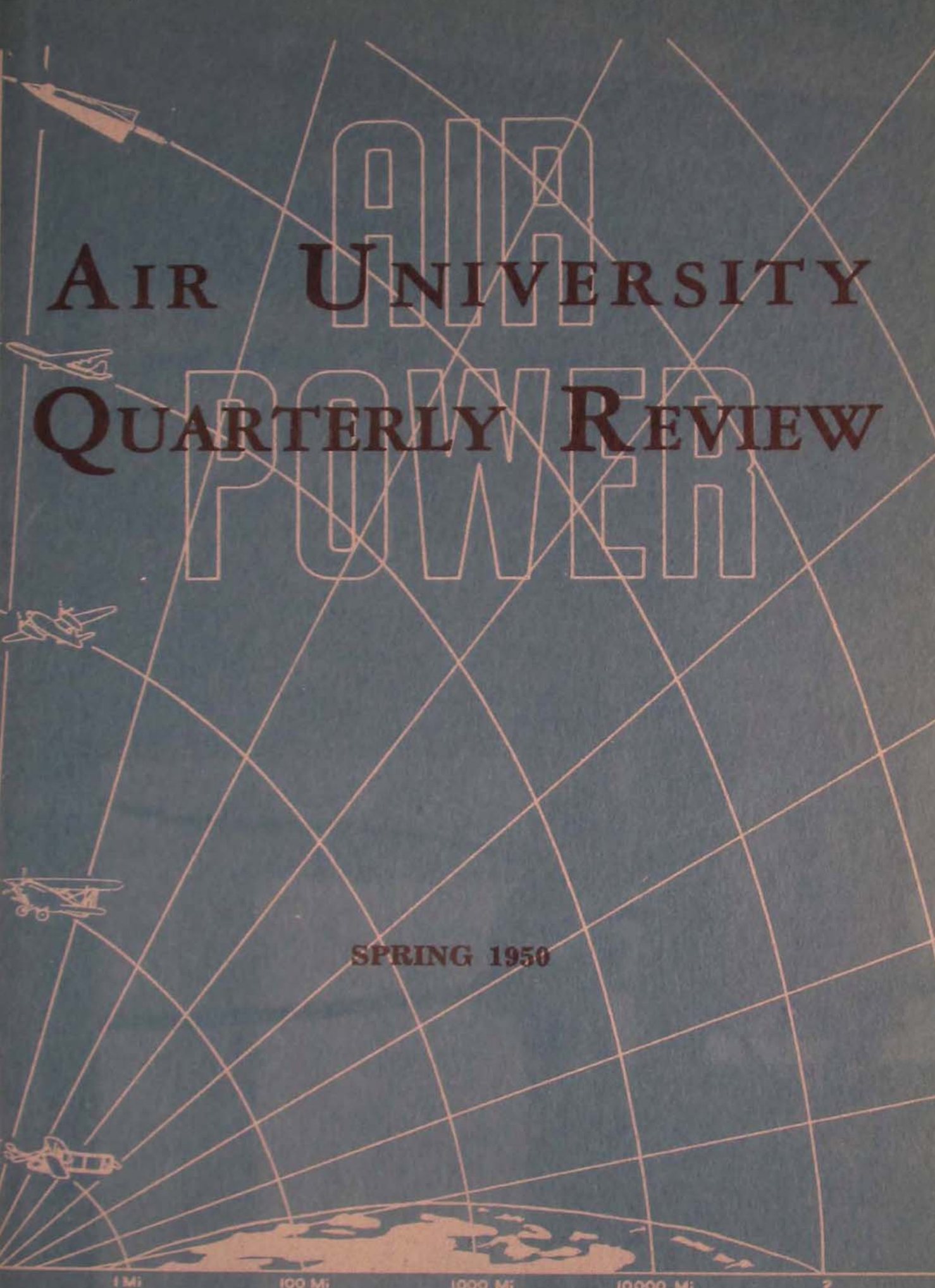
AIR UNIVERSITY QUARTERLY REVIEW

AIR POWER



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ATTENTION

Views expressed in this journal are those of the authors, and are not to be construed as the official opinions or policies of the Department of the Air Force or the Air University. The purpose of this journal is to stimulate healthy discussion of Air Force problems which may ultimately result in improvement of our national security. Appropriate contributions of pertinent articles and correspondence which present new views, or refute or support old ones, are solicited.

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PRIZE EDITORIAL

DISCIPLINE AND THE AIR FORCE

OUR YOUNG AIR FORCE is going through an extremely critical period. Its history is memory-fresh, its traditions still entangled in the service from which it derives. Its ideas are new, full of the creativeness which comes with independence, but some are as yet unchanneled, unformed, riding along under the power of wartime habits. Out of these elements, the brief history, the entangled past, the ideas and the habits, a pattern for the future is beginning to emerge. Not clearly defined yet in that pattern is the power and direction of its controlling force—discipline.

During the war years the Air Force grew from a small component of the army into one which encircled the globe. And while it grew and battled for air superiority, it shed the customs and ideas of its parent like pieces of clothing grown too small for its bulging muscles. Sometimes it replaced them with new ones; sometimes it did not replace them at all. Time was short, the pressure of more immediate things great. The influx of young, eager civilians who had to be trained as quickly as possible to man our combat areas reduced our training program to the bare minimum to ensure an adequate supply of combat-capable men. Beyond training and in combat the trend was away from outward manifestations of discipline, away from the customs and courtesies of the army, the salute, the junior walking on the left, the "yes, sir, no, sir, no excuse, sir." But we had excellent discipline, nevertheless, of the kind that American civilians are used to—fighting to win, getting a job done with as little ceremony as possible. That was what counted. Our air discipline and ground maintenance discipline was high. Discipline elsewhere in the form of ceremony was not for our civilians hurriedly put into uniforms. They remained civilians at heart until victory came to release them.

After the mass exodus the majority of Air Force officers remaining on active duty were still those who had received their commissions from wartime training programs. They were excellent pilots and technicians, but they were lacking in the qualities essential to peacetime officers. With the airmen it was much the same. Here then is the

crux of our problem: we are civilians in habit and training, working and living in a military organization which is itself experiencing its first peacetime years. Long-time habits call for one thing, and military customs and existing regulations call for another. Airmen are embarrassed to salute officers, and officers are embarrassed to enforce the courtesy. The "Good Joe" theory is still alive, and the boys growing up during the war are now entering the Air Force with pictures still fresh in their minds of the wartime "fly-boys," popularized by the comic-strips, with their droopy caps and go-to-hell attitudes.

The Air Force has not renounced the traditions and customs that it inherited, but neither has it made any significant effort to support them. In its new blue uniform it appears to many to be going in a completely new direction. It is going in a new direction, of course. The science it uses can not progress except on a free, open road. But neither it nor science can afford not to look backward. It is the quickest way to go forward.

Military organizations have always depended on a system of discipline to keep them intact and powerful. This system has taken many forms, but in the American form we know it has always been an attempt to cement the individual into the organization, a process by which the little an individual loses is to the great gain of the organization. It is a system for order, efficiency, and economy. It embraces the general as well as the private.

Saluting and the other customs we associate with good discipline are not the points at stake. These are simply trained responses to certain established demands. They are recognition of the demands, overt acknowledgment of them. At best they are simple expressions of a man's attitude towards that discipline which can not be measured from the outside. Elimination or alteration of any of the present demands would not damage true discipline—unless it happened in the way it appears to be happening now, in a slow, confusing, crumbling way. The pressure of demands still exist, but there is not a corresponding degree of pressure inside us to want to acknowledge them. Bit by bit we are assuming individual authority over our small acts.

Good discipline is the substructure of any organization, large or small. The larger the organization, the more solid must be its construction. It is time we examine our Air Force foundation before piling more materials on it. If it is not the right one, if it does not harmonize with our new ideas, our new materials, then it must be repaired or replaced. But it must not be permitted to crumble away.

Lt. James D. Hughes, USAF
Itazuke Air Force Base

Formulating The Air Force Program*

FRITZ MORSTEIN MARX

HOW DOES THE AIR FORCE PROGRAM come into being? What is the interplay of judgments and decisions that makes the program developed by and for the Air Force part of the national program? These questions ultimately refer us to the political process. They reach beyond the technical aspects of formulating large-scale programs. They can not be answered in terms of scientific management alone.

Management specialists and professional planners necessarily must pay tribute to the goddess of rationality. They often become impatient when they see the product of their own work played about by what they suspect are irrational forces. They are easily disturbed about the changes which the product of their planning undergoes in the political arena. No doubt in a large establishment such as the Air Force, exacting planning and exacting management throughout the organization are prime requirements today. Public opinion itself insists upon a demonstration of high standards of performance.

In meeting these standards, what those charged with developing the Air Force program do within their individual sphere of work thus has an important impact upon the character and the public reception of the emerging program. More than the ordinary virtues of the soldier is required today to keep a program of such magnitude well conceived and effectively executed. Certainly each specialist's contribution to this end is a vital factor. But the effort that all participants devote to the planning of the Air Force program obviously gives them no claim to expect this program to become automatically part of our national policy.

Perhaps much of the difficulty that both professional soldiers

*Based on a lecture presented November 9, 1949, before the Comptroller Course, U. S. Air Force Special Staff School, Air University, Craig Air Force Base, Alabama.

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and practitioners of management face when they view the political scene lies in the fact that they maintain too much distance, even too much indifference, toward the processes by which we as a nation do business politically. Greater appreciation is needed of the lifelines of American democracy that alone can sustain an effective program of national security. Specialists in planning and management must be at least part-time students of politics.

Planning its program, especially as part of the annual work plan of the Federal Government known as the budget, is a primary concern of the Air Force. In trying to indicate what happens to the Air Force program at a higher stage, one might in a general way distinguish between three very important levels, each linked in some fashion to the area of politics. The first level is that of the Department of Defense. Above it, there is the President's level. Above that, there is the level of the Congress. These levels are necessarily interrelated; they are not steps that are carved one above the other.

To illustrate, what happens on the level of the Secretary of Defense is, in many instances, a matter of direct interest to the President or various parts of his staff organization. What happens on the level of the President is, in most instances, of great interest to the Congress. What Congress does, in turn, is of very great and obvious interest on both the departmental level and that of the President.

The Level of the Department of Defense

The Department of Defense, intended to be a unified department, would fail Congress as well as the President if it presented to both in three separate packages an Air Force program, a Ground Force program, and a Navy program, dropping these separate programs like hot potatoes, as it were, and without further comment. In plain fact the Department of Defense is called upon to present a unified program of national security. This means in effect that even before the initial planning gets underway for the making of the Air Force program, some guiding instructions, some benchmarks of size, some general concepts have to come down within which to evolve an Air Force program.

The planning that goes into the Air Force program must begin with premises; it would be aimless without being grounded in concrete premises. The imminence of military conflict, for example, would lead to specific premises. So does the character

of the kind of warfare expected. So does the prospect of an economic slump. So does the state of public opinion or the attitude of Congress. Not everyone will accept each of these varying premises as sound at a particular time. Admitting a considerable margin of error or imperfection, it is still true that there has to be a set of working premises. Thus from the outset the Air Force program is developed in its main features with a predetermined framework in mind.

Being expected to produce a unified military program, the Secretary of Defense must assume the authority to lay down basic premises on which the three service departments can effectively proceed to plan. He, in turn, would obviously be unable to draw such basic premises from nowhere. He needs information on the underlying issues and the prevailing expectancies. In addition to military advice, he may need counsel from the Department of State on foreign affairs. He may also need counsel from the President himself or from the President's staff organization. Then too, he may need to consult with important figures on the legislative side—a committee chairman, political friends in Congress with a good sense for matters of national security, influential figures whose support means much any time. Out of these many judgments, professional and political, the Secretary of Defense, aided by his departmental staff, compounds a set of premises that would aim at the largest agreement and at the same time tend to have the right ring to the American public.

Readers may be assumed to be generally familiar with the emerging machinery of the Department of Defense. They are likely to be familiar with the role of the Joint Chiefs of Staff in furnishing the most vital premise for all military planning—that is, the strategic concept. A great deal of nonsense, it would seem, has been poured into the public presses about the sweep of the responsibility of the Joint Chiefs of Staff in the formulation of such strategic concepts. It is widely assumed, for instance, that these concepts are worth little unless they extend far into the future. Longer-range perspective can not be dispensed with, but for the year-by-year formulation, in budgetary terms, of the Air Force program it is no less important to appraise matters in the perspective of the immediate future. In weighing contingencies, conclusions have to be arrived at to govern successive fiscal years with their allocation of financial support to the service departments and their individual components with a view to achieving an integrated

security program. This involves above all a cold and merciless analysis of changing chances reduced to calculated risks.

The Joint Chiefs of Staff could not attempt to formulate valid strategic concepts without drawing heavily on the professional counsel that comes from the three great services and their own staff organizations. Those are indispensable participants in the process. It is easy to see what happens when the professional military judgment is frittered away in fundamental differences of opinion. The military experts lose much of their opportunity for informing civilian judgment and civilian leadership. When there is evidence of incapacity of the services to see eye to eye on basic points, civilian leadership is thrown upon its own remaining resources. When the military services lock horns, they tend to eliminate themselves as effective partners in the formulation of strategic concepts. There is a tremendous responsibility, therefore, in combining incisive and fresh analysis of facts by different staff elements with acceptance of a unifying point of view. Without such acceptance an effectively integrated program of national security is inconceivable.

Besides the Joint Chiefs of Staff, advising both the Secretary of Defense and the President, one must mention the Munitions Board, which considers the economic practicability of emerging military programs. What would they entail economically if they were accepted? The question requires a checking back into the realities and limitations of our economy. In this effort the Munitions Board teams up with parts of the President's staff organization, especially the National Security Resources Board, which weighs the military claims upon our national productive power against the claims on the civilian side—claims we have to respect because they guarantee a strong economy.

As General Bradley said early in 1949 before a group of industrialists in Boston, we must realize in all of our planning that our first line of defense is a functioning economy. Nothing would set us back in military terms as disastrously as a serious recession. It is therefore essential that the volume of cumulative commitments arising from military programs remains closely related to the capacities of the economy.

The National Security Resources Board is a fairly new element in the President's staff organization. Established by the National Security Act of 1947, the Board has recently been formally placed in the Executive Office of the President. On

this Board the military services, once more, have proper representation. The Board's continuing work of planning for economic mobilization is guided by a civilian chairman.

Not only the National Security Resources Board but also still another agency in the Executive Office of the President—the Council of Economic Advisers—is involved in measuring military program requirements against the productive capacity of the nation. The Council of Economic Advisers is another relatively recent addition to the President's staff organization, having been created by the Employment Act of 1946. The Council advises the President on economic developments and trends, assists him in the formulation of economic policy, and renders aid in the preparation of his annual economic report to Congress. In this report, submitted a few days apart from the State of the Union message and the budget, the President takes a look at the state of the nation economically and sets forth his economic program.

In the light of all the information available to him, the President gives the Secretary of Defense an indication of the proper total size of the military budget, based on a synthesis of the needs of national security and the capabilities of the economy. This indication takes the form of a budgetary target figure, also called ceiling. In setting such a general target as the maximum to be requested of Congress for national security, the President in effect makes a tentative determination of the relationship between the military and the civilian programs of the Federal Government. So one can see how even in establishing a framework of military planning on the level of the Secretary of Defense, threads run up and down to and from the President and his staff organization. The hard test of facts is applied at many different points.

Once the framework of planning is established, the three military services can work out their program. They know the general scope; they know the emphasis; they know the priorities. Never are they free agents, at liberty to pursue their professional predilection. They have an assignment from the higher level, and their program planning, to be effective, must respect the limitations of this assignment. It should be added that the new Management Committee of the Department of Defense, as a high-level staff agency, exerts considerable influence in the formulation of these programs. In reviewing and appraising the operations of the defense establishment in terms of economy and efficiency, the Management Committee

is playing an important role in developing the military budget.

It is also necessary for each service to seek that kind of internal program balance which best conforms to the strategic premises. But the requirement of balance—including that of a balanced program of national security—is neither absolute nor rigidly fixed. It is historically always changing. Such shifts are actually often initiated by military judgment when it is well informed and backed by compelling reasons. Balance is most easily lost by bold but one-sided theories. It is a healthy thing, when the American people commits large chunks of national income, to stay close to a planning base from where a variety of probabilities can be met in some fashion, rather than assuming a position that serves to corner fully only one possibility.

In this framework military program planning takes place. There is room for a great deal of professional effort to perfect methods and devices for such planning. Here the management talent of the Air Force must prove itself. Eventually the product has to submit to review on the level of the Secretary of Defense. Review is likely to proceed along the lines of the established premises. The product with which the Air Force comes forth must fit into the specifications. If it does not, the assignment has not been carried out.

The review would also have to go into the internal soundness of the program proposed by the Air Force. Is there sound balance within the Air Force program? Does the balance within the Air Force program relate well to the general balance of the whole program of national security? In such scrutinizing judgments, civilian appraisal needs the benefit of unified military staff opinion. Coming in one voice, to repeat, such opinion would have far more weight and effect than if there is a scattered noise of different voices, none to intelligible by itself.

The Level of the President

How does the matter move on as we reach the President's level? In the relationship between the legislative branch and the executive branch made up of the civilian and military establishments, it is obvious that there is only one leader who can speak for all of these establishments—the President himself. The Constitution explicitly mentions his role as Commander-in-Chief; he is the only common spokesman for the military services and the civilian services. The Constitution thus makes eminently plain that his is the decisive voice of

civilian judgment in advising Congress. Hence, in presenting to the President his tentative program for national security, the Secretary of Defense acts in a staff relationship to the President. Determination rests with the President.

