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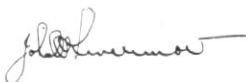
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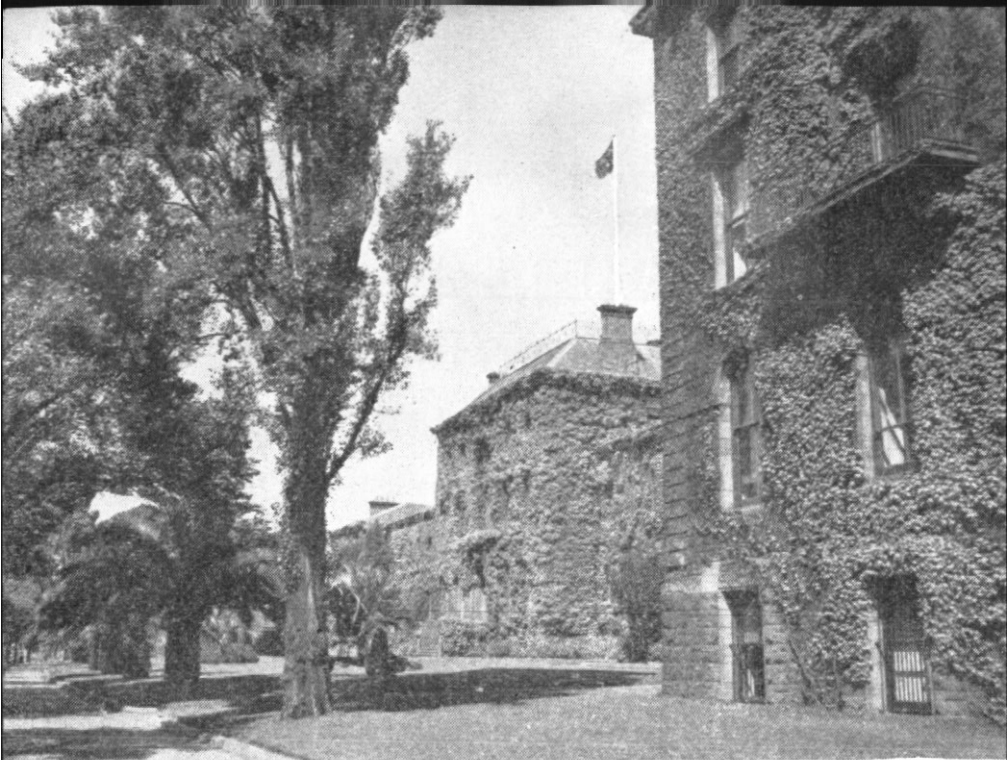
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VICTORIA BARRACKS, MELBOURNE.

# AUSTRALIAN ARMY JOURNAL

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# The Coronation of Our Queen

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*"Elizabeth the Second, by the Grace of God, of the United Kingdom, Australia and her other Realms and Territories, Queen, Head of the Commonwealth, Defender of the Faith."*

WHEN Queen Elizabeth II is crowned on 2nd June, she will take part in a ceremony that is at the same time more than 1,000 years old and startlingly new. The first description of an English Coronation was by Egbert, Archbishop of York, in the 8th century. Certain forms of Elizabeth's Coronation will be used for the first time.

Most significant of the latter is that the Queen's title will, unlike those of her predecessors, vary in different parts of the Commonwealth of Nations. The common element in the various styles will be "Elizabeth the Second, Queen of her (other) Realms and Territories, Head of the Commonwealth". To these, every realm except Pakistan, but including Australia, will add specific mention of its own name; all but South Africa and Ceylon will include mention of the United Kingdom; and all the Christian realms except South Africa will add "Defender of the Faith".

Another important change is that the term "Dominion" disappears

from the Queen's titles, also the adjective "British". More use is likely to be made of the term "Realm", which, though signifying Royalty, avoids any implication of "domination".

Changes in the forms of Coronation are nothing new in British history. They have been varied according to the demands of history. The early English kings, for example, usually referred to themselves as the sovereigns of their peoples rather than their lands. Thus, they were kings of the Angles, or the Saxons, rather than of England or part of it. For several centuries English kings included a claim to the throne of France in their titles. The Hanoverians from George I to William IV included a claim to the Electorate or Kingdom of Hanover. Victoria, Edward VII, George V and George VI were also described as Empress or Emperor of India, but George VI relinquished this title in 1947.

With the years, however, the title of the Sovereign has become

more of a spiritual symbol and less of a material one. The Queen herself emphasized this in her Christmas Day broadcast to her people. "Pray that God may give me wisdom and strength to carry out the solemn promises I shall be making and that I may faithfully serve Him and you all the days of my life," she said. "At my Coronation next June I shall dedicate myself anew to your service".

It is the spiritual nature of this year's Coronation that should emphasize to us the importance of our duties toward the Sovereign. She will dedicate herself under God to us. We owe the duty of being good subjects to justify that dedication.

The Coronation ceremony is primarily a religious service, but it has many historic and symbolic aspects. Some of these reach back to Biblical times. Others have been introduced at significant periods in history. One big innovation this year will be that the ceremony in Westminster Abbey will be televised to millions of viewers.

Here are some points about the British Coronation:—

It has been described as "a service consecrating the new Sovereign with certain fixed rites, unction and the delivery of ornaments. In return for the reception of these gifts, he or she binds himself or herself with certain promises".

In short, the Crown has certain duties toward its subjects, and these are expressed in law. Imposed by the old coronation oath, these were formerly:—

1. To govern the people of the United Kingdom of Great Bri-

tain and Northern Ireland, and members of the British Commonwealth of Nations, according to the statutes in the Parliaments agreed on, and the laws and customs of the same.

2. To cause law and justice in mercy to be executed in all judgments, to the utmost of the Sovereign's power.
3. To maintain the laws of God, the true profession of the Gospel, and the Protestant reformed religion established by law.
4. To maintain and preserve inviolably the settlement of the Church of England, and the doctrine, worship, discipline, and government thereof, as by law established in England.
5. To preserve unto the bishops and clergy of England, and the Church therein committed to their charge, all such rights and privileges as by law do or shall appertain unto them or any of them. (The Sovereign is also bound by oath to preserve the Presbyterian Church in Scotland.)

The new oath will probably contain changes.

So it will be seen that the Sovereign dedicates him or herself to the service of the people. In return, the subjects owe duties to the Sovereign, the most important being the duty to the "liege lord" legally known as allegiance. In Elizabeth's case, the term is "Liege Lady".

When a Sovereign is crowned, the two highlights of the ceremony are the anointing of his or her head and body by the Primate, and the placing of the crown on the head.

In addition, however, certain



other objects, known as "ornaments", are used, and these all have meanings. For example, a sword is girded on, signifying justice, protection to the defenceless, and punishment to offenders.

An 11-inch high orb, surmounted by a cross, signifies that the whole world is subject to the empire of Christ.

Two sceptres are given to the Sovereign—one surmounted by a cross, symbolical of kingly power and justice, and the other surmounted by a dove, signifying equity and mercy.

At one stage, the Archbishop places a ring on the fourth finger of the Sovereign's right hand. This is a sign of kingly dignity and an emblem of the defence of the Christian faith. It is sometimes called "the wedding ring of England", and two interesting traditions are associated with it. The original ring is supposed to have a miraculous origin. The legend is that Edward the Confessor gave a valuable ring to a beggar. Soon after, an old man gave the ring to two English pilgrims in Palestine, saying that he was St. John the Evangelist, and bidding them to return it to the King, which they did.

The other tradition is that the tighter the ring fits, the longer the Sovereign will reign and the more he or she will be beloved. The ring used at Queen Victoria's coronation in 1838 was made for her little finger, but during the actual ceremony, the Archbishop forced it on her ring finger, causing her considerable pain. She reigned for 64 years, and was beloved.

The Sovereign is also presented with a copy of the Bible as the most

valuable thing on earth. It signifies "wisdom, royal law and the lively oracles of God".

As well as the giving of "ornaments" the Sovereign is also clothed with a number of ceremonial garments. First of these is the colobium sindonis, a sleeveless cloak known also as an albe or rochet. Next comes the super-tunica, a long garment with sleeves. Over this goes the sword belt. The Royal footwear—hose and sandals are known as buskins.

The Sovereign is next invested with the armilla, a strip of silk shaped like a stole, and finally there is the imperial mantle, or pallium.

Egbert, Archbishop of York, in the 8th Century, refers to the use of oil, sceptre, staff and helmet. The ceremony of anointing came from the Bible, in which there are numerous references to the practice. In the Middle Ages it was believed that anointing made the Sovereign part priest and part layman. It also empowered him to cure the King's evil, or scrofula, by touching the victim.

Several kinds of oil are used, including pure olive oil and a mixture of olive oil and balsam known as chrism or cream. The oil is contained in an ampulla, and placed on the Sovereign with a ceremonial 13th century spoon which is the oldest piece of Coronation regalia. Most of the rest of the pre-17th century regalia was destroyed by Cromwell's Roundheads, and a new set had to be made for the coronation of Charles II in 1660.

The crown and the ring were introduced into the ceremony before the Norman Conquest and are believed to have been used for the



crowning of both Harold and William the Conqueror. The mantle was introduced in the 12th Century.

The fourth and most important coronation ceremony was introduced in 1307, and was described in an historic volume called the *Liber Regalis*. It continued until the Reformation, and forms the basis of the present day ceremony. With the Reformation, the practice of saying Mass in connection with the coronation was dropped and a Protestant service substituted, though the language continued to be Latin. English was used for the first time at the crowning of James I in 1603.

Two Crowns have been used in modern coronations—St. Edward's Crown, which weighs 5 lbs., and the Imperial Crown, a much lighter piece of jewellery. Queen Elizabeth will be crowned with St. Edward's Crown. The crown as a symbol can be traced back to the "mitra" of the Oriental despots of Mesopotamia, but its immediate parent was the fillet of the later Roman Emperors.

As well as its deep spiritual sig-

nificance as the dedication of a Person to the People, the Coronation is surrounded with a colourful atmosphere of mediaeval and feudal pageantry. Apart from the actual ceremony in Westminster Abbey, the uniforms, horses and music of the Queen's ceremonial drive through London's streets, there is a wealth of detail concerning various aspects of the coronation.

Although these scenes will be taking place in far away London every true Australian has a part, a personal part, to play in the Coronation. As we listen, perhaps, to the description of the ceremonies which will come to us over the radio, let us remember that the commentator is describing more, much more, than a scene of splendid pageantry. He is describing the ceremonies in which our Queen dedicates herself under God, to our service, to the defence of our faith and all that is best in our civilization. Let each one of us in his own heart join in that ceremony by dedicating himself to those same ideals and by swearing to uphold them all the days of his life.



# COMPLETED STAFF WORK

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## The Commander's Part

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H. A. Damminger, Chief of the Industrial Division,  
Office of Programming, Munitions Board, U.S.A.

EVERYONE who has been in the Army for any length of time is familiar with the chart entitled "Completed Staff Work" which hangs conspicuously in many headquarters offices. It tells the staff officer the steps he must follow to turn out completed staff work—how he should work out all details completely; consult other staff officers; study, write, restudy, rewrite; present a single co-ordinated proposed action; avoid long memoranda or explanations; advise the chief what to do.

But that is only half the story. Completed staff work is a two-way relationship between superior and subordinate. The subordinate does the work, but it is the superior who assigns the work to him. And it is the part played by the superior—his manner and method of assigning work—that can make completed staff work simple and useful or complex and wasteful.

Practically all of us are, during the course of a day, both superiors and subordinates. We assign jobs

to our subordinates and we, ourselves, are given tasks by our superiors. It is necessary, therefore to see both sides of the coin at all times. Heads—you assign a job and expect completed staff work; tails—you are given a job and are expected to produce completed staff work.

