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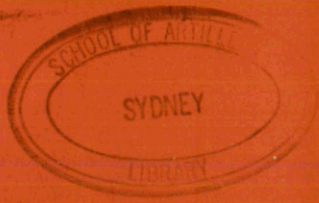
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Number 115

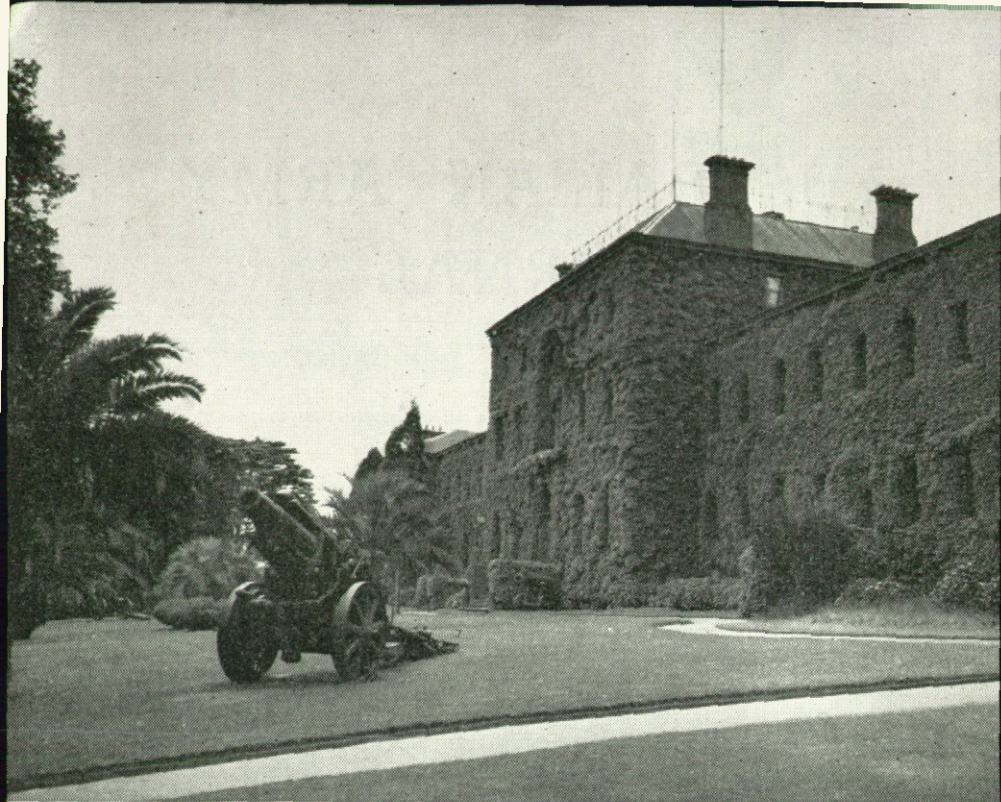
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VICTORIA BARRACKS, MELBOURNE

AUSTRALIAN ARMY JOURNAL

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MORE ABOUT RESERVES

LIEUTENANT-COLONEL M. P. O'HARE, OBE
Royal Australian Artillery

and

MAJOR J. A. MUNRO
Royal Australian Army Ordnance Corps

**The thoughts of others were light and fleeting,
Of lover's meeting, or luck or fame,
Mine were of trouble and mine were steady,
And I was ready when trouble came.**

— A. E. Housman

Having read Major J. A. Munro's interesting and timely article "This Business of Reserves", in the November issue of the 'Australian Army Journal', I found myself in complete agreement with his contention that the true meanings of the provisioning definitions are not well known. To me, as to the majority of officers, the provisioning processes are incidental to planning and exercises, to Major Munro, as a Service officer, they are his daily tools of trade. We discussed this business of reserves at considerable length and it seemed that our joint conclusions could perhaps be of interest to some and may possibly be of value to a few. Here they are —

— M. P. O'HARE, LT-COL

Meaning of Words

To ensure uniformity of reaction and behaviour by differing personnel under the stress of war in widely divergent conditions, the Army relies of clear definitions. By understanding and comprehending organizations, performance of weapons, capacity of equipment, tactical methods and logistic systems, the commander in the field will tend to produce a reasonably sound answer to any problem. The definitions, to be effective, must therefore convey the same meaning to all who use

them, and in the complex flexible British language it is difficult indeed to get universal precision of meaning. Some words and activities appear to be more elusive than others. Take the word Democracy. This word came into every day use via Rome and France from two Greek expressions meaning to rule in combination. According to the Oxford Dictionary, Democracy means Government by the people; that form of Government in which sovereign power resides in the people, and in modern use also denotes a social state in which all have equal rights. In fact, however, it can mean government by Party machines, bureaucrats, pressure groups and propaganda, and on the other side of the iron and bamboo curtains it means government by whiplash and rifle butt. The word has no longer any real meaning beyond that in the mind of the person who uses it.

Just as Democracy is one of the most misused words in the world, so then is "Reserves" the most misused word in the Army; there is good reason to suspect that reserves, also, means only the concept in the mind of the officer who uses it. This situation has arisen partly from the fact that the provisioning definitions are inevitably somewhat complex, partly because the average officer does not feel frequently required

to use them and mainly because the details of logistic planning are rarely included in exercises.

Definitions

The definitions relative to logistic planning approved for use in the Australian Army are repeated here from Military Board Instruction No 67 of 1957.

Stocks

2. *Stock(s)* — The quantity of stores and supplies of all kinds on hand but not in use.

3. *Operating Stocks* — These stocks are held to meet the normal day to day wastage. They include an element required to cover the interval between periodic demands, ie, Maintenance Period (MP) and a buffer stock required to offset minor delays and hazards of transit, ie, Store Margin (SM).

Reserves

4. (a) *Reserves* — The quantities of stocks to be held to ensure against war emergency, unforeseen fluctuations in expenditure, delays in production and transit misfortune, etc. In peace they include provision for requirements from the outbreak of war until adequate supplies become available from production. In Naval usage, but not in Army and Air Force usage, reserves include peace working holdings.

(b) Certain particular categories of reserves are described in paragraphs 5, 6 and 7.

5. *War Reserve* — A reserve held in peace for use in war. It is usually calculated in days' maintenance of the force to be maintained. It includes the following components:—

(a) *War Maintenance Reserve* — This reserve brings operating stocks up to war scales. In the case of an overseas theatre, this means the reserves required to

cover the period from the outbreak of war until the time when war-time re-supply is established. When used by AHQ, the term also covers the period until full war-time production is established. (It is known as the War Production Lag Reserve in Joint Service work).

(b) *Mobilization Reserve* — The equipment required to bring all units in peace, and those units to be formed and/or equipped on the outbreak of war, up to war scales.

(c) *Re-equipment Reserves* — This is an insurance against a foreseen re-equipment liability.

(d) *Project Stores* — These are stores held to allow for specific projects. (Project stores may also be held against a peace time contingency.)

6. *Theatre Reserve* — A reserve held under control of the theatre commander. In peace, there may be a theatre reserve to meet operational contingencies which arise in peace. In war, the theatre reserve will provide a minimum safe level of stocks.

7. *AHQ Reserve* — This is a reserve held in Australia or in an overseas theatre to meet AHQ plans. Issues from AHQ reserves are controlled by AHQ. Such reserves may consist of normal equipment for specific purposes, such as a strategic reserve, or specialized equipment (such as snow/mountain, special assault and airborne equipment, jungle warfare stores, etc) not normally held by units in peace.

Miscellaneous

8. *Unit Equipment* — This is the total quantity of stores and equipment that units are entitled to hold under authority of current equipment tables and/or establishments and other authorized unit entitlements.

9. *Repair Pools* — These are pools of equipment (expressed as percentages of

equipment in current equipment tables) that enable replacements to be issued immediately for equipments evacuated to RAEME Workshops for repair, so that units can be kept at fighting strength. This additional provision is necessary because normal operating stocks cover only absolute wastage, and NOT the withdrawal from service of items of equipment that are only temporarily unserviceable.

10. *Training Pool* — These provide equipment additional to the unit equipment of the units to ensure that equipment is retained in battleworthy condition and is not seriously worn out by use in training before required for operations. It may also provide specialized equipment, not normally held by units in peace, for the training of units in special roles.

11. *Theatre Entitlement* — This is the sum total of operating stocks, repair and training pools, war reserves and any other reserve that may be authorized. It represents the maximum stocks that a theatre is entitled to hold. It does NOT include AHQ reserve.

As definitions go, these are good definitions; they are concise and the related title gives a fair suggestion of the intended meaning. Despite this, looseness in the use of these terms can be seen only too frequently both in articles and, *unfortunately, in exercises concerning logistics.* The faults vary from calling the total stocks "reserves" to making the indefinite statement that "the holding will be "X" days". The fact that in neither case is it clearly defined what reserves and what operating stocks are to be held, indicates a lack of appreciation of the implications, from a logistic planning point of view, of the importance of differentiating between the two.

From the definitions given in MBI 67/1957 we can see that the stores in any theatre are made up of unit equipment, reserves, operating stocks and

special pools. We can take these in turn and examine each in a little more detail.

Unit Equipment

These are the items which units hold in order to allow them to carry out their allotted role. We know that individuals in their day-to-day lives have different opinions as to what is necessary to operate their household. For example, there are increasing numbers who say a television set is essential whilst others regard this item as an encumbrance, and send their children to the set next door. Similar differences of opinion occur with unit commanders and for reasons of economy, standardization, and mobility various documents are prepared which list the items particular units may hold. The sum total of these lists is the unit equipment.

Reserves

These are the stores which are held as an insurance against some mishap. There are different types of reserves held against the occurrence of different eventualities. For example, in peace, a reserve of items to bring the equipment of existing units up to war scales and to equip new units which would be formed on mobilization. In war, it is usual to hold in each theatre a reserve for use in the event of some disaster. This reserve is held under the control of the theatre commander, but he may delegate to subordinate commanders authority to hold and use portions of it. The important thing to note is that reserves, because of their intended use, must in the main be complete equipments, for when the use of reserves becomes necessary, it is complete items that are required not masses of bits and pieces. In a hurry the commander wants a motor truck, not 17,124 separately packed and neatly labelled bolts, gaskets and castings. There may be some major spares included amongst reserves but when, for example, it is decided to hold 30 days reserves, it is only a selected number of items, in the main complete items, which are held and not 30 days of the whole range of stores used in the theatre.

Operating Stocks

So that we may examine the problem in detail it is necessary to find out why we have operating stocks at all and why are they so large.

