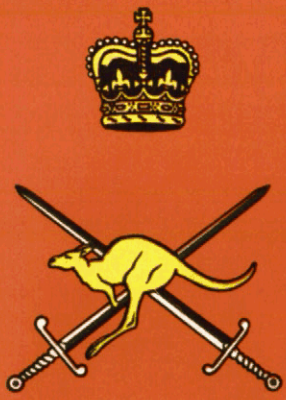
AUSTRALIAN ARMY JOURNAL



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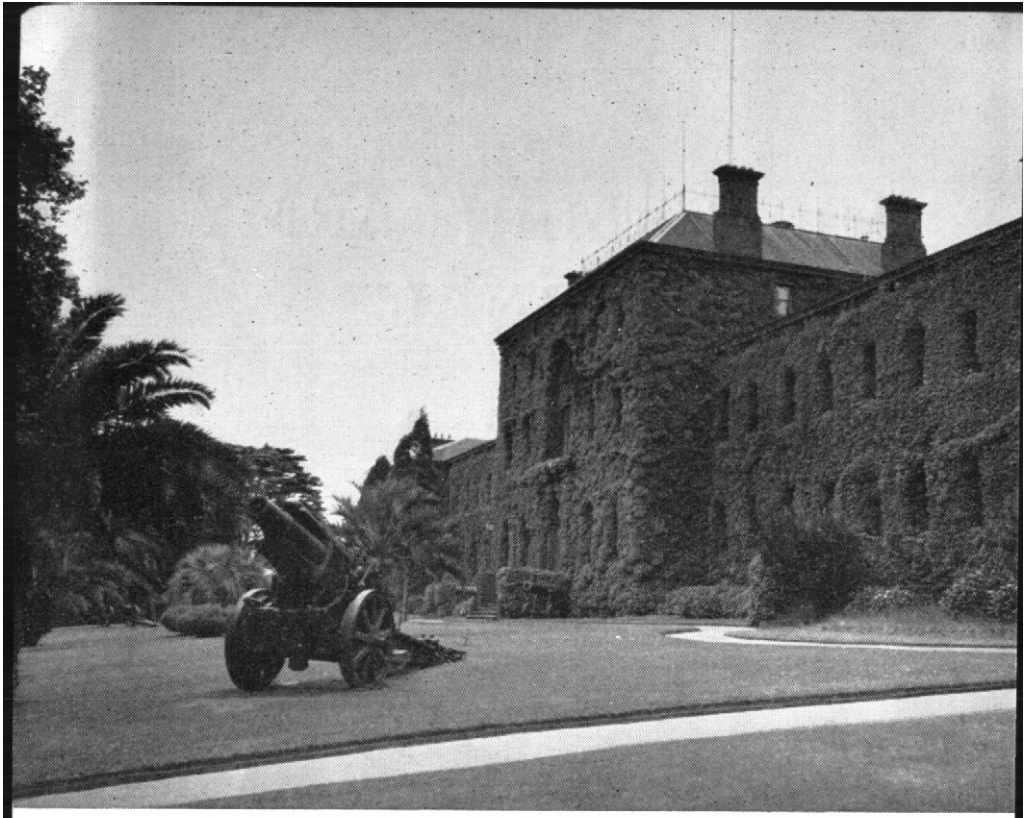

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POPULATION AND OUR DEFENCE

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Royal Australian Army Service Corps

"A sudden pre-occupation with population questions on the part of statesmen, scholars and publicists generally signals crisis"

— Strausz-Hupe and Possony

Introduction

DURING the past few weeks in Australia there has been a succession of public statements on Australian population and the effects of population upon our defence. The Prime Minister, the Deputy Leader of the Opposition, and the Minister for Immigration in particular, have all stressed the need for a greater population if Australia is to be developed and defended. They all, consciously or subconsciously, reiterate the trite theme of Voltaire that "God is on the side of the big battalions", or of that other cynic, Joseph Stalin, when he inquired "How many divisions does the Pope possess?" We should, therefore, consider whether this publicity of population problems presages some deeper crisis, and, if so, how real that crisis is.

It requires but a little reflection to realize that we are all deeply and instinctively impressed with the power of mere numbers in war and politics. Despite the political victories of intelligently-led and well-organized minorities, and the military victories of small well-trained armies over numerically superior opponents, the modern Goliath still starts as a firm favourite against David. The blind acceptance of gross numbers as direct evidence of military power is a dangerous delusion, and we in Australia are in constant peril of being deceived by it, because we feel at a numerical disadvantage.

It is relevant to examine then, the truth of such generalizations, and to assess their validity in the light of the military development which characterize our times. The questions which we should resolve are those of the military asset and liability of mere numbers, the force of population as a factor in diplomacy, and the optimum level, balance and type of population which Australia needs in order to develop and secure her nationhood.

Rise of Mass Nations

The political integration of contiguous populations during the 19th Century, and the machinery of government and economic co-ordination of the 20th Century, have combined to produce powerful mass nations with populations of 40 millions and more, such as the USA, USSR, Japan, Germany, the United Kingdom. Meanwhile nascent powers such as China and India seem to bid fair in the future to outstrip these older powers. These mass nations, in turn, have produced the most formidable war machines ever known in history. In the era of Total War they have mobilized great navies, air fleets and land fronts, backed by gigantic industrial output, and have waged war to the bitter end, over a period of years.

The most significant result of these national growths is the division of the world into two opposing power systems, under the leadership of the USA and the USSR, with a nebulous but numerous

element of uncommitted neutrals on the fringe. Concurrent with this trend has been the subordination of small independent nations, and indeed of once-powerful larger nations such as the United Kingdom and Japan, in the role of allies or satellites in the main power systems. For all nations, therefore, a paradoxical problem has arisen, which can be expressed on one hand as, how can they insure their continued independence by alliance with a major power system and, at the same time, how shall they retain their own political entity and free-will? Nations with very small populations or resources naturally develop this argument a stage further, in the form of questioning at what stage of their growth can they become viable international factors. Thus we in Australia might legitimately wonder whether a population and development as great as that of Canada or Brazil would in fact give us a better strategic and political guarantee, in this troubled world, than we now possess.

From such considerations arise national slogans such as "Populate or perish", and indeed, in a general sense, this military aspect of demography, coupled with a strong desire to develop Australia economically, lies at the basis of our immigration policy, in which there is overwhelming unanimity. Basically this concept is a compound of such elements as the following:—

(a) We are not a sufficiently large population to defend our own territory unaided.

(b) We have not yet acquired a sufficient heavy industry and armaments industry to arm and defend ourselves.

(c) At a certain stage in our development we will graduate into the "heavy" or "middle-weight" class, when we will be self-defensible and be an international-political entity to reckon with.

(d) Although potentially great we will be numbered temporarily with the smaller powers in international affairs until our development is complete.

Uneven Distribution of World Population

It is an undeniable truth of modern politics that the root problem of much peace diplomacy and of aggressive war lies in the conjunction of overpopulation tension, with the complementary attraction of underpopulated lands. Some typical examples of overpopulated areas are Japan, Belgium, Java, Italy; and of empty, under-populated areas, Brazil with a population of 60 millions and a great tropical area larger than Australia; Canada, Australia, eastern and south-eastern USSR, East Africa. These two factors in themselves alone do not necessarily lead to war. But when one or more of the "have-nots" is militarily strong and confident, as Germany and Japan were, by traditional canons, the conditions are ripe for war. Thus overpopulation and underpopulation react to produce a most dangerous political and military situation.

If international equilibrium is to be ensured therefore, underpopulation and overpopulation should be avoided. If they cannot be avoided then they must be mitigated by economic, political and military measures. Thus Australia follows an inevitable triple policy: she increases and promotes food production for the overpopulated areas of Europe and Asia; in the political field she seeks goodwill abroad, as in the Colombo Plan; and finally she maintains armed forces to the extent that the economy and population permit.

Quality of Population

History is full of evidence that military quality is an asset superior to mere quantity. The wily avaricious Europeans conquered populous but barbaric peoples, and decadent empires, ranging from South America to Asia; they prevailed because of moral and technical

superiority. Human quality is an essential factor in determining the military value of any population. Small and effective nations, such as Sparta, Carthage, Greece, Sweden, England, Finland, Prussia have, in their turn, demonstrated the power that lies in high morale and natural aptitude for war. In these dangerous times it is important for small nations to understand the elements which confer these military virtues.

Although physical conditions are a tangible influence they are not paramount. An invigorating or stimulating climate plays some part in the aggressive characteristics of the Pathan and the Finn; the adequate diet and healthy conditions of life contribute to the qualities of the American and the Australian. They do not, however, play such obvious parts in forming the natures of the Japanese or the Gurkha. In their upbringing military pride and tradition are prominent factors; as the Gurkha expresses it — "Better die as a hero than live as a coward". The study of Scottish history, from the internecine feuds of the clans to the performance of 51st Highland Division reveals a similar ingrained personal characteristic of great military value.

On the broader plane, Arnold Toynbee sees whole nations and their civilizations rising from foundations of hardship and struggle by the development of national personality. As the bedouin Arab comes in from the harsh environment of the desert and displaces the settled Arab of the rivers and the cities, so whole nations are stimulated by domination to rise superior to their oppressors and, in turn, to found empires and civilizations of their own. Historical process, therefore, acts as a mould for military qualities, to which the modern Israelis are an excellent testimony, fresh from that effective mould, and belligerent.

As the machine tool one supplanted mere muscle in ultimate military significence, and the physicist is now supplanting the steelmaster as the basis of armament, a new emphasis arises on the intellectual quality of the population. All the valour in the world cannot prevail without a minimum of war material. Although guerrilla warfare flourishes, it still demands small arms, often replenishment by air dropping, and finally co-ordination with regular warfare in order to succeed. The fate of Norway and Jugoslavia in the war with Germany is evidence of these needs. In order to count as a military power, however small, there must be complementary scientific and industrial potential. Switzerland is evidently aware of this, because she has announced proposals to rearm with nuclear weapons.

This scientific and industrial potential derives from an intellectual and industrial environment, and is sponsored by a selective and broadly based technical educational system. It is assumed that all nations possess the basic potential for mental and manual development in this sphere, but there is evidence that the prevailing tone of life in the city, the university, and the factory is also a powerful determinant. We may postulate the influence of the workshops of Coventry upon the development of the tank and the fighter aeroplane, or the chemical and steel industry of the Ruhr in German armament. These influences appear to increase in a cyclical process. The automotive industry of America produced the vehicles to move the Allies to victory, it also produced the instinctive "knowhow" to operate such equipment, and to apply the practices of the industry to a broader and hitherto strange range of war material. The military value of any population is, therefore, partly to be estimated by its technology. It is broadly assumed that the Russians with ICBM and Sputniks are progressing feverishly, while we in the West lag in this field. Our chances man for man, therefore, diminish, and any nation aspiring to defend itself must give a wealth of money and manpower to basic technical education if it is to survive.

The renascent nations of Asia are making considerable headway in this field. The Chinese, by mass-production of specialists, geared strictly to their practical requirements, are producing doctors and engineers at a great rate, presumably with Russian advice. India, for long a proponent of classical and literary scholarship, is concentrating upon her modern requirement of technical specialists, and must be acquiring, for example, a reckonable nuclear potential, if she desired to use it for war. It is important, therefore, to realize that the standards of technology the world over are in a state of intense flux.

In general, military quality no longer rests on the possession of a stout-hearted peasantry with a penchant for bearing arms. It demands a healthy, informed society with a bias to modern technology and industrial production. These are indispensable qualities and, without allotting them precise values, the higher these qualities the better.

Homogeneity of Race

It is a popular fallacy to regard absolute homogeneity of race as a cause of national pride and strength. Ethnologists will refute such claims by pointing to the mixed origins of the British, and in modern times, the American nation. The purest British stock, that of Newfoundland was, until recently, very backward. The Celts, Danes, Saxons and Normans who fused into the British race, and the British French, Dutch, Germans, Scandinavians and Italians who have contributed so much to the United States, must be regarded as sources of strength and virtue. Even the multi-racial, multi-lingual Swiss present a bold front to a belligerent world. Of course a divided nation, whose components are separated by deep political or religious cleavages runs a great risk in war. Modern political warfare techniques can widen such fissures in the national fabric with devastating results. The composite nations of Europe such as Czechoslovakia and Jugoslavia proved particularly vulnerable during World War II. The Communists undoubtedly aim to exploit similar possible cleavages between the negro and Caucasion populations of the USA in any future conflict. The disintegration of the Turkish and the Austrian empires in World War I are excellent examples of racial incompatibility hastening military defeat.

The contrast in racial origins and ethos need present no insoluble problem to old or new nations, provided the political system is adequate to guarantee true integration of national will and purpose. Nevertheless, in recruiting a migrant population, modern nations must clarify their racial policy to ensure an ultimate homogeneity in national sentiment and solidarity, and enforce a system of assimilation and education conducive to the same end. Nations such as the USA, Brazil, Australia, can draw on a variety of feeder nations for a broad range of civilized and military virtues, provided that the aims and ideals of the nation favour assimilation of new peoples, and are acceptable to them.

Numbers in Alliance with Technology

The primary traditional effects of population pressure in the past were colonization. Europeans, from a relatively highly-developed area, invaded America, Africa, Australasia, and subdued more primitive opponents before proceeding to settle and develop their countries. Their force was not based solely on manpower, because in many instances, such as Clive at Plassey, they defeated numerically superior forces by their superior political cohesion and advanced military techniques.

It could be said that strong populations developed the users and the markets which, in turn, stimulated technology. Moreover, surplus manpower enabled the civilian manpower demand to be met, and provided an excess, in production and manpower, for the war machine. Cumulatively, the appetite of the

population demanded more products, and the armed strength of the nation satisfied that appetite by the conquest and defence of areas of raw materials, and thus in turn created further markets in Africa and Asia.

By such processes and by not neglecting good normal neighbourly trade, the great nations of the 19th Century grew. Britain, Germany, America and later Japan, to more or less degree, reflect the same trend; although the USA with her empty empire of the West, arrived at similar development by more peaceful processes.