Since there already exists a fine set of principles to guide us in the role of subordinate, we need only the companion set of principles to guide us when we are cast in the role of superior.

That is the purpose of this article—to outline those steps which you, as a superior assigning a task, must follow if you expect to receive from your subordinates completed staff work. There are six basic steps to follow:

**1. Know the Problem.** Obvious? Of course; but how many times are you, as the superior officer, not too sure of just what you are looking for? It is as simple as this—if you do not know, how can your subordinate? Perhaps the basic problem may be merely to find out whether or not there is a problem. Then

why not be frank and say so? You may really have two problems. The first is to find out whether there is a problem. When that question is answered, you can decide whether or not you need to go further.

**2. Make one individual responsible for the solution.** During World War II a high ranking officer asked me to participate in one of his staff meetings. For almost an hour he discussed a most serious personal problem that badly needed a suitable remedy. Walking back to my office after the meeting, I heard one of his staff officers ask, "Who has the ball on this one?" Apparently everyone — and that meant, of course, that no one individual felt in any way responsible for doing the job of research and investigation required before a sound and workable solution could be reached. Completed staff work, in this case, was less than a pious hope. Fixing individual responsibility is an essential and primary step.

**3. State the problem clearly, precisely; explain reasons, background; limit the area to be studied.** Having followed steps one and two, you are ready to explain the job to be done. Of special importance is the "why" of the problem. If you know what is behind the problem, tell your subordinate. If you do not know why there is a problem, you had better find out or you are likely to get a piece of work which is itself a shot in the dark because, actually, there is no target. And while you are at it, limit the field of study as much as you can. Delving too far into a problem can be an endless and useless task; it is always possible to dig a little deeper and a little wider. So sug-

gest a few areas to avoid. "Don't look into this or that" can sometimes be as good advice as positive suggestions.

**4. Give from your knowledge and experience in the problem.** You have learned a lot about your work. Pass it on to your subordinate. Save him the time and effort of pioneering along a road you have already travelled. He will not only appreciate your paternal display of competence, experience and knowledge, but you will make the development of his final solution easier and better for both of you.

**5. Set a time limit; or request the assignee to estimate a completion date.** Here is another "must". Give your subordinate the time he needs to do an adequate job. "If you want it bad, you get it bad," is a frequently heard caution. On the other hand, you must make certain that your subordinate realizes that you need the completed answer by a certain date. Assigning a task without a deadline for completion is like being asked by a friend "to come over to dinner sometime." Its very indefiniteness provokes a feeling of insincerity and unimportance.

**6. Assure your subordinate that you are available for discussion as work progresses.** This step provides the flexibility that any good plan needs to be workable. Despite all your efforts to explain the problem, its whys, wherefores and limitations, you can be sure that questions which only you can answer will arise in your subordinate's mind as the study progresses. The English language is deceiving and confusing. What you said and what he understood it to mean may be along two very dif-

# COMPLETED STAFF WORK

## HOW TO DO IT

Study of a problem and presentation of its solution in such form that only approval or disapproval of the completed action is required.

1. Work out all details completely.
2. Consult other staff officers.
3. Study, write, restudy, rewrite.
4. Present a single, co-ordinated proposed action. Do not equivocate.
5. Do not present long memoranda or explanations. Correct solutions are usually recognizable.
6. Advise the Chief what do do. Do not ask him.

If you were the Chief, would **YOU** sign the paper you have prepared and thus stake your professional reputation on its being right? If not, take it back and work it over; it is not yet completed staff work.

## HOW TO GET IT

Assignment of a problem and a request for a solution in such a way that completed staff work is readily possible.

1. Know the problem.
2. Make one individual responsible to you for the solution.
3. State the problem to him clearly, precisely; explain reasons, background; limit the area to be studied.
4. Give the individual the advantage of your knowledge and experience in this problem.
5. Set a time-limit; or request assignee to estimate completion date.
6. Assure him that you are available for discussion as work progresses.

If you were the subordinate, would **YOU** consider the guidance, given at the time the assignment is made and as the directed work progresses, to be adequate for readily completed staff work? Adequate guidance eliminates wasted effort, makes for completed staff work.

ferent lines. Being available for discussion does not mean that you are going to do your subordinate's thinking for him. But you should make him feel that if he gets stuck, you are still his guiding star. That's why you are the boss.

Follow these six basic steps and you will have every reason to ex-

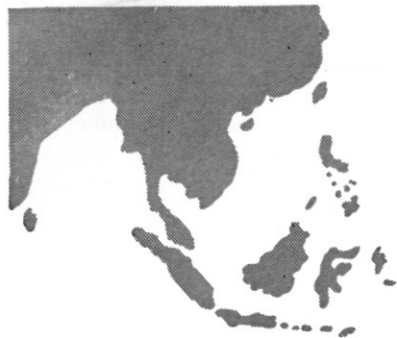
pect completed staff work. Test it the next time you receive an assignment or you are ready to give a job to one of your staff.

Remember that the calibre of the completed staff work you receive is in direct ratio to the guidance you give to obtain it. It is a two-way proposition—any way you look at it.

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In an effort to become "expert" in one field many students restrict their zones of sensitivity to such an extent as not to participate in the rest of life to the limit of their potentialities. The man who gains vast technical proficiency at the cost of spiritual dullness, aesthetic blindness or ethical insensitivity is not fully alive. In a calculated way he is reducing himself towards the level of a mechanism. Anyone who does not strive to develop all his powers — physical, mental, spiritual and aesthetic — has, to that extent, failed to remember that he is alive.

--Dr. H. M. Wriston, President of Brown University, USA.



# **INDIA'S INFLUENCE in S E ASIA**

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Lieutenant R. W. R. Ardley,  
Melbourne University Regiment.

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### **India Past and Present.**

India has been a great centre of civilisation in Asia since the earliest times. The recent excavations in the Indus valley have shown a flourishing civilisation as far back as 4000 B.C. At times in her long history India has been the centre of a south-east Asian empire; as witness the ruins at Cambodia, Java and elsewhere. But more important than empire has been India's influence in the arts and religion. The philosophy of the Buddha spread from India southwards to Ceylon, Burma, and Siam, and northwards to Central Asia, Tibet, China, and Japan. While Buddhism still flourishes in these countries it has almost died out in India itself, having been absorbed back into the original Hinduism.

In the 15th century Europeans began to arrive in India. In time British interests became paramount. The justice of alien rule in India has long been a subject of controversy—often embittered—between

Indians and their European rulers. Suffice it to say that the more liberal of the great English pro-consuls in India envisaged the British rule as a benevolent tutelage in preparation for India's own eventual self-government.

In the 20th century it became evident that the time for Indian autonomy was ripe. But the problem of transferring power was not an easy one, and was rendered even more difficult by the misguided zeal of some of India's own political leaders in their attempts to hasten the process. In 1947 England succeeded in disengaging herself from India by the expedient of partitioning the country into two realms; that of India proper of predominantly Hindu composition, and Pakistan which was predominantly Moslem. Since partition, India and Pakistan have gone their separate ways. Their amity, never great at the best, being marred by the dispute over the territory of Kashmir.

### The Influence of Gandhi.

The moving spirit in the creation of the new India was Gandhi: "He came like a powerful current of fresh air, like a beam of light that pierced the darkness . . . like a whirlwind," wrote Nehru. Gandhi spoke for the millions of inarticulate India. He was revered as a saint. He entered Congress and gave new life to that organization which was eventually to be entrusted with power in India. Gandhi was the apostle of non-violence, the defender of the worth and dignity of the common man, the proponent of the spinning wheel and village craftsman doctrine of work, the enemy of centralized industry and exaggerated urbanization.

In the end Gandhi's humanity cost him his life. During the wave of disorder and massacre of communal minorities which followed

the partition of India, Gandhi devoted himself to the protection of the minority communities. Hindu zealots assassinated him.

The evolution of India in the last few years has been away from the Gandhian ideals. Under force of circumstances, factories and centralization along western lines are replacing the village crafts. India is moving more and more towards the pattern of a modern European state.

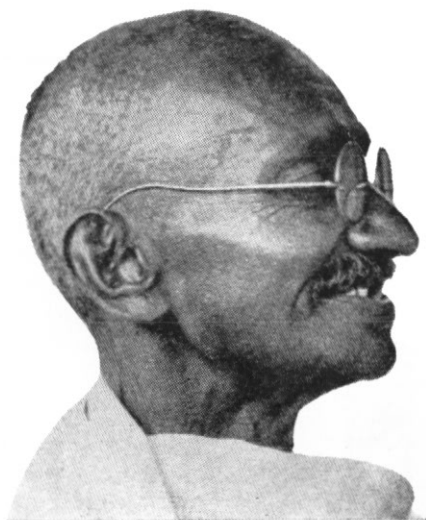
### India's Philosopher-Ruler.

The architect of the new order in India is the present Prime Minister, Pandit Jawaharlal Nehru. He was born in 1889 of a high Brahmin family, and was educated at Harrow and Cambridge. He practised at the Bar, but in 1920 turned from law to politics. He joined forces with Gandhi, and quickly rose to a commanding position in the All India Congress Committee. In the troubles with the British authorities he was imprisoned on several occasions. On the attainment of Indian independence in 1947 Pandit Nehru became India's first Prime Minister.

Once the struggle for independence was over Pandit Nehru showed himself a wise, judicious and truly liberal ruler of his country. He has kept India in the British Commonwealth of Nations, and has laboured mightily to rebuild India along the lines of what he believes to be the best of East and West.

### India as a Centre of Neutrality in Asia.

The foundation of Indian foreign policy, as conceived by Pandit Nehru, is the resurrection of Asia. As Nehru sees it, Asia until the 15th century held an exalted place



Gandhi

in the world. It then became submerged under the weight of European domination. The newly independent India, situated at the pivot of Asia, is now leading the revival of Asia. To this end, Nehru declares, India's policy is one of peace and friendship with all countries, and the avoidance of alignments with power blocs. Accordingly India stands aloof, as far as possible, from both the Russian and the American spheres of influence.

As corollaries to this basic objective, India is working to end colonialism and imperialism wherever they may be found in Asia, and for the elimination of race prejudice and the colour bar the world over.

"It has been India's privilege in the past," writes Nehru, "to be a meeting place for many cultures. It may be her privilege in the present and the future to be a bridge to join warring factions and to help in maintaining that most urgent thing of today and the future—the peace of the world."

India is thus functioning as a bulwark of stability in east Asia. Her prestige is very high. India was the first Asian country to achieve independence and is the great exemplar for the rest of Asia.

Nehru is not dazzled by economics and the apparatus of the technical age. He sees more deeply into Asia than that. While Nehru is in control we may look to India as a firm centre of moderation and neutrality. But after Nehru—what? In the present high state of tension in the world the pursuit of India's policy of neutrality is like walking a tight-rope. A man of less sure touch than Nehru might succumb to one force or another, or might

even attempt to launch out into a Hindu imperialism as a third world force.

#### Sino-Indian Relations.

Under the long British tutelage, India was effectively isolated politically from Asia; India's orientation was predominantly European. On the achievement of autonomy and the division of the peninsula, Pakistan naturally turned towards the Middle East and the lands of Islam. India, on the other hand, turned towards the Far East; an orientation which was greatly facilitated by the development of air traffic.

In the Far East, India saw China as her principal partner in the slow re-emergence of Asia. India's fellow-feeling with China was founded on a sense of common Asian nationalism, not on domestic politics. Nehru was friendly to the government of Ching-kai-shek; after the Communist revolution he was friendly to the government of



Nehru



Mao-tse-tung. Accordingly in world counsels Nehru has been prominent in advocating a general recognition of the new Chinese regime and its admittance to the United Nations.