- (a) *Maintenance Period.* It is obvious that any supply organization should hold sufficient stocks of its commodities so that the customers may be supplied with their needs on call. The supplier then replenishes his stock from the manufacturer. The problem for the supplier is how much will be held "on the shelf". If too much is held losses may occur through deterioration, through an article being superseded by a better one, through labour being wasted on warehousing activities, and through waste of storage space and transport. If too little is held, ultimately some unit will have to wait and uneconomic effort will be expended in arranging special delivery. The requirement is, therefore, to hold just sufficient to meet needs.

A supply organization must, therefore, work on the basis of placing a limited number of bulk orders to the source of supply and receiving a large number of unit demands. Thus the supply system must hold enough stock to meet all its small unit requirements until such time as they add up to a reasonable order, or if orders are handled at set periods, until the next requisitioning time arrives. Before ordering, a supplier must check over the stock of each item held to see if more is required. The complexity and method of this operation becomes greater with the size of the organization involved. In any large warehouse the stock itself is too great to be counted, so the office staff does the replenishment operation by checking a paper on which is recorded the stock held.

The frequency with which this can be done depends on the number of items and the number of people or machines available to do the checking. If the numbers are such that a period of 3 months will elapse between the times when the stock of any item can be checked, then the organization must hold sufficient stock to maintain its issues for that period. The stocks which are represented by this Maintenance Period are part of the operating stocks.

- (b) *Store Margin.* It will be realised that the organization must prepare its orders for stores on the basis of experience of what units are likely to require. This is not a difficult process where items such as supplies, POL and ammunition are concerned as usage is reasonably predictable. In fact with such items as these having a predictable usage factor it is possible to operate a supply system wherein the stores are moved forward automatically from the Support Area without the need of an order from the overseas theatre. With other items, however, the demand fluctuates, so that the usage rate of one three month period may be nothing like that of the next three months. With experience, these fluctuations can be better examined and the usage can be more accurately estimated. However, it is always desirable to hold a margin of stock to cover any difference between what is thought will be expended and what in the event is actually used. In addition there is a requirement for a small buffer to offset minor delays and hazards of transit. This Store Margin is the second component part of operating stocks. It is normally a much smaller quantity than the Maintenance Period stock.

The supply organization therefore has a liability to furnish stocks for each of

the above requirements, that is the Reserves, plus the Maintenance Period plus the Store Margin. Of these, the "reserves" are held intact for use in the event of some disaster and their release is controlled by the General Staff. They are, therefore, not available to the supply service for its normal day to day operations as are the Maintenance Period and the Stores Margin stocks. The latter are "operating stocks" for it is on these that the service relies for meeting its demands.

A critical reader examining the above will see a serious flaw in that no allowance is made for the lag between the time when the overseas depot demands replenishment and the time the stores actually arrive. For example if the order on the Main Support Area was placed when the only operating stocks remaining were the store margin (say 1 months stocks) and the stores take 2 months to arrive, then obviously for one month the theatre is going to be out of stock. This "Interim Period" between ordering and receiving must be allowed for somewhere in the system.

The whole project is a continuous one in which stocks are moving throughout the entire system. The supply organiza-

tion has to include an amount to cover this Interim Period in its overall liability. In theory, if the system is kept operating continuously, the stocks which represent this Interim Period will always be somewhere in transit, either as stores or as an order for stores. They are not operating stocks from the point of view of the overseas depots as the theatre can only operate on the stocks held in the theatre.

Pools

The definition given in the MBI is self explanatory. It should be remembered that the pools are complete equipments. In view of their special application they do not take a place in the main channel of the supply system. For this reason they have been omitted in Diagram 1, which demonstrates how this system operates. The stocks shown grouped together in the theatre will be in fact dispersed over many installations thus complicating the whole problem. Furthermore, for simplicity the quantities shown are small and so selected as to make the arithmetic calculations simple.

Before examining the diagram it must be stressed that the supply organization has a liability to cover —

- (a) reserves (mainly complete items)
 - (b) maintenance period
 - (c) Store margin
 - (d) Interim period
- } operating stocks.


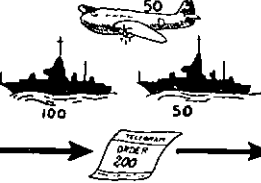

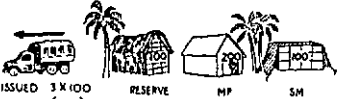



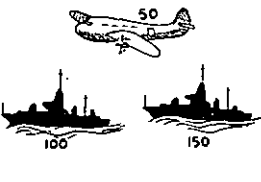

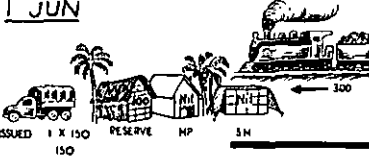


stocks in transit which on receipt become (b) and (c) above.

For purposes of illustration let us select an item which is held both in reserves and operating stocks and let us assume the Reserve authorized is 1 month, the Maintenance Period is 3 months, the Store Margin 1 month and the Interim Period 2 months. It is stressed here again that there will be

literally thousands of different items held in operating stocks which are not held in reserves at all. To simplify the illustration let us convert "months" to numbers of an item by assuming the monthly usage has been assessed at 100. The total liability of the service will therefore be —

Reserves	1 month × 100 per month—	100
Maintenance period	3 × 100	— 300
Store Margin	1 × 100	— 100
Interim Period	2 × 100	— 200
		Total 700

DIAGRAM 1.

OVERSEAS THEATRE	SEA and AIR	MAIN SUPPORT AREAS	REMARKS
<p><u>1 JAN</u></p> 	<p>SEA and AIR</p> 	<p>MAIN SUPPORT AREAS</p> 	<p>AT 1 JAN. OVERSEAS DEPOT REVIEWED STOCK.</p> <p>THE LIABILITY WE KNOW WAS 700 THEIR ASSETS WERE 300 IN STOCK AND 200 DUE IN OR A TOTAL OF 500. AN ORDER WOULD BE DESPATCHED FOR 200.</p>
<p><u>1 APR</u></p> 			<p>AT 1 APR. THE OVERSEAS DEPOT WILL AGAIN REVIEW THE STOCK.</p> <p>IN THE 3 MONTHS 300 HAVE BEEN ISSUED AND 400 RECEIVED SO THE STOCK HAS INCREASED BY 100. LIABILITIES ARE STILL 700 AGAINST ASSETS OF 400 SO THIS TIME AN ORDER FOR 300 IS REQUIRED.</p>
<p><u>1 MAY</u></p> 			
<p><u>1 JUN</u></p> 			<p>THE MONTHLY RATE OF ISSUES HAS INCREASED FROM 100 TO 150 AND THE STORE MARGIN HAS BEEN UTILIZED TO MAINTAIN ISSUES. ALTHOUGH A REVIEW WOULD NOT NORMALLY BE CARRIED OUT UNTIL 1 JUL. THE SYSTEM WILL PROVIDE FOR ATTENTION TO BE DRAWN TO THIS ITEM.</p> <p>THE LIABILITIES WILL NOW BE INCREASED AS THE MONTHLY USAGE IS NOW 150 AND THEREFORE THE TOTAL LIABILITIES ARE 7 X 150 (1050) ASSETS ARE 400 SO AN ORDER FOR 650 IS REQUIRED.</p> <p>SIMILARLY IF ENEMY ACTION RESULTED IN THE LOSS OF A SHIP SO THAT THE STORES DUE IN DID NOT ARRIVE OR AN ATOMIC BOMB CAUSED A LARGE LOSS OF STOCK A SPECIAL REVIEW AND ORDER WOULD BE MADE.</p>

Level of Stocks

The current concept of operations envisages dispersed small groups of great power and flexibility checker-boarded over the countryside. Discounting the fact that no one has put forward anything approaching a practical solution of getting the stores to these dispersed groups, in order to apply the idea of mobility there is a constant cry to reduce stock holdings and the administrative tail. In the very existence of these small, powerful, independent forces it is inherent to cause further dispersion of stocks behind them and even without taking cognizance of the requirement for guarding the dispersed stocks it is evident that the number of personnel required for stock control will increase rather than decrease.

We can see that the problem of reducing stocks falls into two parts, one relating to the reserves and the other to operating stocks. Reserves can be reduced by such means as accepting a greater administrative risk, cutting over-insurance and centralizing locations. To reduce operating stocks we must alter the method by which the services function, so that they are able to satisfy the demand with less in the pipeline.

The method most generally advocated for achieving a reduction of overall theatre stocks is the wider use of air transport. Mere increase of the transit speed of the stores does not materially improve the overall time lag.

The best means by which stocks can be reduced is to discard from the overseas theatre many items altogether. On this basis we would hold in the overseas theatre only fast moving items. Recent trials conducted by the US Army in Europe appear to indicate that only about 20 per cent of items are fast moving. Fundamentally an item should be held in an overseas theatre when the delay involved in bringing it forward is unacceptable. If this delay time can be reduced to an acceptable period then it will be possible to limit the stock holding in the theatre to those 20 per cent of items which are required at short notice.

As has been mentioned earlier the delay is largely a procedural one, actual physical movement of stock not being excessive even over comparatively long distances once an organized movement programme is operating. Fast physical movement need only be used for a small percentage, the majority of items being moved by surface means.

By introducing into our services a modern communications system and machines to handle many of the processes of review, thus cutting the maintenance period, we can replace stocks by speedy communications. It is probable that no one service in the Australian Army could fully utilize the capacity. It would seem therefore that there is a case for logistic communications and processing centres to handle the needs of all the logistic services.

Thus when studying the problem of logistics, it is well to assess carefully the stocks that the supply services require to operate their systems with the means at present available to them, ie, the operating stocks. If this is not done there may well be an under-estimation of the tonnages required to be moved to and held in, an overseas theatre.

Special Considerations Relating to the Initial Establishment of a Force in a Theatre

It is obvious that a considerable accounting and movement effort is required to keep the system functioning for the hundreds of thousands of items involved. It takes time to set up the machinery of provision in the theatre and to build up stocks to the required level.

The delay which will occur before a theatre provision system is able to operate means that it will initially be necessary for all shipments of stores to be made to the theatre from the support area on an automatic basis. That is, the organization in the support area must assess from experience what is likely to be required in the theatre and "pump" these quantities forward. This method should be ceased as soon as practicable because it inevitably

leads to the formation of unbalanced stocks in the theatre. It is important to get the theatre provision system functioning so that stores can be "drawn" forward on demand. This is normally done as a gradual process but it will take about 6 months to become effective.

The movement facilities available will certainly limit the rate of build up. There will not be sufficient transport, handling machinery or even stock to move the total desired level of operating stocks and reserves into the theatre right from the beginning. In any case this is not desirable as the various depot staffs could not handle the tonnages involved if they were all in one shipment. It means that a gradual build up must take place and because it is the operating stocks which provide the day to day requirements in the theatre it is these which must be given precedence. It should be the aim first to build up the operating stocks to an acceptable level and only then gradually to establish the reserves.