The President, of course, knows intimately about the large issues before the country and their program implications, but he would not want to base his determination solely on his personal knowledge. In order to present to Congress the final program of national security as part of the working plan of the Federal Government as a whole, he needs diversified staff advice on many different problems. One of the sources of such staff advice on the President's level, besides those already referred to, is the National Security Council. It aids the President on policy matters in the whole field of national security.

Like the National Security Resources Board, the National Security Council was established by the National Security Act of 1947. Together with the Board, it has now been included in the Executive Office of the President. The Council is in effect a working committee of the Cabinet, which includes the Secretaries of Defense and State and the chairman of the National Security Resources Board, with participation of other heads of civilian agencies. It functions as any other such committee would function, except that it is permanently organized for its purposes. A committee of the Cabinet created by the President with a short-range assignment is likely to be a relatively informal group requiring little administrative machinery. The National Security Council, provided for by statute, has its own secretariat.

While the President, as chairman of the Council, attends its meetings as occasion may warrant, the continuing business of the Council is taken care of by an executive secretary chosen by the President, whose relationship to the President must be very close. As practice has evolved, the executive secretary appears at the White House every day for a day-by-day briefing of the President. The time he spends with the President may be shorter than that spent by the Budget Director with the President. But the Budget Director will ordinarily not appear every day; he may have mercy and appear only on particular days during the week.

Keeping the President informed, the executive secretary of the National Security Council does not speak for himself. He is an anonymous staff agent, and few on the outside would actually know his name. He is not to have a mind of his own;

he is a transmission to the President. What he transmits is factual data and expert judgment formed in the staff work and the discussions of the National Security Council, dealing with all aspects of national security policy—including foreign policy and domestic policy.

The Council, in turn, benefits from the continuing cooperation of the key planners from the military and the civilian departments represented on it. In addition the executive secretary has at his disposal a small staff engaged in study of specific security problems. He thus brings to the President a blending of military and civilian judgment. In periods of peace it is not surprising that leadership in the conduct of most of the business of the National Security Council is exercised by the Secretary of State. Evaluation of the international situation with its potentials of power is being related to military program requirements. Thus the Council is also concerned with the relationship between appropriate military posture and economic capability to meet the programs of the Air Force, of the Navy, and of the Army.

Still other parts of the President's Executive Office play an important role in assisting him in his program decisions. The Bureau of the Budget not only examines the financial requirements of all military programs but also operates as the President's general management staff—a comptroller staff, in military terminology. Hence the Bureau attends to a great many things other than budgeting. The Bureau, for example, prepares reorganization plans for the President under the Reorganization Act of 1949. It engages in administrative studies of particular departments or individual problems in these departments. As a management arm of the President, the Bureau has maintained intimate working relationships with the management staffs in the military departments, initiating joint study teams, jointly analyzing many of the obstinate problems of military program planning. This partnership has flourished all during recent years, including the wartime period.

The Bureau of the Budget pays attention to the President's program in another way. It analyzes for him proposed legislation to see whether this legislation is in accord with the President's program. In this way the Bureau works as a legislative clearance agency for the President. Then also, no executive order of the President is issued without similar clearance in the Bureau of the Budget. So, both from the point of view of the financial requirements of the Federal Government's program

and from the angle of general executive management, the Bureau enters into the formulation of the Air Force program. There is an interplay of many judgments which the President may consider in making his final determinations.

The Level of Congress

The judgments thus far stressed are in the main the judgments of professional specialists—military, economic, budgetary, and other subject-matter specialists. All these turn upon the question of what kind of national program for military and civilian needs could and should be maintained by an economy that, like a live organism, passes through change constantly, never being quite the same for any longer period, requiring therefore fiscal adjustment when tremors of weakness run through its body. Certainly, if there are such signs, all program planning is immediately affected, for men of public responsibility must think of the possible implications of an economic decline and how we are likely to get hit.

But it should be recognized that the judgments of professional specialists, on both the level of the Secretary of Defense and the level of the President, can not afford to be aloof from the political context of these great offices. Here another area of judgment opens up—that is, political judgment. This area is, in many instances, the most befuddling to the professional specialist, who knows and values his own competence and fears the working of anonymous forces that to him show inadequate respect for his professional product. He tends to overestimate the gulf between his neat and sober reasoning and the methods by which we do political business as a nation.

Now actually the weight of facts and of solid analysis is rarely lost in the political process, even if it is not always accorded full consideration. But certainly professional people should appreciate how great the chance is for them today on the level of Congress, as on any other political level, to gain attention for the basic facts. This is in large part the result of the development, in Congress, of a staff organization called upon to furnish and appraise data for the use of committees and individual members of the legislature.

The Legislative Reference Service, operating as part of the Library of Congress, is something of a flying squad of specialists, all of high-grade qualification, who are available to Congressional committees to advise them on a wide range of subjects, including military affairs and programs. Additional

committee staff has been provided by the Legislative Reorganization Act of 1946. The presence of a staff organization in Congress is of great significance to professional people in the executive branch. The staff members on the legistative side are like the professional people on the executive side. Their working approach is the same; their language is the same. That is an important factor in fostering respect for facts and figures.

Of course, beyond the persuasive power of facts we confront in the political arena a sharp contest of identifiable interests. Sometimes these interests are not too well labeled; sometimes they evade accountability in the forum of public opinion. In this struggle of interests each is trying to capture as much power and influence as is possible. The free play of power and preference is modified only by such objective information as can be furnished the lawmakers so that they may probe into the validity of demands pressed by special interests—inside as well as outside the Government.

In part to meet the impact of interest pressure, in part as a matter of general circumspection, a premium in legislative business is placed upon a definition of policy in such terms that safety exits remain open, that opportunity remains for adjustment. In other words, no legislative decision is readily favored that seems to swallow too much. Far better appears a decision that is preliminary in character or temporary in nature, or even a temporizing decision. Lawmakers, especially as they confront uncertainties internationally and in the strength of our economy, gravitate naturally toward policy decisions that do not push the country into extreme positions. The cost of withdrawal, if the picture changes, should never be too great, and the risk of responsibility for the individual Congressman should never be too high.

The Strategy of Open Decisions

The politics of American democracy is characterized in large part by retaining an open state of decisions as contrasted with a closed one. In our political process great value is attached to the kind of national answer that does not claim to be good for longer than the near future—the next fiscal year or two. Much, therefore, of our politics aims at what might be called the open decision, as contrasted with the closed one.

The closed decision is one that would commit the nation in a final and definitive way, allowing us only with an exceptional effort ever to get away from it. A closed decision would be to

force a showdown with an international opponent, or to stake national security on any "absolute weapon." By contrast, the strategy of the open decision operates on this sort of logic: given the facts as they appear to be, so far as can be seen at the moment, and eliminating certain likelihoods apparently marginal, here is the kind of thing we might be able to live with for the foreseeable future. Political action with respect to the combat strength of the Air Force is an example of open decisions. Another example is the general restraint shown toward any sharp rise in the military budget. The open decision is that of caution. Now that may sound provocative. But the chances of wrecking a whole nation by the alternative of closed decisions are terrific.

We have had some very helpful pointers from recent history. More than one political system that operated by the strategy of the closed decision has perished in disaster. In these systems infallibility spoke out of a mind of the leader who was almost a god, and the professional specialist—military or civilian—had to whimper along with the infallible decision. All he could do was whimper and get licked. The risk of this alternative is deterring, to put it mildly.

If we were to throw our great national potential too readily into closed decisions, we would have to get along with a locked steering gear, as it were. We might have to endure this consequence for long periods, with loss of versatility in adjusting to changes in controlling conditions. If we operated by the strategy of closed decisions, some professionals whose staff advice happens to prevail would rejoice—at a large price to the nation. For us, on the contrary, it is better to rejoice in the fact that in our democratic tradition we prefer to operate by the strategy of the open decision.

The strategy of the open decision introduces some temporizing but also continuous pressure toward reconsideration. It therefore extends the chance for the professional staff adviser to gain a hearing for his views. One may be overruled twice, and yet his turn may come the third time. The open decision does not abandon the issue by disposing of it but compels a reconsideration as time passes. How do we stand now? What are the new factors? Where do we go from here? This approach is a very important factor in the successful working of American democracy.

Few will fail to see the merits of the strategy of open decisions, prompting continuous reconsideration, providing the flex-

ibility of elastic adjustment as we move forward, keeping us free from a commitment of our national potential that pins us down to a particular hypothesis though factors always change. This is a congenial atmosphere for creative staff work and inventive planning. In that kind of atmosphere professional planners and management specialists buy themselves the greatest opportunity for offering their product in the free competition of ideas, always assured of a patient hearing.

American University

No American will think it wrong of me if I proclaim that to have the United States at our side was to me the greatest joy. I could not foretell the course of events. I do not pretend to have measured accurately the martial might of Japan, but now at this very moment I knew the United States was in the war, up to the neck and in to the death. So we had won after all! Yes, after Dunkirk; after the fall of France; after the horrible episode of Oran; after the threat of invasion, when, apart from the Air and the Navy, we were an almost unarmed people; after the deadly struggle of the U-boat war—the first Battle of the Atlantic, gained by a hand's-breadth; after seventeen months of lonely fighting and nineteen months of my responsibility in dire stress, we had won the war. England would live; Britain would live; the Commonwealth of Nations and the Empire would live. How long the war would last or in what fashion it would end, no man could tell, nor did I at this moment care. Once again in our long Island history we should emerge, however mauled or mutilated, safe and victorious. We should not be wiped out. Our history would not come to an end. We might not even have to die as individuals. Hitler's fate was sealed. Mussolini's fate was sealed. As for the Japanese, they would be ground to powder. All the rest was merely the proper application of overwhelming force. The British Empire, the Soviet Union, and now the United States, bound together with every scrap of their life and strength, were, according to my lights, twice or even thrice the force of their antagonists. No doubt it would take a long time. I expected terrible forfeits in the East; but all this would be merely a passing phase. United we could subdue everybody else in the world. Many disasters, immeasurable cost and tribulation lay ahead, but there was no more doubt about the end.

—on receiving the news of Pearl Harbor
Winston S. Churchill
The Grand Alliance
Houghton Mifflin, 1950

A Problem in Leadership

COLONEL DALE O. SMITH

IN THE AUTUMN OF 1943 Colonel Jones assumed command of a combat group of Flying Fortresses in England. He, as an unknown to the people in the organization, replaced a group commander who had been almost worshipped by the 3000 people comprising the group. Under the original commander the outfit had been sorely punished by the enemy. Its combat ranks had been thrice decimated within the past six months. Its record of successful attacks had been poor. And its morale for the job of war had plummetted to the nadir. The original commander could hardly have been held responsible for this unhealthy situation. Nonetheless, as is the human way in crises, heads must fall, and the division commander saw fit to make a change. The group lost the leader it loved. He was replaced by someone none had heard of, a stranger, a Colonel Jones.

When he passed through the gates of his new station, Col. Jones knew of this condition only in a vague sort of way. He had no appreciation of the intensity of feeling that had existed, and still existed, for the relieved hero-leader-father figure. The men felt their old C.O. had been heartlessly separated by a high command which had little first-hand conception of the desperate warfare. Neither did Col. Jones have an understanding of the extreme mass sensitiveness that existed. It existed because of the implication that the proud group, which had left so many of its fighters in Nazi Europe, was not doing well. Could all that bloodshed of friends have been in vain? The switch of commanders had focused the questioning eyes of the entire 8th Air Force upon this group and the men resented it. But most serious was the thought of each airman: "Am I to pour out my blood like the others and not even be appreciated for making my ultimate contribution?"

Someone once said that it is never possible for a man to make friends with those who do not want a man like him even to

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exist. Col. Jones was in that position. Not a man in the group wanted him to exist. He had previously commanded a group in a less active theater of war with some success and was confident of his ability and of the future. He had developed several formulae of leadership which had worked well for him. But he was soon to learn that the application of formulae was not leadership.

His first meetings with his new staff were marked with cool courtesy. As he had made no change or suggestion, had greeted them with some humility, praise, and enthusiasm to be their associate, their distrustful manner baffled Jones. His first hypothesis was that they considered him to be a recruit, his previous combat service negligible, and his three indoctrination missions (flown with another group) elementary. Jones resolved to postpone any action on his part until he had flown with them enough to gain their confidence. He therefore led them on three missions to Europe in rapid succession. He leaned heavily on his deputy and his squadron commanders, acting almost exclusively upon their advice. The heavy bomber losses continued at about twenty per cent for each mission.

At the end of that period Jones could hardly contain the many ideas and plans with which he hoped to improve operations and reduce the losses. Although he knew he had not yet gained the confidence of his people, he was at a loss to know what next to do to win them over. With airplanes and crews being shot down at a prohibitive rate, Jones felt compelled to act without delay. Perhaps if he could force some changes that would improve the bombing and reduce losses, those results in themselves would win their respect. He despaired of ever winning them through friendly overtures or persuasion. His only recourse seemed to be arbitrary command. Because the situation had become critical he resolved to force the reforms upon them.

One of the outstanding weaknesses of the group as seen by Jones was its lack of teamwork and precision. Each of the four squadron commanders was at sword's point with the others and, in addition, considered the group headquarters itself an unnecessary echelon of command. Staff meetings were bitterly acrimonious and Jones struggled helplessly to gain some spirit of cooperation. This attitude was mirrored in the group's air work. Formations were ragged, squadrons did not support each other, flight plans were haphazardly followed, air leadership was often ignored, the radio frequencies crackled with morbid

humor and irritated profanity. There were numerous aborts and take-offs were sloppy, drawn-out affairs.

Jones began his buck-up program with the take-off technique. The merits of a snappy take-off procedure were not readily apparent. Nothing seemed to be gained by starting all engines at the same instant, by all airplanes beginning to taxi to their take-off positions on the exact second, or by each bomber roaring into the air at precisely thirty second intervals. Ample time was always allowed for late take-offs to join the formation in the air, and there were frequently genuine troubles that caused delays. On the other hand, with precise take-offs a feeling of integrity and strength could be inspired. A mutual confidence was engendered when several hundred people in massive warplanes moved together as a well-oiled machine, with none faltering, none jamming the works, and everyone able to depend on everyone else. Jones had felt it in other groups, and he knew such a spirit of unity would carry over into the air work, where everything counted so dearly. He knew also, from his own experience, of the tense, dreadful wait in the airplanes after "stations" and before "start engines." He believed that if brilliant pyrotechnics were used to signal the various take-off activities, the distraction would tend to ease the anxiety. And he further thought that such a change, which required no additional work for anyone except the flare shooter, would be a popular one. It was made to order for the opening wedge of his extensive series of reforms.

At the next staff meeting he suggested the new procedure in this way: "Gentlemen, I've been thinking how we might put a little more color and zip into our take-offs. We have vari-colored flares. I saw another outfit use flares to signal the times to start engines, taxi, and take-off. It looked very impressive, and the people seemed to get a kick out of it. I know we calibrate watches at briefing and everyone knows the exact second to start engines anyway, but flares will remind those not looking at their watches. On top of that it might encourage the crews to move off together. What do you think?"

Jones could tell by regarding their faces that they took a dim view of his proposal. But the issue was not a vital one, and their objections were not vehement. Lt. Colonel Edwards, who commanded the most independent of the squadrons, led the vocal opposition.

"Can't see that it does anything more than add extra duties for someone to fire the flares," objected Edwards. "I think

they move off together okay now. Only reason some might not is because of a mechanical difficulty. Flares wouldn't make any difference there."

"It might cause a little extra work," countered Jones, "but hardly enough to wear anyone out." Jones wished to avoid the touchy subject of precision. It was obvious to him that his standard of precise operations was considerably higher than the standard of his staff, and he didn't wish to become involved in the futile argument of the merits of West Point drill. He realized that his remark was a mistake, that it held an element of sarcasm not conducive to persuasion, but he had to let it hang.

"Well," said Edwards, "one of the busiest men on take-offs is the flying control officer. If we add even a little job like flare shooting to his list of duties, he's likely to make a mistake in recording the take-offs or something else. He's plenty busy. Did you ever watch him?"

Jones ignored the implication that he didn't know what went on in the control tower. All would be lost if he allowed Edwards to trick him into an argument unrelated to the issue, particularly when such an argument would involve Jones' defense of himself before his subordinates. He was ready, however, for the "too much work" objection since he had anticipated it. He did not hope to convince Edwards by logic or by any other method just then. He only hoped to smooth the way so that Edwards would have little justification to oppose the plan. Thus the argument had been turned into the channel Jones had been waiting for. "The group navigator gives the time-ticks at briefing," Jones answered. "He's the man who keeps all clocks on the right second. What does he do after briefing?"

"Goes to bed, I guess," Edwards remarked, unprepared for the question.

"Any reason why he can't fire the flares?"

"No, I guess not." But Edwards had recovered with a new objection. "I don't like it though, Colonel. If everyone gets used to flares, they won't pay any attention to their watches. Then one day the flare shooter won't turn up and the whole group will get off late."

"I suppose that could happen," said Jones, "but we wouldn't have to make any change in existing instructions. We could just superimpose the flare shooting onto our regular take-off SOP. Just tell people that flares are an additional reminder. As for the flare shooter, we'd have to depend on him. In this

business there are many individuals we have to depend on. You know that."

"Seems to me we already have enough details to worry us," grumbled Edwards, "without dreaming up more that we could get along without."