On the other hand, the militant Communism of the new China is an embarrassment for India. Nehru has a serious problem on his hands in the growing Communism in India itself. Where, as in India, education is often far ahead of the prevailing standards of living and opportunities for self-expression, a disgruntled class of new pseudo-intellectuals is clay in the hands of Communist propagandists. The rise of Communism in India has been met by the government with stern measures of repression and summary imprisonment. The internal Communist threat is pushing India more and more towards a dictatorial mode of government.

In such a situation it will not be easy for India to maintain a friendly liberalism towards a China which has now become the very fountain-head of Asian Communism, which gives comfort to the Communist parties abroad, and promotes the southern drive of Communist insurrection in Asia.

Accordingly, in considering India's future in Asia we must appreciate the points of latent conflict with China.

#### **The Burman Situation.**

The crucial situation of Burma in south-east Asian strategy became manifest in the Japanese invasion of China. China's attention was turned from the "front door" through the Treaty Ports to the "back door" via the Burma road. More recently, Chiang's abortive attempt to re-conquer China by this same back door by infiltrating KMT

troops into eastern Burma, and from this base invading Yunnan, although unsuccessful from lack of adequate support, has kept the attention of strategists directed to Burma.

The official government of Burma is very feeble, and the country is largely given over to various Communist guerilla bands. In this condition Burma can offer little obstacle to any determined military designs of the neighbouring powers. The future of Burma is fraught with grave possibilities for the security of India. A Communist regime in Burma would be a menace to the whole Indian peninsula. Accordingly, both China and India must have a lively interest in Burma, but their requirements are diametrically opposite.

#### **The Indian Ocean.**

For the last century and a half the British fleet has been the mistress of the Indian Ocean. Now the old unity has gone. India, at the focus of the Indian Ocean has achieved independence, albeit with British Commonwealth ties. Growing Asian nationalism seems likely in time to break up all the old unity of direction in Indian Ocean strategy.

India is the natural geographical centre of Indian Ocean politics. Furthermore, India has interests all around the perimeter of the ocean which she must tend. As yet India is ill prepared to assume these oceanic responsibilities. India's military efforts have for long been directed to the central Asian frontiers. But India must in time take her proper share of the responsibility for the Indian Ocean as befits her new dignity as an independent member of the British Commonwealth.



The Achilles' heel of the Indian Ocean is its eastern island boundary. The rapid oceanic expansion of Japan in the recent war, almost to the confines of India, demonstrated how vulnerable the Indian Ocean is to penetration from the Pacific. Now China has, potentially, taken the mantle of Japan. If the Communist southward expansion succeeds, then it may be difficult for India and China to avoid a growing tension over the mastery of the Indian Ocean.

#### The Rice Economy of South-East Asia.

An appreciation of Asian economics reveals the crucial role of rice. Rice is the staple diet of the inhabitants of the far eastern countries. Most of these peoples are incapable of sustaining life on any other food; they would starve to death if rice were not available. Consequently any major dislocation of the rice economy of south-east Asia would have immediate and disastrous effects. Only three Asian countries

have any large surpluses of rice: Burma, Thailand, and Indo-China. All other Asian countries have to import rice from these three countries to supplement their own supplies. India imports something of the order of half a million tons of rice per annum. This vital food supply to India and other eastern countries would be in jeopardy if Indo-China, Thailand, and Burma fell into Communist hands.

The present Communist attempts at insurrections in Burma and Indo-China take on a more than local strategic significance when the movement of rice is considered. If the supply of rice from these countries was cut off, much distress and famine would be produced in the Far East. In such conditions Communism would be likely to spread rapidly. To meet such a contingency, either the western powers would have to make good the deficiency, which would place a great strain on those powers, or alternatively the rice-importing countries would be obliged to enter into trade agreements with Communist China as the controlling power, and would thus be drawn more and more into the Communist Asian sphere of influence.

It is evident, then, that by gaining control of rice, Communist China could virtually hold much of Asia to ransom. This would place India in a particularly difficult position. Her avowed neutrality in international affairs would be undermined. India would be forced by starvation to capitulate to China's terms, to fight China, or to come as a mendicant to the Western powers. The only solution to the problem is for the South East Asian countries to grow more rice,

to which end earnest efforts are now being directed.

#### The Tibetan Situation.

In 1951 the Chinese Communist government re-asserted China's ancient suzerainty over Tibet. After careful preparation of the situation politically, using the rivalry of the Dalai and Tashi Lamas, a military force was sent to Lhasa to uphold the authority of the Peking Government. Tibet is now to all intents and purposes a province of China. So, the last mountain bastion of the ancient order in Asia has capitulated to the new fervid Asia of the mid-20th century. Tibet, for a century past a closed land, is now more closed than ever to the western world. But it is wide open to the Communist policy.

Tibet occupies a position strategically critical for India. Situated behind the Himalayas, on the high roof of Asia, Tibet physically dominates the plains of India. In 1903 a British expeditionary force under the direction of Colonel Younghusband was despatched by the government of India to penetrate to Lhasa and assert British authority in the country, in an endeavour to safeguard India from the growing Russian influence from the north.

Now the process has been reversed, and Tibet's political orientation has been decisively swung away from India to Peking and Moscow. This must give considerable disquiet to the Government of India. It is not unlikely that any considerable military operations would be launched against India from Tibet; the mountain barrier and the very long lines of communication would be too great an obstacle. But Tibet would serve as a very effective base for the Com-

munist political and social indoctrination of India, particularly as Tibetans have always been in the habit of making pilgrimages to the Buddhist shrines in India.

With the alienation of Tibet, attention must be directed immediately to the situation of the Himalayan border states of Nepal, Sikkim and Bhutan, which act as a screen between Tibet and India. It is obviously to India's interest to preserve these states as allies of India, and not allow them to be absorbed into the central Asian orbit. These states have long had Chinese as well as Indian affiliations, and their frontiers with Chinese territory are not clearly defined. Now that these lands have become part of the sensitive membrane dividing the two regions of Asia, the destiny of these obscure border countries may contain seeds of Sino-Indian conflict in spite of India's endeavours to maintain close and friendly relations with the new China.

#### **The Dispute Over Kashmir.**

When India was partitioned in 1947 the boundaries between India and Pakistan were drawn by mutual agreement and local preference. The choice in the case of Kashmir was rendered difficult because the Maharajah of Kashmir was a Hindu while the people of Kashmir were overwhelmingly Moslem.

Following a Moslem insurrection in his domain, the ruler of Kashmir summoned Indian help. Pakistan sent troops to safeguard the Moslem interests, and a struggle ensued. The United Nations Security Council arranged a cease fire to take effect from 1st January, 1949, and directed that Kashmir should

have the option of adhesion to one or the other side by plebiscite. So far it has not been possible to arrange that plebiscite, and the Kashmir situation remains a grave embarrassment to all concerned.

In the meanwhile Communist propagandists are making the most of the unhappy state of Kashmir to further their policies. There appears to be a possibility of Kashmir becoming an independent Communist-sponsored state.

The dispute over Kashmir is a most unfortunate incident in the establishment of the new order in the Indian peninsula, and is a grave handicap to India in the pursuit of her foreign policy of neutral leadership in the resurgence of Asia.

#### **India and the British Commonwealth of Nations.**

When, in August, 1947, Britain relinquished her power in India it was a matter for conjecture whether the new India and Pakistan would remain within the British Commonwealth or sever the connection completely. It was widely believed that Pakistan would stay in the Commonwealth, but that India would withdraw. As it has turned out, both these countries, along with Ceylon, have remained in the Commonwealth. Why did this happen? It was certainly not dictated by merely economic motives. Burma, confronted with a similar choice and with much to gain economically by remaining in the Empire, elected to secede.

Fifty years ago informed Indian opinion favoured a dominion status for India on the lines of Home Rule. But by 1930 Congress feelings had hardened, and complete indepen-

dence was the order of the day. Nevertheless, in 1947 when the struggle was over, and Britain had freely handed over India's independence, the old bitterness turned to growing esteem and friendship. Nehru steered India into the Commonwealth as a Republic. At the Conference of Commonwealth Prime Ministers in London in April, 1949, India, while yet a sovereign independent Republic, was declared to be a member of the Commonwealth. By this association India has not lost her freedom in domestic nor in foreign affairs. But Nehru's experience has shown him

that in international relations the free association of the Commonwealth is preferable to the more inelastic associations and commitments of treaty alliances.

India is thus the premier Commonwealth representative in Asia. As such she exerts a considerable sobering and stabilizing effect on South East Asia. National aspirations in countries which see in India their forerunner and prototype are likely to be directed in the paths of reason and moderation by the judicious course which India is following.

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Progress has always been a question of the few and not of the many. Those who are the leaders realize this and accept their fate. They know that they are condemned to spend a good deal of their time in utter loneliness, but such solitude is unavoidable if they wish to achieve what they set out to do. Their reward will consist in the consciousness of having worked for the common good and without any idea of self.

—Hendrik van Loon.

# THE SOVIET ATTACK IN DEPTH

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Translated and condensed by the "Military Review," USA,  
from an article by Brigadier General Gino Ferrari in "Revista  
Militare," Italy.

THE effectiveness of the methods adopted by the Soviets in their attacks in depth during the second half of the last war is well known. Therefore, it is worth while to examine their methods in order to attempt to deduce lessons from them.

In order to better understand the Soviet methods of attack in depth, it would be well to consider briefly the German defensive organization.

### German Attitude.

At first, the Germans in Russia paid little attention to the creation of powerful defence organizations, but when they found themselves forced to renounce their blitzkrieg tactics, they created powerful defensive systems made up of numerous successive positions, with multiple lines of trenches, strong points, defended localities, mined sectors protected by wire entanglements, and artillery barrages.

The average depth of each of the defensive positions was about 2 to 4 miles; the distance from one position to the other was about 2 to 3

miles; and the depth of the entire defence system was about 19 to 25 miles.

This was only a minimum depth for the defensive system, with increases in depth varying depending upon the situation. In the case of the defence of highway and railway centres, in particular, the defensive systems assumed much greater depths, at times from 40 to 70 miles.

### Typical German Defences.

In order to understand more clearly the scope of the German defensive organizations, three typical examples are offered below:

#### Orel Salient.

The Orel salient (a highway and railway junction point) was transformed by the Germans into a powerful fortified area in 22 months. The fortified area consisted of five defensive positions:

The first position consisted of multiple lines of trenches, protected by wire entanglements, camouflaged mine fields, and, between these, gun positions and shelters.

The second, or main, position consisted of an area of about 3 to 4 miles in depth, with interconnected centres of resistance, comprising steel cupolas for fire and observation. These cupolas were provided with radio communication, ventilating systems, and periscopes. Moreover, inhabited localities and the wooded areas were transformed into supporting points for the cupolas.

The three other positions consisted of defended localities, which were supported by water courses, which were, in themselves, serious obstacles.

The total depth of the defensive system was about 40 to 50 miles.

#### Kharkov.

The Kharkov region (a railway centre) was transformed by the Germans into an immense fortified area. The city was protected, on the north, by successive positions; on the east, by the Donetz River and three successive positions. The defence positions were echeloned over some 55 miles in depth. In addition, there were two fortified zones (outer and inner zones) for the close-in defence of Kharkov.

The outer zone (5 to 9 miles from the city) was supported by inhabited localities. In the intervals between these, there were supporting points organized for all-round anti-tank defence, which were protected by mine fields, anti-tank ditches, and wire entanglements covering all approaches. The highways leading to Kharkov had been destroyed, the bridges demolished, and the areas in their vicinity mined.

The inner zone was supported by artillery and machine guns em-

placed in factories and other buildings. The approaches to the city, which were mined, were blocked by barricades. The interior areas of the city were organized for street fighting.