Since the Industrial Revolution there has been a consistent pattern of national strength dependent on mass population and an intense degree of technical development. Populous Asian nations such as India and China remained militarily weak because of the new criteria of mechanized war. Realization of this factor by Russia in modern times has brought her from backwardness to to forefront of military and technical progress. Population without technology is a military handicap, but in alliance these confer strength. Machine tools are more potent than muscles. It, therefore, becomes apparent that a nation with manpower, heavy industry, and skill becomes simultaneously self-supporting and self-defensible.

Stimulus of Technology by Population

The direct effects of population growth on certain strategic assets, notably the communications system, is quite obvious. As population expands and new areas are opened up, the need for ports, roads, telephone systems increases, and the population responds with the necessary labour and skills to build the required facilities. A combination of population growth and geographical extension will similarly induce other development, such as airways, which are sources of air power in the installations, technicians, and skills which are associated with their operation. Thus the nation is doubly reinforced; directly in viable military assets such as roads, railways, airways; and indirectly in the possession of industries, civilian skills, and techniques of warlike skill.

In certain specialist fields such as nuclear science the influence of population is not such a directly traceable factor. It is true that certain conditions are pre-requisites to atomic development. Notably the first requirement is the possession of an adequate cadre of physicists and technicians. This alone needs a reservoir of population to throw up sufficient intellectual quality for training. They need positive stimulus by pay incentive and status to attract the potential trainees, and they require atomic weapons or industrial atomic energy projects to employ the specialists when they have been trained.

This stimulus becomes the primary influence in producing atomic specialists, and next in importance is the actual system of education, including selection, and the school and university system which develops the embryo physicist. If we are to credit all the accounts of Russian technology, the USSR has in being such a system, mass-producing scientists and engineers. Anglo-Saxon nations are following this lead by methods of their own. Smaller nations which aspire to full technical development for peace or war must also copy them. It is doubtful whether the problem has yet been fully understood in Australia where our need is immediate. Ultimately it will require a great diversion of money and intellectual resources. At present the Australian field fails to hold all its own latent talent.

Numbers in Conventional War

Lenin quite confidently prophesied that the future world political centre of gravity lay in Asia, as the populations of China and India asserted their rightful place in politics and war, and presumably, took their place beside the Russian masses. This type of analysis is the

widest, most obvious generalization. It pre-supposes mere numbers to be the foundation of economic and military strength. In the past both India and China have been poor supports for such an assumption, although modern progress will change their power and potential. Thus China, with 600 million people, possessed some 250 divisions during World War II. With American aid she proposed to modernize 30. Between 1942 and 1945 about 11 of these divisions had actually been refurbished, although the Chinese Communists possessed about ¼ million highly indoctrinated but poorly-equipped troops. The factors militating against military efficiency were several, but principally political dissension, economic backwardness, the Japanese invasion, and the general illiteracy of the population. About the same time the Indian situation differed considerably. Although economically backward, and politically divided in her attitude to the war, India had a homogeneous system of government and a sound military fabric. Nevertheless, from a population of 400 million she mobilized 2½ million, the majority being base and L of C troops, and at the most only about 30 divisions of field force, of which some 10 could be numbered among the best in the world.

Russia is in clear contrast with India and China. Apart from the regular formations of the Russian Army, political and military indoctrination had been extended to the whole of the Russian population, in para-military and chemical warfare training. Consequently German intelligence estimates of Russian strength were wide of the mark from the beginning and the surprise of Russian strength on the ground made nonsense of much German operational planning. Later this strength manifested itself in the co-ordinated partisan warfare of the Russian people. We see that, with political organization, a massive heavy industry, and careful military planning, the Russian manpower was forged into a solid military machine, in contrast with that of China and, for that matter, India.

Proceeding from these examples it becomes clear that the great Asian nations which are now undergoing renaissance may, within certain natural limitations of geography and resources, become powerful political and military instruments by conventional standards. In fact we have already experienced this by air and land in Korea. Even a peacefully inclined India obviously possesses great potential for conventional war, and ultimately for nuclear warfare.

Nevertheless there is an operational factor which sets an apparent limit to the size of forces which can be useful in future warfare — that factor is the optimum capacity for deployment. Russia could deploy 300 divisions against Germany; the Allies could land and maintain forty divisions in Europe, under pre-nuclear conditions. Future concentrations, particularly in the amphibious assault, will be highly vulnerable to weapons of mass destruction. The installations required to maintain such huge forces will be equally vulnerable; even the denser tactical formations on the ground, eg, river crossing forces, will present worthwhile targets. Only those forces which can achieve high (preferably airborne) mobility and dispersion can survive, let alone fight in such conditions.

It can be stated therefore, that irrespective of the gross population of a nation, it can only mobilize that proportion which it can equip, train, and lead; and further to that it can only deploy such strength as it can move and maintain in the prevailing new conditions of war.

Balance of Military and Population Factors

The optimum relation of military effort to population constantly varies. History is well supplied with examples of both military overload and under-

development. The Portuguese were an obvious example of an overloaded population. Following their great navigational exploits their empire grew until its demands for manpower exceeded the resources of the small homeland, and Portugal has never fully recovered from this excess. Rome fell partly as a result of similar factors, as her economy was debauched by external commitments and pressures, combined with internal decay. The Chinese in their war with Japan, being unable to equip and maintain their vast manpower under arms, failed to develop their maximum opposition to Japan.

In assessing a suitable balance between men under arms and the parent population other factors also obtrude, particularly the actual area of territory to be defended, and the heavy industry available to equip the forces once raised. If a simplification is used, such as General Lawton Collins applied when he pointed out that, in default of conventional opposing forces in Europe, the Russian armies could line up in the East and march through to the Western seaboard despite our nuclear weapons; then the nature of forces required for defence of a specific area can be appreciated. As area warfare is more probable of realization in the future than formed linear warfare, the problem of spreading the available Canadian or Australian forces to cover their vast areas of responsibility becomes an acute one. Nevertheless, if we exclude the vulnerable metropolitan concentrations of population in these countries, this same space confers a compensating protection upon the people and the economy of such countries. Russia, with her carefully dispersed industries, apparently derives full benefit from a similar factor.

Balance of effort to population must also be estimated in long wars, according to the war potential of the nation. Japan erred gravely in this estimate when she waged war against the USA, a nation with only 50 per cent more population but with six times her own potential. Nevertheless in 1939/1940 the actual development of that potential by USA was out of balance. Later, as the forces under arms were equated with the American war resources, the surge of armed strength became overwhelming. Only a few nations possess such potential. Smaller countries must steer a careful course to raise adequate forces without impoverishing the industrial framework which supports them, and so causing them to wither on the vine. When a small population has to defend a vast area the problem of balance becomes very acute. This is very much our problem.

Ethical Claims of Population Pressure

The commonest political argument of the territorial have-nots is the ethical claim that they have a moral right to populate the empty lands. This presupposes that such an expansion will feed their hungry mouths. It is allied with the economic reason that only by full population and material development of the frontier lands can the world reach full economic maturity. Such arguments take no account of national ideals, nor sentiment. They proceed from the axiom that world population must increase until it outstrips the food supply, and the redistribution of population alone can stave off disastrous famine. These Malthusian theories are serious political forces in the modern world.

Thus the teeming populations of Java, Bengal or Japan are taught to look towards the spaces of New Guinea, Brazil or Australia, to solve their overpopulation problem. It must be conceded that there is some general basis of truth and moral right in such claims, since it can only be a dog-in-the-manger attitude to deny the half-fed and unemployed access to the available land and produce of the world. Moreover such an attitude must accentuate existing world tensions.

More careful examination of the underlying tenets reveals some flaws. It is not axiomatic that populations should increase by mathematical progression. In fact until the 1940s the Anglo-Saxon population of the world was declining sharply, but subsequently showed remarkable increases. The Japanese Indian, and Chinese governments have adopted official policies of birth regulation to combat overpopulation. This raises religious and ethical questions which are beyond the scope of this paper; nevertheless in India, where the Hindu religion strictly enjoins a pious fecundity, Pandit Nehru is apparently making headway with a birth control policy. Therefore, population levels can perhaps be regarded as within the control of each nation.

It is also sometimes assumed that highly populous nations have already developed their own natural resources to the full and must, therefore, seek other external sources of raw materials. In practically no country can this be confidently stated as a fact. In India there is great disparity in the levels of agricultural development in various states. Madras is highly developed, although by a comparatively only moderately efficient system; whereas the potentially rich, high-rainfall areas of Assam remain relatively underdeveloped for food production. The underfed and overpopulated nations of Asia are unfortunately among the most backward in the effective use of their natural resources. While such conditions persist, the case for overseas expansion remains imperfect. When it is realized that modern agricultural methods have doubled American production in the past 50 years, the possibility of applying pest control, modern fertilizers and improved seed in Asian countries offers a prospect of considerable improvement in the basis of subsistence.

It must be remembered that much increase in world population is caused, not by increased births, but by "death-control", by modern nutrition and hygiene, as Sir Douglas Copland has recently pointed out. This incremental factor has inevitable consequences for all nations but particularly for Asian nations. Already the Indian and Chinese net annual increase exceeds the total population of Australia, or for that matter of Canada, and approaches the total population of Argentina. Any future modification of this trend must remain a matter of conjecture, for our purposes we should assume a steady increase into the foreseeable future.

Another factor in this complex question is the misleading effect of crude generalizations on the carrying capacity of apparently empty territories. The estimates of experts show so much variation as reduce them to guesses. The capacity of Australia, assumed at various times to be from 20 million to 200 million, is an excellent example of this vagueness. Some opinions, however, put the population carrying capacity of one Canadian province, British Columbia, as greater than that of the whole of Australia. It is probable that the undeveloped capacity of the USA, with 200 million uncultivated but cultivable acres, is far greater than both of these, while the available potential of Brazil and USSR remain enigmatic, but certainly vast. Moreover it is not feasible to foresee the ultimate effects of modern agricultural science.

Nevertheless since World War II we cannot ignore the hunger for population outlet and raw materials which caused the aggressions of Germany, Italy and Japan. Nor can we overlook the emotional evil of sweeping racial discrimination which is displayed in some immigration policies and gives rise to intense political reactions in Asia and Africa. If an underpopulated nation is to go to the council tables of the world with a valid case for its territorial integrity it must be able to prove firstly that the land and its resources are fully utilized, and further, that a process of populating the area is being pressed forward with vigour.

Population in Politics and Diplomacy

It was Mr W. M. Hughes at the Versailles Peace Conference who reminded his audience that although he only spoke for 5 million living Australians, he also spoke for 60,000 war dead. The counting of heads plays a considerable part in national and international politics. Democratic political philosophy sanctifies the concept that the voice of the people is the voice of God, and that the voice of the numerical majority is automatically right. The strength of alliances is, politically, not the sum of fleets and divisions, but the accumulation of massed populations. Surprisingly some recent commentators have shown that in mere numbers NATO considerably outnumbers its antagonists, yet few would accept that as a valid assessment of relative strengths.

Countries such as South Africa, Australia, Brazil, are at a diplomatic disadvantage in the matching of numbers. We in Australia benefit in international conferences from our British Commonwealth connections; since, with prior agreement, a British Commonwealth point of view has the sanction of many times our own population. This confers a real diplomatic advantage so long as our mutual interests within the British Commonwealth are clear and stable. Nevertheless, to speak authoritatively in council, the best sanction is that of a full population, say 20 to 40 million in our case. Until such a stage of national development is reached there is some degree of pretension in our international posture. Admittedly the United Nations gives one nation one vote, but in the preliminary manœuvres and the ultimate results numbers do count. Therefore, quite apart from the ethical force which population demands give to an argument, the size of that population tends to regulate the credence which the external world gives to the argument. This leads to the conclusion that we should "populate or keep quiet", until we have the sanction of numbers on our side.

Does Nuclear Power Modify The Military Potential of Population?

If the active elements of the nation be regarded in the conventional view as individual carriers of weapons, basically rifles, then simple arithmetic converts masses into military power. But when kiloton and megaton weapons are introduced into this calculation, then a small technical population producing nuclear weapons for compact modern forces appears to equal the sum forces of the old mass conventional armies. This has been held to reverse the value of mere population in war. Thus, small nations, by achieving a high level of technology and incorporating nuclear weapons and their vehicles within their forces, can hope to compete with major conventional forces on equal or superior terms.

This concept of compensation for lack of numbers by the use of nuclear weapons has a counterpart which appeals particularly to large but undeveloped populations. This supposes that an under-mechanized power, such as China, can avoid the material and technological drain of mechanization by advancing straight in to the nuclear armament class. Thus both the underpopulated and some overpopulated but underdeveloped nation can regard nuclear weapons as their military salvations.

Capacity of Small Nations to Become Nuclear Powers

As this is being written only three nations are nuclear powers, but France proposes to hold nuclear tests in future, and Switzerland proposes to arm with atomic weapons. Hitherto there has been some comfort in the knowledge that only America and Britain in the West, and Russia in the East, possessed these weapons, and constituted some degree of equilibrium. Nations like Australia felt no need to enter the nuclear arms race so long as their mapor allies and one major potential enemy alone possessed nuclear weapons. A new phase of

unrestricted ownership of nuclear weapons by small nations drastically modifies such a complacent attitude.

If the smaller nations enter this field, all nations will require atomic weapons to enter the international Nuclear Club. Suppose that small but technically efficient countries such as Sweden, Czechoslovakia, Japan, should make these weapons, or that rich but primitive states such as Saudi Arabia should buy them — and it is obvious that outright anarchy will supervene.

It has been assumed that such countries do not possess the resources of uranium and electrical power to manufacture weapons, or that their technical resources are inadequate. Even an informed scientific mind would hesitate to prophesy that such a phase is improbable. History shows us that time and again the processes which begin as complex and difficult *tours de force* end by becoming commonplaces. Certainly the Russians who within a few years of entering this field produced decisive results, proved that, given resources of technology and intellect, the phases can be greatly accelerated. Who would dare to deny the capacity of Germany, Japan, or India to enter the Nuclear Club? We should therefore, assume that in time most nations can become nuclear powers, *ergo* we must follow suit.

Can Nuclear Capacity Negate the Military Importance of Numbers?