Variations Between Services

Despite the promulgation of MBI 67/1957 there remain differences in the interpretation of the various stock holding terms in the various services. An examination of the terms used in the supply services shows that, in fact, there is no real reason why the definitions and titles of the MBI could not be universally adopted and thus in no small measure help clear the confusion which exists.

To exemplify the existing differences we can take the two major supply services: RAASC and RAAOC. The former refer to "buffer stock" whilst the latter have adopted the term "store margin". RAASC use the terms "shipping cycle" and "shipping margin" which are not used in RAAOC and conversely RAASC do not use the term "interim period" as does RAAOC.

The reason for these variations can be traced to the differing problems in provision of stores in these two major services. With certain exceptions, such

as ammunition, the rate of expenditure of RAAOC items is not constant and each of the thousands of items must be reviewed at intervals to determine what additional quantities are required. This in effect means that depots must hold stocks to cover a large maintenance period. With present equipment and procedures 90 days would be a minimum. On the other hand RAASC handle vastly fewer items and these, in the main, have a reasonably regular usage rate. The problem of reviewing requirements of these items is therefore not great as there are comparatively few items involved and usage over a period is constant. As has been mentioned before the nature of the RAASC items lend themselves to a system wherein requirements are shipped forward on a scale calculated in the support area as opposed to being shipped solely on demands from the theatre. As a result, RAASC have not the need of a large maintenance period so in fact they do not even use the term. The problem of deterioration of stock, however, is much greater with RAASC items than with RAAOC. Because of this, RAASC are faced with difficulties in the turnover of stocks, especially reserves, and this fact limits the total stocks which can be held in the theatre at any one time. An average maximum of RAASC operating stocks in a theatre would be something in the nature of 60 days.

Conclusions

The current concept of war being fought by self-contained mobile, powerful combat teams scattered across a zone perhaps 50,000 yards deep is not accompanied yet by an adequate solution to the logistic problem of maintaining these combat teams.

Dispersion, mobility and flexibility inherently postulate the deployment of a larger, more complex and more sophisticated system of logistic support.

The threat of atomic disruption of communications renders it impossible to reduce reserves in an overseas theatre, in fact the reverse is true.

The only possible solution to the problem of the ever growing administrative tail appears to lie in the reduction of operating stocks held overseas to a minimum of fast moving items, whilst by electronic accounting and mechanical processing items are brought forward as required from the support area.

The use of air transport for bulk stores movement, reduces only one component part of the overall time lag between demand and supply, and air transport except for fulfilling urgent demands, is uneconomical in manpower and material.

The same terminology should be adopted by all the supply services.

"Now it is an important objective of education to instil into every man, not only critical faculty, which enables him to see what is wrong with things as they are but the feeling of confidence in himself and his fellow countryman, of his own and other people's ability to pull themselves out of present difficulties, and correct present faults, and to face present dangers.

"I do not believe that any good training in any legitimate course of study, scientific or in the arts, by a worthwhile teacher can fail to instil this sense of purpose and loyalty. For, in the long run, all education is moral education. To undergo any sort of training of the mind or in physical skills is to undergo a moral discipline. But moral qualities belong to individuals, not to society, and still less to the State. A society is morally sound, and a State acts justly and wisely, only to the extent that its members and leaders act wisely and in accordance with the natural moral law.

"First cast out the beam from your own eye is a good maxim whatever your personal faith. The society you live in will merit your love and confidence only if you yourselves are people meriting love and confidence. The defects of society are our defects: we must cast them out of ourselves, and replace them with the spirit of love and service, if we do not wish to see them in society."

— Lord Hailsham, speaking at the Royal Aircraft Establishment
Technical College, Farnborough, UK

ARMoured THINKING

MAJOR J. C. GORMAN

1/15 Royal New South Wales Lancers

A RECENT most readable article, by Captain Liddel-Hart, in the *RAC Journal*, strikes a new armoured note—a typically new, sound example of this distinguished author's flexible mind.

The armoured tactical doctrine has had many downs, and a few partial rises. It has never, in British arms, achieved anywhere near the "possible"—this feat was achieved by the Germans in France and in Africa. The lack of success has been due to the sluggish thinking of many officers and politicians, and a new switch of tactical necessities will no doubt awaken equally few minds.

The close support—in fact, the trundling alongside—of the infantry of the Great War was useful in its day, but was nullified by field artillery in an anti-tank role. The great ideas of the 1930s laboured to produce a compromise—witness the Army tank battalions, which were quite similar to Great War units, and the cavalry role tanks, which represented the step forward. This compromise was adopted, despite the dramatic evidence of the German break-through in France.

Towards the end of the war, the Great War idea of close support finally slipped out of sight, and the dispersed brigades of the desert were finally called back into solid divisions. Concentration of armour was accepted by armoured men, with the infantry still clinging to the idea that tanks are supporting weapons, ie, the idea that tanks adhere to their Great War Role.

Another step back was the introduction of the Divisional Regiment RAAC—this moved some tanks back from mobile support to slightly mobile anti-tank guns—and the improvisation in Korea finally stopped them dead, and dug them in.

One can hardly blame the infantryman—it should be realized that many infantry officers today regard the tank as a supporting, self-propelled gun.

The tentative armoured division of today, namely four independent regiments, an infantry battalion and a medium regiment, is designed for atomic warfare. Its task in defence will be to cover the ground between the infantry group areas, seal off any penetration, and to counter-attack where necessary. Presumably this counter-attack will be concentrated to deliver a massive blow aimed at destroying the enemy force.

In attack, this force could advance along several axes—which pre-supposes some form of command HQ under division—and move in with the standard fire and movement tactic, aiming at surrounding the enemy and forcing his surrender.

Although the new formation shows that changes are in the wind, the proposed change is not sufficiently radical to enable British armour to reach the heights of perfection.

Liddel-Hart makes the point that armoured concentration is now obsolete. In the Desert, losses were borne through our lack of appreciation that armour, at this period, should have been con-

centrated — the threat being concentrated enemy armour with superior tanks. The present threat is dispersed, relatively equal tanks, advancing under an atomic umbrella. The answer is dispersed concentrations, if one can follow the terminology. Thus squadron groups scattered over a wide front will replace concentrated brigades.

In the initial enemy attack, the enemy who masses his armour for a blitzkrieg break-through will be a legitimate target for the 280-mm atomic guns already spaced singly, some 25 miles apart, to cover the entire NATO land front. Presumably these guns are liable to Eben-Emael tactics, to leave a suitable gap in the atomic front. This problem being separate to the scope of this article, we may pre-suppose that the guns are intact at the outset.

To attack with armour — as he must do in Germany — the enemy must therefore abandon the concentrated blitzkrieg. He must also abandon any sizeable concentration. Thus he will attack with dispersed armour, which is the least vulnerable form of attack in the face of the present threat. He will be unlikely to stop and besiege the infantry groups — not that he will be unable to overcome them, but that he will not be able to waste the time. He will pound through the gaps in small, fast moving, hard hitting groups.

The armoured defence cannot suitably counter-attack this threat with a concentrated force, ie, the new division. Perhaps several enemy squadrons will be totally destroyed by a lumbering division, and the remainder will flow past, unobserved, and go on to eat into the supply areas and reserve infantry positions. The Allies will then be in a disastrous position, with the bulk of their forces forward and cut off from all ground-borne supply.

All the above suppositions call for radically new tactics.

Give the regimental commander four tank squadrons, a six troop motor squadron, a four battery 24-gun SP regiment and a suitable HQ squadron. He will then affiliate with each squadron two troops of motor squadrons for the usual infantry support, with the important addition of a reconnaissance element, not close or road bound (eg, present Recce Tp) but tracked to enable them to keep the squadron leader informed of all enemy activity within a radius of ten miles. He will hand over a battery of guns, two troops as at present, to enable the squadron to attack concentrated, without wasting half its strength in supporting the other half. None of the HQ squadron troops will be handed over — the squadron echelon will have to be sufficient to look after itself.

In defence, squadron groups will be located in interlocking (by reconnaissance patrols) positions across the front. Linear defence, the downfall of France? Not so. These forces are not tied to defences, they carry the defence with them. They can move at will, be regrouped and directed onto targets by radio.

Spotted from the air, or by the reconnaissance patrols, the enemy columns will be at the mercy of such groups — atomics do not enter into it, except to decide the initial formations. The attacker should have a 3 - 1 preponderance to succeed — and this will expand him to regimental strength and atomic suitability.

The fourth squadron group will be limited to the counter-attack role — it will need no infantry, but will need guns. It is preferable to have three-fourths of ones forces forward, rather than the weaker two-thirds of triangular formations. On a frontage of 10 miles for a regiment, such a reserve could be centrally located to move fast to any threatened break-through.

In the attack, squadron groups will again be independent to a degree. They will not be mutually supporting. To beat the defence outlined above it will be necessary for regimental commanders to

quickly switch direction of squadrons, past the enemy groups. The attack will depend on the highest degree of tactical skill and boldness ever demanded of an armoured commander — he may break off one squadron thrust to direct it to support another squadron, switch it back as an opening appears and send it through. This means that he must possess the better information — and that his communications be foolproof. A breakdown of his communications would inevitably mean disaster, as uncontrolled squadron battles would rage across the front, to the detriment of the attacker.

The advance differs slightly in that the regimental commander must have an air-borne force on call — perhaps a battalion to an armoured division. A company could fly forward at a moments notice to drop on and secure bridges, with squadron groups thrusting to link up with them. Helicopter groups would also be suitable.

If one accepts these principles, supply difficulties loom ever larger. There are many solutions, almost all demanding imagination and forward thinking. One can imagine Centurion chassis vehicles carrying thousands of gallons of fuel in armoured fuel tanks, moving forward independently, each making its own way cross country. One can see bulbous-bellied flying tankers (expendable) which fly to the area and then parachute down,

or use the vertical airscrew to land gently on their tails. One sees the missile, fired 200 miles away and full of fuel or ammunition, which is vectored down by radio control, again by parachute.

The day of the wheeled echelon, travelling nose to tail along the road, is past.

Dispersed concentration — this term could be the keynote of the new idea. Demands will be heavy — firstly the idea will have to be accepted. Equipment will have to be designed with the accent on the supply vehicles. Communications must be improved and must be quite foolproof. Armament must keep pace with the enemy, and this may demand not only rocket tanks, perhaps atomic fueled, but also small calibre atomic shells to be fired from a tank. Reconnaissance and information must be perfected.

Finally, squadron leaders will have to be exceedingly fine leaders — all the present ideas of rank and seniority may have to be swept away to place a 20-year-old subaltern in the place of a staid 40-year-old major. The Colonel will have to be that much better — in attack his tactics will win or disastrously lose the battle. In this warfare mistakes of any kind will be disasters, and one disaster in any campaign will be more than the permissible maximum.