#### Bobruisk.

Bobruisk (a railway centre) was covered, on the east, by five successive positions, separated from one another by a distance of from 8 to 19 miles. The total depth of the German defensive system was about 60 to 70 miles. The main position, which was the first zone, was 5 miles deep and consisted of five or six lines of interconnected trenches. There were also two fortified areas for the close-in defence of the city.

#### Effectiveness of German Defences.

However, in spite of these powerful defensive systems, the Germans were unable to halt the Soviet offensives, except for brief periods. It is true that the Germans quite often had insufficient reserves, and that many of the intermediate breaches were defended only with artillery fire, but these factors do not provide the principal reason for the great Soviet successes.

At Orel, the Soviets went through the German defences to a depth of nearly 45 miles in the course of a single week. At Kharkov, they broke through the German defence positions to a total depth of 56 miles in 20 days. At Bobruisk, the Soviets crossed the defence positions in six days.

#### Organization of the Attack.

The Soviet attack in depth consisted of a break-through of the enemy defence system, and an encirclement in depth to destroy the enemy forces.

The penetration of the powerful German defence systems required the close co-operation of all arms and a deep echelonment of the attack disposition in order to facilitate uninterrupted effort.

Therefore, the organization of the attack had to be very accurate and highly detailed. When the necessary reconnaissance had been completed, and the required intelligence information compiled, the decision was made as to the number and types of forces required, the locations of the assembly and jumping-off positions, the itineraries to be followed, the methods of attack, and the organization of command and liaison. All of the officers who were to participate in the operation studied the terrain in detail by means of reconnaissance, aerial photographs, and sand-table models. Moreover, all officers had to know the units' and the missions of the other branches co-operating in the action, the hour of the attack, the signals for each particular action, the objectives, the directions of attack, the strengths of the attack units, the methods of liaison, and the forms of mutual understanding and co-operation, especially for requests for fire.

All these details were set down in a plan drawn up by the division staff, which was controlled by another so-called control plan.

#### Preparation Required.

The success of the co-ordinated attack actions required a high degree of preparation on the part of the troops and the commanders. On this account, the attacks were not only discussed well in advance, but tactical exercises were conducted in detail on terrain similar to that of

the actual operation. Such exercises lasted from a few days to several weeks. All branches which were to participate in the actual operation took part in the exercises, including infantry, tank, artillery, engineer, and air force units.

It was this minute preparation which facilitated the complex interplay of all the elements participating in the attack, and which, in many cases, made possible the successful application of the element of surprise.

#### Factor of Surprise.

The preparations for the attack were carried out with secrecy in order to achieve surprise. All possible means were employed for maintaining secrecy concerning the concentration of forces. The approach to the attack positions was carried out with all caution, with strict discipline, and, generally, under the cover of darkness.

Assembly areas for the tanks were generally 25 to 30 miles behind the lines, with the tanks being brought forward to a waiting area (about 7 or 8 miles from the front), generally at night. The time that the tanks were to remain in the waiting areas had to be limited to a few hours. The itineraries which the tanks were to follow, and the crossings of these itineraries with those of other troops, were minutely worked out in order to achieve maximum speed and ensure that the various echelons arrived at the jumping-off positions at the proper time.

The artillery which was to take part in the attack was generally moved into position the night before the attack. The preparation of



ammunition, reconnaissance of the areas and survey work were carried out the day preceding the attack, with scrupulous care being taken to maintain secrecy concerning every preparation.

In addition to the maintenance of secrecy, the Soviets used various methods to deceive the enemy. One method used was that of requesting an artillery preparation over a broader sector than that of the attack, which made the enemy uncertain as to the point of main effort. Another method was that of requesting an artillery preparation, as though an attack were to be made, but without following it up with an attack. At times, this method was repeated the following day, but the preparation would be followed by an attack in another area that did not receive an artillery preparation.

The Soviets varied the time for the beginning of their attacks, depending upon the situation, but the attack at dawn, or a little before dawn, was the most common. The Soviets launched many large-scale night attacks toward the end of the war, but, because of the difficulty in controlling the actions of the tanks in darkness, such attacks were attempted only rarely, and under unusual circumstances. Attacks also were launched during the afternoon hours, but these were quite uncommon because, in the event of an enemy counter-attack and a prolonged encounter requiring action during darkness, it was difficult to regroup and reorganize the forces.

#### **Attack Procedure.**

At the end of the artillery preparation, the tanks and infantry attacked the first line of trenches,

and, when these were captured, they rushed ahead to take the other successive lines of trenches. The first echelon continued this procedure until it was exhausted, and then the second echelon took over. The echelon following the attacking echelon mopped up the trenches that the attacking echelon had taken or passed, and eliminated any strong points remaining in the area. The mission of the first echelon was generally the capture of the initial or forward enemy positions, up to a depth of about 1 to 2 miles. The second echelon then continued the advance to the second positions, up to a depth of about 3 to 4 miles. Here, the second echelon was leap-frogged by another echelon which was expected to reach the third positions, up to a depth of about 8 to 9 miles. The echelons which had been leap-frogged were reorganized as a reserve for the attacking echelon. The various echelons continued this process until they achieved a complete break-through, reaching a depth of about 19 to 25 miles.

#### **A Schematic Description.**

This is merely a schematic description of the Soviet attacking procedure. The details differed in each case for, as was stated previously, the depth of the individual German positions, and the distances between them, varied for each particular defence area. However, it is useful because it shows that when one attack echelon was exhausted, or was about to reach the point of exhaustion, it was immediately leap-frogged by the following echelon in order to keep the enemy continually under attack until a break-through was effected. Furthermore, it illustrates the fact that the major

mission of the attacking echelon was to penetrate rapidly in depth, and that the succeeding echelons took care of mopping up after the attacking echelon had passed.

#### **Mutual Co-operation.**

One characteristic of the deep break-throughs was that the attacking forces were obliged to conquer defence areas about which they had little information, and, at the same time, be prepared for any enemy counter-attacks. The continual modification of the situation required initiative, rapid decision, improvisation, and close co-operation on the part of all troops. The main requirement in the co-operation of the various branches was reciprocal fire support. During the attacks, a certain number of tanks and self-propelled guns fought in close co-operation with even the smallest infantry units. The fire of the infantry was to protect the tanks, and to eliminate enemy anti-tank means. The tanks, in turn, were to combat the enemy's fire means which stood in the way of the advance of the infantry. The tanks were not to separate themselves from their own infantry, and were permitted to accept combat with enemy tanks only in cases of decided superiority on the part of the Soviet tanks. It was principally the artillery that was to combat the enemy tanks.

The close co-operation of the air force units also was of paramount importance. In cases of deep penetration, the airfields were echeloned in such a way that the Soviet aviation would always be able to maintain the air battle and support the ground forces.

As regards the co-operation of the artillery, the accompanying artillery was to combat the machine guns

and the infantry weapons which stood in the way of advancing Soviet troops, while the self-propelled guns were to protect the tanks and the infantry from the enemy anti-tank means and the counter-attacks of the enemy tanks. Provision also was made to have a certain number of tanks and self-propelled guns accompany the various echelons to provide protection against possible flank attacks.

The infantry planes, during the break-through, operated in direct support of the infantry and the tanks along the principal axis of the attack. They were responsible for neutralizing the enemy fire system, destroying the enemy anti-tank pieces, frustrating counter-attacks, and taking the place of the accompanying artillery if the latter was unable to keep up with the advance elements. The co-operation between the Soviet infantry and ground-support aircraft reached such a high degree of perfection that the planes were able to operate at distances only 220 to 330 yards ahead of the infantry.

#### **Liaison.**

The close co-operation between all the elements participating in the attack could not have been realized without perfect liaison. Therefore, commanders of all elements and branches had to work in close contact with one another. They did not change their command posts for more advanced ones until liaison had been organized and effected, and elements had been left at the posts that they were abandoning. Such a system greatly facilitated the concentration of fire on the strong points which were to be eliminated, and on enemy preparations for a counter-attack.

Liaison between the infantry and artillery was maintained, for the most part, by means of pyrotechnic signals, while that between tanks and artillery was effected by means of radio and rocket.

Once the break-through was effected, tank units, motorized units, and masses of artillery rushed through the breach for action in the depths, while other troops attempted to widen the breach still more. The aim pursued was the encirclement of enemy masses in the case of co-ordinated break-throughs, or, in the case of a single break-through, to beat the retreating enemy to a river crossing, thereby permitting other units to complete the encirclement.

#### Supply Problems.

The Soviet High Command was faced with a difficult task in supplying the troops engaged in attacks in depth. To burden the troops with heavy convoys was not advisable, which, moreover, would have been difficult, because of the relative scarcity of motorized means, nor was it advisable to depend on air supply alone. Generally, these difficulties were eliminated by the capture of German supplies.

#### Conclusions.

1. The Soviets planned and organized their attacks in depth in minute detail. All personnel that participated in the action were oriented not only in the missions and the modes of action of their own units, but also in those of the units co-operating with them in the attack.

2. The attacks, in addition to being discussed in advance, were carried out as exercises of several days' or weeks' duration in order to ensure perfection in the actual operation.

3. Surprise was sought not only through the most rigorous secrecy concerning the preparations for the attack, but also through deception.

4. The attack formations were organized into various echelons, which were leap-frogged one over the other, in order to ensure an uninterrupted effort during the operation.

5. Co-operation and liaison between all elements were perfected to a high degree; a prerequisite for success in attacks in depth.

# BRITAIN'S FOREIGN POLICY

in a

## World of Changing "Isms"

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Major A. W. John.  
Director of Army Education.

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AN American cartoon in 1941 showed "Uncle Joe Stalin" with shopping basket over his arm knocking at a door marked "United States' Arsenal," whilst looking round the corner was a hairy individual labelled "Communist" whose eyes were popping out with horror.

Twelve years later Marshall Tito's visit with pomp and ceremony to the capital of western democracy has occasioned a similar sort of horror to people whose outlook on the international scene is conditioned by their being for or against some particular ideology. It is as though, scorning to see the world through red-tinted (or rose-coloured) glasses, they insist on seeing it through black-tinted glasses, forgetting that both are an impediment to clear vision.

A study of British Foreign Policy throughout the centuries will show that it is characterized by a determination to "see the world steadily and to see it whole". It will be recognised that Britain has fought, with apparent impartiality, Spain, Hol-

land, France, Russia and Germany and, on the other hand, with the same tendency to impartiality, formed coalitions with Germans, French, Turks and even Russians. And if you insist that it had something to do with this or that religious, or economic, "ism," I must invite you to read your history again. Close study tends to be convincing that policy has had little to do with passing fashions in "isms," either religious, national or economic, but a great deal to do with the principle that the strongest state on the continent of Europe is the chief enemy of Britain; the principle of maintaining the balance of power.

The first peace-time alliance entered into by Britain was with Japan. This was in 1902. It was aimed against Russian expansion in the Far East and brought first fruits in 1904-5 when Japan fought Russia to a standstill. It did not matter that the Russians practised capitalism and orthodoxism and that the Japanese practised feudalism and shintoism. The interests of Britain coincided with the interests of

Japan and it should now be obvious to those who have studied events that the full circle has been completed.

Japan is no longer an effective ally. Her military power has been pulverized. Japan plus America is an effective combination in the Far East, but no-one should expect the Japanese to be over-enthusiastic seeing that they claimed twenty years ago to be setting out on precisely the same mission the Americans proclaim today—"The containment of Communism".

People often remark that British policy over China is hard to follow. It is if you place too much emphasis on "ismism". One condition of peace is having a stable government in being. A contradiction of this in the case of China is to refuse to recognise the government in being and to persist in not only recognising, but supporting, the Chiangist rump on Formosa.

It is too much to hope with the events of the last three years and their inevitable trend towards war with Communist China that a complete rapprochement can be effected simply by conference and agreement at short notice. It took five years from Marshall Tito's break with the Kremlin for Britain to establish friendly relations with Communist Yugoslavia. A lot can happen in five years.