Graduation as a nuclear power is not an ultimate guarantee of strength and security, as Britain already knows. It rests on the paradox that whereas your defence is based on nuclear weapons, no sane person wants to use nuclear weapons. Therefore, the only hope of a surviving civilization is that conventional arms will suffice the needs of nations, and nuclear weapons will be kept in the background as a last resort. It clearly follows that we must retain conventional forces irrespective of whether we become nuclear powers, and to raise and support conventional forces we must possess population resources of adequate military and industrial strength. Nuclear weapons are not a panacea from underpopulation or underdevelopment.

Is it Necessary and Possible to Control Internal Dispositions of Population?

It can be accepted for the purposes of conventional warfare and nuclear warfare that certain population dispositions are militarily unsound. Some of these are —

(a) Concentrations of the majority of people in metropolitan areas such as London, forming easily recognizable and vulnerable targets for bombardment by aircraft or missiles, carrying HE or atomic weapons. Such targets are a standing invitation to a knock-out blow at morale and at living facilities such as housing and public amenities.

(b) Concentrations of heavy and secondary industry on a similar scale, inviting the destruction of basic war industry by area or pinpoint bombardment, eg, Wollongong/Port Kembla, and Newcastle.

(c) The concentration of population and industry on the seaboard, leading to vulnerability to submarine-borne missiles, to coastal raids or short-range bombardment by naval or naval aviation forces. This generally applies in Australia.

(d) Concentrations of population close to ports or lakes, which would be sources of extreme fall-out hazard in the event of water burst atomic attack, such as in Sydney, Melbourne and most harbours in the world.

(e) Concentrated populations situated on restricted islands, peninsulas or in narrow valleys, such as Singapore, New York or Hong Kong, which offer obvious targets and render it difficult to avoid attack.

It is pointless to recall that international law gives theoretical immunity to such civilian populations in war. From the British bombardment of Odessa during the Crimean War down to the blitz of Coventry, history shows that military expediency overrules such well-meaning precepts. The fact remains that badly-distributed and vulnerable concentrations of people will in future be hostages to an aggressor. Therefore, we should consider the possibility of redistributing industries and population, according to the dictates of intelligent defence.

Such redistributions entail the dispersal of people from such centres as London, New York, Chicago, Calcutta, Singapore (where the inability of the civil population to withstand conventional siege was clearly demonstrated in 1942), Sydney, Melbourne, Moscow, the dispersal areas being located adjacent to agricultural and industrial facilities in such a manner as will ensure prolonged survival, will offer poor targets to modern weapons, and discourage airborne or seaborne invasion. The redistribution of the UK population would preferably include Commonwealth migration on the original and imaginative Chifley plan to give a scatter of our economic and military assets. From Melbourne and Sydney there should be a transfer to planned satellites in their hinterland. The excess population of Singapore would, similarly, be resettled on the Malay Peninsula. An advantage of such planning is that it could be used to reap the incidental benefits of planned rural development in abolishing slums and all the concommittant evils of metropolitan existence.

In deciding on the optimum size for the future satellite towns new factors are influential, such as the possibility of surveying such targets by earth satellite prior to the use of missiles. Such factors may reduce the best satellite size to township levels, say 5000 inhabitants, and also increase the internal dispersal of housing, factories and civil defence shelters.

At this stage the question of the feasibility of such wholesale redistribution arises. Of course many nations and cities already have plans for gradual redistribution in the interests of health, economy, development or æsthetics. The compulsory removal and drastic resettlement of citizens is a most disagreeable project for a democracy. History is full of the exoduses of whole nations under the whips of tyrannical conquerors and at the whim of dictators. The Jews in Babylon, the slaves of Rome, the negroes of West Africa journeying to America in Spanish and British holds, and the Kurds, Uzbeks and Armenians who have been transplanted in modern Russia and Turkey, have all moved under compulsion. The uprooting of free citizens from the hearth and home of their choice is no easy matter. Australia is fully aware of this human factor because the flow of indigenous and immigrant population to the metropolises has for many years been contrary to the needs of her internal development. How then shall we persuade or coerce ourselves to scatter away from these inviting hydrogen bomb targets in which we prefer to live.

One simple expedient is the rezoning of industry to attract population away; another is to increase rural amenities by electrification, TV, and better travel. Of course there will be very little difficulty after the first hydrogen bomb drops but that will be too late for effective redistribution as a military measure. The fact remains that it is our own decision, which cannot be baulked, and is critical to our survival in the future. It is better to redistribute 9 million people now than 20 million in 40 years time, or lose 5 million the year after next in thermo nuclear holocausts.

Compensating Devices

There is clear evidence that the underpopulated and the overpopulated nations both suffer from economic and military disabilities, although they have

different problems. There is no simple solution consistent with each nation's political ideals, whereby surplus population can be traded for space. Therefore, underpopulated countries are anxious to profit from every device that will compensate for lack of numbers. Some of these devices have been briefly dealt with earlier in this paper, and require closer examination.

Immigration

The principal corrective to our deficiencies apart from the "migration of the cradle" is immigration. Hitherto this has been a haphazard process. The USA is a nation built by questing migrants *in search of political, religious or* economic freedom. The migration wave of the late 19th century was a mass movement. Nevertheless it was not a particularly planned or controlled operation. It should be possible with the aid of modern sociology and economics to settle greater numbers with less friction, by planned movement, training, indoctrination, acclimatization and settlement. We learned to move millions of soldiers and to deploy them and their attendant installations during World War II. It should, therefore, be possible to increase the tempo of migration to countries like Brazil, Canada and Australia. Thus emergency programmes, designed to double Australian population within 25 years are physically feasible and militarily promising, provided suitable and willing populations are available and subsequently are assimilable. By such a process a long term solution could be enforced within a limited period. This calls for an accelerated effort beyond the present forecasts of 25 per cent increase in 10 years.

Diplomacy

The system of alliances and engagements into which nations enter are designed to offset military weakness or isolation. They are comparable to a commercial contract inasmuch as there are generally considerations on both sides, such as promises of mutual aid, or the offer of bases or raw materials. Very few stable international agreements are based on pure philanthropy, although, in the Nuclear Age, it is clear that philanthropy, like charity, begins at home. Australia subscribes to a series of international systems. Thus she is an ardent member of the United Nations and *has taken a prominent part in the* political and military activities of the UN. Membership of the British Commonwealth, which is a fundamental attitude in Australian foreign policy, contributes to her place within UN. This enables all British Commonwealth nations to present a united front on matters of mutual interest and adds to our diplomatic strength. It also carries with it an implication of mutual military help, embodied in the ANZAM treaties. Additionally there are the great ANZUS and SEATO systems of alliance, between Australia, USA and other adjacent, like-minded powers, which produce a guarantee of our integrity in the Pacific and in South-East Asia. This is of the greatest importance as it binds us to the most powerful democratic power in the world, within one of the two main power systems.

Diplomacy in this century is a deep and delicate business, as witness the *Russo-German and Russo-Japanese* treaties which were in force in the early years of World War II. Treaties must be militarily viable to be ultimately effective. Thus all the British and French promises to Poland did not avail that unhappy nation of one extra soldier when Germany struck. Rarely a month passes but an Australian cabinet minister or ambassador emphasizes our ultimate military dependence on our major allies. Nor can it be denied. The only small consolation to be derived from this state of affairs is that fact that independence is relative, not an absolute state, in the modern world, and our great allies, in turn, depend on us to some degree. Valid diplomatic and military considerations, therefore, exist on both sides,

within our international contracts. These free democratic systems of alliance have this superiority over the satellite systems opposed to them, that they reflect genuine mutual interests, and exist without external compulsions. This is the true origin of their strength.

The only alternative to these alliances is neutralist isolation. In the context of the power politics now dominant, no potentially rich and underpopulated nation could long survive in such a friendless condition. Nevertheless, our diplomacy cannot be a proxy affair, however subordinate our role; it must be our own Australian policy related to our peculiar needs and problems. This applies particularly to our relations with our nearest Asian neighbours, Indonesia. Some recent developments must give us seriously to think whether our diplomatic attitudes towards this nation are in strict accord with military realities.

External Supplementation of Manpower

From the barbarian cavalry of Rome to the Imperial Indian Army of Britain and the Zouaves and Spahis of France, the device of supplementing inadequate home populations by enlisting colonial or foreign auxilliaries has been used with varying success. The basis of such co-operation is economic and political, and the system is not without its dangers of becoming unstable, unreliable or of resulting in rebellious defection.

Thus, if Australia chose, she could increase her New Guinea forces, now limited to one battalion of PIR to the maximum that could be enlisted, armed and staffed, say one division. Such troops could be employed in both combatant and the less technical supporting services, releasing scarce Australian manpower for other tasks. At the same time the army would serve as a civilizing agency in primitive New Guinea. Units thus raised would initially need to be mixed in formations of Australians, thus one battalion of Australians might be retained in each brigade. At a later stage of development this phase could lapse.

There are international and national political objections to such colonial levies. Militarily, particularly in modern conditions of political warfare, the loyalty of externally produced forces is always subject to stress and doubt. However, in straightforward military virtues such mercenaries have been proved to excel. The German evaluated the Fourth Indian Division as the best-trained formation opposed to them in Middle East.

A variant of this system is the recruitment of foreign migrants as was done in the old British Hessians and German Legion, and the modern French Foreign Legion. Thus European soldiers would be entertained as mercenaries in their own formed units. This system flourished in the Eighteenth Century, when Irish regiments of the British and French armies were even known to have fought opposite one another. Australia might well revive such a practice at this time and raise German, Italian, Polish or Greek units. (One race which merits consideration is the soldierly, persecuted Assyrian minority). Enlistment could be a phase of normal settlement, to be followed by grants of money, land, or rehabilitation training.

Of course there is nothing to prevent suitable migrants enlisting in normal units of the defence forces. Such incorporation in Australian units has the merit that it hastens the process of assimilation. Nevertheless the effect of national units, or perhaps better, sub-units, is to induce a natural *esprit de corps*. We already recruit in UK, and accept some other nationals in the defence forces. It is probable that more overseas manpower could be obtained for these services by adopting a more imaginative approach to the problem.

Militarism

It is a natural development in a nation which is oppressed or faced by an apparently insuperable military problem

to concentrate upon its military forces to the detriment of a balanced national life and economy. Sparta and Carthage are notable examples of this trend in the ancient world and, in modern times, Russia. More recently we have seen the suicidal campaigns of the Gran Chaco in which two young nations fought like gamecocks to a standstill, inflicting grave damage upon their populations and economies. Such national imbalance is to be avoided, as it can defeat the very cause it purports to defend.

This approach to defence would harness the whole nation to the machinery of defence. This must lead to an inversion of fundamental values, particularly in a free society. It is apparent that there is such a trend in the world today, in the East and the West. America devotes one eighth of the national income directly or indirectly to defence. Russia can scarcely devote less, and probably spends a far higher proportion on defence. Australia budgets for a lower military expenditure than most Western powers, per head of population. This is despite recent years of great and expanding prosperity. Of course her absorption of capital in new internal development is greater than that in most older economies. Thus the current recession in the wool and metal markets may ultimately cause a lessening of Australian defence expenditure.

Modern militarism is expensive. Missiles are just as expensive and more expendable than battleships. The appetite of technical development is voracious for money, brains, and materials. Nevertheless if money is intelligently and purposefully spent, there can be no grounds for objection from the public.

The type of militarism which should cause national concern is that of mere display and posture. The raising of half trained units, the expenditure of money solely to impress friends at home and enemies abroad (Mr Chamberlain's famous billion pound military budget in 1936); these are dangerous symptoms. Recent American comment has attacked the enthusiasm for professional armies in Britain and America (as in France before World War II) as a sign of militaristic degeneracy. This may appear odd at first sight, but their argument is that it is derived from a national unwillingness to perform an unpleasant task, and is welcomed as a painless panacea: therefore, it is unsound. Volunteer or conscript, defence forces cost money. Primarily they must be based on an adequate economy and population. "Populate or perish" is an inadequate catch-phrase in itself. It rests on two other concepts — "Produce or perish" and "Prepare or perish". The population, the production and the military preparation must, therefore, be in balance. Further, our need is for effective economy in manpower, and pure militarism is an extravagance for us.

Isolation

Many nations. like individual humans, have sought to avoid their fate, or exclude unpleasant invasions, by cutting themselves off from the outside world. The Chinese and the Japanese in earlier times achieved a measure of temporary success in keeping aloof from the surrounding world. Such exclusion required an insular frontier or a system of garrisoned fortifications, and sufficient force, land or sea, to back it up.

With the advent of radio, space vehicles, air travel, and the world-wide interconnexions of trade, pure isolationism is unthinkable. The spoken word can invade without striking a blow, and future space vehicles will give any great power the capacity to reconnoitre the most withdrawn of nations. Thus Australia, which is one of the more remote and insular land masses of our planet, would be weakened rather than strengthened by isolationism. Indeed our basic foreign policy is one of anticipatory alliances by deliberate commitments to the Western system, to offset geographical remoteness and relative weakness. In fact we contrive to induce a ready-made Monroe Doctrine.

An isolationist trend which is currently popular is that of neutralism, within or without the third bloc. Switzerland has used this device successfully, and countries like India and Burma seek to do so. Switzerland is so situated along the old faultlines of Europe that she had little choice in her policy, and fortunately, was geographically fitted to refuse ingress to her neighbours. We are not so defensible, and our coastline invites, rather than rejects, trespassers. Isolationism is not for us.

Favourable Theories of War

An overstretched population necessarily seeks an economical and effective doctrine of making war, consistent with its resources. It is thus axiomatic that we in Australia should never, so long as the initiative is ours, engage in wars of attrition. We must, therefore, insist on highly mobile, hard-hitting, forces which make the most of our available manpower, and avoid long sieges against numerically superior enemies. The roles of armour and artillery, air power, and amphibious forces in such a scheme of things are obvious. Nevertheless these doctrines can only be palliatives. We are situated adjacent to the most populous nations in the world and whose war potential is daily increasing. The chances of making them dance to our tune becomes very remote. Thus we must eschew the techniques of mass warfare, which will remain one of the options available to them.

Conclusions

The following conclusions are derived from this general survey of the population factor with special reference to Australian defence:—

(a) *Optimum Level.* It is difficult to stipulate an optimum for all purposes. We need a minimum stable population of not less than 30 million to develop our war economy and our defence services within our resources, and produce an essential level of balanced forces, of say 25 divisions, with equivalent naval and air forces.