Strategic Review

INDO CHINA

Reprinted from *An Cosantoir*, Eire

WHEN, by right of conquest, Communism gained a salient in Indo China the South-East Asia Treaty Organization was organized to seal off the penetration. SEATO could never hope to be another NATO for the local states (including those protected — Laos, Cambodia and Viet Nam) could never muster military strength sufficient to create a defensive shield. Major military burdens have been assumed by the protecting powers, the United States and Great Britain bearing the chief responsibility. Naval demands are met by the US Pacific Command while air power is supplied from British and American units in the area.

SEATO's most important object was the creation of defences to combat ideological conquest with the result almost all effort has had to be bent in that direction. Communist subversion, to quote the phrase used in the Manila Treaty, can infiltrate in many guises. To the three states of Indo China it came under arms but this, the mailed fist approach, was not applied to Siam. There it came as the pan-Thai movement, a broad popular appeal to a nationhood which is vaguely felt by some 25 million Thais who reside in all the states but whose chief concentration is in Siam or, to give it its modern and official title, Thailand. Based as were its protagonists in the specially fabricated "Thai" state at Cheli in Yunnan, China, few Siamese could be prevailed upon to view it favourably. For the Chinese, however, the propaganda was worth much in effort for there are 17 million Thais in

Siam and the country is the world's largest exporter of rice, a controlling factor in the lives of hundreds of millions in Asia.

That the free Thai movement gained no support was due chiefly to lack of political interest among the Siamese masses. Not being ex-colonial but always in control of their own destinies, they have none of these disconcerting complexes which go to bedevil the lives and governments of ex-colonial peoples. They are, in the main, content to leave government to those who make their living as governors.

In Thailand it is rare to have more than ten per cent of voters turn out to exercise the franchise and government is no less efficient. The leaders, however, by virtue of long political maturity and wider vision than their counterparts in neighbouring states, were quick to see the danger. Appreciating its significance they hurried into the Western camp when SEATO was mooted.

Rebuffed on this, the nationalistic front in Siam as it was halted on its military front in Viet Nam, Communism is now back bringing gifts and in this guise, there is promise of greater success. Lavish loans, which no impoverished country can resist, are being made available. Reluctant at first to accept aid from the Communist bloc, the states of South-East Asia studied its effects on India and found no cause for alarm. Urged by Mr Nehru, the revered father-figure of the entire region, they are

now dipping more readily into the Communist cornucopia.

The Communist objective is clear and simple (it is the same as the American) and based on the maxim that the surest way to win friends and influence people is to give them something for nothing. First, the atmosphere of benevolence is created and lingering doubts quelled. Then comes voluntary adherence to the high-sounding principles enshrined in the pro forma pact of co-existence. While this condition of amity exists no state can foster positive diplomatic attachment to the West — and that is a communist victory, sufficient for the time being.

SEATO Council

When the fourth annual meeting of the SEATO Council was held in March last it soon became apparent that none of the foreign ministers was in tune with the local mood. In his keynote speech, Mr Dulles, the American Secretary of State, adverted to the great spate of Communist warnings which had preceded the meeting and deduced that a "new aggressive communist plan for the area" might be in the offing. Leaving the point undeveloped he then gave much time to the current prospect for summit talks and availed of the occasion to exchange views with the foreign ministers of France and Britain on this subject.

The three local states were, however, far from being attuned to "summitry" and soon brought the discussion down to the regional level. Pakistan provided the spokesman and threatened "to break all pacts and shake hands with enemies" because of the tightness of American pursestrings. The complaint was endorsed by Siam and the Philippines. However ungracious the attitude it must be conceded that the complaining states have a point of view; being committed to the West they are aided by the West but from that source only. Uncommitted they could accept from both sides, so why remain tied to either.

Last year, as Mr Dulles pointed out, the six local states of SEATO (including the three protected) had received some 600 million dollars in aid. This was far greater than the amount disbursed in the area by the communist bloc.

As was known to every Council member present, Pakistan's outburst was accounted for by India, the first country to embrace neutralism and an indefatigable opponent of SEATO as a grouping which invites aggression. India has been first in Soviet aid donations and has suffered nothing in consequence. One immediate effect of the friendly reception of Marshal Bulganin and Mr Khrushchev by Mr Nehru in 1955 was an outright grant of £5,000,000 (sterling) worth of agricultural equipment. Soviet credits at nominal interest rates have also been granted to the sterling equivalent of £90,000,000. United States aid, which has been forthcoming for many years, totals more than a billion dollars.

During the Council meeting there were few if any references to the protected states of Indo China, yet these too are in the path of the new ideological offensive from the north.

Viet Nam

After four years of precarious existence the Republic of Viet Nam is consolidating its gains and cutting its losses. Its entire sustenance it owes to the United States, yet for all its debt to that country it, too, shows signs of restlessness. The assumption that President Diem is as closely tied to the West as his opposite number in Korea would be quite false. Indeed, the impression gained from his most recent public pronouncements is that he has fallen under the sway of India and is neutral now by choice rather than by agreement of the major powers.

Laos

The Chinese-sponsored penetration of South-East Asia did not confine itself to Viet Nam. In that country it was

frustrated militarily and replied in kind. Much less noteworthy, for it did not involve intervention by any outside power, was the para-communist annexation of two Laotian provinces. This event occurred in 1953 when Viet Nam forces invading Laos set up a government presided over by a prince of the royal house who was pro-Chinese. Over the years he organized the annexed territories as a separate state — Pathet Lao — and carried on business as ruler. The legitimate government, lacking military strength to match that of the intruders and, quite understandably, fearful that action against them would precipitate Viet Minh intervention with consequent loss of the whole country, took no action.

The Geneva Armistice resulted in a compromise whereby, pending integration by agreement on the part of both sides, the rebels would continue to administer the two northern provinces of Sam Nena and Phong Saly. To police the frontier an Armistice Commission drawn from Poland, Canada and India was set up.

Until mid 1956 the situation continued as outlined but events had, in the meanwhile, conspired to produce a climate in which negotiation could begin. First, China, at the bidding of the USSR, revised its previous stand in favour of a live-and-let-live policy and instructed Ho Chi Minh in north Viet Nam to do likewise. Following on this, Laotian leaders were invited to China as guests of the People's Republic and Viet Minh asked for the usual diplomatic exchanges which are customary among friendly states.

Secondly, Laos, mainly because of United States aid, had so progressed towards military parity with the rebel state that its government felt able to negotiate through strength. In exchange for recognition of Viet Minh, Laos imposed conditions. These included withdrawal of communist cadres from Pathet Lao and cessation of supplies, the dissolution of training corps for rebels in Viet Minh and the return of prisoners.

In the midst of the negotiations to effect these conditions the USSR recognized the southern government as the genuine administration of the state. Thus guided the Prime Minister of Pathet Lao expressed his willingness to come to terms on the basis of "mutual concessions". In a single week-end of conferences, held in August, 1956, agreement in principle was reached and arrangements were made for the setting up of a commission drawn from the two parties which would have the task of implementing the agreement.

The main principles of the agreement were: rebel provinces to be integrated into the state of Laos, rebel forces to be absorbed into those of the central government, neutrality to be observed in foreign policy and the principles of co-existence with communist states to be agreed to. Thus, in exchange for domestic peace, foreign policy had to favour the communist bloc. For Laos itself the price of unity was trivial; for Western strategy it was too high.

During 1957 the Commission sat and coursed its way in leisurely fashion through its various problems with the Pathet Lao representatives always to the fore. Communist China offered aid and the Pathet Lao representatives proposed that this should be accepted in lieu of that tendered by America. Laotian representatives, after referring this proposal back to the central government for decision, were instructed to refuse it. There is, however, a lingering suspicion that if dollar aid is not stepped up appreciably, Chinese aid may be accepted as well.

Early this year actual reunification was begun with the help of the Armistice Commission. The rebel army, some 6000 strong, is being disbanded; 1500 are being absorbed into the regular army (now 25,000 all ranks) while the remainder will go home. Civil rights have been restored to all former dissidents.

It is ironic to note that only in Laos has the Geneva Agreement been implemented, that this tiny state is the only one of all those divided by cold war or hot, which has gained its unity. Significant, too, that in the process it has moved from the position of neutrality as posited at Geneva, to one of neutralism which is a very different thing.

On the occasion of the signing of the Manila Pact (which brought SEATO into existence) in 1954 Senator Mansfield, an official United States observer, reported that while Laos still remained outside of communist control, internal conditions made its future highly speculative. Nothing which has happened in the succeeding four years has changed the substance of that statement. The military threat is indeed gone but it has been replaced by a greater danger. Neutrality recognises no side, neutralism recognises both, and accepts its northern neighbours as benevolent in intent.

Laos, in terms of overall Western strategy, may be expendable but it is of some consequence in South-East Asia as a buffer between the communist and non-communist states. It touches on Viet Nam, Cambodia and Burma. The border between it and Siam is 1000 miles long; it is the barrier between Siam and Viet Minh on the one side and China on the other. A thinly populated, rugged strip of jungle-splashed territory, it is of itself of little consequence. As part of a tottering whole it could be vital not so much in the military but in the ideological field, and that is the area where cold war is being fought.

Cambodia

When, in the aftermath of the communist victory in Viet Nam all of Indo China appeared ripe for the picking, Cambodia first drew itself together and with only the minimum of assistance achieved stability. At that time it appeared likely that this was the only state in Indo China to which the West could hang on. Its king, unlike Bao Dai

of Viet Nam across the frontier, was personally active in the field against communist infiltrators from the north. With his tiny army augmented by conscripted levies he succeeded in clearing out every infested area. So great was his drive that he soon had a force of eleven active divisions in the field and sufficient enthusiastic volunteers on hand to man eleven more had he the arms with which to equip them. In the diplomatic field, too, he was no less active and turned his uncommitted but frightened friends in Siam with a project for mutual economic and defence agreements.

In 1955 some fifty million dollars in aid was granted. Half of this went to balance the military budget. Further substantial amounts were promised and there was no doubt among the West's supporters in the area but that the sums allocated would be well spent.

In 1956, when SEATO had become a fact rather than an aspiration, the three local states joined to press Cambodia into closer association with the alliance. The outcome of these overtures was to compel her to make that "agonizing re-appraisal" which must be undertaken by all states on the communist periphery sooner or later. The outcome was a firm foreign policy stand, not for the West, as expected, but for neutralism.

In external affairs Cambodia now reflects the Indian attitude of socialism at home, neutralism abroad. That is not to say that the state has edged any nearer to communism or is likely to do so, for indeed communism has no popular support. This was proved at the elections held in mid-March this year when the Popular Socialists, the Prince's party, swept into office with all 61 candidates elected. The only communist candidate in the election was ignominiously defeated.