Another point frequently made by commentators on international affairs is that it doesn't matter if you call the present world peril "Russian Imperialism" or "International Communism," it means the same thing. This seems to be the general view, but as the word "International" is almost always left out and the enemy is

referred to as "Communism" there is a great area of confusion here. Yugoslavia is just as "Communist" as Russia, which is not being "Communist" according to the dictionary definition of the word in any case.

Since communism, or socialism, total or partial, are economic systems which some nations might freely wish to adopt, there seems to me to be a fundamental error in constantly repeating that we are fighting "Communism". If we mean the Russian system, or "Russianism" why not say so? But if any nation has succeeded voluntarily in this day and age in "Vesting property in the community, each member working according to his capacity and receiving according to his wants," why should anybody want to fight it on those grounds alone? To apply the description to a police state where ten million people are herded in labour camps, where there is no such thing as freedom of thought, or freedom of expression, where ignorance is fed with state-manufactured lies and distortions for the purpose of harnessing fear and hatred to ideological fanaticism, is to lead mankind into a semantic fog. It must confuse the main issue and render counter-propaganda ineffective.

If we are going to retain some respect for the meaning of words, we must recognize that true communism is not practised by any organized nation in the world today. It just doesn't work except amongst religious orders living in seclusion, or pleasantly idyllic communities living in a state of nature. Christians, believing in it in theory, have failed to produce it in practice in two thousand years. Anti-Christians, trying to force it

on others, have only succeeded in enslaving the people in a police-ridden bureaucracy.

To the Chinese peasant toiling in the paddy mud for the privilege of enriching a landlord and barely existing, the illusions of communism may look like heaven. And in all reason communal ownership is surely an advance on a tottering, corrupt, system of capitalised feudalism. The very Chinese character for Communism denotes — "Working together policy," whereas that for Capitalism denotes — "Money as basic policy".

It is time that people recognized that there are differing degrees of communal ownership throughout the world. The Briton, for instance, sees nothing sinister or world-shattering in the communal ownership of banking, coal and steel. The Australian takes as a matter of course that his governments, seven of them, control his railways. Even in America few congressmen would maintain that the post office should be run by private enterprise, though the telephones are. What one people approves another may not and, in any case, most arguments for and against the extension of community ownership consist of delusion and prejudice. For better or worse, as modern technology creates bigger and bigger industrial combines we are going to have more of it whether we like it or not.

Now, to declare war on this sort of thing will turn war into a sort of Irishman's Saturday night—see a red head, hit it! It is to challenge the legitimate aspirations of many nations throughout the world and by inference to accept as the champion of communal ownership the

very nation which has made a mockery of the right of peoples to choose the form of government under which they will live.

Already on the Continent of Europe, instead of Poland for the Poles, Rumania for the Rumanians, Hungary for the Hungarians, and Czechoslovakia for the Czechoslovaks, we have Poland, Rumania, Hungary and Czechoslovakia for the Kremlin. Since Marshal Tito in 1948 declared Yugoslavia for the Yugoslavs, it has been demonstrated that the process of "Russianism" does not automatically follow the adoption of a socialistic pattern of economy. Does anyone doubt but that it took a brave man and a patriot to do it?

That the British Government should have shared the concern of the Yugoslav Government that Marshall Tito should not be murdered by assassins in either red or black tinted spectacles should have occasioned no surprise. This was a most important step in restoring the balance of power and it was equally important that nothing should go wrong. It has been demonstrated to the other Eastern European nations that they are not altogether between the devil and the Atlantic Ocean and that it is possible for a "Communist" State to collaborate with a "Capitalist" or a "50/50 Capitalist/Socialist" State. To comment on the prospects of more tangible results, such as a settlement of the Trieste dispute, would be to enter the realm of prophecy, but we do know that a barrier to the spread of "Russianism" in an important geographical area has been greatly strengthened. Since geographical factors are more compelling than ideologi-

cal factors, we may see similar progress over Fascist Spain in the no distant future, though this would appear to be an American field.

In case this should seem unduly cynical I would like to be recorded as a confirmed believer in the principles of the United Nations Charter. This far superior concept to the old balance of power politics has had full British support and no nation has gone further in the post-war period in trying to give practical expression to the ideals embodied in the charter. But, if this is not to work yet awhile in the troubled history of mankind, if national survival has still to depend upon the old uncivilised principles,

it is surely logical to seek to increase the forces on your side and to decrease the forces on the other side.

Finally, it is most fortuitous that the tie up with Yugoslavia has been brought about while there is a Conservative Government in power, else the bickering and yells of fury from the side lines must have shattered the project. We are inclined to forget at times that the British Foreign Office has had traditional responsibility for the conduct of relations with foreign States since 1782 and has had a lot of experience. Attitudes and interpretations may vary, but broad principles remain constant.

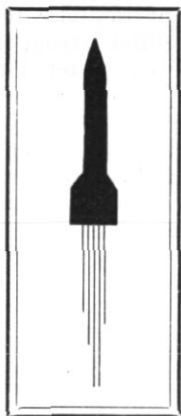
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The struggle of today is not altogether for today. It is for a vast future also.

—Abraham Lincoln.

## GUIDED MISSILES

# What Makes Them Go?



Captain Patrick W. Powers, US Army.

### Why We Use Jet Engines.

THE tremendous ear-splitting roar and spew of smoke and hot gases that occur when a guided missile is launched represent the tremendous motive power required to lift the missile. To get this kind of power and resulting supersonic speeds the jet engine is used exclusively. The first article in this series described how and why guided missiles fly, as well as some of the effects of supersonic flight. This article is to acquaint the soldier with the jet engines used in missiles and some of their operating characteristics. Since the use of

guided missiles will become increasingly important in the very near future, a basic understanding of their operation is essential. Let's examine the principles of jet propulsion and then look at two types of engines: rocket jet and atmospheric jet engines.

### How Jet Engines Propel.

Jet propulsion is a method of producing motion by ejecting matter from the propelled body to create momentum. The matter ejected is composed of burning gases which have a very high temperature and velocity. Momentum is the product of the mass of the gases and their velocity. The creation of momen-

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—From *Combat Forces Journal*, USA.



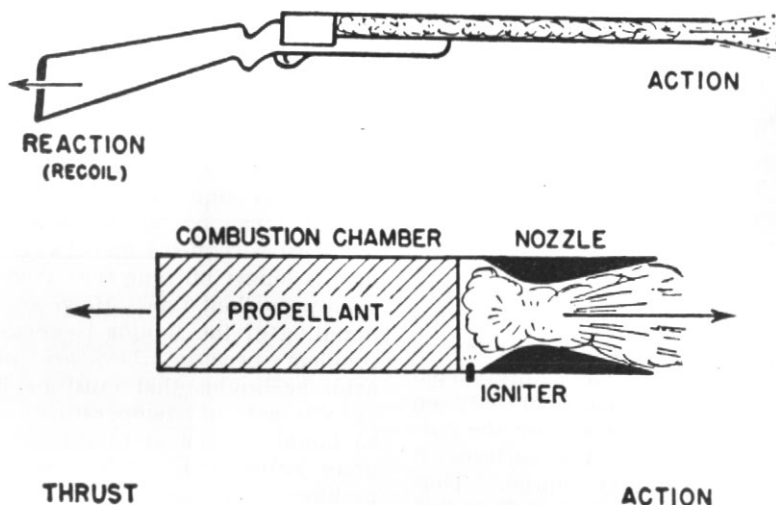
tum develops a force called thrust which produces the motion of the body. This force is measured in pounds. As an example: The German V-2 rocket-propelled weapon developed 50,000 pounds of thrust; 50,000 pounds of thrust when traveling at 3,750 miles per hour is equivalent to 500,000 horsepower! (Note: 1 pound of thrust equals 1 horsepower at 375 m.p.h.)

The principle upon which every jet engine is based is Newton's Third Law of Motion, which states that for every action there is an equal and opposite reaction. One of the best ways to illustrate this is to show that a rocket works like a shotgun, as in Figure 1. When the trigger of a shotgun is pulled and the shell exploded, the shot—possessing a definite weight or mass—rushes out of the muzzle with a high velocity. The momentum thus

created produces an action. The equal and opposite reaction occurs as the recoil of the weapon.

A rocket behaves in the same manner. When the propellant in the combustion chamber is ignited, the hot burning gases—possessing a certain mass—rush out the nozzle with an extremely high velocity. Thus, again we have created an action. The reaction which we called recoil before is now termed thrust. This is the force that produces the motion of the missile. From this illustration we can see that a rocket's exhaust gases do not push against the air to achieve the necessary thrust; the necessary force is obtained from the reaction principle which means a rocket can operate just as well in a vacuum as in the air.

Jet engines must supply large quantities of gas under high pres-



**Figure 1. A rocket works like a shotgun.**

sure and temperature to achieve the required thrust. To accomplish this, they must have the following components, as shown in Figure 2:

A combustion chamber

A fuel supply system (propellant charge)

A nozzle or exhaust pipe.

Large quantities of high-pressure and high-temperature gases are produced by the chemical reaction of a fuel and oxidizer in the chamber. These gases are expelled through the nozzle to the outside air to cause a thrust force. Now that some of the fundamentals of jet propulsion have been covered, their application to the four types of jet engines will be discussed.

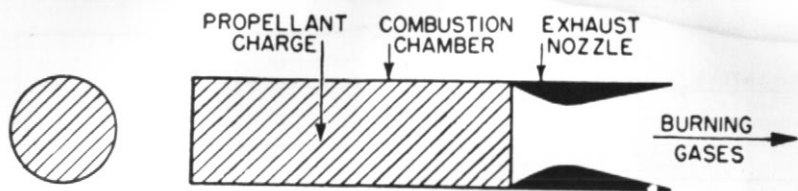
#### **Rocket Jet Engine.**

A Rocket jet engine contains its own supply of fuel and oxidizer which in combination is called a propellant. Rockets are classified as to the type of propellant that they carry, that is, solid or liquid. The solid propellant rocket is shown in Figure 2. It is characterized by the way the propellant burns, that is, in a restricted or unrestricted manner. The restricted burning type at the top of the figure burns like a cigarette from the end of the propellant charge or grain that is nearer the nozzle, down to the forward end. This type of burning usually takes place in about five to forty seconds. The unrestricted burning rocket burns not only on the end surface but also on the outside and inside of the surfaces of the long propellant charge. Thus this rocket burns only for .05 to five seconds. The solid-propellant rocket is very simple in construction, may be stored easily in the field like an artillery shell, and is ready to fire

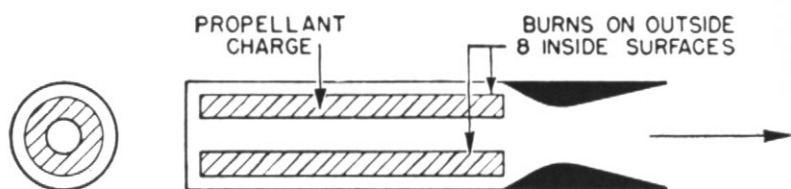
at a moment's notice. Two disadvantages are: a large, heavy combustion chamber is needed for the propellant, and sometimes the propellant grain fails to burn properly at extreme temperatures. The restricted burning solid rocket has been used in JATO units while the unrestricted type is used in artillery rockets and booster units for missiles.