Jones sensed that Edwards was running out of specific objections and that the others who had been bystanders in the exchange were partially swayed and ready, at least, to close the subject. Then Jones gave them the needle. It went in so gently that they never realized it was the beginning of an injection that would revolutionize the outfit.

"Well, suppose we give it a try," Jones said. "Let's work it a while, and if you don't like it, we'll cut it out." This was an arbitrary order, and they knew it. Discussion was closed. Jones had not gained their support nor even their grudging consent. He had simply taken some of the venom from their objections on general principles. By now he knew that any suggestion he voiced would be rejected on those grounds. But if his take-off plan proved successful, his next suggestion would be more deliberately considered on its basic merits.

Edwards and the others agreed, with reservations, and the program for precision take-off was inaugurated as a standing operating procedure.

In the early morning darkness before the next combat mission, forty-two crews watched the control tower as their second-hands crept to "start engines" time. Energizers were meshed ten seconds before, and when the two yellow flares burst above the control tower, forty-two engines jumped into thundering life. These were quickly followed by the starting of the other one hundred and twenty-six engines, and in a moment the airfield was throbbing with their roar of power.

Five minutes later a green and yellow flare exploded in the darkness. The lumbering bombers began to move as a single unit, jockeying for position, to their take-off places. Then the final green-green flare signalled the leading Fortress to give it the gun, and it rolled down the runway, shooting flames from its exhaust stacks, picking up speed, and lifting into the air. This was followed by another and another and another at thirty second intervals, until all 42 were airborne and making the world tremble with their terrific vibrations as they circled above the field. It was the best take-off in the group's history. Nothing had been changed. Only some color and interest had been added. The new commander's reform program had begun.

At the next staff conference Edwards volunteered the information that the crews liked the flares and that perhaps it might be well to continue the custom. The group navigator even enjoyed shooting the flares. It was rather like pulling the trigger that set the several hundred thousand horse-power juggernaut in motion. Jones thanked Edwards for his help in getting the procedure underway and turned the discussion to flares in general.

"No reason why we can't use them profusely," Jones said. "The armament officer tells me our warehouse is full of them. Maybe we could use them to advantage in other ways." Jones wished for Edwards to propose a particular way.

"Well, the leaders fire them for self-identification to help their wing men form," said Edwards, and Jones knew he had hit the jack-pot.

"Yes," he said, "but when you look for a leader, he isn't firing flares; and when someone in your plane sees flares, by the time he calls you the flares are out and all you see is two trails of smoke."

"Yeh," said Edwards, thinking, "it doesn't work too well. Can't see the colors half the time."

"How often does the leader usually fire flares?" asked Jones.

"Every few seconds," answered Edwards, "but I guess they could be fired oftener."

"A swell idea!" jumped in Jones. "The engineer does the shooting. Why doesn't he fire one flare after another just as fast as he can? Then maybe the wing men could identify their leader better."

"Worth a try," responded Edwards. "Sure use up a lot of flares though."

"Well, you have my full authority to use all the flares you can fire," said Jones. "If you decide it helps the forming-up in your squadron, let me know and we'll make a group SOP of the idea."

So the ice was broken. Before long Edwards became an enthusiastic supporter of the group commander's revitalizing program. With each successful change new enthusiasm was created. True, there was a never-ceasing resistance to change, as such, but each new convert that Jones made decreased the difficulty of enforcing the changes. Formation flying was tightened up and rivalry in this skill provoked between squadrons; practice missions were run at every opportunity; stiff penalties were laid on unjustified aborts; radio discipline was enforced;

engineering was held strictly responsible for mechanical failures; bombardiers and gunners were constantly scheduled on ground trainers. Thousands of practice bombs were dropped and millions of rounds of ammunition fired. Navigators and lead teams studied target folders for hundreds of hours before being entrusted to the direction of the air attack.

Gradually the group's record over Germany improved. Targets were hit oftener with more compact bomb patterns. Losses decreased steadily. With these successes the self-pity that had been gnawing at the group and rotting its moral fiber was replaced by pride: a pride in its ability and in its teamwork. It had acquired *esprit de corps*.

Analysis

In this situation little was gained by the leader's attempt to be friendly. Normally, particularly in less-intense situations, a friendly approach is a good rule of thumb. Subordinates are always doubtful and apprehensive of a new leader. Until they become assured that he is approachable, fair, and easy to deal with, they will move slowly, be confused and frustrated. But occasionally, as demonstrated here, the new leader will find himself disliked even before his arrival, simply because he is a symbol of something hateful. He can only achieve true leadership then by somehow destroying or altering that symbol.

This group attitude had nothing to do with the leader's personality. The attitude would have existed regardless of how he approached his people. Of course by being unfriendly he could have exaggerated the hate, but friendliness in itself could not dispel it. Hence the formula of friendliness which Jones had formerly used with much success failed utterly in this situation to gain his acceptance as a popular leader. It was good as far as it went, but in this instance it didn't go very far.

Jones failed to analyze correctly the hate expressed by his men. Here was a clear-cut case of displaced aggression. The intense suffering they had undergone, the constant fear and frequent traumatic experiences, could not be compensated for in the impersonal aggression of air combat. Adequate compensation was impossible and it overflowed into aggressive thought and action directed at each other, the high command, and particularly their new commander.

Not being insensitive to the valiant fight being put up by the group, Jones assumed command with some feelings of humility and unworthiness. As soon as he sensed the hatred

directed toward him, he jumped to the conclusion that they hated him because he was not experienced in their particular type of combat. This was reasoning from a subjective point of view, and although there was some objective basis for his conclusion, Jones overrated its importance. After becoming skilled in their type of combat, the hate had not diminished. Jones had attempted to cure a symptom of the group's disease, not the cause.

All this was lost time: time spent in trying to make friends and time spent in trying to prove his worthiness. The disease of misplaced aggression was unchecked, gathering momentum.

Only by chance did Jones hit upon the true cause of the disease and check its progress. The group had almost lost feeling for the enemy. The enemy had become impersonal and could not be blamed for the group's fate. Emphasis had been put on individual survival rather than attack. The bombing of the objective had become an insignificant incident. The great emphasis that Jones placed on bombing accuracy, gunnery formation, teamwork, *etc.* redirected the group's aggression to the enemy. The group became progressively more eager to strike back at the Nazis. Strike photos were eagerly studied by all, and spirited critiques turned attention to the enemy. Direct aggression had supplanted misplaced aggression. With the gradual lessening of the hate directed toward him, Jones was able to afford leadership more applicable to a normal situation. Had he correctly analyzed the unusual situation in the beginning, his task would have been simpler.

Stanford University

Volumes can be written, and perhaps will be written, to cover in detail the work of the airlift, though I doubt if they will do it justice. Mechanically, it proved the efficiency of the Western Powers in the air in a way that the Soviet Government could understand. Morally and spiritually, it was the reply of Western civilization to the challenge of totalitarianism which was willing to destroy through starvation thousands of men, women, and children in the effort to control their souls and minds.

—*General Lucius D. Clay*
Decision in Germany
Doubleday, 1950

The Doolittle Influence On The Pacific War

COLONEL JERMAIN F. RODENHAUSER

IN THE MINDS OF MANY the famous flight of Jimmy Doolittle and his heroic airmen over Tokyo in mid-April 1942 has always appeared to amount to no more than a stunt, a token raid, or at most, a temporary answer to the Japanese sneak attack on Pearl Harbor of some four and a half months earlier. However, a true measure of the effectiveness of this daring achievement is to be found in a study of the enemy's reaction to it. Doolittle's effort set in motion a series of events that became so decisive as to shape the course of the war in the Pacific.

Following their very successful and destructive attack on the fleet and air installations in the Pearl Harbor area, the Japanese concentrated their attention and efforts on their prime objective—the southward expansion of their Pacific empire. Their general plan appeared to be to secure and consolidate the southern resources area before the United States had had sufficient time in which to recover from its initial setback. The relatively inexpensive successes of the Japanese in this direction fanned the flames of avarice, and soon the more venturesome of their planners began to dream in terms of further expansion of the original perimeter. Opposed in their scheme by the more cautious strategists, the bolder of the Japanese planners were ripe psychologically to react to an external influence supporting their views.

The successful penetration of United States aircraft to Tokyo itself on 18 April 1942 could not have been better timed. The Japanese High Command was convinced readily that a greater defense in depth was required to secure the home islands as well as the more advanced positions already gained. Forthwith the Japanese committed themselves to a new plan that involved further expansion to the south and east. Intensive prep-

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aration was begun immediately, and considerable shipping, supplies, and forces, both Army and Navy, were diverted from other tasks where they were to be sorely needed in the not-too-distant future.

To the south the Japanese undertook the occupation of Port Moresby in New Guinea; however in the Coral Sea engagement of 7-8 May 1942, the effort was repulsed with the loss of a single carrier to each of the opposing navies. The net result was that the Japanese suffered a heavy depletion of their first-line carrier-based air groups and their men and supplies aboard transports served no useful purpose other than to return to Rabaul.

On 27 May, in the belief that occupation of Midway would preclude further air attacks such as Doolittle's, an expedition set forth to seize that objective. Because of, primarily, the reduction in U.S. carrier strength in the Coral Sea engagement,

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Colonel Rodenhauser's belief in the decisive results of the Doolittle raid began in 1945 and 1946 with his interrogations of numerous key Japanese in Thailand, the Philippines, China, and Japan during a tour of duty with the Military Analysis Division of the United States Strategic Bombing Survey. Colonel Rodenhauser's investigations, which were leading to the Bombing Survey report on the "Effect of Air Action on Japanese Ground Army Logistics," disclosed that many Japanese high in governmental and military circles attributed the overextension of their perimeter of conquest and their consequent logistic dilemmas to the belief that Doolittle's B-25's took off from Midway. The die was cast to push out the defenses of the home islands the very day of 18 April 1942, Colonel Rodenhauser was told. The Jananese High Command was in session to debate the question of whether to consolidate gains, as was desired by the conservatives, or to press the phenomenally successful drive further into the Pacific, as was demanded by the hotheads. The roar of American engines over Tokyo was the deciding voice. Colonel Rodenhauser, now Academic Director of the Air War College, reports that his subsequent research in documents bearing on his conclusions gave ample evidence that the daring venture of Doolittle and his men was in truth transformed into one of those incidents of warfare that yield rich results unplanned or undreamed of when they occur.

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the Japanese expressed a high degree of confidence in the success of this undertaking. Nevertheless, for the operation they assembled a force of approximately 134 ships of the following composition: 5 carriers, 1 light carrier, 11 battleships, 12 cruisers and light cruisers, 58 destroyers, 12 miscellaneous ships, principally naval supply, 1 seaplane tender, 1 mine-

sweeper, 1 subchaser, 16 submarines, and 16 transports. To even the most unpracticed eye this represents a most formidable diversion of strength. In fact it was the most powerful surface force assembled up to that date in the Pacific war. Meanwhile in the South and Southwest Pacific the Allies were extending every effort to build up and strengthen their tenuous hold.

On 4-6 June the Japanese went down to a crushing defeat in which they lost four carriers as well as several other warships. Moreover the Japanese themselves estimated that they lost upwards of 4500 highly trained personnel, mostly from the carriers. Of the supply and transport vessels, one was hit and none was lost; in fact they did not enter the main battle area at any time. From a naval viewpoint the outcome of the engagement brought the relative carrier strengths of the Japanese and ourselves into a more favorable ratio. Further, at this point Japanese naval air strength had been so attrited that for the future the Japanese Navy was forced into engagements at night or under the protection of land-based air.

Coral Sea and Midway stemmed the Japanese advance. Moreover for these engagements the Jap had been forced to divert an important segment of his naval and military strength from other areas at a time when such diversion worked to the advantage of the Allies. The hundreds of thousands of tons of Japanese shipping, together with its naval support, that had to be tied up over a considerable period of time for these operations could have been used to supply and strengthen the outpost areas which were soon to feel the test of opposition.

WITH a surprise landing on Guadalcanal on 7 August 1942, the Allies opened the Solomon Islands campaign. Here the effects of Coral Sea and Midway on Japanese strength became evident. For a considerable period of time the outcome hung perilously in the balance, but in the end the failure of the Japanese to foresee and prepare their perimeter for the counter-blow was one of the most important factors that tipped the scales in our favor.

Initially the Japanese had a relatively minor force on Guadalcanal, and only after the strength of our effort was apparent, did they take steps to augment and supply their forces. Their depleted naval air strength and loss of local control of land-based air limited their efforts at reenforcement

to night operations, except when in desperation they were willing to accept the very hazardous and unsatisfactory conditions of daylight exposure. The result was that, although limited at first, our air strength was sufficient to gain local control of the air and make the Japanese position intolerable. Despite continuous, desperate, and expensive efforts the enemy was able to land only about twenty per cent of the supplies destined for their forces on Guadalcanal. While some 30,000 troops were eventually put ashore, they lacked adequate equipment and logistic support. By February 1943, so great had been the attrition in men, ships, and supplies, the Jap was forced to give up his hold.

Concurrently with the Guadalcanal operation Allied forces in New Guinea had gained successes in that area and at no small cost had gained local superiority over the enemy. In both areas the conflict had been close and hard fought. It is difficult to imagine just what the outcome in either or both places might have been, had the Jap devoted his attention to more effective consolidation of his initial positions rather than to efforts toward further conquest. However, as things stood at the beginning of 1943, the Japanese expansion had been definitely stopped; their first-line air strength, both navy and army, had been seriously attrited; much of their sorely-needed logistic support, together with its protective force, had been ungainfully dissipated and lost; and their strategic plans had been completely upset by an enemy whose capabilities they had falsely assessed. The initiative in the war had passed irrevocably to the Allied side.

A glance at a map of the empire initially captured and occupied by the Japanese will indicate that the war that had to be fought was necessarily one of logistics. Everywhere, even in the home islands, the Jap was dependent on overseas transport. At home his industries required the raw materials of the outlying resource areas; in the field, particularly in the eastern perimeter outposts, the Jap was completely dependent on sea transport. Since the distances between the many outpost areas were too great for land-based air to protect the shipping lanes adequately, it became a necessity that the navy provide the required protection for the line of communications. Moreover it was essential that the merchant shipping of the nation be adequate and well managed to meet the demands that such a far-flung empire imposed. For the type and scale of war into which he had plunged, the shipping available to

the Jap from the very beginning was inadequate. His management and coordination of what he had of this vital element left much to be desired.

The original strategic plans indicated that approximately two-thirds of the merchant fleet would be required by the military forces until they had attained their objectives and consolidated their positions. It was then expected that an increasing number of ships would be returned to civilian channels for transportation of raw materials from the various areas to the home island industries. Further, it was anticipated that many of these ships would carry military supplies to key distribution points in forward areas on outbound trips and bring back raw materials on the return trip. In actual practice this theory proved impractical, since outside of the Asiatic mainland and the Netherlands East Indies area there was very little that could be returned from the atolls in the far reaches of the Pacific. The vast majority of those outpost areas were, in fact, only a further drain on the meager logistics of the Japanese.

HAVING attained their original objectives in the very early stages of the war, how could the strategic planners have been so bold as to abandon an already precarious supply situation for one demanding additional expansion beyond all reasonable effective support? How could those planners have been so wasteful of that precious reservoir of shipping as to tie up large increments of it in preparation for and actual conduct of operations that, even if successful, would impose a prohibitive burden on an already over-loaded logistic structure?

For a nation possessing but ten per cent of the industrial potential of her major opponent to undertake further expansion of an already far-flung perimeter indicates a fundamental lack of understanding of the importance of strategic logistics. One of the most significant lessons of the war is that the military potential of a nation is directly proportional to its logistic potential. Further, inefficiency or lack of objectivity in the employment of logistic resources can spell the difference between victory and defeat. The Jap was not the only one who demonstrated a weakness in this direction; however, with his comparatively scanty means his errors in judgment were magnified many fold. A faulty assessment of his capabilities

and his prodigality combined to upset fatally his strategic planning and permit his adversary to gain the initiative so necessary to ultimate victory.

In the early days of the war the illusion of greater power and security for the empire implanted itself in the minds of the more venturesome among the Japanese strategists. The more-conservative element needed only the urge of necessity to convince them that further expansion and acquisition were prudent. The shadows cast by Doolittle's wings over the heart of the empire supplied that urge. As a result, the Japanese High Command committed their military effort to extend further the easily-won conquests and the defense perimeter of the empire. Thus was shaped the coming events that spelled disaster for the Jap.

Air War College

For us power has hitherto been too much of an end in itself, and furthermore, not merely for ourselves alone, but for nationalism in general. Power, however, can justify itself, outside the service that it performs for a people's needs of life, just by the service that it renders to the highest spiritual and ethical values—to culture and religion. That it is otherwise in reality and that the power of the state ever and again acts and behaves as an end in itself, the historian knows very well. But it behooves him after every necessary look at reality to lift his gaze again to mankind's highest stars. Tragic will appear the contrast that he perceives between the reality and the ideal. Tragic indeed is the history that he will have to write.

—*Friedrich Meinecke*
The German Catastrophe
Harvard, 1950

Career Plan For USAF Officers

COLONEL GEORGE D. CAMPBELL, JR.

SINCE THE FIRST WORLD WAR, research in the area of human resources has produced new concepts in the science of management of people as individuals and in groups. It has given sound foundation for others already in existence. The result is a science of management tried and proved in numerous operating situations. Its basis is the substitution of a new approach for the paternalistic and often despotic treatment of employees by management that evolved with the Industrial Revolution. Modern management conceives of employees as individuals of varying abilities, capacities, motivations, and interests—all to be embraced in a democratic framework as participants in management itself.