(b) *Priority.* The immediate increase of our population to this safe level is the most important task now facing the Australian people.

(c) *Quality.* Heterogeneity of origin is not necessarily a defect, in migrants from the technical and military point of view, provided assimilation is intelligently encouraged and controlled.

(d) *Rate of Assimilation.* The criterion of population absorption is not the comfort or well-being of the public, but the gravity of the crisis. This demands a 'crash programme' which, in turn, will demand sacrifices from all of us for the next 25 years. The present rate of assimilation must be accelerated, regardless of vested interests.

(e) *Nuclear Armaments.* The onset of anarchic nuclear armament will force us to conform, but it will not diminish our need for conventional forces, hence for increased population.

(f) *Redistribution.* The redeployment of civil population is necessary, but will impose such additional stresses upon the nation that it must remain a long term programme, to be implemented principally by the creation of new communities for the current population increase rather than by moving existing populations and installations.

(g) *International Relations.* A fully populated Commonwealth is as necessary to our diplomacy as it is to our defence. It will effectively silence our critics on ethical and economic grounds.

(h) *Makeshift Policies.* No expedients, such as alliances, militarism, neutralism, or mercenary forces,

can replace a stable adequate population as the guarantor of our integrity.

(j) *Balance.* We need to preserve a balance between our national resources, population, industry and defence services. This in turn, calls for a high degree of planning and control, comparable with an operation of war.

(k) *Effects Upon Defence Services.* So long as the manpower crisis persists the Defence Services must take special steps to remain effective. These include the formulation of a suitable doctrine of war consistent with our present stage of development; an imaginative approach to recruitment; and strict manpower economy. Thus the adoption of British or American war establishments is unsound if they are lavish in manpower beyond our means; we need rather to enforce our own standards.

(l) *Long Term Effect of Population Increase.* We should not be overawed by our more populous neighbours in the world. Excessive population will tend to diminish in military value. The ideal is a supportable optimum, backed by comparable economic and technical resources.

(m) *Acceptability of this Policy.* This policy can only be carried out by a combination of official ruthlessness and public determination. If the issues are put squarely to the public, then these measures are likely to be accepted as inevitable. Otherwise, by deluding the public, that an easy alternative solution is feasible, we deceive only ourselves, and must ultimately encompass our own downfall.

A Tin of Sweet Potatoes

MAJOR R. S. GARLAND, MC
3 Battalion, Royal Australian Regiment

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Communist Terrorist Organization in Malaya

THE Communist Terrorist Organization (CTO) in Malaya, commenced its campaign in June 1948. A state of emergency was declared and this situation still exists. Recently the CTO has had severe military reverses but it still operates in the jungle and makes frequent visits to supporters in cultivated areas, to obtain food, money and supplies.

Apparently inspired by the example of the patience and perseverence of the Communist revolutionary movement in China, the CTO has faced the adversities and hazards of its existence in the jungle with great tenacity.

Obviously, it is principally a Chinese movement, but it does not receive the sympathetic support of the majority of Chinese people in Malaya. On the contrary, the Communists resort to murder and intimidation to enlist support from the "masses" and to ensure security of their movements.

Informers are quickly sought out and brutally murdered. After years of this treatment, the loyal people are loath to volunteer any information to assist Security Forces in their operations against the Communists.

The CTO is organized into groups, each with its own operational area. After 10 years of operations, the Communist terrorists have acquired animal skill at avoiding our patrols and have built up a detailed knowledge of the jungle. They largely live off the land with a diet that includes such delicacies as pork, venison, fish, monkey, snake and rat. Jungle fruits and vegetables are widely used and medicinal herbs are also gathered.

The Communist skill in evasion can best be illustrated by the story of one frustrated battalion that patrolled the present 3 RAR jungle area for 18 months and did not make one contact with the CTs.

The CTs have had continuous experience in ambushing and of being ambushed. Consequently they move with great caution and avoid likely ambush positions. They reconnoitre each area in detail before moving into it. Maximum distances, according to ground, are maintained between individuals. They take pains to conceal their tracks in jungle and are highly skilled in this art. When out of the jungle, they normally move at night.

If the reader reflects on the size of Malaya, with its vast jungle areas bordering on innumerable rubber estates, and realizes the comparatively limited number of battalions in Malaya, it should be apparent that CT kills are very difficult to effect. However, this campaign provides excellent training in jungle warfare, and 3 RAR is now in fine shape for warfare against a major opponent in a tropical theatre. Valuable lessons on administration, planning, communications, control, navigation, equipment, supply, and jungle minor

tactics have been absorbed during our 12 months on continuous operations in the jungle.

CT forces that operated in my company area included Jalong Armed Work Force led by Lam Poh, and 27 Independent Section led by Chan Fei. Both leaders are experienced and tough opponents. Chan Fei is wanted for ten murders. My aim was defined as "Destruction of the Jalong AWF", so Lam Poh was my principal target.

This is now a story about a tin of sweet potatoes.

The Clue

Amongst the litter that always gathers on my table was the following Special Branch report:—

Jalong Area

The following report is graded C3 —

On 9 Jul 58 information was received by a rubber tapper that CT Lam Poh still wanted to move to the area of Jalong New Village to contact Communist supporters and collect supplies. Instructions were also given for the retention of all tappers employed on Yoong Fan Estate, and caution was to be exercised in the selection of new tappers. On 11 Jul 58 it was arranged for a quantity of tobacco to be delivered to the mangling shed on the Hock Lian Estate.

Comment

Lam Poh has been unable to make direct contact with supporters in the Jalong New Village since December 57 (owing to activities of 3 RAR). On several occasion he has said that he was going to see them but, as yet, has failed to do so. This last letter may be an attempt to boost the morale of the Communist supporters in that area.

It was now 22 Jul 58, and no doubt the tobacco would have been collected. However, the report was worth checking, so I decided to do so. I waited till 1630 hrs, when curfew is effective in rubber estates, and then proceeded by scout car to the mangling shed on the Hock Lian Estate.

It was raining very heavily and the tracks of the scout car were washed out as they were made on the road in the rubber estate. My search did not locate the tobacco, but I found a large drum of sweet potatoes carefully hidden in the mangling shed.

It was obvious that the potatoes were hidden for use by the CTs and that the CTs were expected in this area in the next week or so. Resultant discussions between the CO and Special Branch led to the decision to maintain a small ambush by night on the potatoes.

B Coy was heavily committed covering other possibilities at the time and the Assault Pioneer Platoon, under command of B Coy, was given the task of maintaining a three-man ambush on the potatoes during the subsequent nights.

On the following evening I took Lt John McGhee on a foot reconnaissance into the area and indicated the task to him. Care was taken to conceal tracks and leave things undisturbed in the mangling shed. If the local rubber tappers were made suspicious of our presence, the CTs would be warned to keep away.

The Plan

It was decided to place the ambush in the mangling shed as it afforded excellent fire positions and good concealment. The moon was approaching the full and ensured good shooting light. Consequently torch attachments and flares were not used. There were four entrances to the shed and dispositions were selected to cover each of these.

The shed was of timber construction enclosed by "chicken wire". This placed the ambush group in darkness whilst permitting all round vision into the surrounding rubber estate.

To avoid leaving tracks that might alert the rubber tappers or CTs, local

hockey boots were worn. Also, calico overshoes were worn to help conceal boot prints. (This is a trick that we have learnt from the CTs).

A covered approach, that led to the rear of the shed from a nearby road, was selected. This was used as the route in and out.

The ambush party lived about five miles away from the mangling shed and it was necessary to drop them by vehicle to ensure that the ambush was manned at dusk each evening.

A scout car was used and the ambush party debussed on the move. (CTs always listen for the movement, slowing down and stopping of troop carrying vehicles).

The scout car also conducted dummy patrols on main roads in the area to assist deception. The ambush group was collected at 0500 hrs each morning.

Ambush personnel were changed on alternate nights so that the ambush could be maintained for a long period. (Some ambushes in this theatre are maintained for months).

The Ambush

The ambush group on 27 Jul 58 consisted of —

L cpl Hanley	—	FN Rifle
Pte Ramsay	—	Owen Machine Carbine
Pte Mullings	—	FN Rifle

At 2115 hrs the barking of a dog was heard coming from a northerly direction. It seemed like an imitation and the ambush was alerted. All was quiet for the next half hour. At 2145 hrs the ambush saw and heard movement coming from the direction of a nearby footbridge. Four CTs were seen approaching the mangling shed.

The CTs left the darkness of a tree and doubled towards the footbridge, 25 yards from the ambush. The ambush commander held his fire.

When the first CT placed his foot inside the mangling shed (5 yards range) L cpl Hanley sprang the ambush by killing him with his FN. Fire was opened immediately and two more CTs were killed by the ambush. The first two CTs died with their eyes open, the third CT fell into a rather smelly drain and died there. The fourth CT, obviously wounded, ran away into the night, followed by bursts of fire. The CTs did not return the fire.

During the rest of the night, the bodies, together with weapons, equipment and documents, were recovered and passed to Sungai Siput for identification by Special Branch. A follow up operation was launched to capture the wounded CT.

The following morning he surrendered, together with a female CT, to a scout car patrol. He was later identified as Lam Poh, a Branch Committee Member and leader of the Jalong Armed Work Force. He was suffering from a hole through his neck made by an Owen bullet.

The three killed CTs were identified as members of the notorious 27 Section. They were all hard core terrorists and were all wanted for murder.

Exploitation of the success of this three-man ambush led to the further elimination of eight more CTs, totalling 13 CTs eliminated and being the end of the Jalong Armed Work Force and 27 Section. And it was all because of a tin of sweet potatoes.

Lessons Learnt

1. Importance of sound deception planning.
2. Value of well selected and well concealed fire positions.
3. Good fire control produces good results.
4. Requirement for detailed planning for successful ambushing.

Three days later I revisited the mangling shed on a further scout car patrol. The sweet potatoes had gone.

New Dress

For The Army

The AHQ dress Committee

ARE you one of those people who are always wondering what "they" are doing about new uniforms for the Army? Maybe you need a new set of blues but hesitate to buy them because rumour has it that blues are on the way out. Perhaps you would like to get an officers pattern garbardine uniform to add some glamour to your summer wardrobe but you put it off in case the colour or design should be changed or worse still, because this uniform might become a free issue after you've spent your good hard cash on it. What is the real form? You've heard plenty of rumours and even met a chap who saw the new uniforms displayed at a senior officers conference. You understand there is an AHQ instruction out but, as far as you are concerned, the whole position is pretty vague and you want to know the form.

You will be glad to know that "they" appreciate your concern and are anxious that you should be right in the picture. Hence this article — it should ensure that all officers and, through them, everyone else knows exactly what is proposed.

The present position can be summed up by saying that the Military Board have agreed to a set of proposals as a basis for user trials and a Submission to Treasury. Trial arrangements are already in hand and trials will probably be commencing about the time this Journal is issued. Subject to satisfactory trials, Treasury approval and availability of funds, the new uniforms will be phased into the service, on a priority basis, starting with summer dress. The review of dress will be continued to include dress for special areas and dress for the women's services and cadets.

The Background

When discussing the proposals, officers will probably find it useful to know something of the background of the subject.

The review of dress arose mainly from the unsatisfactory nature of the present khaki drill summer dress and the blue uniform. The summer dress in particular has come in for constant criticism over the years from officers and other ranks alike because of the difficulties and expense associated with laundering; the fact that the uniform creases and soils quickly; and also because it is quite inadequate for many of the purposes for which a summer walking out dress is required. The public and press have not been backward in adding their criticism about the appearance of the uniform.

The blue uniform, in some respects, is quite a good uniform and there are those who like it. However, it is generally unpopular. It is too hot for ceremonial or walking out use during summer, and troops have never taken to it as a best occasion dress even for winter wear. As a formal evening dress a strong body of opinion considers that the open, lapel type jacket is unsuitable. Press comments on the blue uniform have included such terms as "un-Australian" and "un-Military". It is easy to be wise now after practical experience but it is interesting to note that when the uniform was introduced the colour and design were what serving members of the ARA and CMF wanted at the time. But that doesn't alter the fact that right now the blue uniform does not meet the Service Dress requirement.

SERVICE DRESS WINTER
OTHER RANKS
WORN WITHOUT TUNIC

SERVICE DRESS WINTER
OTHER RANKS

Aware of the unsuitability of these uniforms, and of other deficiencies in the dress of the Army, the Military Board directed the AHQ Dress Committee to "review the whole question of dress for the Army". The Dress Committee were alive to the complex problems inherent in the task and took the very wise step of establishing a set of principles to be used as a basis for the review. These were submitted to and approved by the Military Board and have guided the Committee in much the same way as the principles of war guide a commander in the field. Like all principles they often tended to conflict and it was then a matter for the exercise of judgement by the Committee. The principles are worth stating —

(a) Dress should be functional.

(b) Dress for the Australian Army should meet the complete Australian climatic range.

(c) Standards and customs of dress should be in keeping with those of of the civil community and of the other Services.

(d) With a view of obtaining the required standard of appearance, the best available material, fitting and finish should be sought.

(e) Maximum Australian content should be insisted upon.

(f) The maximum degree of uniformity which is feasible throughout the Army should be sought.

(g) The use of embellishments should be carefully controlled.

(h) Australian traditions should be fostered.

(j) Multiplicity in design should be avoided.

(k) The cost to the public and to the individual soldier should be kept to a minimum.

After a thorough examination of all aspects of the problem, including tests of a large range of materials by the Defence Standards Laboratories and the

FIELD DRESS
JACKET WORN INSIDE TROUSERS

production of sample uniforms, the Dress Committee submitted a comprehensive report to the Military Board which was agreed upon and is the basis for current user trials.

Three Basic Orders

Three basic orders are proposed — a "best" uniform, a "general duty" uniform and a "hard training" uniform.

The need for a best uniform, in which a member will look and feel both smart and comfortable, needs no arguing. It is an absolutely essential requirement. The intention is that it will be worn for ceremonial, walking out and special occasions. Two versions are proposed, winter and summer. Both versions are similar in design to the existing officer pattern uniforms with some slight differences between the uniforms for officers and those for other ranks, and are designed to be worn with or without the tunic. A new shirt and tie of better material and design will be worn with both versions. The winter version will be barathea for officers and one of two materials to be tried for other ranks.