The liquid-propellant rocket is shown in Figure 3. The fuel and oxidizer are actually liquids such as liquid oxygen and alcohol. These two liquids were used as the propellant in the German V-2 rocket. In order to get the liquids into the combustion chamber where they will burn, a pressure feed system is used for smaller rockets and a pump feed system for the larger ones. The pressure system shown uses compressed air or some inert gas to force the fuel and oxidizer into the combustion chamber. This type of feed system is very simple and is much lighter in weight for smaller rockets than the pump type, which uses turbine-turned pumps to force the propellant into the combustion chamber. The main advantage of the liquid-propellant rocket is that it can be turned on and off as thrust is required and that it will have a longer burning time than the solid-propellant type. However, the handling of the liquids is always a problem because they are often acids or liquids that must be kept at extremely low temperatures, such as liquid oxygen at minus 200 degrees Fahrenheit. This presents a problem of storage and handling.

In general, rockets have almost unlimited speed, a high rate of propellant consumption—the V-2 consumed 20,000 pounds of propellant

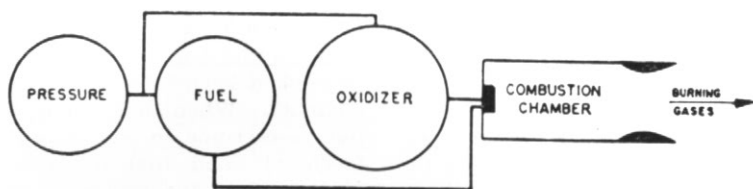


RESTRICTED BURNING



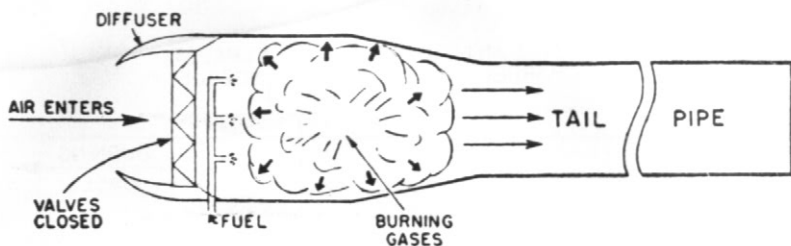
UNRESTRICTED BURNING

**Figure 2. Solid-propellant rocket.**



PRESSURE FEED SYSTEM

**Figure 3. Liquid-propellant rocket.**



**Figure 4. Pulsejet engine.**

in 65 seconds—and they can operate above the earth's atmosphere where conditions approach a vacuum.

#### **Atmospheric Jet Engines.**

In contrast to rockets, the atmospheric jet engines carry only fuel and obtain the necessary oxygen for burning from the air. In general, they have a longer operating time and better economy of fuel. They operate on a cycle like an automobile engine. That is, they have an intake, compression, combustion, and exhaust phase. The amount of power or thrust developed in these engines depends on the amount of compression that can be gained. The types of jet engines that fall into this category are the pulsejet, ramjet, and the turbojet.

The pulsejet engine is shown in Figure 4. In order to follow the combustion process, imagine that the engine is flying through the air and that a stream of air enters the forward end or the diffuser. When the air enters the diffuser section its velocity is decreased, thereby increasing the pressure. This is the first step then in building up the necessary compression. As the air flows into the engine, it enters a series of flap valves which only allow the air to enter when the

pressure inside is less than the outside atmospheric pressure. Fuel in the form of kerosene is sprayed into the entering air stream and this mixture of fuel and air then enters the combustion chamber. The mixture is ignited initially by a spark plug and immediately the temperature and pressure rise. This increased pressure closes the flap valves and causes the burning mixture to rush out the tail pipe with a high velocity, creating the action whose reaction is thrust. Now, since the burning mixture of gas and air has left the combustion chamber, the pressure inside is lower than that of the outside air. Hence the flap valves will open again and admit a fresh charge of air and fuel; also, some of the burning gases that do not quite leave the tail pipe will be sucked back into the combustion chamber. When these small bits of hot gases come in contact with the fresh air and fuel mixture, they ignite it and the process is started all over again. For a large-size pulsejet engine this process occurs forty or fifty times per second and gives a characteristic buzzing sound which gave the name "Buzz-Bomb" to the German V-1 pulsejet missile. The fuel consumption for the pulsejet is generally about 1/16

that of the rocket. In addition, the pulsejet is a very simple engine and uses a readily available kerosene-type fuel. However, it is a subsonic engine—top speed about 450 m.p.h.—and its altitude is limited to about 10,000 feet. At the present time it is being used as a training engine, to power drone aircraft, and recently, to turn the blades of helicopters.

The ramjet (Figure 5) is the most promising of all the jet engines, because it can give supersonic speeds with a very simple design and low manufacturing costs. Again imagine that this ramjet engine is flying somewhere in the atmosphere and let us examine its operating characteristics. The air that enters the forward part of the ramjet passes through a series of shock waves that are formed around the cone projected from the ramjet body. The shock waves are pressure disturbances that always occur on leading edge surfaces at supersonic speeds. As the air goes through this series of shock waves its velocity is decreased and the pressure is increased. This conical body and the outer walls of the ramjet comprise the diffuser for this engine. The diffuser merely acts as a mechanism that slows down the

air, increasing the pressure for the compression phase in the combustion chamber. The air picks up fuel and then this mixture of fuel and air goes through a meshlike device known as a flame-holder. The flame-holder maintains the flame that is started by the ignition cone and prevents the flame from being blown out of the rear of the ramjet body. Actually the flame-holder's function corresponds to that of the perforated metal skirt around the wick of a Zippo lighter. If this "fence" were not there the flame would be blown out. Now the mixture of fuel and air is ignited by the ignition cone and burns in the combustion chamber where the pressure is again increased. It is interesting to note that at this point there appears to be nothing to keep the burning mixture from going out of the front end of the ramjet instead of out of the rear end. However, the pressure in front of the flame-holder is higher than that of the outside air. This is caused by the action of the diffuser in slowing down the air. The burning mixture will not flow to a region of high pressure but will flow to a region of low pressure which exists in the outside air. Hence the burning gases exhaust through the nozzle

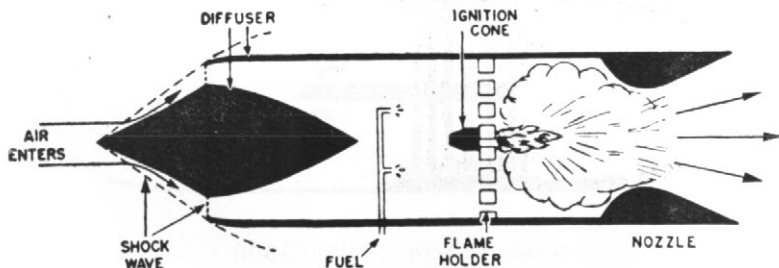


Figure 5. Ramjet engine.

and expand into the outside atmosphere, creating the necessary thrust force. The ramjet has no moving parts, is very light in weight, and simple to manufacture. Since it operates at supersonic speeds using only kerosene as a fuel, it is ideal for use as a guided-missile power plant. At the present time the ramjet is not very flexible in operation and always must be boosted up to its operating speeds. This type of engine, since it gets its oxygen from the atmosphere, is limited to a maximum operating altitude of nearly 60,000 feet.

The turbojet engine is the most common jet engine in use today. It powers most of our high-performance aircraft and is continually being improved to give enough thrust for supersonic speeds. The turbojet engine differs from the pulsejet and ramjet in that it uses a mechanical air compressor to obtain the high pressure necessary for the combustion process. There are two types of turbojet engines classified by whether they use a centrifugal or axial-flow air compressor. Of the two types the axial flow shown in Figure 6 is being used

most extensively in this country. In operation, the entering air stream increases its pressure by means of a diffuser and enters the axial-flow compressor where it is further compressed to more than four times atmospheric pressure. It is then ducted to the combustion can. As the air enters the combustion can it picks up fuel in the form of kerosene and this mixture burns with a very high temperature and pressure. This hot burning mixture is then forced through turbine blades and is exhausted to the atmosphere through the tail pipe. The turbine that is turned by the hot gases is connected directly to the compressor, so that the gases must have enough energy to turn both the turbine and the compressor and be able to provide enough thrust to the missile. A limitation on the performance of the turbojet is the temperature that the turbine blades can withstand: we have to use critical materials in order that the gases can reach at least 1,500 degrees Fahrenheit. However, this temperature is much lower than that in the combustion can because the gases are cooled by air that has

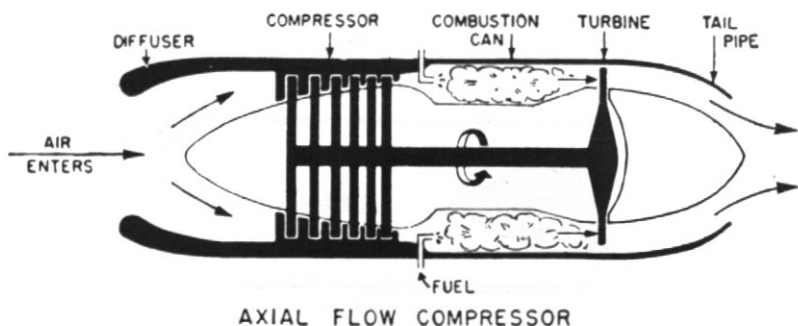
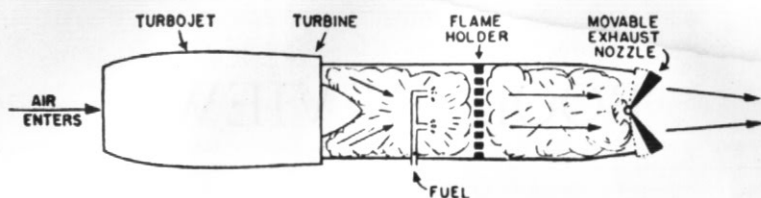


Figure 6. Turbojet engine.



**Figure 7. Turbojet with afterburner.**

been ducted around the combustion can and which has joined the hot gases just in front of the turbine blades. Only fifteen of 100 parts of the air are burned. The turbojet is the most reliable and the most complicated of the jet engines. It uses fuel very economically compared to the other jet engines and with the addition of afterburning will give our missiles supersonic speeds. The afterburner shown in Figure 7 is actually a ramjet attached to the rear of a turbojet engine. By burning additional fuel in the turbojet exhaust, greater thrust can be obtained.

#### **Summary.**

We have examined briefly the powerpacked jet engines which are necessary to fly guided missiles at supersonic speeds. A force called thrust, a measure of the power needed, is obtained by creating high temperature and pressure gases which are forced to rush out through a nozzle at very great speeds—even as high as 4,500 miles per hour! The rocket jet engine using a solid or a liquid propellant provides the most thrust of all the jet engines and thus can fly at greater supersonic speeds. However, it has a high rate of propellant consumption so that the propel-

lant burns up in a short length of time. The solid rocket can be handled with relative ease by troops in the field while the more complicated liquid rocket requires special equipment and handling techniques.

The atmospheric jet engines combine the oxygen in the air with a kerosene or gasoline type fuel for combustion. Consequently, the problem of maintenance and handling procedures is much simpler. The pulsejet engine is a subsonic power plant, too slow for use in missiles but used in training and with drones and helicopters. The ramjet has the best characteristics of any of the jet engines because it will give us supersonic speeds with low cost and simple design. However, it must be boosted to operating speeds and is limited to flight in the atmosphere. The last engine covered was the turbojet which powers most of our high performance aircraft. This is the most complicated and expensive jet engine and the most reliable. With economical fuel consumption it gives supersonic speeds by the addition of an afterburning apparatus.

The final article in this series will examine methods of guiding missiles.

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# BOOK REVIEWS

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**TO BENGHAZI—Volume 1, Series 1, ARMY; Official History of the Australian Army in World War II. (Australian War Memorial, Canberra, A.C.T.)**

**AUSTRALIAN** soldiers will welcome the publication of the first volume of the Official History of the Australian Army in World War II. Any criticism of the time that has elapsed before this volume made its appearance will be silenced by the sincerity, the impartiality, and the judgment which are outstanding characteristics of the book. Neither good history nor good literature is produced in a day, and this book possesses both qualities to a marked degree.