A noteworthy change in management has been the rejection of the philosophy that the objectives of an organization are incompatible with the personal goals of the individuals serving it. Accumulated evidence has indicated that it is possible to provide for the attainment of an individual's personal goals within the framework set up to attain the objectives of the organization. This is much for the good of the organization. Organization goals have been shown to be most efficiently and economically achieved by alert, cooperative individuals who are realizing their own personal objectives at the same time they are driving for the accomplishment of organization ends. The vital spark, the push and drive called high morale or motivation, appears to the degree that individual aspirations are being realized. It is this idea which provides the underlying philosophy for the officer-career plan.

Basically the officer career plan is a system for giving each officer the opportunity to develop, to utilize his capacities to the utmost, to satisfy his aspiration, and to engage his interests. In this plan the Air Force recognizes that its personnel—

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people—comprise its greatest strategic resource. It recognizes that the degree of its success in accomplishing its military mission is contingent upon the satisfaction of the human desires of its own people. In these things the plan is based on sound and tried and modern management principles.

Objectives of the Plan

A major objective of the career plan is to qualify officers for future positions of responsibility by developing their capabilities to the highest degree possible. This is to be accomplished by formal training in conjunction with appropriately rotated job assignments. These assignments will be made on the basis of rounding out the individual's experience in accord with his abilities and training. For the officer this policy provides well-rounded experience in his chosen career and usage of his interests and capacities. For the Air Force it provides an accumulation of executive ability and experience as a cadre for mobilization expansion.

The plan will be pointed initially toward the proper training and development of younger officers, particularly those incoming officers whose talents can be directed into careers vital to the Air Force. Officers of wide experience and field grade rank are to be used in assignments that will round out their career development.

An important part of the plan sets up a means of identifying and classifying job experience. A new job-coding system is being developed to reflect job requirements accurately so that they can be matched with an individual's capacities and work experience. Such a system will provide the tool for inventory of Air Force requirements and its available human resources. It will give a true picture of shortages and overages, and it will be used as a basis for long-range career planning. With precise knowledge of Air Force requirements it will be possible to control entry of officers into careers for which there is no one long-term requirement. It will be possible to avoid malassignments which are expensive to the Air Force and to the individual. The coding system will also be invaluable in gearing formal training to career development. And it will make for recognition of the officer as an individual with specific job capacities.

The development of officers in accordance with their interests and abilities and capacities is a major aspect of the plan. Input to various Air Force occupations will be controlled

on the basis of long-range Air Force needs and the capacities and interests of the individuals concerned. The overloading of an occupation denies true career opportunity to the officers involved and is expensive to the Air Force in training costs. Controlled input builds up career opportunities, channels for progression, and proper utilization of officers' abilities.

What do the above objectives imply? Certainly they imply a procurement incentive, proper initial classification, selected training, proper assignment and reassignment, an adequate identification system, and the economical and efficient utilization of personnel. In effect we have a management system for the control of Air Force officer personnel. For the individual officer we are developing a system which supplies the incentive, the motivation, and the opportunity for advancement in an area of work selected for his career.

Specifically the career plan provides the following benefits to officers:

(1) A full career progression through the merging of certain officer jobs and duty assignments with limited possibilities for advancement to form new and broader channels.

(2) Development of the individual's capabilities to the highest degree by progressive assignments to higher echelons of command and broader responsibilities.

(3) Equal opportunity for advancement for all officer personnel, including those in specialized and technical careers. Advancement will be based on appropriate qualifications and experience, initiative, and performance rather than on organizational limitations.

(4) Greater opportunity for acquiring additional qualifications through a plan of formalized training followed by appropriate duty assignments upon completion of courses.

Operation Searchlight

The philosophy, objectives, principles, policies, and operating techniques of the officer career plan were arrived at through extensive research. Air Force staff studies bearing on the problem were analyzed. The Air Materiel Command and Air University submitted results of their studies.

A survey was made of industry to compile the best personnel practices that could be applied to solving the needs of the Air Force and its officers. Surveys were conducted in companies of all sizes and in many different types of industries. The information that was gathered by these surveys covered such

essential items as (1) methods employed in the selection of personnel, (2) use of aptitude and other qualification tests, (3) the practicable extent of formal and informal training programs, (4) methods of selection of personnel to attend training sessions, (5) administrative procedure used in monitoring the progress of personnel earmarked for key positions, (6) limits of on-the-job training, and (7) scope and duration of rotational assignments.

The data assembled supplied a picture of industrial practice and highlighted the most effective and practical techniques in use in modern business. The survey was then extended to personnel practices of the Department of the Army, the Department of the Navy, and the Civil Service system.

The synthesis of material and ideas accumulated in this research provided the basic pattern for the officer career plan. To test the reaction of Air Force officers to some of the resulting proposals, a questionnaire of fifteen items was developed and circularized on a sampling basis to approximately five hundred officers. Approximately ninety-five per cent of the queried officers agreed to the incorporation of the following items in the guiding policy of the career plan.

(1) Career monitoring will start at the lowest echelon and will be a continuing command responsibility at all echelons. Headquarters, USAF, will establish a central career monitoring agency to control assignments, fill critical shortages, and check career development at all echelons of command.

(2) Officer promotions will be centrally controlled and based on demonstrated merit.

(3) Officers will be selected by a central agency to attend fundamental schools such as Air Tactical School, Air Command and Staff School, and Air War College, Joint top level schools, and civilian institutions.

(4) Organizational and generalized training and experience will be provided for non-rated officer personnel at squadron or equivalent level in the early stages of career development. Rated officers will receive this training upon completion of flying training.

The Principle of Functional Grouping

Results of the extensive research just described also indicated that officer careers would have to be planned on the basis of the association of similar skills and knowledges. This means that jobs closely related in their mental and physical

demands upon an individual will be grouped to form a career area. To determine the careers of officers by organizational grouping, such as is found in tables of organization and equipment, would be inequitable. Some organizations would inevitably provide better opportunities than others. Careering by the pattern imposed by organization would be like a building in a headwind against the career plan.

The functional arrangement of Air Force Specialties provides the logical relationship of jobs to each other. A career area can thus comprise all the Air Force Specialties requiring the same basic skills and knowledges. It provides for the greater utilization of personnel, since the close similarity of required skills and abilities necessitates a minimum of training for officers rotated to job assignments within any career area. It is expected that from twelve to fifteen career areas will be finally isolated. These areas will include all of the necessary functions of the Air Force. They are not organizational groupings of jobs except insofar as some organizations are established on a functional basis.

Each career area will be grouped with related career areas, and the job-coding system will indicate the interrelationship of skills and knowledges among areas. This will provide a necessary tool in transferring officers to related career areas for cross-training or to fill jobs on an emergency basis.

Career Area Patterns

Within each career area each job is evaluated in accordance with job requirements. Jobs within the career areas fall generally into three levels of responsibility. These levels are Junior, Staff, and Senior Officer, with respective assignments as follows:

Junior Officer Level. Normally officers entering the service will be rotated through many varied types of Air Force functions at squadron level during their first three years. Thus they will gain an understanding of the interrelationship of Air Force activities and the importance of the technical functions in which they plan to start their careers. Because of immediate requirements some officers will immediately enter their technical specialty without rotation to squadron duties, medical officers and scientists for example. Choice of a career area will be influenced by an officer's aptitudes revealed by testing, his personal desires, his special training prior to commissioning, and the needs of the Air Force.

Staff Level. This level will normally embrace the progression of senior captains and majors who have been selected to direct functions at higher levels of command within the career area or selected for positions of responsibility over major Air Force activities and operations.

Senior Officer Level. At this level the average officer will attain the apex of his career within a career area. Each career pattern provides equitable advancement to and including the rank of colonel on the basis of a percentage distribution of officers in the career area. During this period of his career an officer will occupy responsible positions in his specialty or direct broad Air Force activities, operations, and programs.

All specialties within the career areas can not be justified through all three levels.

Some jobs can be justified only to grades within the first level. Others can be justified to grades in the second level, and still others can be justified to the third or top level. But after all the jobs in a career area have been evaluated, they are charted so that advancement can be progressive from the lower-level to the higher-level jobs. Completion of all lower-level jobs will not be prerequisite to advance to higher-level jobs. However certain jobs in each career area become the hard core. They are the basic and fundamental jobs in which an officer must have had training and experience to be considered qualified in that particular career area.

Corollary duties will be listed in all career areas. These duties make up jobs that must be accomplished in the Air Force but that do not contribute directly to further qualification as do the hard-core jobs. Instead, these jobs add to the general over-all experience of the officer and contribute indirectly to qualifying him for more advanced positions of responsibility. For example, an officer in the Supply Career Area might be assigned as air attache in a South American country. His responsibility for strictly supply matters might be very light, but the over-all experience in another area would broaden rather than hurt his career. Another example might be found in the training received by an officer attending the Air War College. The schooling he would receive would not be aimed at training him for advancement in any particular career area. It is designed to acquaint him with high-level problems confronting the Air Force, the other services, the Government, and the civilian population. He must have an understanding of such matters and problems in other areas in order to solve

problems in which he is personally involved. As a student he learns to work in harmony with other students whose background and experience are in different career areas. He learns to approach problems from many angles. His solution is not tinted by his own opinion or experience to a point where it is unsound. We have therefore produced a better all-around officer for the Air Force.

Why do we develop career areas for officers? Why not permit them to run through the gamut of jobs as they see fit? In the first place the Air Force is becoming far too much specialized to permit such haphazard and partial development of personnel. Technological developments have advanced demands on training to the point where the jack-of-all-trades is no longer an asset. This is true in all areas and is not confined to the so-called technical areas. Even the nontechnical areas of a few years ago, for instance, Administration or Supply, are complex because of volume alone, if for no other reason. Another answer to the question is cost. Training is expensive. We can not afford to waste it. We can not afford to overtrain individuals, and we must efficiently utilize those individuals whom we do train in the right places.

Therefore an officer should have a primary occupation, some type of profession, some work area in which he has thorough experience and training. It is necessary to keep his assignment restricted until this experience has been acquired. Then he can broaden into other areas as his capacities and Air Force requirements permit. The Air Force can then rely on him as a specialist in one area who can perform competently in his profession.

Status of the Plan

The extensive general research phase of the officer-career plan has been completed. The developmental phase is well underway. Research continues in the developmental phase, but it is research aimed at solving specific problems, such as determining the scope of Air Force activities that should be included in any one career area.

The developmental phase includes the grouping of officer Air Force Specialties into career areas. This grouping is on the basis of a close relationship of the physical and mental demands made upon an officer by the specialties. Officers technically qualified in the various specialties are assisting in the developmental phase. They are officers of field grade rank

and are obtained from both Headquarters, USAF, and the field. Thus all points of view are well represented in each career field.

Career progression plans for each area will be completed in rough draft stage by April 1950. Each of these plans will then be analyzed and cross-compared with the others to ensure equity of opportunity in all career areas, proper grouping of officer Air Force Specialties, inclusion of all Air Force functions, and compliance to the guiding philosophy, principles, and objectives of the program. This analysis will be followed by informal coordination with concerned staff agencies preparatory to the development of complete job descriptions for each projected Air Force Specialty. Prior to final approval, completed career areas, including job descriptions, will be informally coordinated as widely as possible to ensure validity.

Another project of the developmental phase is the preparation of implementing directives. This involves the coordinated efforts of many Air Force agencies. It can be readily seen that the development and implementation of the officer career plan will take some time. The potential impact of the plan on officers' careers and the Air Force requires that the plan be sound in every respect before it is put into operation. Because some problems are yet unresolved, no implementing dates can yet be given for the plan.

Thus the officer career plan is designed to serve the needs of both the Air Force officer and the Air Force. It is designed to compare favorably with the best management practices in the armed forces, government, and industry. Coupled with the airman career program it will provide an integrated career program for all Air Force military personnel. It is a recognition of the responsibility which the Air Force has toward its people. It is also sound management practice. The career plans can provide great benefits not only to the Air Force but to the individual. With its advent will come the responsibility of every officer and airman to implement it wholeheartedly in daily operations at all levels. They will then return to the Air Force its fair share of the plan's advantages—to be measured by accomplishment of its mission.

Headquarters, United States Air Force

Maintenance Consideration In Development of New Aircraft

MAJOR WILLIAM H. WHEELER

GREAT ACHIEVEMENTS in the vast fields of aeronautical science have made it almost impossible for ground-level, practical-thinking people to keep pace with aircraft development in the Air Force. With the pressure of these achievements, and the pressure of achievements still lying in the future, the designers of our fast, high-flying aircraft have been allowed to deviate from maintenance considerations, or even to ignore them, if they tended to affect the primary objective—performance.

Performance is unquestionably the primary concern when establishing the military characteristics of an aircraft. But maintenance deserves consideration far above what it has been getting. The degree to which an airplane performs its mission depends directly upon the ability of available manpower to keep it in operational condition. For example, an interceptor would be of little value in an air-defense mission if it required fifty hours of maintenance to perform one mission of an hour's duration. Under such conditions the requirements in aircraft and manpower would be so enormous that we could not afford to protect effectively all the vital areas of this country against a major air attack. Obviously enough, this applies to all types of aircraft—bombers, trainers, cargo, *etc.*

Under the present system of aircraft development, maintenance representatives are not consulted until the proposed aircraft has reached the mock-up stage. It is difficult then to make adequate provisions for maintenance features. The die has already been cast. The military characteristics have been laid down; the aircraft has been designed in accordance with them. Only tentative and conditional measures are left open to maintenance personnel. They are prevented from thinking

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The views expressed in this article are not the official views of the Department of the Air Force or of the Air University. The purpose of the article is to stimulate healthy discussion of Air Force problems which may ultimately result in improvement of our national security.

constructively in terms of their ultimate objective—designed built-in maintenance.

The Mock-Up Inspection is sometimes too late to make major changes for ease of maintenance, and changes of a lesser degree are not made at this time because of the low priority given to maintenance in comparison to that given to performance and production. Similarly the Engineering and Acceptance Inspection assigns the lowest priority to maintenance. Although the aircraft has now taken definite form, certain changes can still be made economically, since the production line has not yet been set up. But changes are seldom made if they affect an extensive change in the design characteristics.

The final chance for correction of maintenance deficiencies comes in the flight-test phase of the experimental aircraft's progress. Testing is conducted by flight-test and engineering personnel whose thoroughness is beyond question. But unfortunately certain aspects of the program fail to show a true picture of the aircraft's suitability from a maintenance point of view. There are several reasons for this, but perhaps the main one is that flight-test personnel are not required to submit Unsatisfactory Reports to engineering personnel on any of the malfunctions or maintenance deficiencies of the aircraft. This lack of coordination wastes time in determining the changes required to improve maintenance characteristics before the aircraft is sent to the field.

Thus from drawing board to finished product, maintenance receives only secondary consideration in our system of aircraft development. The result is an aircraft requiring several years of hard work before it can meet the tests of normal operating conditions. The dramatic example of this is the jet fighter which in its first year of service as standard Air Force equipment at one Air Force base averaged sixty-six hours of maintenance for each hour of flight. It was one of the first jet fighters to be manufactured and undoubtedly some of its maintenance deficiencies were the consequence of lack of knowledge in this particular field. But many of the mistakes can not be as easily justified. Practically all aircraft have had to undergo a similar process in the field—the B-29, C-82, F-80, and the L-13—to mention only a few.

THE design of an aircraft and its related equipment has a permanent effect on the maintenance of the aircraft. The features of accessibility, simplicity, and standardization de-

termine to a large extent the time and effort that will have to be expended to keep the equipment in serviceable condition. For this reason it is believed that if those features are considered in the design of an aircraft, low-cost, built-in maintenance will result.

Accessibility. From a maintenance point of view accessibility is undoubtedly the foremost feature to be considered in the design of an aircraft. To achieve it requires careful planning on the location of the accessories and equipment. In the past, serious thought has not been given it in the designing stage; it has usually been postponed until the mock-up was available. At this time the basic design of the aircraft has already been tested and approved. Changes for added accessibility might seriously affect the design characteristics of the aircraft; therefore they are frequently rejected. This was true of the jet fighter previously mentioned which was sent to the field with such poor accessibility features that it became known as the "Mechanics' Nightmare." To get to the plugs, the starter, the pumps, regulators, and other accessories, it was necessary to break the fuselage and remove the engine. To get to the battery or the hydraulic system, it was necessary to remove the gun deck and the radio.

Accessibility is generally limited in the smaller aircraft. Weight and over-all dimensions impose certain restrictions which can be only partly removed by careful planning in the early development stages. The complete solution lies in recognizing the fact that the weight and size of previous small aircraft can not properly accommodate all the equipment of the modern aircraft.

But poor accessibility in larger aircraft can not be similarly excused. Inadequacies of design rather than of space are usually responsible for poor maintenance conditions. A good illustration of this is a famous World War II bomber which was designed with a one-piece ring cowling. When a cylinder was replaced or minor adjustments were to be made, it was necessary to remove the propeller before the cowling could be removed—an operation costing twelve man-hours.

Lack of accessibility to the many and varied pieces of complex aircraft equipment requiring excessive service and inspection is causing grave concern among operators in the field. Cost considerations are sometimes thought to outweigh improved accessibility. The Unsatisfactory Reports of operating units indicate, however, that maintenance costs greatly exceed

the original saving. Serious thought and study should be made to determine whether the effectiveness of the aircraft would be severely impaired by sacrificing a slight degree of performance to improve accessibility.