For the summer uniform four new materials will be tried against the current gabardine. These materials include both all wool and wool and synthetic mixtures. As well as new materials, modern techniques such as permanent creasing, drip dry, no iron, etc, are being carefully examined and their suitability will be tested during user trials. Laboratory tests at the Defence Standards Laboratories and CSIRO will continue. The summer uniform will be greener in colour than the current gadardine but will not be a dark colour.

At the other end of the scale is a "hard training/work" uniform which is not intended for wear in public. A green uniform is proposed with a jacket which may be tucked inside or worn outside the trousers. A soft peaked cap will also be tried. To overcome the old but very justifiable lament of unit quartermasters about "unit issues", and the consequent administrative workload and expense, it is proposed to make this order a personal issue of two per member, replaceable at public expense on the CO's authority.

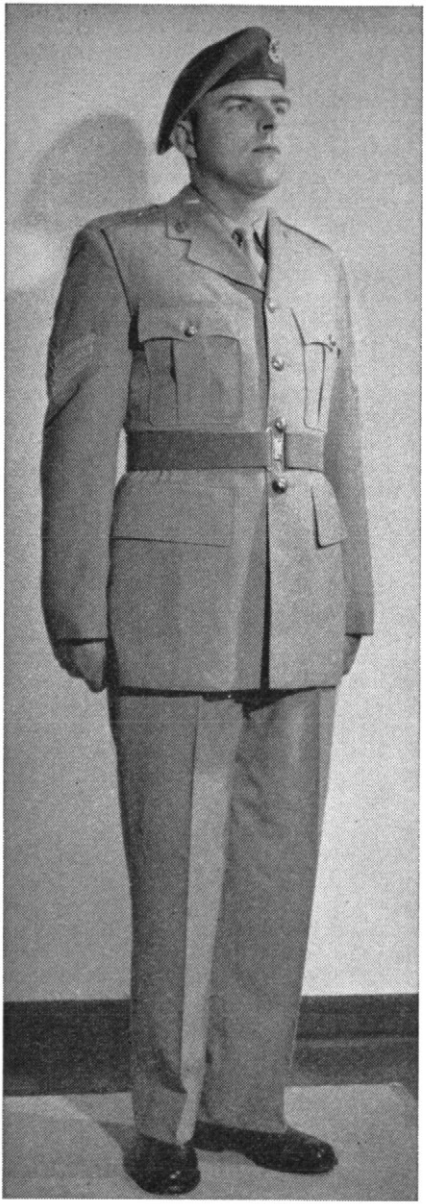
One of the weaknesses in the existing range of dress is that some orders are required to meet too wide a variety of functions. This must be avoided at all costs. If only "best" and "hard training" uniforms were provided the former would often be used for light training and work thus spoiling it for its primary purpose; and the latter would be worn in public and thus invite further criticism from public and press. It follows that a third order is essential to meet the range of functions between ceremonial/walking out and hard training/work, such as normal administrative duties in units and headquarters, light training at schools and the like. Thus the proposals include a "General Duty" dress. There are to be two versions. The current battledress, with some minor alterations such as removal of ankle straps and thigh pocket, will be the winter version. The summer version will be the same material and design as the trousers and shirt of the service dress summer.

Headdress

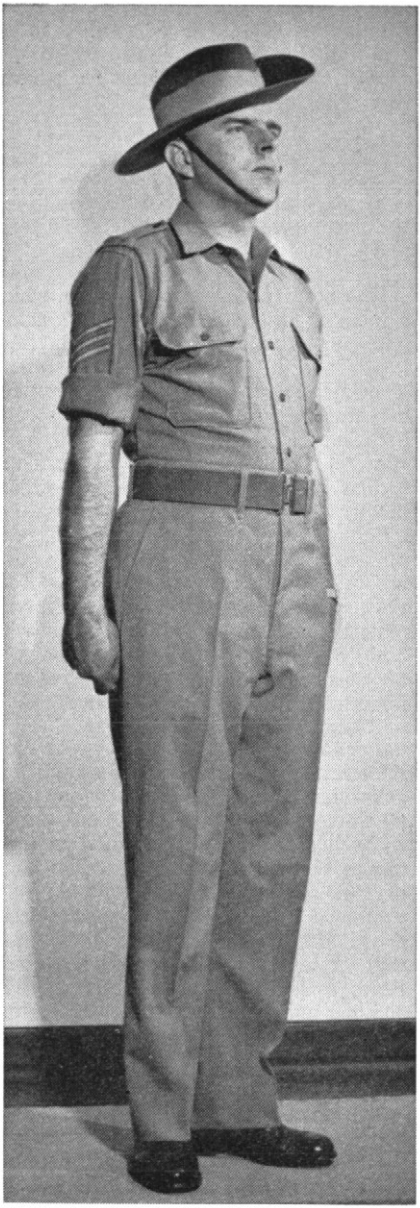
For wear with service and general duty dress the hat will be worn by all ranks for ceremonial. For other occasions officers will wear the existing cap and other ranks a khaki beret (except where a corps or unit is entitled to wear special dress).

Raincoat

One of the most glaring deficiencies in the current range of dress is the lack of a raincoat. Troops at present have the option, when in summer uniform, of wearing a greatcoat or getting wet. Therefore, a raincoat, light and simply designed, is proposed for wear with service and general duty dress.



SERVICE DRESS SUMMER
OTHER RANKS



GENERAL DUTY DRESS
SUMMER
OTHER RANKS

Blues

It is proposed to retain blues only for formal evening wear, by Sergeants and above. A patrol type uniform is proposed. Mess dress will be retained and will continue to be provided at the expense of the individual.

Protective Dress

With the introduction of field dress for hard training and work, protective dress will only be issued for the specific purposes for which it was originally intended, such as tasks involving the use of grease and oils.

Miscellaneous Items

In addition to the various orders of dress, the Dress Committee considered the whole question of embellishments and other distinctive items worn on uniforms. Each item was examined very carefully, the pros and cons usually covering a number of typed pages of agenda. In this article, it is obviously impracticable, and certainly unnecessary, to give all the reasons for the decisions which follow. It is certain that not one of the decisions will be agreed to by everybody but the logic of each will be readily apparent to most —

Badges — The existing range of Corps and regimental badges is to be retained.

Buttons — Regimental buttons are to be dispensed with but to avoid undue inconvenience the changeover will be phased over a period of years. This decision mainly affects Armoured and Infantry units who will in the future wear Corps buttons.

Titles Embroidered — Titles will not be worn on uniforms on which collar badges are worn which means, of course, that they will not be worn on service dress.

The winter title will remain pretty much as at present except that it will probably be reduced somewhat in size.

The summer title for wear on shirts will be a small slip-on type with the initials only of the Corps or unit.

Lanyards — Lanyards are to be retained as one of the few pure embellishment. The scale is being increased to provide for issue to all ranks, instead of only down to Corporals as at present.

Formation Signs — Formation Signs will disappear except for formed bodies of troops overseas who will probably wear a sign incorporating the rising sun.

Sam Browne Belt — The Sam Browne belt is to be worn by officers and WO 1s whenever service dress is worn outdoors. This decision will not apply until the new service dress becomes a general issue. Belts will be issued as personal *equipment.*

The decisions on these miscellaneous items, except for the Sam Browne, will be made effective in the near future. Some will have been promulgated by the time this article is read.

Scale

The Scale of issue cannot be stated precisely at this stage. It will be influenced both by the results of user trials and Treasury consideration. Whilst the basic intention is that ARA and CMF will be dressed alike, it obviously is not feasible, especially in regard to CMF other ranks, for the range and scale of dress to be completely identical.

Phasing

Two of the main factors which will affect the timings for the introduction of the various orders are the availability of funds and the large stocks of existing garments, such as khaki drill trousers, which have necessarily been built up for mobilization purposes. These stocks must be used up in some way. For example, khaki drill can be issued as field dress. It will be reasonably satisfactory for the purpose but will delay the introduction of the new green field dress for some years. It is clear, however, that priority one will be the issue of the new summer dress and the raincoat.

Conclusion

Much thought has gone into the present proposals and much will be discovered as a result of the trials. Don't imagine you will be getting your new uniforms next month or that the final answer to new dress for the Army will be exactly as indicated in this article. There is a long way to go and dress, like everything else, must take it place in the queue for funds along with all the other important things the Army wants. We are, however, under way and it should not be many years before the Australian Army is as well dressed as any army in the world.

COMPETITION FOR AUTHORS

The Board of Review has awarded first place and the prize of £5 for the best original article published in the November issue to "Unification by Evolution" by Lieutenant-Colonel A. Green.

Strategic Review

INDUSTRIAL AND TRADE DEVELOPMENTS IN COMMUNIST CHINA

STAFF SERGEANT P. G. GITTINS
20 National Service Training Battalion

Man is a preposterous pygmy who has taken upon himself the task of mastering the world and everything that's in it. To date the record has shown some brilliant successes, some indifferent accomplishments and a distressing number of appalling failures.

— G. E. Furnas

ASIA, and in particular, China, in the words of its principal revolutionary, Mao Tse Tung, has "stood up". It has ended the ascendancy of the West. For the first time for some centuries it has become again that part of the world on which the historian, philospher, scientist, and industrialist must concentrate if he wishes to see what of lasting interest is happening in this period of the history of man.

In China there have been radical changes, and the result has been to create a civilization derived partly from the tradition of Asia's despotic past and partly from the example of Communist Russia. Voluntarily of involuntarily, China and India are now in competition to see which is to become the pattern for the rest of Asia, and the issue is complicated by the world struggle of the Great Powers.

China, having undergone a political upheaval, may bring new wealth to human life and add something to our way of living. For centuries she has been a magnet, irrestibly attracting traders, missionaries, and adventurers. The civil strife, almost an accepted part of the Chinese way of life, has been fanned by Powers seeking to expand their sphere of influence.

China is, and has been, many things to many nations. To Japan she was the number one prize in Asia, the backbone of the great empire for the creation of which the Japanese jingoists risked (and lost) their all.

To Russia, China is the very active Asian partner in the world revolution and conversion to Communism.

To the USA, China was firstly the corner stone of the status quo in the Pacific. Today, through the eyes of American foreign policy she presents a problem, an economic and military "unknown factor".

To Australia, China with its 600 millions and their Asian communisation policy, their big influence on Asian affairs, and their economic and military pacts with other communist nations, constitutes an ever present threat to the security of our country. At the same time, however, she presents an excellent market for Australian produced goods,

raw materials, and food exports; and should this market be exploited to the full (without any military or political conditions attached thereto) it would result in a marked improvement in the financial and economic state of Australia.

Industrialisation and Military Strength

Warfare today, more than ever before, is a matter of economics. Military efficiency and strength is dependent to a certain extent on a nation's industrial strength, development and scientific and technical knowledge. A nation must have the big factories and heavy industries capable of turning out and maintaining a continuous flow of war materiel to the fighting men. Herein lies China's weakness. She is lacking in big factories and heavy industries.

The "Five Year Plan" System

To overcome this industrial weakness, the Chinese Communists have borrowed the same technique used by the Russians. They have instituted a system of industrial development based on the "Five Year Plan" and already in December last year, Mao Tse Tung announced that by 1972, their industrial production would exceed that of Great Britain.

Together Russian and China are challenging the industrial development programme of the Western world, challenging it as it has never been challenged before. The danger of defeat does not lie so much in the size and quantity of the opposing stockpiles of nuclear weapons or guided missiles, as in the economic challenge Communism is throwing out. To quote from Denis Warner, journalist and expert on Far Eastern affairs, in his recent report headed "The Booming Red Industry" —

"If it . . . (the economic challenge) can persuade others, as it has clearly persuaded President Soekarno in Indonesia, that its way is the only way for under-developed countries of Asia to progress, then Western civilization will shrink into isolated pockets and the Communists will dominate the world".

The Chinese are planning to become a major industrial power, and an industrialized nation of 600 million hardworking Chinese can dominate the markets of the world. The five year plan system dominates the whole of China's economic life. Imports, investments, production, the very standard of living — all are tailored to fit the plan. Factories are plastered with slogans, the competitive spirit has been carried from the factory level to the international field. Both Russian and Chinese industry is growing rapidly and production rates are continually on the increase, hence there is a justified cause for concern, particularly as British and American production rates are on the decline. If these trends should continue for a few more years, then there is a possibility that the grim forecast by Mr Warner could take place.

Industrial Achievements in China Under the Communists

In the few years the communists have controlled China there have been great strides taken in the overall industrial development of the coutnry.

Coal mines (and China has an estimated coal reserve of some 250 million tons) have been expanded, particularly in Hopei, and these, together with their allied industries, have provided the base for this industrial expansion.

The iron and steel industry of both Manchuria and the basin of the Hwang-ho have been expanding on an unprecedented scale. Four years ago, according to the Moscow trained party theoretician, Lu Shoa-chi, the steel production was 2,200,000 tons. This year (1958) he predicts an output of some 7,100,000 tons.

Hydro-electric power, already available and in service on a large scale in Manchuria, has been expanded. In

June 1958 a team of over 100,000 workers, including some 40,000 servicemen, completed the construction of a gigantic dam near Peking to hold 86 million tons of water, thus providing yet another source of hydro-electric power as well as water for irrigation. It is interesting to note that this project was completed within six months. China's potential natural water power has scarcely begun to be tapped, whilst the amount that could be created by engineering feats appears to be limitless.

In the petroleum field, China claims to have succeeded in extracting synthetic petroleum from turpentine of pine trees. Preparations are under way to construct a factory in Ichang, Hupeh Province, which could extract 6000 tons of synthetic petroleum a year. In the western part of the province there are big pine plantations from which it is estimated about 20,000 tons of petrol and diesel oil could be produced a year. By-products, such as lubricating oil, pitch, and insulating oil could also be produced from turpentine. Already there is an oilfield in operation at Yumen, and last year oil fields, believed to be fabulously rich, were discovered at Karamai. At Lanchow, an important railway junction, an oil refinery is being built, and a power and heat station is in prospect. Lanchow is also a big industrial centre for the production of enamelware, glass, hardware and rubber boots.

Automobile factories have been constructed near Peking, and the first Chinese-made cars have rolled off the production line.

Ship building has commenced on a scale greater than ever before attempted. At Shanghai, only one of the many ship building centres, an ocean going liner of 5000 tons was launched only three months after laying the keel.