The volume covers the story of the Second A.I.F. up to the end of operations in early 1941, and is, therefore, mainly concerned with the formation and training and the first campaign of the 6th Division.

Soldiers who were on the active list on the outbreak of war in 1939, either in the Regular Army or the CMF, will read with particular interest the chapter dealing with the formation of the Second A.I.F., known initially as the "Special Force". Many memories, not all of them pleasant, will be revived by the faithfulness with which the author portrays the indecision, the misunderstanding, the sense of

frustration, which beset the Australian Army in the early days of the war, and which are directly traceable to the lack of political leadership and decision. If the book drives home this one lesson only, all the time and effort spent on its production will have been well worth while.

The author traces the strategy and the political considerations which lay behind the first Libyan campaign, the halting of the pursuit of the beaten enemy after the capture of Benghazi, and the subsequent withdrawal of the 6th Division for service in Greece. Against this background the book vividly describes in considerable detail the battles which led to the capture of Bardia, Tobruk and Benghazi. The narrative contains many lessons for the statesman, the strategist and the tactician.

The official historian of the First A.I.F., Dr. C. E. W. Bean, created a work which has become a classic in his own lifetime. If the first volume of the story of the Second A.I.F. may be taken as a criterion, the present Official Historian, Mr. Gavan Long, is creating a work no less meritorious. Not only is it a fine contribution to military history, but to the literature of this country as well.

The book, obtainable at all book-sellers, is a **MUST** for all Australian soldiers.

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# The HUMANITIES in CADET COLLEGES



By Professor R. A. Preston,  
Department of History,  
Royal Military College of Canada.

FREDERICK the Great is quoted as having said "If my soldiers began to think, no one would remain in the ranks." On the other hand, one of his ADC's, Behrenhorst, wrote, "The art of war calls for a vaster amount of knowledge and more inborn talents than any of the other arts." These apparently contradictory statements indicate the basic problem of military education. "To think or not to think," or, in other words, since thinking and education are in some degree synonymous, "to educate or not to educate."

The frightening blast of the atomic bomb has given a partial answer to this dilemma. Some cadet colleges, for instance West Point in the United States, the old Royal Military Academy at Woolwich, and the Royal Military College of Canada,

were always primarily scientific and engineering schools. During the nineteenth century they were signposts to the future, pointing out the inevitable triumph of technology in war, and, in consequence, in military education. But other military circles set their faces against technical advance. In some countries, for instance Great Britain, a certain stigma was attached to the technical soldier and to technical education. After the explosion at Hiroshima and Nagasaki, however, it finally began to dawn upon even the most obtuse and reactionary of military minds, that human courage alone was no longer the primary end of military training. Those cadet colleges which had stressed engineering came into their own and are now riding on the crest of the wave.

A natural result of this triumph of technology and science was, however, that there was even greater

pressure than before on the content of "general" or "arts" subjects in military colleges. This phenomenon is, of course, noticeable in universities also; but in military colleges the humanities have to contend not merely with triumphant technology, but also with pressures created by the fact that the institutions have a military organization, their purpose is military training, and some professional training must be undertaken.

It is easy to show that certain of the studies which we know as the humanities have a direct and a practical application for military education. Languages, for instance, have an obvious value for the soldier; military history is fundamental to the teaching of tactics and strategy; English is an essential tool in military administration. The armed services, like modern society as a whole, cannot operate properly unless all their members can "read, write and figure." The three R's of elementary education are therefore essential down to the level of the lowest ranks; and some further degree of training in the subjects listed above it necessary at other levels as part of "professional training." With this no one can disagree.

Turning to the other end of the scale, it is generally accepted that the "Great Captains" of history have, without exception, been intelligent and well-read men who had undergone a thorough education either in a formal way or one undertaken on their own initiative after the period of formal education was over. It follows that at some stage in the ranks a system of general education must be introduced in order to create a pool from which the army leaders of the future may arise.

One other argument in favour of

a "general education" for officer-cadets also has a practical appeal. In modern war the soldier and sailor is often called upon to perform a multiplicity of tasks. Professor Prendergast of the United States Naval Academy showed in an article in the "Proceedings" of the United States Naval Institute that as many as thirty-five different positions are listed in the United States Naval Establishment, but that during World War II American naval officers had to perform many more tasks outside the specific peace-time establishment. They had to be diplomats, house-keepers, "father-confessors," pineapple-growers and many other things. He argued that for such a variety of tasks a common vocational training would be entirely inadequate and that it follows that the training of officers must have a common content of "general subjects."

However, the humanities have an essential part to play in the training of officers, not merely because of the practical application of some of them, but also because of more intangible "general" values. War is an art rather than a science. It is deeply concerned with that great imponderable, the mind of man, and it operates through a multitude of independent agents each of whom has a will of his own. Despite the growing importance of technology and the development of ever more complicated weapons the soldier must learn that war itself can never be an exact science. Mr. Winston Churchill said this in one of his customary telling sentences. War depends, he wrote, "on an instructed and fortunate judgment of the proportions of an ever-changing scene." The study of history would seem to be the best training for the kind of judgment which the commander,

like the statesman, must exercise. But to be of value, history must be taught with a proper emphasis on its complexity and not, as is frequent in the teaching of military history, as a simple means of illustrating a few allegedly simple principles. A "general education" thus has a value for the training of the minds of military leaders which cannot be found in the exact or physical sciences.

Furthermore, teaching the soldier to understand and appreciate that for which he fights is an essential part of the building of his morale. Nothing, surely, can be clearer than that democracy can only survive if those who are entrusted with the force to defend it really understand and love it. This is a lesson which professional soldiers are, and always have been, reluctant to learn. Cromwell understood it. He wrote, "I would rather have a plain, russet-coated Captain that knows what he fights for and loves what he knows, than that which you call a gentleman and is nothing else." A general education is an essential weapon of war.

A general education is also necessary to fit the soldier into his proper place in society, to enable him to take part in the interests, activities and amusements of his fellows on the same level as other professional men. It follows automatically that in a democracy, even more than in other forms of society, military leaders must have an education similar to that of their fellows lest they become a class apart.

Many people today believe that a purely scientific training does not provide the real understanding of the nature of technocracy because it fails to give a philosophy of life. Recent events seem to show that bril-

liant scientists are often children in the word of social science. A large number of eminent physicists have become communists or fellow-travelers; and this cannot be explained away by the fact that because the physicists possess the knowledge of the atom-bomb their aberrations are thrust into the searchlight of publicity when a few are found to be communists. There has been a decline of religious instruction; and the only means by which moral values can now be imparted is by the development of a philosophy of life; but the normal methods of teaching science as a technology seem not to provide such a philosophy. For science is not concerned with moral judgment.

This was illustrated in the recent history of Europe. Between the wars the minds of university men in Germany, and particularly of the scientists, who had become technicians rather than philosophers, readily adopted Nazi doctrines, and began to deteriorate even in their own area of interest. In Russia today science readily accepts "political" scientific doctrines. While it is true that the scientists in our universities have a more philosophical outlook, outside the universities many of our scientists appear to have come to regard science as the single key to human life and to human society, and to forget that the very existence of modern science has depended upon and continues to depend upon, the maintenance of individual freedom. For the preservation of a society in which freedom can survive, scientific attitudes standing by themselves and a scientific training without a basic general education, are useless and even dangerous. The scientist (and sometimes the social scientist also) turns all too easily to a simple rigid solu-

tion for social problems and ignores alike both the human values that lie behind the facade and also the fact that an infinite number of special interests obstruct solution. The only salvation for our civilisation is the rediscovery of true values by the restoration of a basic education in the humanities for a large part of the population and, even more, for our specialized professional groups. **We must educate for living as well as for making a living.** The soldier is, for most of his career and most of his life, simply another specialized professional man. The education of soldiers must also be "humanized."

But there are many difficulties in the way of those who would emphasize the humanities in a military college. First, there still lingers a school of thought which asserts that the duty of a cadet college is to train soldiers in a "trade" and that the only other qualities that need to be developed beyond the purely technical and professional ones are physical courage and honour. Pressure from those who belong to this school of thought will obviously impede the teaching of "general subjects" and particularly of the humanities.

Secondly, the nature of military training does not make for the kind of atmosphere in which the humanities can easily flourish. The military time-table, like that in an engineering school, is full from morning to night. There is little time for the student to think or read. What is more, whatever may be said to the contrary, during the military part of their life cadets are directed continually and are trained to act like automatons. The practice of selecting some for "officer rank" and responsibilities does not deny this

general statement. It is hard for cadets to switch rapidly from being soldiers during drill-periods to becoming students during study-hours and to drive themselves with a minimum of external direction as a student must.

Military training also has another attribute which those civilians who went into the services during the war will remember well. It is especially concerned with the accumulation of factual data. One of its methods, the distribution of innumerable précis, illustrates this. It tends, therefore, to discourage speculative thought, difference of opinion, and "outside reading."

It should also be realized that the structure of a military college is fundamentally different from that of a university and that this can affect academic standards. Even under the best of rules, a military academy cannot have the same freedom as a university. A university, properly constituted, is a self-governing community and self-government serves as a mighty bulwark to protect the humanities against outside interference from those who are not able to understand their values and also against interested interference in particular cases.

Interference in particular cases can obviously be disastrous by precedent to academic standards. As the cadet college is organized on a military hierarchical system it is liable to be subject to the whims and influences of high military officials and to the pressure of politicians, ex-cadets, relatives and friends. This situation became so serious at West Point in the past that the heads of its nine departments, who form its Academic Board, were given life-

appointments from which they can only be removed by Congressional action for most drastic reasons.

Another pressure on academic standards in cadet colleges and on the inclusion of a general education in officer-cadet training must also be mentioned. During times of emergency and war the necessity for getting officers quickly can lead to a serious and dangerous decline in academic standards and to pressures which tend to minimize the importance of the humanities. The problems of officer-production usually override long-term plans.

On the other side of the ledger, however, it is important to realize that the public does not as a rule know much about the internal operation of a cadet college and therefore does not always realize its actual nature. The modern concert of propaganda and publicity plays heavily on the theme of the pageantry of cadet life. Reviews, parades, athletics, spit-and-polish, long standing traditions, and automatic discipline are played up for the public eye. A West Point Professor, Colonel Hall, showed in an article in 1932 that publicity regularly ignores and neglects both the cadet and classroom and the Professor's office which are actually more important than the parade ground. At West Point it is the classroom "which decides whether a cadet should graduate, his seniority in the army, and his promotion for many years after his graduation . . . All the extra-curricular activities taken together, including practical military training, do not bulk as large in his life." The popular picture of a cadet's life thus mistakenly diminishes the importance of academic activity.

It will be seen from what has been said, that although the hu-

manities are not in an impregnable position in a cadet college, although they are subject to a pincers attack with the sciences and professional military training forming the two arms of the pincers; and although an emergency may drive them out altogether by its very urgency, against these apparent difficulties must be set the fact that in some cases outsiders may not really appreciate the importance placed upon academic work within the colleges.

To discover the extent to which contemporary cadet colleges teach the humanities it is necessary to examine curricula. An important new trend in the cadet colleges of today is towards the emphasizing of a "general education" for cadets, including the humanities.

The analysis which makes no attempt to distinguish between the humanities and other "general" subjects, but merely tries to discover the proportion of "general subjects" in what are primarily professional and engineering courses.