Conclusion

In considering SEATO, or indeed any of the multiple groupings which give

form to the West's strategy, it is as easy as it is fashionable to cry despair at every communist tactic and to grant in anticipation complete fulfilment of every subversive plan. But the strengths and weaknesses in SEATO must be balanced against conditions peculiar to that area and not to be found anywhere else. The brown man's nationalism is, by instinct almost, anti-West—and the USSR is presenting itself in its most altruistic light. China is too close to be provoked so that offers of co-existence pacts must look attractive to states which are so weak militarily as never to be able, even in combination, to argue from strength.

Finally, there is the fundamental point that small states badgered by terroristic propaganda cannot but live in fear of becoming embroiled in other people's wars. In this climate the wonder is that neutralism has not gained much more supporters as being the only practicable *modus vivendi*.

To balance this, however, is the sobering concept that no state, not even India, could for long luxuriate in neutralism were it not for continued United States interest in the region.

—M.H.

COMPETITION FOR AUTHORS

The Board of Review has awarded first place and the prize of £5 for the best original article published in the October issue to "Australian Army Administration in an Allied Theatre of War" by Colonel F. W. Speed, Australian Staff Corps.

ALL THOSE COWBOYS and SO FEW INDIANS

COLONEL M. AUSTIN, DSO
Australian Staff Corps

ONE hundred and sixty-eight years ago this month, an event, unique in the history of Australia, took place in Sydney — the first armed action by the original "New Australians" — an action which is not without its lessons today.

On 9 Dec 1790, a marine sergeant, accompanied by three convicts, including one M'Entire, Governor Phillip's game-keeper, left Sydney Cove to hunt in the vicinity of Botany Bay. The usual practice in those days was to rest during the day, and stalk and shoot the kangaroos in the early hours of the morning, when they came out of the bush to crop the grass or drink.

This particular morning the party were resting in a bough hut, when they were awakened by the sounds made by a couple of natives. They went outside and M'Entire, who said he knew them, went forward unarmed. However, after some conversation a ten-foot spear was abruptly inserted in to his left lung to a depth of some 7 or 8 inches, by a sinister looking "Indian" by the name of Pim-el-wi (Pemulway). The party got M'Entire back to the settlement about 0200 hrs on 11 Dec. Not much could be done for him, however, and he died an agonising death on 20 Jan. There was some thought that he had provoked the natives in the past, but this he stoutly denied up to the moment he died, although he did not cease repining for the wickedness of his past life.

Governor Phillip was a little incensed. It was only in the previous September that he had very nearly been killed on Manly beach by a spear delivered by one Wileemarin. In his case, he was convinced that the attack was unpremeditated, and the result of unreasoning panic. This present case, however, was unprovoked, ". . . and the barbarity of their conduct admits of no extenuation. I propose to convince them of our superiority and infuse a universal terror, which may operate to prevent further mischief."

Phillip called for Captain Watkin Tench⁽¹⁾ of the Marines (they did not become Royal until 1802) and issued his orders⁽²⁾, which were short and to the point. Two captains, two subalterns, sufficient NCOs and forty privates, with three days rations, were to leave at day-

- (1) One of those to whom we are indebted for a detailed view of early Sydney. Born in 1759; enlisted as a second lieutenant in the 18th company on 25 Jan 1776, and promoted to lieutenant in 1778 at the age of 19. He commanded the detachment of marines in the transport Charlotte in the First Fleet as a captain/lieutenant, and returned to England in the Gorgon in Dec 1791. He was eventually promoted colonel/commandant in the Royal Marines in 1809, but retired from the services as an army lieutenant-general in 1821. He died 12 years later at the age of 74.
- (2) At this time the marine battalion was commanded by Captain James Campbell, since Major Robert Ross, the Major/Commandant, was commanding at Norfolk Island, and the only other senior officer (Captain James Meredith) was under arrest.



LIEUTENANT and Mrs WILLIAM DAWES

break the following morning to bring in two, and kill ten natives from the Bidjegal tribe who lived near the head of Botany Bay. The heads of the slain were to be brought back — “for which purpose hatchets and bags would be furnished”. The marine sergeant and the other two convicts were to act as guides.

Phillip asked Tench if he had any comments to offer — “I begged leave to offer for consideration, whether instead of destroying the persons, the capture of six would not better answer all the purposes for which the expedition was to be undertaken; as out of this number a part might be set aside for retaliation; and the rest, at proper time, liberated, after having seen the fate of their comrades, and being made sensible of the cause of their own detention”. Phillip agreed “. . . if six cannot be taken, let this number be shot. Should you, however, find it practicable to take so

many, I shall hang two, and send the rest to Norfolk Island for a certain period, which shall cause their countrymen to believe that we have despatched them secretly”. Collins⁽³⁾ remarks that “To this measure the governor resorted with reluctance. He had always wished that none of their blood might ever be shed; . . . As, however, they seemed to take every advantage of unarmed men, some check seemed absolutely necessary”.

The party, led by Tench and consisting of Captain Hill of the NSW Corps⁽⁴⁾, Lieutenants Poulden and Dawes⁽⁵⁾ of the Marines, Mr Worgan and Mr Lowes, surgeons, three sergeants, three corporals and forty privates set out at 0400 hrs 14 Dec 1790.

(3) Judge-Advocate of the early settlement and later Governor of Tasmania.

(4) Part had arrived as guards in the Second Fleet the previous June.

(5) Born 1758 and enlisted as a second lieutenant in the Marines in the 32nd Company on 2 Sep 1779.

At this point it is worth while digressing to note how "this terrific procession" possibly looked. Unfortunately no word picture is available of this particular expedition, although Tench describes an exploratory party four months later: ". . . Let me describe our equipment, and try to convey to those who have rolled along on turnpike roads only, an account of those preparations which are required in traversing the wilderness. Every man (the Governor excepted) carried his own knapsack, which contained provisions for ten days; if to this be added a gun, blanket, and a canteen, the weight will fall little short of forty pounds. Slung to the knapsack are the

"384 White shirts	200 Needles
1152 Check shirts	100 lb Thread of diff't sorts and colours
576 Pr hose	6 Shears (for taylors)
1728 Trowsers	108 Cloaths brushes
576 Setts brushes	200 Pr shoebuckles
576 Black balls ⁽⁷⁾	200 Clasps
576 Caps	2 Gross heel-balls ⁽⁷⁾
576 Knapsacks	576 Short gaiters
576 Turnscrews ⁽⁶⁾	Wax thread and tools (for shoemakers)
576 Knives and forks	Thimbles (for taylors)
576 Spoons	576 Setts combs
1152 lb Soap	100 Razors
384 Leather soles	200 Roses for hair
100 lb Pipeclay ⁽⁸⁾	Black tape for hair"

It is also worth while noting that Dawes (about whom more shall be said later) staged a one-man mutiny. Phillip, writing to Lord Grenville states, "on this order appearing, Lieutenant Dawes, whose tour of duty it was to go out with the party, refused that duty by letter to the senior officer of the detachment (Captain Campbell) who, finding it impossible to persuade Lieutenant Dawes to obey the order, brought the letter to the Governor, who likewise took great pains to point out the consequences of his

cooking kettle and the hatchet, with which the wood to kindle the nightly fire, and build the nightly hut, is to be cut down. Garbed to drag through morasses, tear through thickets, ford rivers and scale rocks, our autumnal heroes, who annually scale the hills in pursuit of grouse and black game, afford but an imperfect representation of the picture".

The picture can possibly best be completed by giving the items of "necessaries" which Secretary Stephens forwarded in the First Fleet "for the use of the detachment of marines going to Botany Bay".

(Lieutenant Dawes) being put under arrest. Late in the evening Lieutenant Dawes informed Captain Campbell that the Reverend Mr Johnson thought he might obey the order, and that he was ready to go out with the party, which he did".

The expedition was not very successful. Five hours after leaving, the head of Botany Bay was reached, and after a further seven hours casting about in various directions without meeting a single native, the party harboured at 1600 hrs. The following day things were even worse. Even with the redoubtable Mr Dawes (who was celebrated as a navigator and surveyor) the party lost its way, and at 0730 hrs, instead of being

(6) A short screwdriver used to dismantle the "musquet" for cleaning.

(7) Boot and shoe cleaning materials.

(8) A fine white kind of clay, which formed a ductile paste with water; used for making tobacco-pipes and cleaning white "trowsers".

on the south-west arm they found themselves on the seashore about midway between the two arms. Here five Indians were seen. An attempt was made to surround them, but they easily escaped. "We pursued; but a contest between heavily-armed Europeans, fetted by ligatures, and naked unencumbered Indians was too unequal to last long". The party then moved to a village on the north arm, but the natives did not wait upon the order of their going. As Collins remarked, they fled with "incredible swiftness".

Eventually they returned to the spot on the beach where the baggage had been left with a small guard. Lo and behold, however, they now came across Colbee (Coleby) fishing. Colbee was one of the natives who lived in the settlement, whom Phillip on occasions tried to use as liaison officers. It had been hoped to keep news of the expedition from him, but it had not taken him long to find out what was happening, and announce that he was going down to Botany Bay.