Simplification. The costly development of aircraft has been almost solely restricted to the Government. Commercial aviation has been hampered by lack of funds, and its independent progress has been slight. Unfortunately this has been a great factor in the lack of simplification in our airplanes today. Prior to World War II little headway was made because of our limited national budget. Development was on an experimental scale, with most aircraft practically tailor-made for the services.

The great wartime expansion of the Air Force offered an excellent opportunity to improve simplicity in mass production. This was accomplished to some extent, and although mainly to facilitate production, it resulted in better maintenance characteristics. But as the war progressed and greater demands were made for performance, the gains towards simplification decreased. With the postwar era and new concepts of aircraft performance even greater complexity has appeared.

High-performance aircraft require such additional equipment as pressurization, refrigeration, de-icing, heating, ventilating, and control boost equipment—all extremely intricate and sensitive systems which necessitate frequent adjustments and inspections. This greatly increases time out for maintenance. Complex and not-yet dependable equipment should be so designed that it can be easily removed and replaced as a complete unit. The defective unit can then be made serviceable to replace the next unit that fails.

Engine changes are probably the most time-consuming job of aircraft maintenance. Use of the jet engine has greatly simplified this operation and shortened the time required. Further improvement can be had by using quick disconnects, fewer suspension points, and couplings and multiple sockets instead of the numerous lines, wiring, and plumbing now required to install the engine. Reciprocating engines present a far greater problem, although some progress is represented by the present use of "quick-change" units. Tables of Organization and Equipment now authorize building up complete engine assemblies which are ready to be installed. It is planned to make all complete engine units air-transportable.

Complex equipment in itself does not mean difficult and time-consuming maintenance. Simplification makes it possible

to remove quickly and replace major component parts of the aircraft. But when it is lacking, maintenance efforts increase to such proportions that they sometimes fall outside the scope of economical capabilities.

Standardization. Standardization is a prerequisite of simplification. Once standardization has been accomplished simplicity is largely automatic.

Emulation in the field of aircraft and equipment manufacturing is greatly responsible for the lack of standardization. Numerous contractors are authorized to design and develop component parts and equipment under rather loose Air Force, Army, or Navy specifications. Many variations of equipment are consequently produced to perform the same functions. A cursory inspection of inter-changeability lists of cockpit instruments, for example, reveals 27 different types or models of altimeters, 24 clocks, 8 auto-pilot oil pressure gauges, 8 deicer pressure gauges, 11 vacuum gauges, 11 directional gyros, 16 artificial horizons, 20 airspeed indicators, 26 turn and bank indicators, 11 tachometers, and 18 fuel tank quantity units. A check of the numerous other equipment in the aircraft would reveal an equal amount of variation. The supply problems of inventory, records, storage, and issue are enormous. Other heavy penalties in economy are exacted in manufacturing and producing these many items and to satisfy operating and training requirements for their use. Simplification means simplified training for mechanics, and this in turn means more qualified mechanics in shorter periods of time. Above all, it means easier and better maintenance.

The only apparent solution to the problem of simplification lies in forming a centralized coordinating agency composed of the military services and civilian aviation agencies such as the Civil Aeronautics Administration. The air transport industry has formed such a group, and the initial results have been gratifying. The centralized coordinating agency would review all Air Force and Army-Navy specifications to ensure detail and completeness. Specifications would stipulate the maximum space volume permissible for parts and equipment. Standardized interchangeable mounts and connection arrangements would be required. Development of envelope or packaged equipment that can be easily removed and replaced as a complete unit would be encouraged.

The restrictions imposed by the coordinating agency need not throttle engineering development and progress, nor need

it dampen the competitive spirit which has made this country great. Perhaps the incentive would be even greater if the manufacturer knew that the best article would be used and standardized.

> "Standards are not compulsory—but if good and readily available, are a real help and convenience in development and design, and are of incalculable value in production and use. The benefits of general, nonrestrictive standards available early in the history of a new development can guide future products and assure reasonable interchangeability.
>
> "Standardization is useful only if it increases the safety or economy of an operation. Safety cannot be jeopardized for the sake of individuality, although economy can easily be slighted in the name of expedience or distinctiveness. Expedience is often the consequence of poor planning. Distinctiveness, if carried beyond economic justification, is a reflection on business judgment."*

THE rapid pace in the development of aircraft has afforded little time to consider seriously anything but performance. It has been necessary to make the airplane extremely complex in order to meet the demands of the Air Force. As a consequence it has never matured; it has been continuously in the experimental stage. An inappreciable amount of time and effort has been spent to simplify, standardize, and refine each aircraft that has become standard equipment. In many cases by the time an aircraft becomes completely reliable, it has almost reached the point of obsolescence. The time has come to slow down and approach the problem from the standpoint of the man on the ground.

Present aircraft development procedure affords a basis for a sound and workable solution to aircraft maintenance problems, but it needs to make additional provision for maintenance considerations from the design and initial stages to the finished product delivered to operating units. The following recommendations are designed to give balance to the existing system and thus lift maintenance to the position it deserves:

1. The military characteristics of a proposed aircraft should be supplemented with specific requirements under structure and design to facilitate maintenance and servicing. These requirements could be phrased substantially as follows: Provisions are to be made for immediate accessibility to internal

*William Littleton, "Economics Through Standardization," SAE Journal, LVI, No. 9 (1948), 42.

areas of the airframe, wing structure, engine nacelles, and special equipment. Provisions are to be made for incorporating all features associated with quick engine change. Accessory equipment will be installed in such a manner that "package" units may be used as replacements in minimum time.

2. *The Handbook of Instructions for Aircraft Designers* should be revised to give more specific emphasis to the essential factors of maintenance, accessibility, simplicity, and standardization.

3. Greater maintenance representation and authority should be given at Mock-Up and Engineering and Acceptance Inspections. The Mock-Up is the most feasible time to rectify many maintenance deficiencies.

4. Specifications on the installation of "systems" should stress greater accessibility for inspection, servicing, *etc.* This will improve the present situation of systems being jammed on top of each other.

5. The Engineering and Acceptance Inspection should be held on the first X-model airplane rather than the first production article. Changes recommended on X-models can be adopted more economically and will eliminate, in many cases, the scrapping of expensive production commitments. Thus present resistance to proposed changes for ease of maintenance will be greatly reduced.

6. Airplane contracts should include a requirement for the development of a maintenance and inspection system or procedure during the X-model phase.

7. A maintenance project officer should be assigned to each X-model airplane until the airplane has been accepted and delivered. This will reduce to a minimum the maintenance and modification problems that are now encountered immediately upon delivery of the production article.

Air Command and Staff School

In My Opinion . . .

A PLAN FOR THE EDUCATIONAL DEVELOPMENT OF THE AIR FORCE OFFICER

ONLY four out of ten Air Force officers have a college degree. That is to say, only four out of ten have the general education for their jobs considered normal schooling for a junior executive in civilian life. Two out of ten officers have never been to college at all. And two out of every hundred did not even finish high school.*

This wide range in number of years of formal education is matched by variety in choice of fields of study. Few occupations or professions are not represented among Air Force officers in varying stages of abandoned or completed training. An informal survey of officers having two or more years of college at a typical Air Force base revealed sixteen different educational backgrounds for its thirty-two regular officers.

This is not all. In military life, as in civilian life, sound and extensive experience is valued along with formal professional training. But even in experience our diversely and divergently educated Air Force officers do not rate highly as a group.

The rapid expansion of the Air Force destroyed the ladder-like arrangement of experience levels in progression from bottom to top, in each of which an officer labored in preparation for his turn at the next higher. The large majority of our officers—nearly eighty-five per cent—have less than ten years of military experience. Between this majority group and the few officers now occupying top policy-making posts there is a wide gap of many years in experience. The wartime conditioning of our younger officers is extremely valuable, but wide areas of professional demand upon a commander lie beyond the range of their specialized past. The Air Force can not look to

*Derived from "A Tabulation of Educational Background of 16,031 Regular Air Force Officers," prepared by Statistical Control Unit, Hq., Air University, dated Dec. 31, 1948. Exact percentages: college graduates, 41.03; high school graduates, 18.16; non-high school graduates, 1.46.

The views expressed under the heading of **In My Opinion . . .** *are not the official views of the Department of the Air Force or of the Air University.*

experience to compensate for the great deficiency of its Officer Corps in education.

The low level of education of our officers is therefore genuine cause for concern. Its effect on our junior-level leadership is already apparent. Its total effect on the Air Force structure will be even more apparent when this junior leadership moves up to become top leadership—unless a solid educational base is put under it. It was the need to improve the quality of our command material that Major General David M. Schlatter had in mind when he made the following statement to the Board of Visitors of the Air University in April, 1947:

> "We have all of these officers with combat experience, young officers who were unable to go to college. We need the combat experience yet they need the college. We've got to take them into the Regular establishment because of the combat experience and find some way to put this broad base underneath."

The problem is how to put this "broad base" underneath enough officers to make an appreciable showing of progress. The USAF Institute of Technology at Wright-Patterson Air Force Base represents a partial effort in this direction, although it was primarily designed to alleviate the shortage of technically trained officers. Two courses are offered, one in Engineering Sciences and one in Industrial Engineering Administration, in which a total of 282 students were enrolled in 1949. This school has not yet been accredited, and therefore officers completing these courses do not receive degrees. However they do receive the equivalent educational background.

A second and more significant effort to correct educational deficiencies is the college-training program in which Air Force officers are trained in civilian schools. As of 30 May 1949 the Air Force had 599 students engaged in undergraduate studies at civilian colleges. The aim of this program is to permit qualified officers to return to college and earn their degrees. Students pursue courses of study which will enhance their value to the service.*

At the present time, there are 881 officers in the Air Force engaged in undergraduate studies of a type which will adequately prepare them for their professional career. Obviously the num-

*"Operation Bootstrap," implemented by AF Letter No. 35-52, 23 Dec. 1949, is another important program designed to raise the educational level in the Air Force. Although broader in scope than the other two programs, it does not include some of the characteristics, particularly all-inclusiveness and objectivity, which Col. Torresson believes indispensable to success. —Ed.

ber of officers participating in these two programs could not be substantially increased. Even if funds were available, the Air Force could not spare nearly nine thousand officers from their regular duties for periods of from one to four years. These two methods are commendable, but they are not capable of fulfilling the educational needs of the Air Force. Those needs are too pressing, too widely prevalent, to be entrusted to programs which do not encompass all officers who are deficient.

There is need for a new program that will reach all of these officers, that will take their varied educational backgrounds and mold them to fit the requirements of the service. Such a program must have broad but definite characteristics.

The *first* of these is all-inclusiveness. Any Air Force officer must be allowed to participate, regardless of his educational background. No prerequisite should bar admission. The largest number of officers needing to participate are those who cut short their education to fight a war. To disqualify any of them on the basis of prerequisites would not only be unfair but unwise. A potential top leader might thus be relegated to a minor role, his full value to the service never utilized, simply because he was not given an opportunity to gain the necessary educational background.

The *second* characteristic is flexibility. The program must allow for progress at a rate commensurate with individual ability and background. Not only would participants start at different levels of the program, but they would also start at different age levels, with different experiences and habits back of them. It would be unreasonable to expect progress from all at the same rate.

The *third* necessary characteristic is objectivity. Definite requirements must be established for each participant. To simply rule that each officer further his education without specifying clear-cut objectives would only increase the heterogeneous aspects of the over-all educational profile.

And *fourth*, the program must provide strong incentives. There must be some tangible reward for those who progress satisfactorily, and some penalty for those who do not.

It is the purpose of this paper to propose an educational-development plan which incorporates these four major characteristics. In basic design the plan is intended to permit improvement in mass of the educational level of the Air Force. But it is not a magic formula. Speed with which it accomplishes the objective is not one of its main characteristics, nor is origi-

nality. It is simply a proposal to coordinate all presently available means and gear them to the job at hand. It allows each officer to progress toward a definite educational goal at a rate consistent with his ability, his opportunity, and his previous educational background.

THE AIR FORCE OFFICER is a professional man devoted to a field of work which is technical in nature and therefore requires continuous study. His educational background should meet the specific needs of his profession and should be broadly based to permit further development. A student aspiring to the medical profession must first take premedical training at undergraduate level. No one would say that any kind of subject matter would adequately prepare him for medical school. To say that any kind of subject matter provides sound career training for the Air Force officer is tantamount to the same thing.

The necessity for a specific type of educational background for Air Force officers was fully realized by the Air Force Academy Planning Board as is evident in their report to the Chief of Staff, United States Air Force:

> "The Air Force Academy will offer a program involving inspiration, indoctrination, and instruction to develop [desired] attributes within the Air Cadets and provide the educational background suitable for career officers. This program will not be an end in itself but, rather, will serve as a background upon which the career officer may continue to build through his service for a maximum utulization of his talents and abilities within the Air Force organization."

In discussing the curriculum of the proposed Air Force Academy, the Planning Board said:

> "The curriculum for the Air Force Academy is designed to provide such a program of education as would enable every Air Force officer, regardless of his specialty, to represent the Air Force advantageously in any educated group, at home or abroad, socially or officially."

The advice and help of many leading educators was available to the Planning Board to decide on what this curriculum should be. In its final form it was one which, in the consensus of these outstanding experts, would fulfill the educational requirement of the profession. As summarized by the Planning Board, the Air Force officer should be "broadly and soundly educated in the humanities, sciences, and military studies." It is obvious that if this is the ideal requirement for the newly commissioned officer, it is equally applicable to those officers who are now making the Air Force their career.

The minimum educational standard for award of a new Air Force commission is now two years of college. Assuming this to be a satisfactory minimum goal for all officers now holding commissions, the first step in implementing the Educational Development Plan is to issue a directive defining it as the goal and requiring that it be met. Since participating officers will experience varying degrees of difficulty, no time limit can be set for its attainment. A satisfactory rate of progress for each individual can be the only time requirement.

This plan proposes college-level training only. It does not concern itself with the problem posed by Air Force officers who are not high school graduates. There is no reason for this condition to continue. Any officer who is not a high school graduate should be required to earn a high school diploma or certificate without further delay. The USAFI Program presents a ready means of attaining this end. Any officer who fails to meet this requirement in a reasonable length of time should be considered for separation from the service.

The curriculum designed for students of the future Air Force Academy is the product of recent, progressive thinking. It can be assumed to furnish a sound basis for the Educational Development Plan proposed by this article. The Master Program of the proposed Academy (Figure 1) is divided into three parts: Humanities, Sciences, and Military. Upon this broad base the new officer will build his professional knowledge. As the object of the Educational Development Plan is to provide a similar foundation for present Air Force officers, it appears logical to follow the proposed Air Academy curriculum as closely as possible. Therefore in its Master Program (Figure 2) subject matter for study has been placed in the same main divisions appearing in the Academy program. Although each officer will be required to complete only the first and second-year blocks, a third-year block is provided for those wishing to progress further. The division of the Master Program of the Plan into yearly segments must not be construed to indicate segments of time but rather segments of amount. Participants will be progressing at individual rates of speed not measurable by an academic year.

The Air Academy curriculum was designed for cadets and therefore includes certain subjects in the Military Division which are not applicable to the Educational Development Plan. These subjects have not been included in Figure 2. The other subjects in the Military Division are of such a nature that full

knowledge of them is mandatory for all Air Force officers.

The credit-hour system of the Air Academy Program was used for purposes of comparison. If the Air Academy figure of 195 total credit hours is taken as the equivalent of a college education and credit is allowed for the military courses that were omitted from the schedule set up for the Plan, the two-year requirement would then be approximately half of the Academic requirement for four years, or 80 credit hours. Thus each officer who completed the first two years' requirement could be considered to have the educational equivalent of two years of college in subjects meeting the needs of his profession.

The similar numerical identity of the subject matter in the two curricula does not imply identical course content. Identical numbers were used simply as a ready means of reference and comparison. The Air Academy Planning Board felt that fully to accomplish the task of educating the future Air Force officer, there would necessarily have to be a new method of course presentation:

> "Since the courses proposed represent fundamentally new integrations of materials drawn from hitherto independent courses of study, and since a dynamic coordination between (as well as within) these newly integrated courses has been proposed, so that they will strengthen (not compete with) each other, it will be necessary to prepare new textbooks, with detailed and carefully coordinated syllabuses, buttressed by readings from carefully selected reference and source books."

The reason for this concept is that it will be necessary to channelize the air cadet's thinking along specific lines as a matter of orientation. The present Air Force officer is already orientated, or he would not have been retained in the service. Thus, even though his approach to subject matter will differ under the Educational Development Plan, he will cover the same basic ingredients as the cadet at the Air Force Academy.

The subject matter of the three curriculum divisions falls roughly into two categories. The subjects in the Humanities and Sciences Divisions can be considered academic, while those in the Military Division can be considered professional subjects. These terms will be used to simplify discussion.