Railroad construction has re-commenced after the temporary set back in mid 1957, when only 357 miles were laid, and 60 per cent of the annual appropriation was spent in remedying the faulty workmanship. The Vice Premier, Po I-po, announced a "great forward leap" in the national economy in 1958, during which year a total estimated £2000 million or 17.8 per cent more than last year, would be spent on railroad construction, development and expansion: "All China is to be covered by a network of railways within 15 years" he said, when telling railway workers what was expected of them. The builders will have to cope with sandstorms of the Gobi Desert, and bore at least 11 tunnels through the Tinshan Range, these being only two of the gigantic tasks facing them this year.

China's new film industry, which dates from 1949 when the Communists took power, has to meet a tremendous and ever-growing demand. By 1951 imports from the USA had been replaced by Chinese films and many from the socialist countries. China now has ten studios. Besides features, they are producing newsreels, documentaries, and many other types of films never before made in the country. Education shorts are being produced to spread scientific knowledge and to popularize modern working methods in industry and agriculture. Travelogues are made to show the beauty of the country as well as its huge resources, and to encourage native pride. Studios are situated at Changchun in north-east China, and in Peking, the capital. In Peking there are also the newsreel and documentary studios. Two more large film centres are being developed at Shian, the capital of Shenshi Province, and at Canton. The cinema is a formidable instrument through which the people can be educated in patriotism and socialism. To quote from Hsia Yen, Vice Minister for Culture, "Like industrial and agricultural production, the Chinese film industry has fulfilled and overfulfilled its first five year plan".

In the field of atomic and nuclear research, Communist China may soon announce it has the atomic bomb. If so, the bomb will be of Russian origin,

as this is a scientific feat that the Chinese could not achieve unaided. It suggests close technical co-operation with the Russians, and this has probably extended to the nuclear field. In recent months there have been reports in Soviet journals of tremendous underground explosions in Western China, "the biggest deliberate explosions the world has known". There are also whispers in some of the capitals of the world that the Chinese are expected to launch their own satellite. This would be startling news, particularly as the Chinese lag far behind both the Russians and the Western world in nuclear physics and electronics. To provide a nucleus of Chinese scientific and industrial research groups, and to help overcome this technical lag in this sphere of industrial development, the Russians, through their technical "advisers", are teaching and training the Chinese youth. They are slowly opening the doors to the mysteries and marvels of the space age, knowledge that is vital to China if she is to be a World Power.

Television is now operating in Peking — again evidence of the tremendous effort made by the radio telecommunication industry.

Maladministration of the Five Year Plan

Even when considering some of the more spectacular industrial feats of the first five year plan, it is still obvious that there has been a considerable amount of gross mismanagement and maladministration. Great sums of money have been wasted through lack of responsibility and thrift.

From Kunming, capital of Yunnan Province, comes reports that bicycles and high heeled shoes have been sent to remote hilly areas that haven't so much as even a footpath. One provincial corporation purchased 35 piano accordions costing about £187 each, completely disregarding the fact that they had already 10 of the same type, and had had them for some years! Wastage of medical equipment reached alarming proportions in Shanghai, the amount of equipment being sufficient to equip a medium sized hospital. Reform through labour has come under attack in Mongolia for extreme "inefficiency, waste and extravagance". One report from Mongolia mentioned "in the matter of machinery and equipment, the corrective labour enterprises have been guilty of gross negligence".

Irrespective of the number of these appalling examples of mis-management, the fact still remains that China, coupled with the Soviet Union, will, in a few years time, be a serious industrial rival to the Western world.

Trade with Australia

Much has been written in the Australian Press during the last few months on the question of trade with Red China. Many have been the arguments both for and against, and it is, therefore, my intention in this paper to present briefly both sides of the question.

The Case for Trade with China

If we look on China as a market for our goods, we can plan on the basis of 600 million customers and an almost limitless demand for Australian products. China needs our goods — steel-making equipment, heavy machinery, precision instruments, electrical plant, wool, foodstuffs — and we need the market. If we enter into trade agreements it would be good political sense and economic wisdom, as it would have the effect that China would not be so dependent on the Soviet Empire for her economic survival. The current Western trade embargo will not, in the words of Chou En-lai, "strangle China's economic development. It may slow it down a little, but only very slightly".

The Case Against Trade with China

If we were to recognize the Peking Government and negotiate economic agreements with them, the mutual confidence between Australian and America and the nations of Free Asia would be seriously affected. When considering the question of refusing to trade with Red China, it must be borne in mind that trade with communist nations, no matter how attractive the terms, could be a short cut to national suicide. Such agreements would bring about political infiltration by communist agents, and would invariably have either political or military strings attached. Delegates could be used as a means of establishing new agents, and contacting agents already here. In the course of time, requests would be made to grant them diplomatic status, with permission to have their flags flying from their buildings. This would give Red China prestige in Australia and encourage other overseas pro-communist countries. If China's prestige grows, rival ideals may be in eclipse. Anti-liberalism may become a crusade, carried on with immense material power.

Conclusion

The future in China is extremely hard to predict. It depends on too many ever-changing circumstances. Accident and the chances of personality will play their part. New inventions may, in a lifetime, utterly change all the conditions of life and alter all the present forces. Quite new political systems may result. With the whole world changing at amazing speed, China is caught up with the changes.

Who can tell what further and yet more radical changes may come about from the introduction of atomic power? Every major innovation in the means of economic production has in the past started major political upheavals: the Industrial Revolution is a classic example. If atomic power is harnessed, the changes which it may bring about in China may surpass those brought about by gunpowder, steam, and electricity.

With the lapse of time, Communism in China may lose some of its aggressive impetus. Revolutions after a time lose their vitality, and cease to be an international danger. In Russia there have been signs — perhaps deceptive — of revolution petering out. China, which borrowed its doctrine from Russia, may reflect the change, but as yet it is too early to know. For the present the revolutionary fires are still burning.

THROUGH A GLASS DARKLY

LIEUTENANT-COLONEL M. P. O'HARE, OBE
A/Director of Administrative Planning

IN a recent issue of the *Australian Army Journal*, the word 'democracy' was examined at some length, as an example of a word which has lost its real meaning and has taken on instead a concept governed by the ethos of the person who uses it. Although democracy was a reasonable example, subsequent perusal of the archives of Phantom Army Headquarters, captured in entirety in a recent bitter battle North of Puckapunyal, have shown that it is not only in democracies that words are hard to define. While we cannot guarantee the accuracy of translation from the difficult Phantom language, it is felt that our experts have arrived at a reasonably accurate assessment of the substance of the Phantom Army's working file.

It appears to start with a minute from the Director of Important Things to the Director of Unusual Detail in July 1958.

"

PHANTOM MILITARY FORCES

Minute Paper

Subject: Use Of The Word Logistic

DIT/95

DUD

1. At a recent conference there was a lengthy and inconclusive discussion as to whether the word "logistic" or "logistical" should be used in a paper which was being drafted. Very few knew or really cared about the correct grammatical word, but all wanted the Army to adopt a standard expression.

2. Would you please consider action to determine which word should be used and to advise all concerned possibly through MBIs. For my own part I prefer the perhaps less grammatically correct "logistic".

N. Nickoffski
Col
DIT"

23 Jul 58

It appears that the next move was by the DADUD who, on 25 July, passed the minute to his master annotated as follows:—

"DUD/

We might also try to define such terms as —

Logistically self-contained
logistically self-sufficient
logistic support.

Z. Duzlaz, Maj"

Subsequent hieroglyphs indicate that DUD first toyed with the idea of sending DIT's minute back to him with the suggestion that the word "grammatical" and "grammatically" occurring in it be replaced in both cases by the word "grammatic" but although DUD (Colonel Omaneski) is known to have attended an Australian Army school before the war, it is obvious that he had not perfected our normal method of disposing of a difficult letter, as he referred it back to the DADUD endorsed as follows:—

"DADUD/

We seem to need the word as —

(a) a noun
(b) part of a compound noun
(c) an adjective
(d) an adverb

What do the Jerks use — please discuss.

POM
DUD"

It appears that "the Jerks" is a commonly used slang term for Phantom's powerful and friendly trans-oceanic ally, Pullica, and DADUD lost no time in drafting a simple signal to the nearest Pullican Military Attache, his personal friend, who replied on 12 August 1958 as follows, by telephone:—

"1. Logistal is used adverbially.

2. The adjective is logistic.

3. Logistic Support is support give by a command to a person, activity, unit or force, by means of which are furnished all or part of its supply, equipment, combat material, maintenance, transport, administrative or any other like service, to allow it to carry out its own operations and movements expeditously.

4. Logistics (in a comprehensive sense)
Those aspects of military operations including —

Design and development
Acquisition
Storage
Movement
Distribution
Maintenance
Evacuation
Disposition
} of war materiel

Personnel movement, evacuation and mobilization.
Operation and disposition of facilities.
Action for furnishing services for planning and implementation and determination of requirements.

The sentence structure of para 3 and the meaning of the last part of para 4 appear to have been too much for DUD (who, from his handwriting, was a simple soul) so he called for the Staff College Precis in which, even in the Phantom Army, lie enshrined the simple facts for simple people. He jotted down the wisdom of the precis on the inside cover of the file —

"Logistics — The science of planning and carrying out the movement and and maintenance of forces."

He underlined it and put rings round it; obviously its magnificent simplicity impressed him. It could mean anything. It solved the problem. He reached for his Oxford Distionary and, joy unbounded, there was still only one word —

"Logistics — noun — Art of moving and supplying troops".

DUD relaxed; his efficient staff would deal firmly with DIT.

Unfortunately, however, DADUD was a keen, enthusiastic tenacious young man. On 23 August it seems that he attached a typewritten sheet to the file.

"Websters Unabridged Dictionary

Logistics — noun — (military)

That branch of the Military Art which embraces the details of moving and supplying Armies. The meaning is by some writers extended to include strategy.

— noun — (mathematical)

A system of aritmethic in which numbers are expressed in a scale of 60 — Logistic Arithmetic.

Logistic — adjective
Logistical — adjective } Skilled in calculating."

It seems that it was at this stage that DUD spilt his morning rum; no doubt the sinister mathematical implication disturbed him. Here was a matter too weighty for the General Staff. In his hour of travail DUD thought of Colonel Lord Castle in A Branch. Here was a man of such lore and erudition that it was widely believed that following the release of the recent Nuthinsen Report on Pay and Allowances for the Phantom Army, he had, alone and unaided, computed the daily emolument of a corporal fitter. What, he was asked in writing, is Logistic Arithmetic? It even beat Lord Castle, he thought it was a method of teaching children to count, using shells instead of beads. DUD seems to have annotated the file with an opinion on this view which is too idiomatic for our translators but we suspect that it does not signify agreement. The only course now open to DUD was to solicit an opinion from a master of the complex; he wrote to Mr Scrooge Kisspenny of The Funds for an explanation of Logistic Arithmetic in which numbers are expressed in a scale of 60. Scrooge Kisspenny replied at once.

Department of The Funds

(Soldier Exploitation Branch)

Skinflint Barracks
25 Aug 58

My Dear Colonel,

We thank you for your splendid help and co-operation. Your suggestion is the most promising and practical which has been put before us since rent went up 15 per cent. It is so simple, so clear and so just; now we can see a way to pay out on a basis of 60 arithmetic and deal with the soldier on the normal basis of 100 with the resultant continuous saving of 40 per cent. To this end we have already appointed an Assistant Secretary (Logistic Arithemetic) (£5013 - 5711) (Old £402) and a Deputy Assistant Secretary (Logistic Arithmetic) (£3998 - 4221) (Old £318) for each branch and Service and are about to post ADAS, DADAS, and ADADAS to platoon level.

You may rest assured that your loyalty and patriotism will be stressed in the appropriate political quarters.

Gratefully,
S. Kisspenny
Supervisor."

It seems that at this stage, about 31 Aug 58, the DADUD attached to healthily growing file another typewritten excerpt.

"Chambers Dictionary

Logistics — noun — The art of calculating by the four fundamental operations; sexagesimal arithmetic; the science of moving and supplying armies."

Australian Intelligence reports indicate that Lieutenant Z. Duzlaz is at present commanding a Bomb Disposal Platoon on the Alice Springs front. Our translators had great difficulty with the pages on which Phantom Staff officers speculated about the meaning of "the four fundamental operations". They agreed that sleep was not one of them.

Nothing was left now but for DUD to communicate with the Grand Headquarters of the Phantom Empire. The Directorate signalled as follows:—

"Most — Immediate — Topsec
From: Army Pucka — XL 1287
To: Phantarm Donlon — 081610K

Consideration being given to preparation of MBI defining meaning of quote logistics unquote and associated terms (.) appreciate advice whether bonehead use following terms and if so their definition for each term (.) Alpha (.) logistic support (.) Bravo (.) logistically self contained (.) Charlie (.) logistically self sufficient (.) Delta (.) also whether quote logistic unquote or quote logistical unquote is used when word is used as an adjective"

Back came the reply —

"Topsec — By Air 2097 — Phantom Staff Phantom Hut Donlon

In reply quote
17/1/312

Phantom HQ

Pucka

Definition of Terms

Reference XL 1287.

1. None of the terms have been standardized, or processed, for standardization. The term "logistics" and "logistic support" are, however, in general use by Bonehead.

2. Logistics — Defined as the science of planning and carrying out the movement and maintenance of forces. Is at present the agreed Joint Services definition. The term is being processed for the Ocean Treaty Organization for standardization but different definitions of member countries have yet to be reconciled.

3. Logistic Support — At present there is no agreed definition but we feel the following definition from the Pullica Armed Forces Dictionary (1956) would be acceptable. (Here followed the definition given in the conclusions and in the telephone message above.)

4. Logistically self-contained / Logistically self-sufficient { These terms are not used by us and in the opinion of officers from Pullica are not generally used by them.

5. We consider logistic is the correct adjective but Chambers's Dictionary permits the use of *logistical*.

L. G. Thread, Maj
for Phantarmrep"

At this point the file appears to have been captured by the recent Australian offensive so we will never know the final Phantom decision, nor if DIT received a satisfactory answer to his original query.