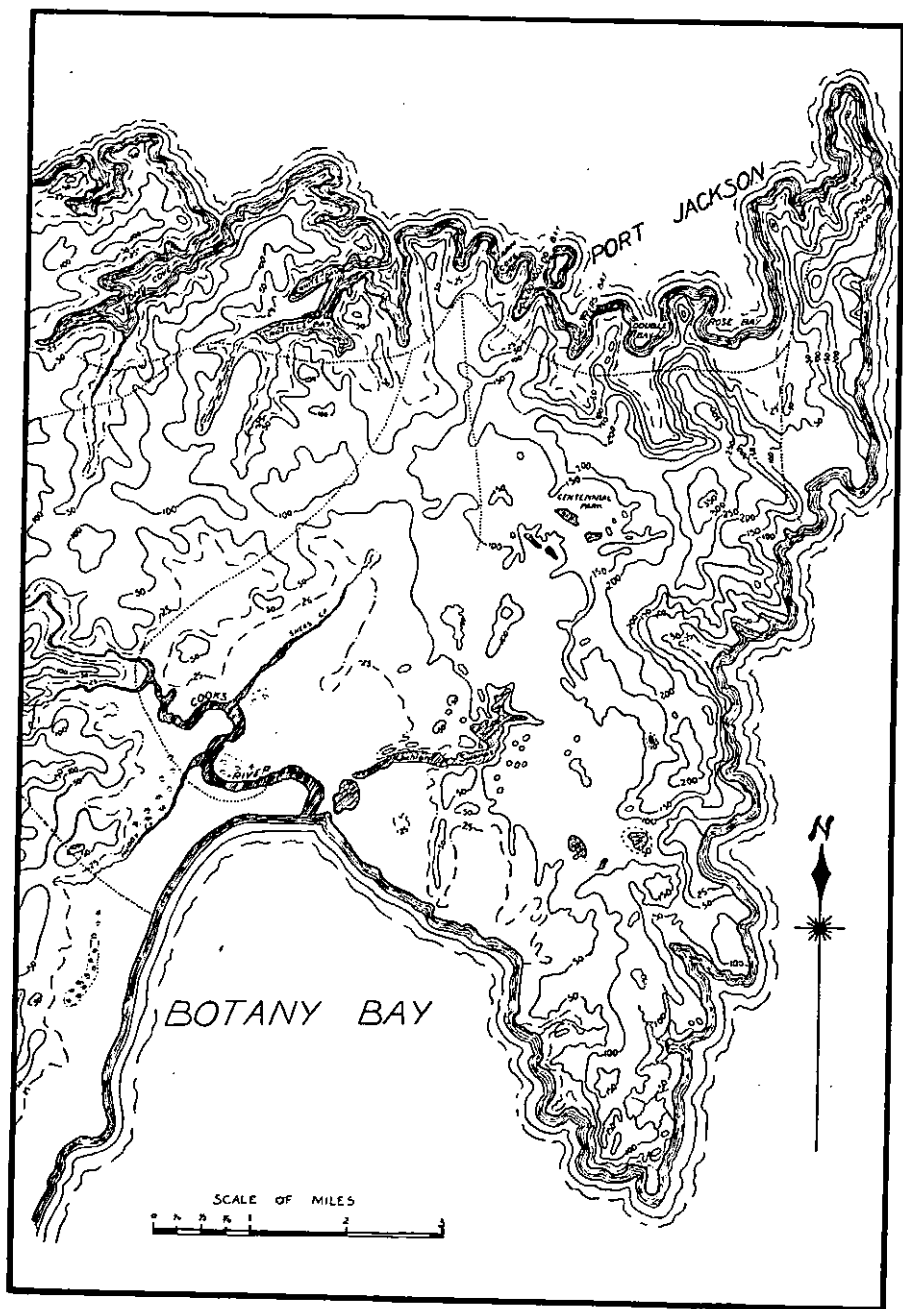
Various expedients had been attempted to prevent this, but without much success. He had been to the hospital where Mr White, the surgeon, had cut off a woman's leg. "The agony and cries of the poor sufferer he depicted in a most lively manner". He scorned clothing, a blanket and a hatchet. An attempt to "eat him down" met with no success, since after devouring a "lighthorseman" (a favourite fish, probably the modern sweep and at least five pounds of beef and bread, he set out "plainly . . . a stranger to the horrors of indigestion".

The expedition had obviously been less than a success, so the party came home. Collins may be writing with hindsight when he states that "There was little probability that such a party would be able so unexpectedly to fall in with the people they were sent to punish, as to surprise them, without which chance, they might hunt them in the woods for ever; and as the different tribes (for we had thought fit to class them into tribes) were not to be distinguished from each other, but by being found inhabiting

particular residences, there would be some difficulty in determining, if any natives should fall in their way, whether they were the objects of the expedition, or some unoffending family wholly unconnected with them. The very circumstance, however, of a party being armed and detached purposely to punish the man and his companions who wounded M'Entire, was likely to have a good effect, as it was well known to several natives, who were at this time in the town of Sydney, that this was the intention with which they were sent out".

Dawes's action may appear strange. He had been a marine officer for 11 years at this stage, and was a man of obvious intelligence and mature judgement. He must have been completely aware of the normal consequences of his refusal to obey Phillip's order, and the legal flaws which prevented Phillip from court-martialing him. On the other hand he should not be judged too harshly. He was obviously concerned with the misery and debauchery he saw about him and was much influenced by William Wilberforce's views on the slave trade. Apart from his own honesty of purpose, his action must be considered against the background, not only of the general ill-feeling between the Army and the Navy at this stage (which had only partially closed in the years since the *Marines* had passed to the complete control of the Admiralty) but also of the antagonism between the marine garrison and Phillip the naval governor, fomented by that mixed-up major, Robert Ross who, fortunately for all concerned, was in Norfolk Island.

Dawes desired to remain in Australia when the NSW Corps arrived and, in fact, his father petitioned the Right Hon W. W. Grenville to this effect. However, because of his attitude on this occasion (as much as a previous brush with Governor Phillip regarding his conduct, "in purchasing the convict's ration contrary to repeated orders on that head") Phillip saw his opportunity and shipped him home; where he not long afterwards became Governor of Sierra Leone.



Phillip likewise cannot be blamed for his attitude. It had taken repeated incidents to produce this reaction, which was not typical of the man or his humanity. Moreover, Dawes's prejudices were pointedly expressed. On return he informed Phillip "he was sorry he had been persuaded to comply with the order" and made it plain that he would not obey a similar order in future. As Phillip said "Lieutenant Dawes's expressions when Lieutenant and Adjutant Long was present were such as would have subjected him to a court-martial had he been amenable to one".⁽⁹⁾ Dawes's chief claim to fame, however, is as a military surveyor, gunner and engineer, rather than as a one-man mutineer.

It is interesting to compare the attitude of Dawes and Phillip, both of whom were greatly concerned in not alienating the good-will of the natives. Possibly their differing reaction arose from no other reason than that one could afford to indulge in pure theory, whereas the ultimate responsibility for all actions rested consciously on the shoulders of the other.

A second attempt was made shortly afterwards. This time all preparations were made openly, but directed towards Broken Bay, the cover plan being that Wileemarin, who had speared the Governor, was to be captured. It was also full moon, and to achieve both surprise as well as a reasonably cool trip, it was decided to travel by night. The composition of Tench's second party was slightly different. This time he was accompanied by Lieutenant Abbot and Ensign Prentice of the newly-arrived NSW Corps, 3 sergeants, 3 corporals and 30 privates.

At 0230 hrs on 23 Dec the party reached "the fords of the north arm of

Botany Bay". Here Tench decided "to disburthen the men" and consequently as much as possible was left in charge of a sergeant, and six men "who from their low stature and other causes were most likely to impede our march, the success of which I knew hinged on our ability, by a rapid movement, to surprise the village before daybreak".

The map on page 26, drawn by Sgt R. B. Stafford Royal Australian Survey Corps, shows the country between Port Jackson and Botany Bay much as it appeared to Tench and his party. The foreshore in the vicinity of the infant town of Sydney may have altered slightly, but the contours are probably no different from what they are today. The dotted lines have been transcribed from a map drawn by Dawes dated March, 1791.

At the two crossings, which consisted "of narrow slips of ground, on each side of which are dangerous holes", the party successfully crossed — "The firelock and cartouche box were all we carried, the latter tied fast on the top of the head, to prevent it being wetted". About 45 minutes later, however, the party was stopped by what appeared to be a dry creek (the tide was out) about 60 yards wide.

The guides warned that it was a bad crossing, but that it could be crossed. Tench made a poor appreciation — he placed the most important factor first instead of putting it in its proper perspective. As a result — time was important and a walk of a quarter of a mile around the head of the creek would take time — he ordered the party across. Let him speak for himself: "Those who were foremost had not, however, got above half over when the difficulty of progress was sensibly experienced. We were immersed nearly to the waist in mud, so thick and tenacious that it was not without the most vigorous exertion of every muscle of the body, that the legs could be disengaged. When we had reached the middle our distress became not only more pressing, but serious, and each succeeding step buried us deeper. At length a

(9) For various reasons not pertinent to this story, there were flaws in the judicial system, as it applied to the Marine garrison at that time.

sergeant of grenadiers stuck fast, and declared himself incapable of moving either forward or backward; and just after, Ensign Prentice and I felt ourselves in a similar predicament close together. 'I find it impossible to move, I am sinking', resounded on every side. What to do I knew not; every moment brought increase in perplexity and augmented danger, as those who could not proceed kept gradually subsiding. From our misfortunes, however, those in the rear profited".

A soldier had the right idea. Boughs of trees were cut and passed to those stuck. "Even with this assistance, had we been burdened by our knapsacks, we could not have emerged, for it employed us near half an hour to disentangle some of our number. The sergeant of grenadiers in particular was sunk to his breastbone, and so firmly fixed in that the efforts of many men were required to extricate him, which was effected in the moment after I had ordered ropes, destined to bind the captive Indians, to be fastened under his arms".

The climax must have been particularly frustrating. Having got out, the party pushed on (half the muskets were "rendered unserviceable by the mud") and arrived at their objective about 30 minutes before sunrise.

"Here I formed the detachment into three divisions, and having enjoined the most perfect silence, in order if possible to deceive Indian vigilance, each division was directed to take a different route so as to meet at the village at the same moment. We rapidly pushed on, and nothing could succeed more exactly than the arrival of the several detachments. To our astonishment, however, we found not a single native at the huts; nor was a canoe to be seen on any part of the bay. I was at first inclined to attribute this to our arriving half an hour too late, from

the numberless impediments we had encountered. But on closer examination, there appeared room to believe that many days had elapsed since an Indian had been on the spot, as no mark of fresh fires, or fish bones was to be found".

A quick appreciation soon showed Tench that he had to get back quickly, as "it would be impossible, on account of the tide, to cross to our baggage, in which case we should be without food until evening".

There was the inevitable straggling due to their previous "excessive efforts and so laborious progress". "All I could do for these poor fellows was to order their comrades to carry their muskets, and to leave with them a small party of those men who were least exhausted, to assist them and to hurry them on. In three quarters of an hour after we had crossed the water, they arrived at it, just time enough to effect a passage", before the tide came in.

By 2100 hrs they were back in Sydney to report their "fruitless peregrinations".

Tench did not think much of the country around Botany Bay, which Banks had extolled as "some of the finest meadows in the world". As he pointedly states, "It has often fallen to my lot to traverse these fabled plains; and many a bitter execration have I heard poured on those travellers who could so faithlessly relate what they say. These meadows of grass are covered with high coarse rushes, growing in a rotten spongy bog, into which we plunged knee-deep at every step".

However, the ghost of Tench, as well as those of the Bid-ee-gal tribe may have some quite satisfaction in the knowledge, not only that those same meadows now form one of the world's major airports, but also that the lessons learned are just as practical today.

FOOD FOR AN ARMY

LIEUTENANT-COLONEL A. L. BLAKE
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THIS article is written primarily to acquaint serving soldiers with the methods and procedures by which the Australian Army ration is obtained, the safeguards in force to ensure quality and nutritional adequacy, and to outline the functions of an organization new to the AMF, the Chief Provisioning Officer (Food Supplies). CPO (FS).

Historical

References have often been made to a nutrient pill or food capsule to fulfil all requirements for military feeding. Fortunately (or unfortunately, depending on one's dietetical tendencies) this extreme innovation has not arrived, nor is it ever likely to. Fat is the most concentrated form of energy and it requires 12 ozs of fat to provide 3000 calories which is much less than that stipulated in present day army ration scales.