No attempt will be made here to set rigid requirements for the course content of the academic subjects. But certain broad policies would have to be established to ensure an equal level of proficiency in each subject. In setting these policies it must always be remembered that the requirements established must be capable of fulfillment. It will be noted from Figure 2 that

Figure 1: MASTER PROGRAM OF AIR FORCE ACADEMY PLAN*

Year	Humanities				Sciences				Military				Total Semester Hours		
	Subjects	S	1	2	Subjects	S	1	2	Subjects	S	1	2	S	1	2
Freshman	English 100, 101, 102	0	3	3	Mathematics 100, 101, 102	0	4	4	Tactics 100, 101, 102	3	1	1			
	Language 101, 102		3	3	Chemistry 101, 102		4	4	Orientation 100	3					
	Psychology 101, 102		3	3					Physical Education 100, 101, 102	2	2	2	8	20	20
Sophomore	English 201, 202		3	3	Engineering Drawing 200	4			Tactics 200, 201, 202	2	1	1			
	Language 201, 202		3	3	Mathematics 201, 202		4	4	National Military Establishment						
	Philosophy 201, 202		3	3	Physics 201, 202		5	5	201, 202		2	2			
									Physical Education 200, 201, 202	1	2	2	7	23	23
Junior	History 301, 302		5	5	Applied Mechanics 301		4		Tactics 300, 301, 302	4	1	1			
	Geography 301		3		Thermodynamics 301, 302		4	4	Military Law 301		3				
	Economics 302			3	Fundamentals of Electrical				Military Hygiene 302			3			
	Psychology 301, 302		1	1	Engineering 302			4	Physical Education 301, 302		1	1	4	22	22
Senior	Government and Economics 401		5		Fundamentals of Electrical				Tactics 400, 401, 402	4	1	1			
	International Relations 402			5	Engineering 401		4		Administration 401, 402		2	2			
	Great Issues 402			2	Mechanics of Materials 401, 402		4	4	Physical Education 401, 402		1	1			
					Aerodynamics 401, 402		4	4							
					Electronics 402			2							
	Credit Hours	**0**	**32**	**34**		**4**	**37**	**35**		**19**	**17**	**17**	**23**	**86**	**86**
	Total Credit Hours	**66**				**76**				**53**			**195**		
	Percentage	**33.8%**				**39.9%**				**27.2%**			**100.0%**		

S = Summer Term 1 = Fall Semester 2 = Spring Semester

*Taken from *A Plan For An Air Force Academy, Vol. I*, Headquarters, The Air University, (January 1949) p. 115.

Figure 2: MASTER PROGRAM FOR EDUCATIONAL DEVELOPMENT PLAN

Year	Humanities	Credit Hours	Sciences	Credit Hours	Military	Credit Hours
First	English 101, 102	6	Mathematics 101, 102	8	National Military	
	Language 101, 102	6	Chemistry* 101, 102	6	Establishment 201, 202	4
	Psychology 101, 102	6			Military Law 301	3
					Military Hygiene 302	3
		18		14		10
Second	English 201, 202	6	Physics* 201, 202	8	Administration	4
	Language 201, 202	6	Mathematics 201, 202	8		
	Philosophy 201, 202	6				
		18		16		
Third	History 301, 302	10	Engineering Drawing 200	4		
	Geography 301	3	Applied Mechanics 301	4		
	Economics 302	3	Thermodynamics* 301, 302	6		
	Psychology 301, 302	2	Fundamentals of Electrical Engineering 302	3		
		18		17		

*Does not include laboratory work. If student completes one year's laboratory work in these subjects, two additional credits are earned.

less credit is given for those subjects which normally require laboratory work in resident study. Since it is not expected that many officers will be in a position to do the laboratory work, it would not be right to require it. However extra credit can be given to officers who complete it.

The content of the professional subjects will need to be determined. Course outlines should be prepared by eminently qualified Air Force personnel. It is imperative that they be well prepared. They should be timely and useful and should be designed to give each officer a basic knowledge of the subject.

THE MAIN REASON for raising the educational level in the Air Force is to make sure that each officer possesses certain fundamental knowledge. If he has this knowledge, it is not important how he obtained it. In short, if an officer can prove his proficiency in any subject in the curriculum by passing a comprehensive examination, he should be awarded Air Force credits. Other officers will want to earn actual college credits. They should be encouraged to do so. These credits would then be translated into Air Force credits to ensure that the full requirement was met.

The nature of the professional subjects will limit them to recognition by Air Force credits. These subjects are not offered anywhere except in the military establishment. But since they are a necessary part of a career officer's educational background, they should be credited towards the two-year college requirement.

The four required subjects in the Military Division could readily be taught at each Air Force base or headquarters. Qualified personnel are available to instruct in them provided the necessary texts, course outlines, and examinations are furnished by a competent agency. The Base Surgeon could teach military hygiene, the Base Legal Officer, military law, and a carefully selected administrative officer the remainder. Classroom teaching is preferable. It will cost less and will ensure uniformity.

The academic subjects present more methods of attaining credits. If the officer desires to earn actual college credits for a degree, two general means are available. Many Air Force installations are located near a recognized college or university. Most of these schools hold night classes or summer sessions which the officer could attend. Others will arrange to send qualified instructors to the base to teach certain credit-bearing courses, if the number of students warrants it. If such con-

veniences are not available or if the individual officer prefers, credits could be earned through the college extension program of the United States Armed Forces Institute. Instruction is available in all required subjects of the proposed curriculum.

If an officer decided to meet the Air Force requirement by earning Air Force credits only, it would be necessary that he pass an examination in each course. The implementing directive would tell him beforehand just what each course embraced so that he could prepare himself for the examination. There are a great many ways in which this could be done: by self-study, by the formation of study groups or seminars, by enlisting the help of a fellow officer who is proficient in the subject, and so on.

There should be no restriction on individual utilization of the means to complete the work in the academic subjects. Each officer should be free to plan his own program and decide on the means or combination of means he will use and the order in which he will prove proficiency in the various courses. This flexibility is necessary to solve the problem of individual differences and individual starting points.

THREE strong incentives are offered. The first is that which results automatically when officers are directed to meet a requirement. The fear of penalty for noncompliance is an incentive which will make every officer meet at least the minimum requirements. The second incentive results from the spirit of competition. Once all participants are placed in a position where they have to complete a specific requirement, it is only natural that they will want to surpass one another. The third incentive is one of tangible reward. Incorporated in the program would be a provision whereby some of the officers who have reached the third-year level would be given an opportunity to complete the final year in resident study at a recognized college to earn a Bachelor of Science degree.

In mentioning a penalty for noncompliance the writer does not intend that any officer should be unduly hurt. There should be no penalty for slow progress, only for failure to try. One of the assumptions underlying this plan is that an officer must be allowed to progress at a rate commensurate with his ability, his opportunity, and his previous educational background. It is quite conceivable that an officer who has not had any previous collegiate background might take ten years to meet the requirement and yet still be considered to have performed satisfactorily.

Some difficulty may be expected in consolidating acceptable credits to make the third incentive possible—award of a degree by a recognized college or university. The subject matter of the proposed plan consists of a combination of Bachelor of Arts and Bachelor of Science subjects which will not always conform with the traditional program of studies for either of the degrees. This difficulty will not be unsurmountable. Actually many colleges and universities are very lenient in this respect, since one of their major concerns is to satisfy the needs of the future employers of their graduates. Air Force candidates for degrees will already be employed in an exacting profession. It will simply be a matter of enlisting the cooperation of these academic institutions to meet the demands of the military profession.

Aside from resident study at a recognized university, another possible method of awarding a degree to officers could be afforded by the new Air Force Academy. The curriculum proposed for this plan is based on that proposed for the Air Academy. Thus any officer who successfully completes the three-year requirement would be on the same educational level as a senior at the Air. Academy.

Since the Air Academy from its inception could not graduate any cadets until the fourth year of its existence, this time could be spent in completing the college education of selected officers who have met the three-year requirement of this plan. At present, the Air Force Academy Plan calls for taking upper-class cadets from the United States Military Academy to utilize the open three-year period. Could not this period be more profitably utilized in raising the educational level of career Air Force officers already in the service? By virtue of their rank alone these officers need this background. They will be occupying top-level positions years before the first Air Academy graduate receives his first promotion.

Air Command & Staff School *Lt. Col. Thomas S. Torresson, Jr.*

Airman's Reading

My Three Years in Moscow, by Lieut. General Walter Bedell Smith (Lippincott, $3.75), pp. 346.

Reviewed by
Eugene M. Emme

IT IS NO HISTORICAL ACCIDENT that two American ambassadors to the Kremlin early published memoirs of their diplomatic experience, along with their observations of the Soviet regime in action. Both Walter Bedell Smith's *My Three Years in Moscow* and Joseph E. Davies' *Mission to Moscow* were designed to enlighten the meaning and conduct of American foreign policy. This fact, however, completely ends the similarity between these two volumes. Ambassador Davies' sympathetic analysis, as may be recalled, was published in 1941 when Soviet Russia was being discreetly courted as a potential ally against the Third Reich. It was Davies who even wrote of Stalin that "his brown eyes are exceedingly kindly and gentle. A child would like to sit in his lap and a dog would sidle up to him."

General Smith, Eisenhower's capable Chief of Staff during the recent "crusade in Europe," was apparently little deceived about the fundamental nature of the Stalinist regime during his stay in Moscow from March 1946 to March 1949. Neither a documented chronicle nor a personal diary his authoritative volume is primarily a comprehensive survey explaining the politico-military reasoning underlying the diplomatic strategy of the United States in the "cold war." The significant events and personalities of recent diplomatic history attending the East-West struggle for European affections become more meaningful after reading it. Highly significant subjects discussed by the former American ambassador are *first*, the diplomatic impact of "Operation Vittles" upon Soviet foreign policy (a thorough defeat for the Kremlin's thesis regarding America's intentions and ability); *second*, studied observations on Stalin, the infallible head of the Communist world, and other Soviet leaders with whom the author had contact; and *third*, the run-

ning diplomatic battles created by the institutionalization of the Marshall Plan aid for Western Europe and the reconstruction of the German State. The fruitless Foreign Ministers Conference in Moscow (March 1947), as well as the defections of Marshal Tito and Anna Kasenkina, are considerably clarified.

Above all, perhaps, *My Three Years in Moscow* links the official "line" of the Politburo confronting American policy in international affairs with the propagated version of facts ladled out to the Russian people from the collapse of the wartime unity of the United Nations to the virtual stalemate in East-West relations immediately preceding the existence of the Russian A-bomb and the Communist domination of China. From his Kremlin vantage General Smith realistically analyzes the delicate balance between the domestic and foreign policies of the Soviet Union without oversimplification. The absolute political authority stemming downward from Stalin through Molotov, Malenkov, and Beria, efficiently enforced by the strong arm of the security policy and the strait-jacket of the centralized bureaucracy, are traced in detail to expose the distribution of a "uniformity of poverty" and an enormity of fear among the Russian people. Virtues of Soviet endeavors in the arts and sciences and emotional attachments extracted from the historic national traditions of Mother Russia are all blended with Leninist-Marxist doctrine into an ideological opium to appease the discomforture of daily life in the Communist police state.

> "Thus the Soviet regime is nailed in place by bayonets and held together by an omnipresent demonstration of force as well as by the psychological trickery of propaganda. The individual, his personal liberties and, to a considerable extent, his dignity as a human being, are submerged—all in the interest of the system as a whole, whose material achievements, particularly in vast stretches of backward territory, are ample evidence of impressive power."

Although the Russian people apparently have nothing to lose but their Communist chains, General Smith believes that the Western hope for an internal disintegration of the Stalinist regime is unrealistically inspired.

About the Soviet armed forces the author briefly reviews impressions acquired during his tour of duty at the Kremlin. The Red Army, particularly its "showpiece" garrisoned in Moscow, is well disciplined, schooled, and equipped in a manner probably "not surpassed anywhere else in the world." Tactical air support and airborne operational organization testify that lessons were well learned from the experience of defeating the

Wehrmacht from the East. The Soviet Navy, lacking warm waters and the support of a strong shipbuilding industry or merchant marine, is nevertheless today a "formidable fighting force" because of its quantities of German-type torpedo boats and submarines and the Kremlin decree that Soviet sea power soon become "commensurate with the leading international position of the Soviet Union."

Having flown in Soviet aircraft and observed aviation day parades in Moscow, General Smith believes that the Soviet Air Force has the assets of considerable "tactical experience" and the concentrated development of high-performance aircraft by capable designers exploiting German designs to the hilt. In addition it possesses the tremendous cargo capacity and popular enthusiasm generated by the energy expended upon the Civil Air Fleet to help conquer vast tracts of Asiatic space lacking ready accessibility and to make all Russians air-minded.

> "However, if the Soviet Union does not at this time have what we call air power—the ability to carry on a strategic air war—she certainly has the resources to create this power, and undoubtedly is straining every nerve to do so."

In spite of the tremendous effort placed upon armaments by the Kremlin and the "irreconciliable hostility" of Communist policy and propaganda towards the non-Soviet world, General Smith soberly concludes that World War III can not be considered "inevitable." He reasons that Russia's A-bomb remains but a single factor among the strategic ponderables, for its destructive potential, if exploited, can bestow neither complete victory nor comfortable security from "retaliation in kind." Although the leaders of the Politburo have not forsaken the goal of the worldwide Bolshevik revolution inherently possessing the omnipresent possibility of war, the strength and unity among the North Atlantic nations, if augmented and preserved, should maintain a protracted period of peace. The problem of utmost significance towards which all possible efforts for solution should be directed, General Smith astutely reasons, is the *complete* renaissance of Western Europe—the establishment of economic and military strength firmly founded upon political and moral harmony—so that these free and progressive states, thus in a position to stem internal Communist infiltration, will no longer be frustratingly dependent upon the United States for assistance or be fearful of aggression from the East.

Department of the Air Force Library

The Red Army Today, by Colonel Louis B. Ely (Military Service Publishing Company, $3.50), pp. 256.

Reviewed by
Major Robert B. Rigg

THE SOVIET ARMY is one of the most poorly documented military forces in modern history. Much has been written about this giant force, but too often it has been in terms of generalities and not accurate details. The Soviet high command has long imposed secrecy regulations and security discipline on the Soviet Army, with the result that facts have been difficult to ascertain. However, the author of this compact little volume on a big subject takes the view that "an army of two and one-half million men cannot be concealed even by Soviet Russia." There is always a need for accurate books on this army, and Colonel Ely seeks to reveal much of what the Soviets endeavor to conceal.

Few authors have been so fortunate as Colonel Ely in having access to the reliable sources that he exploits. It is mainly the documentation by some unusual sources that sets *The Red Army Today* apart from other texts on the subject. His book, however, might have been better accented if he had had the benefit of more first-hand knowledge of the army that is its subject. Wartime books such as Walter Kerr's *The Russian Army* brought a certain freshness and insight to their subject that can result only from personal experience. And despite his early explanation that the Red Army was redesignated the Soviet Army, the author persists in using the title that is now four years out of date.

It is difficult to characterize and generalize a military force the size of the Soviet Army, and Colonel Ely deserves much credit for his successful characterization of the Russians who unite to form this army. He generally avoids the pitfalls of overstatement, and he is not too often guilty of the mistakes which result from oversimplification. But the book is not without many small errors which undermine his intent and pledge of accuracy.

Colonel Ely embraces the general structure of the Soviet Army, but he concentrates on artillery to the neglect of infantry. He is at his best when he is describing the army and comparing Soviet elements with U. S. Army counterparts. When he projects the Soviet Army into a future war, he labors the point and steers away from hard facts.

The low overhead of division-heavy army of the U.S.S.R. is

properly emphasized, as is the hardiness of its troops. The Army's influence, and often dominance, over the Soviet Navy and Air Force is a point too often glossed over. However the newly granted "autonomy" of the Navy reveals a trend that, while not contradictory to the spirit of unification, does indicate in the Soviet Union the growth of the sister services to a point where the Army's dominance will have to wane.

In wartime it was fashionable to present the U.S.S.R.'s military strength as invincible. On the surface of final Soviet victories the world looked with considerable awe on the Soviet Union's military strength. Colonel Ely examines this military might objectively. Numerical superiority, he points out, was a necessary requisite and a most influential factor in the success of many Soviet campaigns where the Russians and others were deceived by the belief that Soviet tactical skill contributed most to the victories. "In the first few months of the war the enemy repeatedly encircled large masses of first-line Red Army troops, on two occasions annihilating over twice as many as the Red Army liquidated at Stalingrad."

Here and there the author resorts to cliches, such as the incident of a Soviet soldier hiding out on the battle field in the carcass of a horse. Colonel Ely says the Soviet "loves his bayonet"—the real object of the Soviet soldier's affection was his light tommy-gun.

Unfamiliarity with the Cossacks is revealed in statements to the effect that they wear the *papakha* and that the Cossacks comprise fifty per cent of the cavalry. The *kubanka* and not the *papakha* is the standard headgear of the Cossacks, who do well to make up one third or one quarter of Soviet horse cavalry. The book fails to indicate cavalry's vulnerability to aircraft or to reveal that the staying power of cavalry in World War II resulted from its good firepower, especially in antitank weapons. Colonel Ely underscores the wrong facts in saying small units made cavalry raids. Some of the most successful and common raids were by cavalry corps.

The role and tactics of heavy tanks and self-propelled guns are not adequately discussed. While Soviet armor is credited with *blitzkrieg* successes, there is a failure to examine the many Soviet combat actions where armor lacked the dash, originality, and logistical planning or support essential to real armored technique. If the author had desired really to bring out Soviet success with armor, he would have done well to have included an account of the Soviet campaign in

Manchuria. It was there that the Soviet Army handled large, mobile forces in a real exploitation by armor—and it was the last combat action by Soviet tanks.

One of the author's sources is quoted as saying, "Sooner or later, Soviet artillerymen believed, the Red artillery will be the equal of any artillery in the world." Almost every Soviet officer or soldier will say their artillery *is* the best, and Soviet military journals are loaded with anything but the modesty of "it will be the best."

The book holds that artillery is favored over other arms because the Communists can control it with greater ease and see their commands result in positive action. This is overdrawn. To say that "Rations are a real factor in Red Army supply tonnages . . . " is also a debatable point, considering the many thousands of tons of ammunition and fuel the army had to deal with in combat.