Conclusions

Fas est ab hoste doceri; perhaps we could learn from the enemy. We too make use of these terms and it is desirable that we adopt well known and clear definitions for them. It does not seem of sufficient urgency for Australia to decide on and publish official definitions in advance of any standardization which may be reached by regional defence organizations, such as NATO and SEATO, of which the Commonwealth countries are members. In the interim, however, we might well adopt the following as the normal usage of the terms.

Logistics

The science of planning and carrying out the movement and maintenance of military forces.

Logistic Support

The support given by a command or other organization to a person, activity, unit or force, by means of which are furnished all, or any part of, its supplies, equipment, combat materiel, maintenance, transportation, administration, or other like service, so as to enable the person, unit, activity, or force, to carry out its own operations expeditiously.

Adjective

Normal usage should be "logistic" as for "logistic installations", "logistic units".

Other Uses

Expressions such as "logistically self-contained" should be avoided, they can never be completely true; and there is no requirement for the word "logistical" outside the monumental works of Mr Webster and Mr Chambers.

A PHILOSOPHY OF LEADERSHIP

COLONEL M. AUSTIN, DSO
Australian Staff Corps

IT is many years since Aristotle pointed out the distinction between Man and the animal — the ability of the former to reason, as opposed to the latter's unthinking instinct. It is because of this faculty that our lives are controlled by various arts and sciences, or mental skills, and we follow that pattern of life which appears most desirable to us. In order to reason, however, we must have knowledge, and this has to be acquired.

Knowledge may be either speculative or practical. The speculative (or theoretical) processes of thought take place entirely within the mind and are concerned with the acquisition of knowledge merely for acquisition's sake, and not necessarily with any thought as to its practical application. It is this process which gives a mental vision of the end product, logically arranges the facts and, if necessary, allows the knowledge to be applied to a practical end. Theory must precede practice.

The practical application of knowledge is a different process. To apply the knowledge gained successfully, so that something is made or done, often requires special techniques or natural endowments. For example, it is possible to know as much about billiards as Walter Lindrum, without being much more than an average player, or for that matter being able to play at all. Similarly, it is relatively easy to acquire knowledge of how to be a leader without necessarily being able to apply that knowledge. Character must be present in a person who would aspire to practice the science of leadership, although this is not necessary for a person who is merely seeking a knowledge of the art of leadership.

Leadership is essentially a practical skill, and consequently not everyone can be a leader. This is so because a successful leader also requires certain innate abilities not possessed by everyone. However, provided the method of leadership selection is sound, it is possible to impart the necessary theoretical knowledge and develop the techniques and natural endowments which are also required. This is not to say that all leaders require these qualities to the same degree. Far from it. The talents required of a battalion commander in the field are not necessarily those required by the Head of a Corps at Army Headquarters, and yet they must both provide leadership.

What makes a leader? Field-Marshal Slim states that —

> ". . . . leadership is of the spirit, compounded of personality and vision".(1)

The Australian Army defines leadership as —

> "The art of influencing and directing men to an assigned goal in such a way as to obtain their obedience, confidence, respect and loyal co-operation".(2)

(1) Australian Army Journal No 102, page 7.
(2) MTP Leadership (provisional) 1957, page 5.

An analysis of various writings on the science of leadership shows that the requirements expected of a leader naturally fall into a discussion of —

The urges which drive men on.
Qualities of character, and
Natural gifts.

The Urges Which Drive Men On

There is a driving force of self-fulfilment in all men, a belief in the dignity of man and his ultimate destiny. The greatest leaders have always acted as if they believed themselves to be the instruments of fate. All their thoughts, words and actions have been concentrated on the attainment of their own spiritual ideal — an ideal which they have pursued with passionate intensity.

It is not easy to define this ideal, since it is essentially of the spirit, and because of the tyranny of words a definition may not convey the same meaning to all.

Faith, belief, a sense of purpose, a goal or aim in life, a deep conviction, can all be used to describe the feeling of purpose, the urge to achieve, which all great leaders possess to a remarkable degree. For ease of discussion the word "faith" will be used, although obviously many will have their own understanding of that word, particularly in its religious sense.

Basically what should be believed?

> "that each of us has a duty to defend the community against evil designs and aggression and to preserve for our children that which was given to us, that each of us has a duty to deal fairly with his fellows in the transactions of life, that each has a duty to himself and to his fellows of honest work, that the development of a true community amongst ourselves and with all peoples of good will is the one way to peace at home and abroad".(3)

(3) A Call to the People of Australia" — Bardon et al.

These beliefs are not new — they run like a golden thread through the tapestry of history providing incentive to all manner of peoples in many ages. Mencius, an ancient Chinese philosopher, wrote of them; they were embodied in the Chinese Imperial Constitution; Judaism, Christianity and other religions have incorporated them in their philosophies; the American Declaration of Independence recognized their existence; they are in the preamble to the United Nations Charter.

The characteristic of faith is an intensity of purpose allied with an appeal to the emotions, which in turn is dependent on mutual trust between the leader and his men. Above all there must be this element in the struggle for achievement — the knowledge that ultimately any sacrifice required will be worth while.

Intensity of purpose is derived primarily from the passions — a much misunderstood word in this modern world. In its true sense the word passion merely means the intensity of some craving or emotional drive, and consequently is the great motive force behind most human acts. Of the three ingredients necessary to sustain passion — knowledge, a movement of the sense appetite, and some bodily change — possibly the second constitutes its essence, the natural movement to accept what constitutes bodily good and to avoid what may be bodily harmful.

Those manifestations, which are commonly known as passions, may be either simple or emergency and, with the exception of the emergency passion of anger, are all grouped in opposites, such as the simple passions of love and hate, desire and dislike, pleasure and sadness, and the emergency passions of hope and fear, daring and despair.

Everyone at some time or another has felt the power of anger — even possibly cringed before it. However, to be a sustaining force, anger must be

controlled and directed towards some ultimate aim. Blind anger is uncontrolled; is soon dissipated and consequently achieves little. The leader who constantly gives way to blind rages engenders little confidence in his troops.

To achieve any intensity of purpose the leader must not only know what his aim is — he must believe avidly that it is right. His aim must be crystal clear so that he knows what he wants to do, and how he intends to do it. This requires knowledge — a knowledge of the reasons why he is in the army; why the army is in existence; the forces which threaten our national security; the philosophical basis on which those forces rest; and why that philosophy is alien to our way of life. This connotes inflexibility of purpose, but not of mind.

However as —

> "Intellectual indoctrination without emotional excitement is remarkably ineffective," —(4)

the faith of the leader must appeal to his men. He must be able to show conclusively that what he himself believes to be right is right. He must be able to appeal —

> "The eighteenth century, like the twentieth considered itself an "Age of Reason;" the intellect was, in fact, held to be far more important than the emotions, when habits of thought and behaviour needed to be dictated. Wesley's great success was due to his finding that such habits were most easily implanted or eradicated by a tremendous assault on the emotions".(5)

The leader must, therefore, be an effective public speaker, and have a good knowledge of applied psychology.

To appeal, the leader must be seen, for there can be no leadership in isolation. There must always be someone who can symbolize the ultimate aim, and that can only be the leader. Trust and loyalty cannot be given merely as an ideal.

Not a little of a leader's appeal comes from his own obvious belief in the dignity of man, in the good which exists in everyone —

"E's a bright an' shinin' sample uv a the'ry that I 'old:
That ev'ry 'eart that ever pumped is good fer chunks o' gold.
Ev'ry feller is a gold mine if yeh take an' work 'im right:
It is shinin' on the surface now an' then;
An' there's some is easy sinkin' but there's some wants dynermite,
For they looks a 'opeless prospect — yet they're men."(6)

The true test of leadership comes in times of stress, when morale is dropping and disillusionment is setting in. The leader must draw on all his resources of moral courage, and his men must be prepared to make any sacrifice for the cause for which they are fighting. It is only then that the leader will know whether he has been successful in identifying his men with himself and his convictions. If he has not been successful distrust will soon appear, and with it disloyalty, lack of responsibility, frustration and a sapping of all moral courage.

However, the sacrifice must be worth while. Not only the hope that the end will be achieved, but the achievement itself will provide the necessary self-satisfaction.

The onus of proving that the sacrifice is worth while lies with the leader at whatever level he may be. Consequently morale within a unit may be high, due

(4) "Battle for the Mind" by William Sargant, 1957 reprint, page 98.

(5) "Battle for the Mind" by William Sargant, 1957 reprint, page 76.

(6) "The Push" by C. J. Dennis.

to good man-management by its commander, whereas the overall morale of an army may be low because of stupid personnel management policies. A commander can do, and does, a tremendous amount to build and sustain morale within his unit. But he can do little about housing, pay rates, and general conditions of service, all of which obviously lie within the wider sphere of national leadership.

An appeal to a spiritual ideal may be sufficient in time of war; in peace-time a more materialistic approach is often required. For example, since the Australian Army is to be ready to fight, at a moment's notice, for those basic human rights and values to which, as a nation, we all subscribe, the soldier must feel that the people of Australia (represented by their elected leaders) really care. He must feel that the task of defending the nation is so important that the nation is prepared to make some small material sacrifice for the group which must bear the onerous responsibility for it. If, however, the feeling is bred that the only thing which matter is finance, then the soldier's faith in his leaders, and himself, will ebb.

The problem of providing the necessary appeal to his men becomes greater for the leader as the promotion ladder is climbed. The platoon commander cannot avoid gaining personal contact with his men, whereas a battalion commander will take quite some time to achieve the same result. In spite of modern publicity media senior leaders must be seen personally by their troops, and must be capable of engendering trust in all subordinate ranks. This can only be done if the leader's own faith is intensified as leadership becomes progressively more impersonal. Leadership must always come from the top of the organizational structure, it should never start halfway down, or at the bottom. Consequently any organization whose top management is conducted on committee lines is at a disadvantage to one which, although organized on similar lines, has a Managing Director or similar officer who can make the necessary personal appeal.

Finally, from faith, naturally follow the personality traits which most students of leadership expect in a leader — moral courage (and through it physical courage) loyalty, decisiveness and enthusiasm (or will power and drive) initiative, a willingness to assume responsibility, reliability, and by no means least a pride in one's profession, which in turn influences bearing and turnout.

Character Qualities

There are only four qualities of character which co-ordinate human activity — prudence, justice, fortitude and self-control. From these four qualities stem all personality traits which are considered to be required by a leader — friendliness and affection, unselfishness, compassion, integrity, sense of honour, judgement, ability to select subordinates, and tact, to mention only a few.

Prudence is that quality of character which directs acts to their proper goal. It, therefore, implies foresight — the ability to foresee what must be done to achieve the desired aim, and what must be avoided. The prudent man not only knows what should be done, but also applies that knowledge to his actions. The impractical, impatient and impulsive all lack prudence and consequently are all selfish, since they never consider the effects of their actions on others. They appear to be extremely busy, achieving nothing.

Prudence is a habit of the mind acquired slowly with age, experience, education and character training — it, therefore, implies maturity of mind. It employs a great number of talents — memory, understanding, receptivity to instructions, shrewdness, reason, fore-

sight, circumspection and caution. All these talents require time and perseverance, before they can function perfectly, and only those with faith — a vision — will remain steadfast until the mind matures to the degree necessary for the task in hand.

Peace and order within any group can only be attained by the practice of the quality of justice. It is justice which leads the policeman to enforce the laws without fear or favour; which leads men to give others their dues; to respect each other's rights; and which gives the group the stability so necessary for succestsful and efficient attainment of the aim.

If it is conceded that men have rights, either natural or positive (that is, given by civil law) then it must also be conceded that other men have an obligation to respect those rights. Therefore, the actions of all men within the group must be regulated so that the rights of all are safeguarded. This is the justice which must be given by the leader.

Of the two types of justice, particular justice is concerned with the relations between men as individuals, while general or legal justice regulates the relations between men as members of a community, so that the common welfare of all is protected. The value of justice in a community is probably measured best by considering the effect of injustice. Any unjust man, whether in a position of authority or not, is a threat to the peace of the community. Stability is upset, and men lose the incentive to work either for themselves or the common good. Suspicion and hatred replace trust, and cunning backed by the law of force soon appears. Leaders must not allow injustice to creep into either their own acts or those of their subordinates. Moral cowardice stems from injustice. It is only the moral coward who shields behind others when uttering his opinions, and has not the courage to come out into the open.

From the character quality of justice stem the personality traits of judgement, ability to select subordinates, tact, integrity, impartiality and a sense of honour.

We all admire a hero — a man who refuses to be stopped by any difficulty, who faces up to his responsibilities; who is strong enough to oppose difficulty with strength, danger with courage, and who faces death without fear. It is the quality of fortitude which enables men to do all these things. Consequently it is fortitude which is directly concerned with both moral and physical courage.

Fortitude directs and moderates the traits of daring, fear and anger, by removing the obstacles which prevent the desired goal from being achieved. Consequently it is very closely allied with prudence, since it is the latter which tells a man when his daring is excessive and foolhardy, and unlikely to succeed. Like all other virtues, fortitude follows a mean between two extremes, excessive fear and excessive daring; the cowardice of the timid and the fearful, and the stupidity of the reckless and inexperienced.

Fearlessness may be considered a good thing — but it can be the very opposite of fortitude. The man who rushes into danger without measuring his own strength or the chances of success, is not displaying fortitude but recklessness and a desire for vain glory. This is the type of man who needlessly risks the lives of others by his gross stupidity and lack of prudence; who is always ready to make a decision, but who lacks the flexibility of mind to change a plan when it is necessary. All this must not be confused with the truly courageous — those who carefully assess the risks involved and then deliberately risk their lives if necessary to achieve their aim.

Arising from fortitude is magnanimity — that quality which enables men to rise above petty things. The magnanimous

man is not vain, since he does not seek honour for the sake of honour. He acquires great honour absolutely and simply because he tends to do things which are great in themselves. Since the magnanimous have hope they have confidence; because they have fortitude their minds are free from worry and they have assurance. At the same time all great men are humble — they always acknowledge the work of others; they realize the lack of proportion between their own personal efforts and the things they are trying to achieve; they do not attempt the impossible.

Lack of fortitude is evidenced by laziness — either mental, physical or spiritual. Putting off until tomorrow the tasks which should be done today; taking the easy task first and always deferring the more difficult, refusing to face responsibility, being hypocritical, are all symptoms of a lack of fortitude.