Tremendous advances in food technology have been made over the years, and it will perhaps be of interest to look back briefly in history and establish certain factors which have been continually modified until military feeding today has become one of the prime munitions of war.

The first recorded incident in military writing on this subject dates back to about 480 BC when Xerxes, the Persian commander, was convinced that victory depended on both strength and logistics, with food supplies of paramount importance. He reasoned that a previous Persian defeat at the hands of the Spartans in 490 BC was due to fighting

taking place "at a time when corn, olives and staples were not afforded for ravage". Accordingly Xerxes timed his march on Sparta when a bumper crop of food was ready for harvest. The result is history. The well fed army won decisive battles, the eventual loss of the war was caused by internal strife and disagreement.

When the Roman Empire began its conquest about 150 BC a most significant military and political outcome was the Corn Law. Corn as the basic item, together with wheat, olives and wine, was issued as a ration to each soldier. Questers (from whence we derived the term 'quartermasters') were sent on buying expeditions for food months before a campaign was launched. Supply points and depots were set up along their line of march which enabled the troops to travel greater distances in quicker time since the carriage by the individual of large quantities of food was then unnecessary.

Julius Caesar added an important factor to the advancement of military feeding. He considered that milled flour was too easily destroyed by heat, moisture and long transportation. He decreed that whole wheat and wheat grain be carried by each soldier. Unknowingly he had returned important nutrients to the diet which had previously been lost.

The Crusades provide an interesting example of how a first class fighting force can crumble through disease and lack of food. History tells of knights falling off their horses when weakened by hunger, and of a mortality rate higher than 65% among crusaders

campaigning in Italy and the Middle East. As a fighting unit the Crusaders were a match for any force of commensurate size, but no man can do himself justice in a starving condition.

No outstanding advancement in military feeding is noted during the Middle Ages. Cromwell created a Commissary of Victuals which he combined with The Commissary of Horse Provision and the Waggon Master General.

Later, Marlborough appreciated that an efficient system of provisioning was essential for success. He commenced by employing various civilian contractors, but the system soon became unsatisfactory due to corruption amongst these suppliers. He finally retained only one, who supplied bread and bread waggons only. Licensed sutlers and commissaries were responsible for providing the remainder of the supplies. This system proved successful in the Netherlands campaign and the bread contractor, Solomon Medina, was knighted for his services.

When Napoleon entered the scene in the early 1800s, he quickly realized the necessity to correct the undernourished condition of his troops before committing them to prolonged warfare. In less than two months he re-organized the armies and provided clothing and adequate food. He went on to achieve decisive victories.

Modern canning owes its origin to the military and civil exigencies of the time when, in 1795, the Directory which governed revolutionary France offered a prize of 12,000 francs to the first citizen who could effectively preserve foodstuffs. At this time France was not only in the throes of a revolution, but was at war with several hostile European nations. The problem of ensuring adequate and proper food supplies for the army and navy as well as the civilian population had become acute. Diseases now definitely known to be due to malnutrition were rampant among the French armed forces. Even so, it was

not until 1809 that a Parisian confectioner, Nicholas Appert, made a successful claim to the money, presented to him by Napoleon, then Emperor. In 1810 Appert wrote his thesis on canning, which was based on the principle of heating foodstuffs contained in jars followed by tight sealing, with emphasis on cleanliness and sanitation. What Appert did not realize was that the same heat which he believed necessary to expel the air, also killed the spoilage organisms. It was fortuitous for Appert that he commenced with fruits, as their acidity facilitated the control of micro-organisms. It was Louis Pasteur who discovered the true reason for the success of Appert's procedure, which basically is followed today for canning and bottling. The glass and earthenware containers used by Appert proved too fragile for the rigours of army transportation which were not finally overcome until the development of the tinfoil container many years later. Napoleon remained a great advocate of the extreme importance of food for troops and is quoted as saying —

“Wars are not won by the mass of troops or by tactics and artillery, but more by the ability of my officers to provide my armies with food and supplies”.

A notable achievement at the turn of the century was the discovery of vitamins, although the deficiency diseases caused by their absence had been recognized for centuries.

In 1901 the first mention of climatic conditions of military feeding appeared in a US publication entitled ‘The Soldier's Ration in the Tropics . . . Its use and abuse’. The particular significance of the article was the realization that armies must be fed different diets according to the area in which the campaigns were being fought.

Recent Developments

Despite the discovery of vitamins, the recognition of their significance was gradual, and even only forty years ago,

the view was general that all was well if people had sufficient food to eat irrespective of what type. Now we know that there is a qualitative standard which must also be reached if growing children are to develop in the proper manner, if workers engaged in mental and physical labour are to achieve optimum effort, and if soldiers, particularly those on active service, are to maintain good health and maximum efficiency.

The basic facts concerning optimum diet are now well established and defined. Briefly, it must contain protein, fat and carbohydrate in amounts sufficient to provide energy and material for growth and repair of body tissue. It will then act to keep the body warm and supply energy for the vital activities of circulation, respiration, digestion and for any work that has to be done.

Though the actual amounts of protein, fat and carbohydrate are not laid down in standard diets, we can at least state an approximation of the number of calories required per man per day, which is 3000 for an adult man doing light work. This number will, of course, need to be varied depending on condition of work, severity and geographical location.

A brief elucidation on the term 'calorie' may be of some use here. The food we consume is first broken up into soluble fragments by mastication, digested by gastric juices and absorbed into the body where it is carried by the blood stream to where it is needed. Here it combines with oxygen and is 'burnt' by the tissue to give energy and waste products. This energy is measured in 'calories', or units of heat. A calorie is the amount of heat required to raise the temperature of 1 kilogram of water through 1 degree centigrade. To determine the energy value, we need to find the chemical composition of food in terms of fat, protein and carbohydrates and then apply the following facts:—

1 gram of protein gives approximately 4 calories when combined with oxygen.

1 gram of fat gives approximately 9 calories when combined with oxygen.

1 gram of carbohydrates gives approximately 4 calories when combined with oxygen.

For example, one egg contains approximately 6 grams of protein, 6 grams of fat and no carbohydrate. Thus the number of calories = 6×4 (protein) + 6×9 (fat) + 0×4 (carbohydrate) = 78 calories.

Although we state that an adequate amount of protein, fat and carbohydrate will provide growth, heat and energy, it must be realized that these in pure form, even with the essential minerals and water, would neither sustain growth nor support life unless certain indispensable accessory substances were present in it. These substances we know as vitamins. During the gradual process of discovery they have been distinguished by various letters of the alphabet but now they are becoming known by names which accord with their chemical structure.

It is not within the scope of this article to enter into a *dissertation on the value or composition of vitamins*. To those sufficiently interested many excellent works have been published, including "Food for the People of Australia" and "Food for Better Performance" written by the Defence Food Scientist, Dr R. C. Hutchinson.

Food Specifications

In providing food for an army, careful specification is required so that the best available *foodstuffs* are used and in the correct proportion. During World War II a Commonwealth Food Specification Committee was formed and given the task of preparing specifications for all food commodities required by the Services. They were issued under the title of the "FC Series". At that time the Committee was an inter-departmental one, operating within the Department of Commerce and Agriculture which was the Department responsible for the

inspection of all foodstuffs produced in Australia for export or supply to the Services. Later the specifications were revised into the present series called Commonwealth Food Specifications. The responsibility for CFS has now passed to the Department of Primary Industry, with a Royal Australian Army Service Corps officer as a member of the Committee. The specifications are placed in appropriate groups, eg, Cereals, fish, meat, etc, and given an identifying number within each group. When initiating tenders, the relevant CFS can be quoted to which the samples submitted by a contractor must conform.

The CPO (FS) Organization

Before the establishment of this organization in the AMF, each Command obtained its supplies under local contract arrangements. Whilst appearing to function smoothly there were certain inherent weaknesses in this system.

In the first place it was designed for peace-time operation. In the event of war a serious delay would occur in setting up the machinery for co-ordinated provisioning. Secondly no reserves were held and the dispersed local purchase of commodities on an 'as required' basis, was obviously more expensive than a large order placed with a manufacturer. It was also impossible in many cases to purchase food, particularly canned goods, which complied with, or even approached, the standard required by the Commonwealth Food Specification.

It was, therefore, decided to set up a central provisioning agency following on the lines of the established British Army system and known as Chief Provisioning Officer (Food Supplies). The AMF CPO (FS) would be responsible for provisioning on a Commonwealth wide basis. The advantage of such action can be summarized as—

- (a) Substantial economies by reason of bulk purchases from manufacturers.

- (b) Manufacture of foodstuffs to the quality standards of Commonwealth Food Specifications.
- (c) Packaging in accordance with the specification for containers.
- (d) Safeguarding against shortage of seasonal commodities during out of season periods.
- (e) The establishment in peace of an organization which would be required immediately on the outbreak of war.

Basis of Issue

Before rushing into battle armed with Procurement Demands and Tender Forms, the CPO (FS) must be in a position to calculate the overall requirements for the AMF. This requires a basis of issue, related to the ration scale, which can be simply defined as "the frequency with which commodities will be issued during a ration accounting period of 28 days". In addition to acting as a medium for assessing Command requirements, it ensures nutritious balance to unit messing. Each Command prepares its own Basis of Issue to accord of course, with the entitlements laid down by the Mainland Ration Scale. Units thus know several days in advance when, and in what quantity commodities will be issued. This is a substantial aid to menu planning.

Provisioning Procedure

Having made up their Basis of Issue, each Command is now in a position to inform the CPO (FS) of its liabilities of non-perishable commodities for the next provisioning period which is six months, and twelve months for seasonal items which are canned once a year. The CPO (FS) then relates this return to existing stock holdings in Commands, potential stock, that is commodities on order from a contractor but not delivered, and arrives at a provisioning figure. This involves the separate calculation of 250 types and varieties

of commodities which will increase considerably as at 1 Jul 59, when the complete range of non-perishable items on the ration scale will be centrally provisioned. A Procurement Demand for each commodity stating the quantity required and the estimated cost is then passed to be certified that funds are available, and for approval by the appropriate army officer, usually the DQMG or, if over £5000 up to the limit of funds available, by the QMG. The Procurement Demand can then be sent by CPO (FS) to the Procurement Authority, which in time of peace is the Department of Supply who calls for tenders from a number of manufacturers. Samples are required by CPO (FS) and, on receipt, they are checked at the AHQ Experimental/Test kitchen for appearance, taste, quality and conformity with the specification. *Certain technical work on foodstuffs is carried out at the kitchen by qualified members of the CPO (FS) staff. If considered necessary, however, samples can be sent to the Commonwealth Analyst for report.*

The Experimental/Test kitchen is, therefore, a valuable adjunct to quality control, and ties in with other measures designed to protect the soldier so far as his rations are concerned; viz—laboratory analysis referred to above, and inspection during processing.