The chapter on air support is one of the shortest. There will be considerable question in the minds of some readers as to whether a Soviet officer would be markedly under suspicion by the MVD for his enthusiasm over strategic air power. It is a fact that the tasks of Soviet airpower are predicated on the tactical air support of the ground army, but the Kremlin is not so narrow as to inhibit military thinkers who could develop carriers for the A-bomb.

"One way to develop airplanes is to shoot down those of your ally." This is a striking sentence, but it implies that Soviet pilots were under official orders to get pilot models of our aircraft when they downed some of our B-29s. It is doubtful if Colonel Ely is in full possession of the facts when he makes this assumption. The book does stress the poor standard of navigation in the Soviet Air Force, an honest fact during the last war, but it is not too clear as to whether this low standard still maintains. The author speaks about the intensive training program in the army, navy, and air forces, and certainly the Soviets recognized their earlier defects in aerial navigation. As he points out elsewhere, ". . . if the Russians should decide to use atomic bombs, the relatively few Red airplanes carrying atomic bombs will have to be navigated and handled with great skill, otherwise Soviet possession of the bomb will be largely neutralized."

The chapter entitled "War" diverts the reader just when the book has progressed to a well-reasoned conclusion. Not one or a dozen Soviet divisions can fully characterize the Soviet Army.

least of all when they are launched in the speculative warfare of battles yet unfought. It is here that the author, seeking to prove many facts, contributes few. To project the Soviet Army down the Nile valley and across Europe and North Africa and yet fail to account for Soviet actions against Western forces in Japan is not only to neglect obvious strategy but to ignore that sizeable portion of the Soviet Army that lies poised in the Far East. Furthermore, to involve the military reader in possible Soviet combat actions is one matter, but to complicate this pattern with the details of possible military moves by Western powers is to parlay one artificiality with another.

The publishers might have greatly enhanced Colonel Ely's book if they had paid serious attention to the illustrations. The weapons illustrated are very poorly drawn. Map space is wasted. One full-page map (p. 235) bears only five geographical and political names, plus the caption "Russian line Jan 12." For a book as important as one on the Soviet Army, the publishers might have invested in better art and cartography.

Thus Colonel Ely's book has its faults, but all in all the military reader can benefit much from a study of it. Its author can look upon it with justifiable pride.

He does not labor over a lengthy conclusion. He presents some well expressed thoughts on the future and serves warning with, "We may hope that the Western land forces will . . . be sufficiently strong to stop the Soviet Army without the use of the (atomic) bomb. . . . The West must maintain its air power and its control of the seas. Minimum land strength must immediately be built before the Soviet stockpile of bombs becomes large enough to be dangerous."

General Staff Corps

Slipstream, by Eugene E. Wilson (Whittlesey House, $4.50), pp. 328.

Reviewed by
Colonel Harvey T. Alness

MR. EUGENE WILSON has a background in aviation encompassing a long career as an officer in the U. S. Navy and an equally long period in the aircraft industry, and his pronouncements on military, commercial, and industrial matters pertaining to aircraft appear to be sound. His analysis in this field, however, reveals certain prejudices

which may stem from his background in the armed services during a period of inter-service rivalry and a further somewhat unexplained prejudice as one of the leading industrialists in the aircraft industry. Although there is no difficulty in following the rather systematically assembled review of the growth of the aircraft industry, it is colored by a point of view imposed upon the author by years of inter-service rivalry.

Mr. Wilson is given to certain unproved and unverified generalizations, particularly as they relate to inter-service jealousies and rivalries, and in each instance advanced it is to be noted that the stigma of being decidedly in error is placed upon either the Army Air Forces or the U. S. Air Force. This general trend is evident all the way from the time of General William Mitchell down to that of Secretary Symington. He also concerns himself with certain of the present concepts of tactics, strategy, and policy, and where he fails to agree with the accepted strategy or policy, he falls back upon a castigation of the ethics of those who support our present plans. He states unequivocally that we are burdened by a Hiroshima concept of the employment of air power and that the military, specifically the U. S. Air Force, has failed to realize the true implications and the true value of the air line transport industry.

Somewhat more basically Mr. Wilson is critical of the various political appointees who have the control of the Government agencies that regulate operating air lines. His is a doctrine of the return of private management with more freedom than has been allocated under the present governmental control. In other words he desires subsidization without control. He is definitely opposed to strict government control and management and specifically to the government control of industry attempted in certain fields during World War II.

His review of the rise of American commercial air transport in the early 30's is interesting. His analysis indicates a failure to realize its potentialities, emphasizing the fact that had courage and enterprise been displayed in fostering an air policy, we might have so furthered our technology as to match a rise of American air transport in our day with the rise of British sea transport, and even eclipse it, in the period of the *Pax Britannica*, which was based on the carrying of freight, not passengers. Asserting that history reveals that the progress of civilization has been paced by discoveries in transport, he finds America in a period when, had we recognized the field of air transport for what it is, our own air power would not

have been hamstrung, as he now sees it. In lieu of the peaceful conquest of trade by means of air transport, he is firm in his conviction that we have accepted the Douhet doctrine and that this doctrine is a negation of the philosophy of chivalry, which has been expressed in international law. In other words he attacks the morality of our present ideas of air warfare and suggests that we revert to the improvement of commercial air transport, which indirectly will produce more favorable long-term results.

In general *Slipstream* can be divided into two parts. The first covers the problems of the development of aviation within the United States Navy and the part played by the author in their solution. It gives a first-hand review of the individuals who were involved in the growth of Naval aviation, the basic problems within the Navy Department, and particularly within the Bureau of Aeronautics and within the fleet, in getting acceptance of air power. This period of frustration had its impact upon the author and culminated in his leaving the Navy for the aircraft industry. The second half of the book, covering the rise of that industry, is particularly illuminating in that it covers heretofore unknown details of the maneuvering for position between the various industries producing aircraft and allied materiel and recounts the problems imposed by the rules and policies handed down from high Government circles. From the author's point of view the chronicle vindicates the aircraft industry in these controversies.

Air War College

Economic Geography of the USSR, by S. S. Balzak, V. F. Fasyutin, Ya. G. Feigin (Macmillan, $10.00), pp. 620.

Reviewed by
Professor George B. Cressey

DURING THE PAST TWO DECADES the Soviet land has undergone an unparalleled development with the construction of new mines, factories, railroads, and cities. The *Economic Geography of the USSR* is a report of these achievements and an evaluation of the environmental possibilities which lie behind them. If there is exuberance, it is understandable. It should be obvious that each country is entitled to have its geography seen through sympathetic eyes.

English readers who wish to evaluate the Soviet landscape are thus under obligation to examine the point of view here presented, even though it includes ideological comments usually absent in a geographical volume. Only thus can we secure a valid insight into the Soviet mind.

This volume is the first of two texts on geography to be translated under the Russian Translation Project of The American Council of Learned Societies. The second will be L. S. Berg's *Natural Regions of the USSR*. The Balzak volume here reviewed is itself the first of two volumes, and it is a matter of regret that the second volume, on regional geography, does not appear to be available outside the Soviet Union.

This work is no mere translation. Under the editorship of Professor Chauncey D. Harris of the Department of Geography at the University of Chicago the present volume has many added footnotes, maps, and tables. It is difficult to imagine a more-comprehensive analysis. In addition to 504 pages of translated text the front matter includes 45 pages made up of two forewords, a preface, an editorial note, an introduction, a list of maps, a list of tables, and two tables of contents. The 115 pages of end matter include an appendix with 14 tables, five other appendices, and four indexes. Within the text are 39 tables and 83 maps.

Many of the maps are based on the Great Soviet World Atlas. Nowhere else is there a fraction of the cartographic array here provided. Seven of the maps are folded inserts, dealing with "Surface Configuration," "Mineral Deposits," "Economic Development," "City Growth," "Industrial Production by Cities in 1913 and 1935," and "Administrative Divisions." The others are mostly full page maps. Although postwar boundaries are shown, data is limited to the area prior to World War II. This array constitutes a geographic portfolio of major value itself. From these maps one may measure the electric capacity of Chelyabinsk, or the flour milling status of Kiev, or the density of population district by district.

Seven authors are credited with the authorship of this volume, with two others as editors. S. S. Balzak appears as an editor rather than an author; Feigin and Vasyutin are both editors and authors. Only one of the nine persons listed is identified as a geographer, the others, where their field of interest is indicated, are economists. The translation is by Robert M. Hankin and Olga Adler Titlebaum.

Americans will read the volume with mixed reactions. The

four chapters on natural conditions and resources, industry, agriculture, and transport conform to standard geographic procedures. They are factual and detailed, with a wealth of place names and many prewar production figures. Typical pages carry two dozen place names, often of obscure towns. Fortunately all are indexed and shown on some attending map. Most of these facts are already known to a few abroad; it is their assembly and accessibility which are valuable.

Between the above chapters are three others entitled "The Distribution of Productive Forces in Tsarist Russia," "Basic Problems in the Distribution of the Productive Forces of the USSR," and "The Population of the USSR and its Distribution." For the most part these chapters are socialist analysis of bourgeois capitalism, colonial oppression, Stalinist achievements, and class problems. Thus one reads: "Capitalism . . . is inherently characterized by an extremely inefficient and unequal distribution of productive forces," (p. 104); "Tsarism and the Russian bourgeoisie exploited the borderlands mercilessly," (p. 126); "As a result of the Stalin Five-year Plans, Soviet industry and agriculture have been outfitted with the most advanced technical equipment," (p. 135); "The revolutionary class itself is the greatest productive force, wrote Marx," (p. 167); "Tens of millions of people—almost half the population —formerly suffering under a double form of oppression (class and national) have been truly liberated as a result of the socialist Revolution," (p. 179). Nearly fifty footnotes in these three chapters refer to Lenin, Stalin, and associates.

In a nation of planned economy, one must predict, and to predict one must control. Under Tsarism, development followed *laissez-faire* economics; under the Soviets there is to be balanced development for all parts of the country. Thus (p. 360) "a distinguishing trait of socialist agriculture is not passive adaptation to natural conditions, but radical modification of these very conditions." Or (p. 361) "Many bourgeois scientists affirm that the distribution of agriculture is determined exclusively by natural conditions. Certainly natural conditions have a tremendous influence on distribution; but to attribute the leading role to natural factors is incorrect. In the USSR great changes in the distribution of agricultural crops have taken place since prewar times, although the climatic and soil conditions of the different regions have not changed. This fact shows graphically that the system of social relationships and the level of development of productive forces are decisive

factors in determining the distribution of agriculture."

This leads to paragraphs such as the following (pp. 145-6): "The contemptible enemies of the people—Trotskyists and Bukharinists—have fought against the policy of our Party in the field of the socialist distribution of productive forces. Trotskyists, foaming at the mouth, argued that a uniform distribution of productive forces was conceivable only on a world scale. . . . It is not difficult to understand that this is the refrain of the counterrevolutionary theory of the impossibility of building socialism in one country. Rightist capitulationists spoke against constructing the Dneproges, against converting the old industrial regions into a base for industrializing the entire country. . . . the saboteurs put forward the point of view of 'optimal' regions, according to which industry can be developed in only a few regions of the country. . . . and one of the saboteurs wrote that the industrialization of the previously backward regions of the country was not expedient, since it would mean a completely unproductive expenditure of government means. . . . The Party shattered all these hostile purposes and dispersed them completely."

Department of Geography, Syracuse University

Russian-American Relations in the Far East, by Pauline Tompkins (Macmillan, $5.00), pp. 426.

Reviewed by
Robert W. Schmidt

MISS PAULINE TOMPKINS, a lecturer in political science at Wellesley College, has prepared the only comprehensive account now available of the intricacies of United States policy relative to Russia in the Far East. She examines Russian-American relations in that area from the time of President Thomas Jefferson to the present, and except for an occasional overtone of revulsion at the amoral nature of what was happening, her study is straightforward and free from bias. Her bibliography is extensive. Department of State Archives and other primary sources have been effectively utilized.

Miss Tompkins considers the balance of power in the Far East the key to Russian-American relations. Before the Communist Revolution the two countries were on good terms,

except for those periods when Russia was threatening to dominate the area or overthrow the balance of power.

We are generally told that Russia and the United States were friendly until the beginning of the twentieth century. Earlier than that date both countries were absorbed in conquering their respective continents and were little concerned with what happened beyond their borders.

After 1900 American interests were extending to the Far East. Russian expansion had reached a point beyond which further advance could be made only at the expense of China. It is not difficult to understand that under the circumstances, relations between the two countries could change.

The United States countered Russian threats against Chinese sovereignty with the Open Door Policy. The same tactics were applied against Japan, when Japanese expansion also threatened Chinese sovereignty. When the Open Door Policy was first announced, it succeeded, largely because of the support of the British Royal Navy. Whenever the policy was challenged or ignored (either because the British Navy was occupied elsewhere, as during World War I, or had ceased to be an effective world force, as during and after World War II), the United States was unwilling to support the policy with force. Protests and other methods of moral pressure were attempted. When they failed, the United States usually withdrew with the empty threat that she would not recognize the action to which she objected. This was especially true in the time of Japanese activity in Manchuria and North China before World War II.

The Communist Revolution of 1917 was a new factor in Russian-American relations. Americans welcomed the first or moderate Russian Revolution of 1917. The subsequent Communist Revolution was not understood. A deep revulsion at its methods and objectives caused the United States to withhold recognition of the Soviet Government. In order to maintain the balance of power in the Far East, however, the United States, even while detesting the Communist regime in Russia, found it necessary to protect Russian territorial integrity in Siberia against Japanese threats.

Not until 1933 did the United States recognize the Communist Government of the U.S.S.R. Even then the anticipated benefits of recognition were not realized. The deep distrust which had been built up between the two countries was too great to be quickly overcome, and a confused world situation made matters worse. With Hitler's attack upon Russia the

United States began to cooperate more fully with the U.S.S.R. The Russian Government, however, was unable to overcome the feeling of distrust which had developed, or else the hope for World Communism deterred it from cooperating wholeheartedly with the United States.

After World War II only two great powers remained, and they faced each other in Europe and Asia. They were inexorably drawn into the vacuum left by the disappearance of Japan, China, and Great Britain as major powers. Unfortunately there was no background of recent cooperation upon which a *modus vivendi* could be established. Nor could a balance of power be arranged in such a situation. Here Miss Tompkins must relinquish her narrative and analysis to the daily journalist. For there remains yet to be resolved in the Far East one of the most vexing and dangerous problems in American foreign affairs.

To this reviewer the greatest limitation of Miss Tompkins' volume is the absence of an adequate discussion of the objectives, ideology, and program of World Communism and the effect of these upon Russian-American affairs after 1917. Those matters certainly bore importantly on relations passed under the author's scrutiny. In spite of this limitation, however, Miss Tompkins has afforded students of international politics and American foreign policy a useful review of conditions in an area continually upset by diplomatic jockeying for position and armed conflict.

Air University Library

Air Power and Unification, by Louis A. Sigaud (Military Service Publishing Company, $2.50), pp. 119.

Reviewed by
Dr. R. Earl McClendon

IN 1941 Louis A. Sigaud, former Lieutenant Colonel, Military Intelligence Reserve, United States Army, published a relatively short book under the title of *Douhet and Aerial Warfare*. Therein the author ventured to outline the use and organization of air power, generally in accordance with the doctrines presented much earlier by the well-known Italian air enthusiast, General Guilio Douhet. He concluded with what may be regarded as a mild plea for a separate military air arm

and a single department of national defense for the United States. That was but shortly before the United States became a belligerent in World War II. By the time that conflict had ended, the air organization, then known as the Army Air Forces, had gained virtually complete autonomy within the framework of the War Department. Two years later, upon the adoption of the National Security Act of 1947, it acquired an independent status. That statute also provided for a National Military Establishment including as coordinate branches of service the Army, the Navy, and the Air Force. Still another two years and certain fundamental amendments to the original law were adopted to approach more closely its objective. Now comes Sigaud's *Air Power and Unification,* which advocates the application of Douhet's principles to aid the solution of the numerous problems arising in connection with the complete utilization of air power as a branch of our armed forces and the full implementation of unification.

Colonel Sigaud goes down the line of some of the most important ideas of Douhet, as he interprets them, particularly in relation to unification. A few of the more pertinent ones may be indicated here: Since the air arm can fight in the air, take action against surface forces, and strike enemy national territory behind the lines, it is the arm most likely to be decisive in combat and thus should be an autonomous branch. There also should be a unity of organization and command on a level superior to the surface and air arms. In broadest aspect these factors would call for a department of defense, a general staff for the armed forces, a commander-in-chief for the united armed forces, and commanders for each of the three [Douhet would add a fourth, the "area" of territorial defense against aerial attack] separate armed forces. Finally, higher officers should be trained to handle single commands consisting of varying ratios of surface and air units according to specific needs and circumstances.

The United States lagged behind other nations in the organization and utilization of an independent air arm and in unification of its armed forces. No one would claim that complete unification or coordination has been attained; nor hold that a satisfactory delineation of the roles and missions of the three forces has been determined. And the problems remaining to be settled are legion. In setting forth certain doctrines of Douhet believed to be essential to their solution, Sigaud makes no claim of offering a panacea for the ills of our system of

national defense; but he does believe "that a realistic evaluation of Douhet's principles in the light of current military problems of the United States and those of the foreseeable future will appreciably assist in clarifying those problems."