The place of the passions in providing impetus to the leader's faith has already been indicated. However, it must also be realised that the leader must not only be capable of controlling his own passions, but at the same time he must be capable of arousing, controlling and directing the passions of his followers towards a definite task. This applies particularly to the emergency passions of hope, fear, daring, despair and anger, which are of outstanding importance in war. This can only be done if the leader possesses the character quality of self-control; otherwise the strength of the passion merely becomes a source of weakness.

The two qualities most necessary for self-control are found in most men — a sense of embarrassment and honesty. A sense of embarrassment makes a man fear to do a base or ignoble act, prevents him from excesses in the presence of others, strengthens his self-control, and assists him in moderation. How often is the expression "No one can embarrass him" used as a term of approbation? This can never be said of the true leader, since if he does not have a sense of embarrassment he must surely be over-confident to a dangerous degree.

All men have a natural tendency towards honesty — even the greatest of thieves may have complete honesty in words and in his other actions — the greatest hypocrite may be honest with other people's money. Honesty works closely with a sense of embarrassment to build up and preserve self-control. It is self-control which produces clemency and modesty which in turn provides the mean between humility and pride, between studiousness and curiosity. It is self-control which makes the leader the master of himself and the material world in which he and his men live, which allows him to achieve his aim.

Natural Gifts

The natural gifts are those with which we are born. These endowments are bequeathed to us by untold generations of ancestors — intelligence, perspicacity, physique, endurance, physical and nervous energy, flexibility of mind, teaching skill and many others, which in turn are modified, nullified or strengthened by the environment in which we are reared and in which we live. These are really priceless talents which in the main are not used to the full, either because we are unaware or only partly aware that we have them, or because circumstances have never existed which would call for their full use. No one is born with the same degree of intelligence and physical strength or of any other of these gifts. They cannot be taught, but they can be tested, and if necessary encouraged and developed. Most of them are latent until they are required. A man's endurance is not really known until he is deliberately pushed to its mental or physical limit. It is the inner faith and strength of character which will carry the leader through, long after those with a lower leadership potential have cracked. Interrogation teams have proved that time and again.

Conclusion

The basic requirements of a leader — faith or the urge which drives him on, qualities of character and developed natural gifts are formed and sustained mainly by operative habits, that is, those which result from human activity. By repeated actions of one particular kind a man acquires such habits. For example, if a man desires to be truthful he must always tell the truth. After continually telling the truth he will find it increasingly harder to tell a lie. As Oliver Wendell Holmes put it — habit is "a labour saving invention which enables men to get along with less fuel".

Leaders will acquire many habits in the course of lifetime. Habits can be learned and forgotten, changing in intensity and direction with the leader's objective. Therefore, they can be taught, and the success of the teaching will be reflected in the practical application of the knowledge and habits gained. As Thackeray said —

"You sow a thought and reap an act,
You sow an act and reap a habit,
You sow a habit and reap a character,
You sow a character and you reap a destiny".

The United States Strategic Army Corps (STRAC) is composed of the 82nd and 101st Airborne Divisions and the 1st and 4th Infantry Divisions with a total strength of over 125,000 men. Command facilities are provided by the XVIII Airborne Corps headquarters. STRAC has been described as that element of the Army which is maintained in the Continental United States to meet or reinforce any initial emergency requirements throughout the world. Mobility for STRAC forces is to be provided by the Navy and Air Force.

Military Review, USA.

SOME THOUGHTS ON THE TASKS OF FIELD ENGINEERS IN NUCLEAR WARFARE

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KNOWN problems confronting Field Engineers in nuclear warfare will be considered by taking in turn the principal field engineer tasks. These tasks will be examined in the light of current knowledge of the physical effects of nuclear weapons and the necessity to achieve a balance between dispersion, protective measures and mobility of an army in the field.

Obstacles

A defence based on defended localities and defended areas has been recommended as an essential requirement in nuclear warfare. To limit penetration and where possible to canalize it, the maximum use of natural obstacles will be necessary. Engineers will be faced with the task of providing more minefields and of developing more natural obstacles. Conversely, in offensive operations, the task of overcoming enemy obstacles and opening up routes is likely to be a greater problem than in the past. To achieve a satisfactory result, all available plant and manpower of all arms and services must be deployed. This points to the fact that other arms and services must do more than pay lip service to the need for training in field engineering, particularly minefield and obstacle construction and clearance.

Apart from wire, obstacles generally are little affected by air burst nuclear missiles and only locally by ground burst devices. However, ground bursts will create serious obstacles in the form of craters and the surrounding radio-active areas. Thus, a 20KT ground burst bomb would produce a crater about 800 ft diameter and approximately 100 ft deep. The crater would contain rubble and loose material and might partly fill with water due to seepage. Added to this, the area would be contaminated with residual radioactivity and would constitute a major problem if it had to be refilled.

In built-up or heavily wooded areas, the destruction of buildings, the felling of trees and branches, and the associated conflagration and debris would most likely give rise to an obstacle of major proportions. Such areas should be avoided and by-passed wherever possible.

Breaching of Minefields

The relatively long duration of the pressure wave and high wind velocities associated with an air burst nuclear explosion may result in the current pressure operated types of mines being detonated within the area of ground zero and some distance beyond it. Other special types of mines which could not be detonated by an air burst, could be destroyed or neutralized by surface burst explosions — but the resulting crater is itself an obstacle of far more serious nature than the minefield.

However, air burst weapons used as a tool to neutralize or breach minefields will be of limited value. In the first place, reconnaissance will be essential to

determine that the minefield is susceptible, ie, contains mines which can be neutralized. There will be also the difficulties associated with the placing of the bomb accurately over the target, and the risks which must be taken if a number of bombs must be used to produce a guaranteed gap. Economics alone would tend to rule out this method of minefield breaching and, further, close proximity of our own troops to the enemy minefield would prevent it entirely.

Mechanical breaching of minefields has limitations both in effectiveness and vulnerability and there have not been any startling developments in this field. At present, hand breaching is still the only reliable method. However, times to breach a gap by hand are unacceptably long, particularly if advantage is to be taken of nuclear weapon support on forward enemy locations. Further, a lane through a minefield constitutes a defile and may well prove to be an ideal atomic target particularly for shells. Consequently, early development, including widening and improvement, of the number of lanes and/or gaps will be essential.

Field Defences and Protective Works

If troops are likely to remain in an area for a time sufficient to invite atomic attack, cover must be provided. Initially, it should minimize the effects of heat flash, and subsequently be developed to provide protection against gamma radiation. For weapon pits and trenches, some form of overhead cover is, therefore, essential to provide protection against thermal radiation. Overhead cover will also limit the reflection of gamma radiation from the trench sides and will provide some protection against scattered radiation. Development to provide adequate protection from gamma radiation will depend, however, on the time and resources available.

The provision of protection for Headquarters, communication centres, workshop facilities, medical facilities, guns, command and wireless vehicles is an immense problem. For example, 5 to 6 pounds per square inch overpressure will cause serious damage to all exposed "B" vehicles over an approximate area of of diameter 4000 yards. Thus, unless some form of protection is provided, one bomb exploded in the right place at the right time could well result in a crippling loss of maintenance transport.

The engineer problems associated with the provision of protection are largely earthmoving plus the provision of stores for shelter construction and, in some cases, ventilation and lighting. Drainage is, of course, also an engineer problem. So that the problem may be viewed in correct perspective, it has been estimated that the excavation and construction of an atomic-type battalion command post would take 8 - 10 days assuming all stores, etc, are available, engineer plant is used for excavation, and 15 men are employed on the task. Reflection will prove that not every battalion may expect to have its command post constructed to atomic specifications.

River Crossings

To achieve surprise and speed in crossing and to avoid concentration, a river obstacle must be crossed on a wide point at a number of crossing sites providing flexibility in choice of routes. Each site should be served by the maximum number of routes as approaches and exits, thus lessening the tendency to concentrate. Generally, selection will favour those sites with good exits.

Bridging

It is fairly obvious that an army which relies on only a few crossing sites over a major river obstacle will present an attractive atomic target. Assessment of the damage at Hiroshima indicated that reinforced concrete bridges would be little affected by air burst atomic explosions; neither would fords and underwater

bridges. Floating bridges would be damaged principally by wave action on the short ends, by the burning of inflammable components, and by resultant blast damage to pontoons by flying debris. Timber bridges could catch fire. Steel bridges near ground zero or even broadside on at some distance away would be damaged if only by lateral displacement.

Safety will lie in keeping military bridges spaced well apart. Alternative crossings should be constructed and ample reserves of equipment should be held for the maintenance, or if necessary, replacement of key crossing sites. Flexibility will be achieved by the development and use of fords. The possibility of developing "underwater bridges" should not be dismissed. In the event, however, the use of air transport would solve many of the engineer problems.

Routes

Other than at defiles and points of concentration, roads and railways are not an attractive atomic target. The requirement for initial dispersion of forces followed by rapid concentration for offensive action may impose on engineers the construction and maintenance of greater total lengths of roads than in the past. Further, extensive reconstruction may be an urgent requirement.

The time any one engineer unit or sub-unit is able to work in a radioactive area will be very limited. Relief will require either the provision of additional engineer units or, if not practicable, the avoidance of work in such areas. Decontamination of engineer plant will also require consideration.

Water Supply

Sources of water may be contaminated by —

(a) Induced radio-activity due to a ground or underwater burst.

(b) Fall-out of radio-active particles.

(c) Deliberate sowing of radio-active material.

Water itself quickly loses radio-activity. The duration of contamination depends on the salts in solution and the suspended impurities. The principal danger is from the ingestion of radio-active material into the body. Consequently, all water supplies will need regular examination and the imposition of strict water discipline may be essential. It is to be stressed that, as a means of removing rado-activity, boiling is ineffective.

Measures necessary to contend with radio-active contamination of water are —

(a) Distillation of all drinking and cooking water. This will remove most radio-active material. (Some radio-active Iodine can be carried over as vapour during distillation.)

(b) Sedimentation and filtration should remove all except soluble radio-active matter. Recently, special clays which absorb radio-active particles have been discovered to improve the process.

(c) Monitoring of radio-activity at water points should be continuous.

(d) All storages should be covered as protection against fallout.

(e) Reconnaissance of alternative water supplies, to enable a quick changeover to uncontaminated sources.

Contamination of water supplies by sowing prepared radio-active material, used as part of a scorched earth policy by a withdrawing force, would be a serious problem during an advance, both because of its morale effect and the technical and administrative difficulties of providing a safe water supply.

Following an attack by a ground or water burst nuclear weapon, decontamination of equipment and vehicles would require considerable quantities of water. Whether it would be possible from a water supply, or organizational point of view, to carry out decontamination in a forward area is open to question.

Damage Assessment, Debris Clearance and Decontamination

Following an atomic attack, it would be necessary to obtain a rapid assessment of the damage, mark radio-active areas, deploy fire fighting equipment, engineer plant and labour, and get the rescue and relief teams into operation.

Engineer units forming a large part of the "disaster organization", would need to be first in the field. They must be highly trained in monitoring and assessment of radio-activity, and its effect on the times teams can work in various parts of the devastated area. However, radio-activity is not likely to hamper work, with air bursts over 500 feet.

Engineer tasks will include the provision of water for decontamination, drainage, and plant for removing or burying radio-active matter. The selection of a disposal area will be influenced by the movement of ground water and natural drainage.

Airfields

The large engineer effort necessary to construct or repair an airfield capable of carrying modern military aircraft indicates that modern airfields will be ideal atomic targets. An airburst weapon would have little effect on the runways, but would destroy facilities and insufficiently protected aircraft. A ground burst explosion would destroy runways, and the resultant radio-activity would considerably delay any repair. Extension of the undamaged section of a runway or construction of a new one may be better than the repair of a radio-active crater. Consequently, complete reliance on aircraft for delivery of nuclear weapons could be unsound if the enemy launched concentrated attacks against our airfields. It appears desirable to have numerous airfields supplemented by guided missiles and guns to meet the nuclear weapon requirements of tactical commanders.

Concealment and Camouflage

The threat of enemy nuclear weapons makes it more than ever necessary for a commander to conceal his intentions, and hide or disguise the key groups of his force. Headquarters, reserves, counter-attack forces, gun areas, armour, and communication centres must be given the highest degree of concealment by using natural cover, artificial camouflage, dummy construction or other special techniques. These measures must be supplemented by effective dispersion.

Dispersion will make deception more difficult. However, routes and movement must be strictly controlled and the maximum use of night movement will be essential.

Camouflage materials must give protection against heat flash and be fire and blast resistant if concealment is to be maintained. The need for increased digging makes extra work in concealment of both field works and excavated soil necessary. Alternative or dummy positions may be necessary where concealment is not practicable.

After an atomic attack is sustained the enemy should be deceived as to the success of his strike. Deception resources should be deployed over the target area concurrently with damage assessment, rescue and relief teams. Massed use of smoke could be effective as both a concealment and protective measure.

Engineer Organization and Equipment

The effect of nuclear weapons on engineer tasks inevitably leads to a demand for more engineer units with greater resources of more mobile and specialized equipment. The dispersed area to be served will throw added responsibility on more junior engineer commands, whilst the peak demand for the services of Engineers will require excellent communications to allow the senior engineer commanders to exercise centralized control, and to ensure economy of resources.

During quieter periods, the engineer tasks may be little heavier than before the advent of nuclear weapons. However, peak requirements, such as during an attack, will be much greater than previously, and the demand will come very suddenly. Rapid reinforcement forward from Corps and/or Army will, therefore, be even more important.

The universal requirement to dig in and to produce obstacles on an unprecedented scale, together with maintenance of additional routes, necessitates a re-examination of field scales and types of engineer plant and equipment. There is a case for more dozer and excavator capacity in the divisional engineers in all phases of war. Perhaps there is also a requirement for specialized entrenching equipment or comparable excavation attachment.

Conclusion

The traditional role of engineers in the Army will remain in a war in which nuclear weapons are employed. Engineer tasks are generally the same irrespective of the type of war. However, the demand for more engineer work will be met only by a realistic approach to the provision of engineer plant and equipment adequate both in capacity and numbers. Another important point is that other arms and services must be prepared to undertake minor engineer tasks particularly in field engineering.