely to affect other countries.

There is a security aspect to this,

but it need not be important. Since we are not discussing code words, it will be very rare that mere definitions will have a high security grading, and we can afford to treat separately those which have.

Conclusions.

1. The primary need is to educate the entire mass of our Armed Forces to realize that no individual country has a monopoly of brains and ideas, and that it is certain that there is something we can learn from other nations. It may be said that any reasonably educated man already knows this, which is true. However, the publicity given to it is so small that although the fact may be known, its logical implications are not realized. If NATO is to thrive as a true society of free peoples, these implications must be realized.

2. Whatever their relationship to NATO, the Armed Forces of the English-speaking nations have a special responsibility toward their countries and to the future as the most important, if not the only, agencies engaged in standardizing their common language.

3. Independent and specialized standardization programmes of any type between any combination of services or powers should be encouraged as long as the existence of the same subject in two or more programmes does not result in confusion and wasted effort.

4. The effects of non-material standardization will not be significant if the rate of increase of new procedures and terms exceeds the rate of standardization of existing ones. Adequate international representation can do much to prevent this, if supported by a truly objective attitude of mind.