The trend towards a general education is illustrated in England by the fact that one of the motives behind the amalgamation of the army cadet colleges, R.M.C. and R.M.A., was the desire to create what Lt.-Gen. Sir Ronald M. Weeks, the Lees Knowles Lecturer at Cambridge in 1948, called, significantly, a "defence university." A committee was set up in Britain in January, 1944, under Sir H. L. Guy, C.B.E., D.Sc., to examine the requirements of the army for scientific and technical officers and to make recommendations for training. It reported, "Examination of the requirements of the army for officers with a broad technical and scientific training has satisfied us that its provision cannot be divorced from that of the education

and training of officers as a whole." The committee, therefore, assumed that a cadet college must necessarily include, in addition to a scientific course, such things as military history, military law, army organization and administration, elementary tactics in the handling of men, and English; and it added "provision should also be made for instruction in more liberal subjects such as modern languages and modern history for those officers whose talents lie in such directions." The Guy Report went on to say that the committee was convinced of the need for training cadets for all arms and corps in one college with a highly qualified civilian staff giving instruction of a university quality. As a result of the Report, carrying out a decision which had actually been announced in 1939, but not executed because of the war, the "Royal Military Academy, Sandhurst," replaced R.M.A. and R.M.C.

The Guy committee recommended undergraduate military instruction for all future officers for 2 or 3 years; but R.M.A. Sandhurst, up to the present, gives only an eighteen months' course, which includes 1,000 common-to-all-arms military training periods, just over 1,000 periods of academic studies, and 220 periods of games and sports. The first six months of the course is "general," but the remaining year of study permits specialization on either the scientific or the "general" academic side.

Commenting on the new curriculum the Director of Studies, Sandhurst, recently said that the military subjects alone would be enough to fill the eighteen months by themselves. It should be noticed, however, that the "military subjects"

which he listed included military history; and that might be perhaps regarded as part of the humanities. The same writer goes on, "it is integral in the new plan that all these things [he was still speaking of the military subjects] are better learned by a cadet whose mind is continually being stimulated by quite other studies not directly military." He said that it is for this reason that the new Sandhurst course includes mathematics and science, one foreign language (French, German or Russian), and modern studies (political theory, economics, the history of the British Commonwealth and the history of the Development of International Relations).

At the conclusion of the new Sandhurst course the cadets are placed in order of merit based on an estimate of character and academic ability. Their choice of a regiment rests on this order of merit. However, a cadet with "family claims" to join a particular regiment may get a "hoist" of several places in the order of merit, as much for instance, as from 57th place to 27th. It is said that by these means "a small number of cadets have been disappointed, but they have been invariably those who have passed out very low in the order of merit." It would appear, on the other hand, that cadets of good social standing, but of low academic standing are thereby given an opportunity to obtain commissions in favoured regiments. A practice of that kind can only lead to a grave decline in the seriousness with which the academic portion of the new curriculum is treated. Despite certain claims for its merits, the "hoist" appears to be a hang-over from outmoded social patterns and unworthy of retention along with the fine aspirations of the new course.

In the Royal Navy there is also a trend towards emphasizing general education. Professor Michael Lewis, Professor of Naval History at Greenwich, wrote in 1939: "A man, however expert in his own particular job, will be a much more effective entity in every way if the rest of his mental outfit is developed at least up to normal standards. And this, which is true of all professions and other walks of life, is particularly the case of a profession which is, by its very nature, active rather than sedentary, and demands contact with men as well as machines."

The Royal Navy ensures that potential naval officers receive a general education either at the Royal Cadet College, Dartmouth, or, in the case of the "special entry," at a "public" school. Dartmouth takes boys in young (now at thirteen) and imparts "a firm foundation for life in a general education consisting largely of the humanities."

After leaving Dartmouth, young executive officers of the Royal Navy go straight to sea for fifteen months, and then return to Greenwich for a course which has a large content of the humanities, international affairs, etc., and which is considered to be about equivalent to the third year of university. It is claimed that sea-experience has matured the cadet. Potential Engineering officers, on the other hand, proceed from Dartmouth to the Royal Naval Engineering College, Keeham and Mandon, at a stage which is considered to be about equal to that of university entry. The R.N.E.C.'s basic course is two years (6 terms) and is considered by the R.N.E.C. to achieve the standard of a university pass degree (normally three years in England). The R.N.E.C. tends to be technical rather than academic and has no French, no

History, very little Economics and a very small amount of elementary Chemistry. On this available data it appears that the general education of technical officers in the Royal Navy may be deficient when compared with that of executive officers.

The American service academies have always laid more stress on general education than was customary in Sandhurst and in the Royal Navy. It may be that this is because English Secondary and "Public" schools carry their students further than those in the United States. But there also seems to have always been a greater appreciation in America of the value of the humanities for a military education. For instance, under threat of war in 1812 the U.S. Congress ordered an increase of the **academic** staff at West Point. It is interesting also to notice that shortly before the Civil War, Southern influences were stressing the necessity of cultural attainment among army officers. Robert E. Lee, Superintendent of West Point from 1852 to 1855, and Jefferson Davis, Secretary of War from 1853 to 1857, both of whom were West Point graduates, were responsible for the increase of the West Point course to five years so that more time might be given for English literature, history, ethics and logic. Davis reported: "It has long been the subject of remark that the graduates of the Military Academy, whilst occupying the first rank as scholars in the exact sciences were below mediocrity in polite literature. Their official reports frequently exhibited poverty of style."

During the Civil War West Point cut its course back to four years, but succeeded in maintaining it at that level. In 1917, however, the

West Point Academic Board and the War Department ignored the precedent of Lincoln's decision of 1861 to maintain West Point on its normal basis during wartime. By November, 1918, West Point had virtually become a professional training camp. The end of the war, therefore, left the military authorities in the United States to face a difficult problem. Should the four-year curriculum be restored, should it be replaced by a shorter course, or should it give way altogether in favour of a plan to recruit officers from the universities and the colleges?

In 1919 the Superintendent of U.S.M.A. was General MacArthur, who was directed by the War Department to initiate a three-year course and after experience with it to report on it. To achieve this shorter course all subjects were cut to the bone. But the Superintendent and everyone else at the Academy reported unfavourably on the experiment, and in the spring of 1920 the four-year course was restored.

It was becoming fully realized in American military circles that the army of the future was going to develop what would virtually be post-graduate schools for specialist training and hence that there should be a growing emphasis upon a more broadly based curriculum at West Point with a combination of general and technical education. The possibility of introducing courses in Economics, Government, Psychology, Sociology, Logic and Moral Philosophy was therefore examined, but, since this would mean reducing other subjects, all that was done in 1921 was to double the time for the study of English, to introduce Economics and Government, and to reduce the time for Mathematics,

Spanish and Drawing. Further changes were made in 1933 and in 1941, usually with the aim of strengthening the general content of the West Point education.

The course at West Point is much more academic than military in content. Some subjects that appear at first sight to be military, turn out on examination to be civil subjects masquerading under another name. "Military topography," for instance, is the "Drafting" of the civilian engineering school. The West Point course is a four-year course leading to the B.S. degree and is generally accepted as being parallel to degree courses in other American Universities and colleges. In its lack of alternatives the course compares somewhat with civilian engineering schools, but in the proportion of time given to the study of the humanities and the social sciences it differs fundamentally. About twenty per cent. of the cadets' class-time over the whole course is taken up with these studies.

The West Point system is notable for the use of "recitation groups" of 12 students, who are supposed to "recite in every subject every day." The system is that the student learns the lesson in advance and is in effect examined on it by an instructor in the recitation class who explains and enlarges upon its contents. There are no lectures as we know them. As a result of the grades given in the recitation classes the cadets are listed on an elaborate roster or order of academic merit, which is kept up to date practically day by day.

A West Point professor has written that, "The compulsory, competitive dialectic course will not produce intellectual skeptics with an educated taste for some branch of know-



ledge. And no reform is possible. For an army officered by men with a 'show me' attitude towards the dictates of higher authorities, cannot be relied on to win battles." He admits that, as a result of the system of education at West Point, students tend to deify the text-book and are, therefore, inevitably discouraged from questioning the accuracy of the text or its philosophy; but he argues as some compensation for these deficiencies that the cadets are encouraged to think on their feet. He asserts that the system is sound for West Point and would be adopted elsewhere if universities could afford the number of instructors which it entails. One may wonder, however, whether the West Point system really lives up to its ideal of preparing a cadet for the diverse intellectual problems that will confront him as an officer, and whether the text-book method of instruction, with the authoritarianism which it implies, is not destructive of individual thought and therefore of the end which, presumably, the designers of the course had in mind. However, it must be admitted that many other institutions, both in the United States and in this country, rely to a deplorable extent on textbooks.

A unique feature of West Point affects the nature of the instruction given. Apart from the nine heads of departments the faculty consists entirely of army officers posted to the Academy for terms of one to four years. Obviously these men are not "scholars" in the university sense. But the Academy believes that it has, by this system among others, been able "to keep its faculty fresh and enthusiastic . . . [and] the Academy . . . a dynamic institution." It is pointed out that one does not

see around West Point the doddering figures of "ossified" Professors who are alleged to be common sights in university towns.

The situation of the humanities at the United States Naval Academy is in many ways similar. After World War II the United States Navy was dissatisfied with the amount of general education which it had been able to provide for its officers, and a Report by Admiral Holloway in 1945 recommended an increase. The Superintendent of the Naval Academy made it clear that the navy rejects a narrow professionalism and he asserted that the Academy seeks to provide "basic education."

Like West Point, the United States Naval Academy gives a four-year course parallel to that of the American universities, with the summer vacations occupied by cruises for professional training. During the winter terms the cadets receive some professional education and a general course in the sciences and humanities. Out of eleven departments two are concerned with general subjects, the Department of Foreign Languages, and the Department of English, History and Government. The humanities and social studies are stated to have been included in order "to explore and clarify the realm of human values."

The proportion of "general subjects" in the Annapolis course is about the same as at West Point, i.e., 20 per cent. The faculty at Annapolis, is however, unlike that at West Point, since it includes a large proportion of experienced civilian teachers. Like the faculty at a university, the staff at the Naval Academy is encouraged to engage in scholarly work, to attend the meetings of professional associations,

and to do advanced study during the summer months.

The Royal Military College of Canada was founded by Act of Parliament in 1875 to impart "a complete education in all branches of military Tactics, Fortifications, [and] Engineering and a general scientific knowledge in subjects connected with, and necessary to, a thorough knowledge of the military profession."

When reopened in 1948, R.M.C. introduced what is in some ways a new departure in military education, namely, courses in the humanities conducted in the style customary in the arts faculties of the universities. But this is not, of course, completely revolutionary or unique. Like other military colleges on this continent R.M.C. has always laid a greater emphasis than was the case in Europe on academic education. And as has been shown there is a general tendency everywhere towards a more "general education" for potential officers though circumstances in other countries have not always made the implementation of such a trend practicable. Furthermore, it must be remembered that R.M.C. is the only one of the military colleges examined in this paper that trains young men for the Reserve Forces as well as for the Permanent Armed Services. The necessity of providing an education acceptable to young men who desire to be reserve officers is an additional factor which compels R.M.C. to give courses which

have standards and options similar to those in the Canadian universities.

An American military historian, Dr. Vagts, in 1940, in the shadow of possible American participation in the second World War, wrote as follows: "Modern warfare no longer calls for rural stamina primarily, but makes the higher demands upon the best educated members of society; . . . academicians . . . represent, by a strange development of military technology, the ideal material for the warfare of the future; . . . the term 'academician' can no longer be used to describe one shrinking from the violence of the world; nowadays an academician is precisely the man best fitted to stand at the front and fight." It has been shown that the idea expressed there has affected present-day military institutions in varying degrees. But it must be emphasized that this has not been at the expense of any decline in the old military standards of character, discipline, and smartness. On the contrary, intelligent, well-educated young men respond better than others to discipline, drill and character-training. But the growing urgency of the necessity for technical education and at the same time for a wider general education has imposed a heavy curriculum on military academies. This has in turn made the cadet's burden heavier. However, the product of the service colleges is, and must be, of outstanding calibre if our civilization is to survive.

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