Before leaving the Experimental/Test kitchen it may be of interest to give its charter which provides for—

- (a) Practical examination of ration packs and ration scales.
- (b) Initiation of standard recipes and menus.
- (c) Practical cooking tests of tenderer's samples.
- (d) Testing new foodstuffs.
- (e) Testing small items of cooking equipment for the Controller of Army Catering.
- (f) Tasting Panels.

Tasting Panels usually comprise members of various arms and services. Each member of the panel records his or her opinion of the food subject to the test. All results are collated, and a formula applied which then shows the order of preference for palatability and acceptability. Subject to a clearance by the Analyst the CPO (FS) can then make his recommendation to the Contract Board. The *brand recommended* is not necessarily the lowest tender although such is an obvious advantage when presenting the case to the Contract Board.

Following the confirmation by the Contract Board [the CPO (FS) attends all meetings] a Contract Acceptance and Purchase Order is prepared by the Board, sent to CPO (FS) who makes *one or two additions and forwards* to the appropriate Command. This Contract Acceptance and Purchase Order has replaced the previous form, the Authority Requisition. The present form has three more words than its predecessor but it can be nicely abbreviated to what is known as a CAPO.

Provisioning action is complete when the ordering/receiving officer informs the CPO (FS) when supplies have been received and in what quantity, and types of pack.

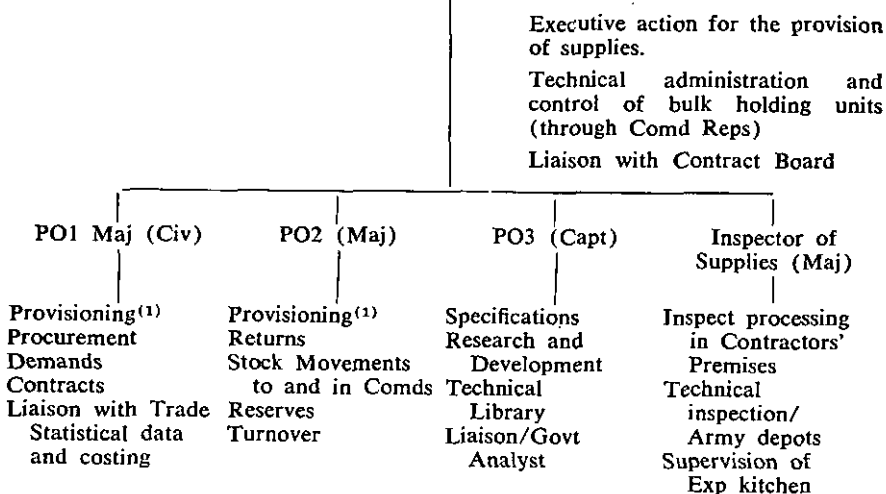
An outline of some of the main responsibilities of the CPO (FS) organization (excluding the AFSE referred to under Research and Development) is shown in Figure 1.

Special Ration Packs

Design, development, provisioning and packaging of Special Ration Packs is the responsibility of the CPO (FS).

Under normal service conditions a man is fed according to a standard ration scale. In addition to providing sufficient calories, protein, minerals and vitamins, this scale conforms to the national food consumption pattern as

CPO (FS) (Lt-Col)



NOTES — Some of PO3 responsibilities shown here merge with those of the AFSE.
(1). Combined work.

FIGURE 1

closely as practicable. The scale, therefore, includes fresh foods such as bread, milk, meat, vegetables and fruits. However, when supply conditions become difficult as, for instance, when men are first moved far from their base, canned equivalents of the fresh items are brought into service. This substitution may replace the whole, or only part of the fresh component of the ration, and will be continual until fresh items become available, either through the development of local resources or the arrival of supplies from the base areas.

When servicemen are together in large units, issue from a central supply depot is possible and desirable, but many disadvantages manifest themselves when units are widely dispersed, either as independent groups, large or small, because of the difficulties of having the bulk supplies prepared and issued in the correct proportion. Under such circumstances as say, during a landing operation, the problem is solved by the issue of ration packs, each of which

contains a definite number of properly balanced rations, or in some instances a definite portion of a properly balanced ration.

The use of such packs eliminates the time-consuming task of calculating and issuing large amounts of separate items; it is resolved into the simple method of handing out the appropriate number of complete rations from a single stack. As this is the only food a soldier may have for many weeks it is obvious that nutritional adequacy and palatability are essential.

Since World War II there has been considerable development in food processing and packaging technique. Constant efforts are being made to reduce weight and bulk consistent with caloric and acceptability requirements. Lighter, but stronger containers, and low bulk density of food facilitate air supply, and the weight saving overall is of great importance as air supply can be expected to play a vital role in the operational resupply system.

24 HOUR (ONE MAN)
RATION PACK

TYPE 'B'

BREAKFAST

LUNCH

TEA

HAM OMELETTE
4 oz.



MILK CONDENSED
1 oz.



CEREAL BLOCK
2 oz.



MARGARINE
1 oz.



BISCUITS
2 oz.



MEAT & BEANS
4 oz.



FRUIT SLICE
2 oz.



JAM
PLUM
1 oz.



BISCUITS
2 oz.



CORNED MUTTON
4 oz.



MILK CONDENSED
1 oz.



SOUP POWDER
BEEF
1/2 oz.



CHEESE
1 oz.



BISCUITS
2 oz.



SUNDRIES



CHOCOLATE
BLOCK
2 oz.

WATER STERILISING
OUTFIT

WATERPROOF
MATCHES

TEA & SUGAR PACK
TEA 1/2 oz. SUGAR 1/2 oz.



RECLOSURE
LID



INSTRUCTION
SHEET



TOILET PAPER
5 SHEETS



GLUCOSE TABLETS
16 TABLETS



BAG
RATION



RESEALING
BAND



SPOONOPENER



SALT TABLETS
6 TABLETS

Those who were serving in the period of World War II will remember some of the ration packs evolved, eg, the emergency ration known as the A3, the operational Ration known as the O2, the Australian Beach Landing Ration [ABL (6)], the Medical Landing Ration, and numerous others.

Present policy, however, is to reduce the number of special ration packs by making the current ones more adaptable to varying circumstances and, apart from the emergency ration, two have been designed, tested, and are now in use. It is considered that these will meet most of the demands, ie,

The 24-hour ration pack (one man)
and

The composite ration pack (10 men).

Both packs which have a caloric content of approximately 3500, include a suggested menu for each meal. A hot meal can easily and quickly be produced by using the field cooker and hexamine tablets, which are issued with the 24-hour ration. The field cooker, a small light appliance, has a useful life of twenty to thirty days and is, therefore, treated as a returnable container. Hexamine tablets as a heating medium have proved very successful and are issued on the scale of eight tablets for each 24-hour one man pack.

The 24-hour ration is essentially a combat ration for use under tropical conditions. It provides three separate meals, is palatable when eaten cold and is nutritionally adequate for thirty days continuous use. It should retain its acceptability for two years.

The composite ration pack is designed for use in the opening phases of assault operations, or special operational conditions when normal rationing is impracticable. It can be eaten continuously for periods of up to three months as occurred with British troops in Europe and Korea. The new type pack has a division inside the container which facilitates issue to 5 men for one day if the complete ration is not warranted.

Research and Development

In time of war food for an army takes up a large proportion of transport space, be it ship, rail, road or air. Any reduction that can be made in the weight is, therefore, of great importance. Means of achieving savings in space include —

- (a) Avoidance of loss by deterioration with consequent need for replacement.
- (b) Reduction in weight and bulk by dehydration.
- (c) Compression, particularly bulky foods such as meat, vegetables and flour.

Measures to reduce losses by deterioration includes special packaging and, it is hoped in the near future, the extensive use of anti-oxidants, the latter being a substance which is capable of retarding or preventing the development of oxidative changes in the food.

Because of low moisture content due to the drying process, dehydrated products are not as liable to bacterial or chemical spoilage as fresh foodstuffs, and of course offer a great weight reduction especially in meat and vegetables.

The field of research and development of foodstuffs in the army was considerably stimulated recently when the army assumed responsibility for Defence Food Research from the Department of Trade. Arising from this an Army Food Science Establishment has been created which is subject to the direction of the DST, with technical control by the DFS and administered by CPO (FS). The AFSE is headed by the Defence Food Scientist, and comprises three sections with the principal functions of research, quality control, and advice. The development of dehydrated vegetables and anti-oxidants are high on the list of projects to be carried out by this Establishment. We are working toward the goal of a light-weight ration of adequate variety and nutrient content, palatability, and a long storage life.

COMPOSITE
RATION PACK (10 MEN)

TYPE 'B'

RAASO SUPPLIES
COMPOSITE RATION PACK
(10 MEN)

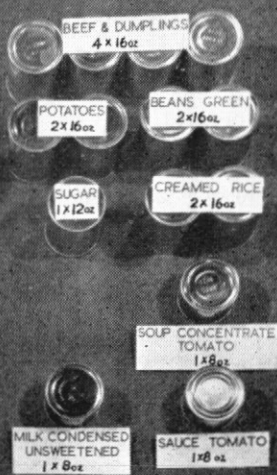
BREAKFAST



LUNCH



TEA



SUNDRIES



The Future

In a widely dispersed force under the threat of, or subject to, nuclear attack, cooks and kitchens will be out of place. In these conditions, the tactics necessary would not permit troops to assemble for cooked meals. A requirement exists, therefore, for the development of a quick-serve meal which requires no knowledge of cooking and can readily be prepared either individually or in small groups. Eating utensils should be the lightest weight consistent with their purpose. Present indications are that these quick-serve meals will be in the form of dehydrated cooked foods, so formed and packaged that mixing with hot or cold water in the package as appropriate to the food, and allowing a short while for reconstitution, is the extent of preparation.

It will always be argued of course that nothing can take the place of fresh food, but this requires refrigeration which will not be available in the circumstances envisaged, or preservation by irradiation which is very costly.

Excessive heat is a hazard that has always concerned those connected with supplies and transport in tropical areas. However, some encouragement is to be derived from current research into irradiated food, that is food in which the organisms which bring about decay are destroyed by the application of gamma rays. Extensive work into irradiation of food is being carried out by the Quartermaster Institute in the USA. Some research is also progressing at the NSW University of Technology and the Australian Atomic Energy Commission. Through the Defence Food Scientist, the army is, therefore, well in a position to keep abreast of developments in this field.

Conclusion

The problems to be solved are many and varied and new ones will continue to present themselves with every advance in food handling and preservation techniques. This applies especially to those already recognized, ie, dehydration and compression, anti-oxidants and irradiation. Work is in hand to find solutions for them.

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