Air Power and Unification in reality contributes no more than a restatement of well-known theory toward the untangling of a complex situation, and one interwoven with personal animus and vested interest at that. There is, moreover, considerable evidence to indicate that the book was hurriedly prepared and published. Many sentences, for example, are long, somewhat involved, and difficult to understand. Certain combinations of words are inexcusably unintelligible, for example: "But the United States the earth the need for unity of action as to its own land, sea, and air units and as to combined military forces of allied nations" (p. 56).

The work has relatively few footnote citations. Excluding one translation, the listed bibliography contains but eight items. Five are books credited to Douhet himself; one is a collection of some of his papers; and the remaining two (including Sigaud's own *Douhet and Aerial Warfare*) relate specifically to him. There is an index that is only fair. Approximately one-tenth of the book is devoted to an appendix, which includes only one document—extracts of a statement made by General Omar N. Bradley before the House Committee on Armed Services. But the author of *Air Power and Unification* neglects to give its date and fails to explain the circumstances which elicited that particular testimony from the Chairman of the Joint Chiefs of Staff.

Air University Library

999 Survived: An Analysis of Survival Experiences in the Southwest Pacific, by Richard A. Howard (Arctic, Desert, Tropic Information Center, Air Univ., free distribution), pp. 88.

Reviewed by

Dr. Deric O'Bryan

DR. HOWARD is a botanist and assistant professor in the Biological Laboratories, Harvard University. In World War II, as a captain in the Air Forces, he served as Chief of the Jungle Survival School conducted by the Aero-Medical Department at Orlando, Florida. After the war, as a

civilian in the active reserve, Dr. Howard collected survival stories which had tropical settings. His discussion of his findings is now available in mimeographed form.

Dr. Howard states that his report "is not intended to be a statistical analysis of survival episodes." It is a review of the nature and range of the conditions and events experienced by a thousand survivors who were forced to leave their aircraft in foreign, often enemy-held, territory. Inflight emergencies resulted from (with frequency in order of mention) lack of fuel, enemy action, faulty navigation, mechanical failure, and—rarely—from fire, collision, icing, and pilot error. Landings usually were made by parachute. Sixty per cent of the crew members received injuries before they were safely on the ground. The majority of individual isolated survival periods lasted less than forty-eight hours. The longest period of isolation for one person was twenty-three days. However some fliers aided by friendly natives spent as much as eight months away from their bases.

Problems of survival included health and sanitation, shelter, clothing, water, and food. The accounts studied contained much data confirming indoctrinated survival techniques and some important new information. Several of the experiences underline a need for additional instruction in the application of first aid to one's self. Amputees did not know how to use tourniquets or bandages on themselves. Seriously injured men did not know how to insert morphine syrettes to ease their pain.

Shoes caused the most concern of all articles of wearing apparel. A distressingly large number of regretful survivors did not "wear the shoes you might have to walk home in." Insect repellent was praised unanimously, but there was a multivoiced demand that it be supplied in unbreakable containers. Hunger governed the appreciation of food materials. Typical is the story of a downed crew in Burma who at first accepted only boiled eggs from the natives. Later they relished everything including fried bees.

Enemy troops, when present, were an obvious danger. Collaborationist natives—encountered less than ten per cent of the time—were equally to be avoided. Other hazards of survival varied from rare meetings with large wild animals (tigers, elephants, snakes, sharks, crocodiles, black panthers, water buffalo, and wild pigs), to fear of the dark, shapes, sounds, and phosphorescence.

The section on signal equipment and techniques is particu-

larly noteworthy. Various items of equipment and methods are evaluated by their successes and failures in attracting the attention of rescuers. The "Gibson Girl" radio was vehemently criticized; the Corner reflector, available only toward the close of hostilities, was as extremely praised.

The author concludes that in general the survival cases studied reflect credit on the training programs conducted by the Air Forces. Degree of preparation, and possession of a survival manual, made a great deal of difference. Physical condition was a decisive factor. But most important was the mental spirit of the individual, the level-headed determination to survive.

999 Survived, containing one thousand references to actual case histories, will interest and instruct all casual readers. It will be an important source of information to those concerned with briefing fliers and passengers for travel in the areas under consideration and to all instructors of survival techniques on tropical lands and seas.

Arctic, Desert, Tropic Information Center

BRIEFER COMMENT

The Military Staff, Its History and Development, by Lt. Col. J. D. Hittle, USMC, pp. 286.

IN this revised edition of a standard military text on the origins and development of the military staff and its current modern expressions, a section on the Russian staff, under both the Czars and the Soviets, has been added to the sections on the German, French, British, and United States staffs. Acknowledging that the military staff is not a modern invention, Col. Hittle begins his survey in the ancient eras of the Egyptians, the Assyrians, and Alexander, the Macedonian. He then follows a common continuity of staff development through the time of Gustavus Adolphus and the Battle of Lutzen (1632). After that date, when the national character of armies became more pronounced and as a result staff systems acquired individual characteristics, he pursues his subject under the five sections indicated above. Although the book does not treat its subject in great detail, it furnishes an adequate body of material for all purposes of the student or general reader.

Military Service Publishing Co. $3

Hitch Your Wagon, the Story of Bernt Balchen, by Clayton Knight and Robert C. Durham, pp. 332.

THIS is a narrative-type biography with a leavening of numerous passages in dialog about the

Norwegian youth who came to America with Admiral Byrd in the hope of participating in air exploration of the Arctic, who took out his first citizenship papers to help fly Admiral Byrd's *America* across the Atlantic in the Lindbergh days, who was frozen in at Little America with the Byrd expedition to Antarctica and was in the pilot's seat on man's first flight to the South Pole, who joined the U.S. Air Force in 1941 as a polar expert in line with the plan for establishing bases in Greenland and who laid out and commanded Bluie West-8, who pioneered in Arctic rescue, who sparked the Ball Project to supply Norwegian underground workers with food and materiel by air and took command of the 1415th Base Unit with headquarters in Stockholm in September 1944 and undertook the mission of helping rid Norway of Nazi occupation. Col. Balchen is now C. O. of the 10th Rescue Squadron at Elmendorf Air Force Base in Alaska. It is, all in all, an interesting story, although somewhat hero worshipful, written by Balchen's former executive officer in Stockholm.

Bell Publishing Co. $3.50

Brassey's Naval Annual, 1949, edited by Rear Admiral H. G. Thursfield, pp. 304.

IN its sixtieth year of publication *Brassey's Naval Annual* comprises statistics issued by the Governments concerned pertaining to the warships that compose the navies of the world today. Other elements bearing on the naval strength of nations—the correlation of sea and air forces and of shipborne and land-based air squadrons and the over-all organization of defense forces—are also discussed. There are reviews of naval development during the past year, with special reference to progress in marine engineering and a chapter on the changes in naval strategy and tactics brought about by the agency of radar. The reference section contains tables of dimensions and particulars of warships, together with illustrations of silhouettes and plans and elevations of warships of the navies of the world.

Macmillan $6

Coral Sea, Midway and Submarine Actions, May 1942-August 1942, pp. 307; The Struggle for Guadalcanal, August 1942-February 1943, pp. 389 (Vols. IV and V of History of United States Naval Operations in World War II), by Samuel Eliot Morison.

CONTINUING Professor Morison's projected fourteen-volume history, these volumes are as well written and interesting as their predecessors. In addition to the actions indicated by its title, the Coral Sea volume treats the Japanese thrust on the Aleutians and their occupation of Attu and Kiska, the submarine attacks against Japanese shipping during the first year of the war, together with the raid on Makin Island in August 1942, and the beginnings of the Solomon Islands operation: the decisions in Washington, the preparation, and the successful landings of 7 August 1942. The Guadalcanal volume includes several major actions: the U.S. defeat in the Battle of Savo Island, the carrier battle of the Eastern Solomons, the battle of the Santa Cruz Islands, the three-day naval battle of Guadalcanal, the battle of

Tassafaronga, and the battle of Rennell Island. Considerable attention is given to the relation between the ground fighting and the naval warfare in the campaign for Guadalcanal. While Professor Morison's work is not so adequately based on painstaking consideration of available source materials as, for example, the official *Army Air Forces in World War II* and the interpretations of events and conclusions are frequently slanted by this fault—from the objective historian's point of view—in the direction pointed out by overdependence on U.S. Navy materials and, possibly, Professor Morison's personal inclination, the volumes of his series are very worthwhile additions to the library of significant literature about the Second World War. The *History of United States Naval Operations in World War II* is disclaimed as "in no sense an official history," although the Navy Department has contributed extensively to the furtherance of the author's labors and he was on duty as a Captain for historical purposes. In one sense at least the work has an official godfather.

Little, Brown $6 (per volume)

The Maritime History of Russia, 848-1948, by Mairin Mitchell, pp. 543.

THE first comprehensive work on its subject to appear in English is not pure history but a book with a thesis—that Russia has had an historic urge to the oceans and that this urge remains as one of the principal motives in the foreign policy of the Soviet Union. Mr. Mitchell, an Englishman whose book was published in London, also considers that maritime power is indispensable for the attainment of world power and clings to the Mahan complex that navies are the decisive element in the destiny of a great nation. After his account of earlier Russian naval history and efforts to expand to the sea, he turns to the operations of the Soviet fleets in the Second World War and an examination of the maritime aims of Moscow today, considering the questions of how far did the last war disprove the saying that Russia is a land-minded nation and how will the objectives of the Soviets with regard to the sea affect relations with the British empire and the American sea power in the Pacific. The book contains several insert maps, an extensive bibliography, and a detailed index.

Macmillan $5.00

Political Handbook of the World, edited by Walter H. Mallory, pp. 224.

A REFERENCE book on the parliaments, parties, and press of all nations as of 1 January 1950. Under the various national headings are lists of members of the government, recent political events, party programs and party leaders, and leading newspapers and periodical journals with editors and political affiliations. Extremely useful to the man who needs to know about such things. Twenty-third year of publication.

Harper, $3.50

The Air Officer's Guide, 1950 Edition, pp. 528.

THIS handy reference now appears in its third edition revised to incorporate legislative changes

to date and recent matter of special interest to Air Force officers. Those who have used it in earlier editions will recall the special sections on Air Force bases, foreign service, life in overseas commands, and personal affairs and its usefulness in providing a quick answer to numerous questions that come up about professional and social problems.

Military Service co. $3.50

Elements of Practical Aerodynamics, by Bradley Jones, pp. 444.

THIS fourth edition of a standard college text can serve the general reader for a survey of the practical aspects of aerodynamics or as an introduction to more advanced treatment. The reader is assumed to have no mathematics beyond elementary calculus. A good book for the nonexpert who wants to learn something definite about such matters as airfoils, vortex motion, scale and compressibility effects, drag, load factors, stability, calculation of the speed of sound, Mach numbers, and so forth.

John Wiley and Sons $5

Principles of Aircraft Propulsion Machinery, by Israel Katz, pp. 477.

THIS book, though written in a style that is easily read, will require more than the normal amount of time and study to understand completely. It is subdivided into eight sections, any one of which may be considered separately. The material is covered at the college level, and the book is well adapted for reference or classroom work. The author has demonstrated a clear understanding of modern power plant problems and their solutions, and the student who is serious in his quest for knowledge will find this book interesting.

Pitman Publishing Corp. $6.50

Jet Aircraft Simplified, by Charles E. Chapel, pp. 160.

THIS semitechnical book gives the step-by-step progress made in jet propulsion of aircraft. It is written in an easy-to-read, narrative style for high school and college students. The drawings and photographs are up-to-date with the latest developments in aviation.

Aero Publishers $3.75

Applied Experimental Psychology, Human Factors in Engineering Design, by Alphonse Chapanis, Wendell R. Garner, and Clifford T. Morgan, pp. 434.

THIS book is an excellent synthesis of the principles of human psychology and physical make-up and their manifestations in human behavior patterns that must underlie the design of machines for peak operational efficiency by human operators. Its approach consists of basic information about man's capacities, for example how he sees, and its application to practical design problems such as the legibility of instrument dials. Most of the design problems considered have to do with aviation and related equipment, and the discussions of theory and application are easily understood and extremely pertinent to Air Force matters. From the enormously scattered reference materials bearing on their subject, how to know

the best way to design a machine — meaning anything from the shape of a control knob to the frequency of a warning signal— so that a human being can use it, the authors put together a series of lectures on engineering psychology for the Naval Postgraduate School at Annapolis which were delivered to a selected group of engineering officers. These lectures were expanded into the present book. Readers interested in aircraft and related equipment or in research and development will like it.

John Wiley & Sons $4.50

Jane's All the World's Aircraft, 1949-50, compiled and edited by Leonard Bridgman, pp. 463.

THE fortieth annual issue of this standard and authoritative reference offers its customary up-to-date and detailed descriptions and characteristics of the aircraft of all nations and their engines.

McGraw-Hill $16.50

Some recent textbooks in political science for study and reference.

The Department of State, by Graham H. Stuart, pp. 517, Macmillan, $7.50.—A history of organization, procedure, and personnel, this work analyzes the State Department at every stage of the national growth of the United States. It gives the duties of each officer and includes critical comment on each of the Secretaries: his personality, his principal acts, his relations with his President. Beginning with the days of Thomas Jefferson, it discusses such matters as the Louisiana Purchase, the War of 1812, the first census taking, and Webster's negotiations with England over the *Caroline* affair.

Conduct of American Diplomacy, by Elmer Plischke, pp. 542, Van Nostrand, $4.85, is a college text intended not as a survey of United States diplomatic history nor as an evaluation of foreign policy but as a treatment of the principles, procedures, and governmental machinery involved in the conduct of foreign relations. In addition to chapters concerned with the Department of State and the Foreign Service, there are chapters devoted to the handling of foreign affairs abroad by American diplomatic and consular establishments and the changing trends in the basic tools of modern diplomacy such as the executive agreement and the international conference. Appended matter includes a collection of documents illustrating diplomatic practice.

The Theory and Practice of Modern Government (Revised Edition), by Herman Finer, pp. 978, Henry Holt, $5.50, devotes a thousand pages of fine print in double columns to examination of man's political needs in government, the fundamental institutions of government, political parties, legislatures, cabinets and chiefs of state, and civil service—the foregoing being the topics of the six parts of this textbook for advanced students. The features, justification, and consequences of the democratic principle are emphasized in the comparison of various national governments and in contrast with the practices of dictatorships. The rise and fall of the Nazi state and the peculiarities of the Soviet constitution in relation to their national environment, recent developments in bills

of human rights, the creeds and organizations of political parties in democracies and dictatorships, the formation of public opinion and public policy, and the problems of civil service are also among the themes given particular attention. A book for reference or serious study.

Business and Government, by Marshall Edward Dimock, pp. 840, Henry Holt, $4.75, is intended to provide a working knowledge of government-business relations as a key to many vital domestic and international problems. Principal topics are the limits of state intervention; recurring depressions; relations of labor and government; government and agriculture; monopoly, free enterprise, and public control; public utility regulations; financial controls; the government as owner and conservator; and forces in a mixed economy. The necessary materials of political science, economics, and other social sciences are brought to bear on the history and the examination of the numerous problems treated, as is approach through important judicial decisions and case materials. Recommended for the officer who wants to understand a primary component of the national environment in which the the Air Force is an entity.

The United States in World History, by John B. Rae and Thomas H. D. Mahoney, pp. 813, McGraw-Hill, $5, was written, its authors say, "on the assumption that the history of the United States should be studied in its proper setting as part of the general growth of modern civilization." In organizing the material they have "tried to subordinate narrative history in favor of emphasizing the interrelationships between America and world civilization" and to consider "both direct and indirect relationships, since events which had only a remote bearing on the United States at the time they occurred have nevertheless had consequences with which the United States had become vitally concerned." Very useful background for interpreting present international affairs.

International Relations, by Robert Strausz-Hupé and Stefan T. Possony, pp. 947, McGraw-Hill, $6, is an analysis of the doings of nations today, with special emphasis on the conflict between the democratic and totalitarian worlds. The military student will be especially interested in the treatment of the ideology of U.S. foreign policy, the interrelationship of military power and foreign policy, the problems of atomic politics, Soviet foreign policy, and the techniques of the cold war.

The United States and Scandinavia, by Franklin D. Scott, pp. 359.

ESSENTIALLY this volume is a description of the five Scandinavian countries: Iceland, Norway, Sweden, Denmark, and Finland, with some attention to Greenland, together with an explanation of their problems, their policies, and their unity of action. The author expertly treats Scandinavia as a whole, emphasizing its common culture and common interests. The result is a readable handbook on resources, economic structure, history, and other national facts and a guide to understanding the Scandinavian search for social and national security.

Harvard $4

The Periodical Press

Leonard Krieger, "The Inter-Regnum in Germany: March-August 1945," Political Science Quarterly, December 1949, pp. 507-32.

AS THE SPRING CAMPAIGNS of the Allied armies brought Germany progressively under military rule in 1945, the historic East-West distinctions in German society came under the dissimilar policies of the occupation Powers. Indeed, Professor Krieger defines the contemporary "German problem"—the division of Germany into two geographical and political entities—as being a direct manifestation of the ideological division between the occupation policies of the Western powers and the Soviet Union. Western Germany, governed by a middle-class coalition professing political democracy and economic individualism, is "far to the political Right even by German standards." On the other hand Eastern Germany, governed by a popular front emphasizing economic and social collectivism, is merely a façade for Communist domination.

Professor Krieger's thesis is that the embryonic period determining the partition of Germany into two parts was the period between the military occupation and the Potsdam Agreement which established four-power rule. The Western powers, with "denazification" as their primary canon, sought above all to restore law and order in their German areas upon the principles of international law, the security of the occupying troops, and the encouragement of nonpolitical German institutions. In contrast to the gradualness of Western policy, however, the Soviet authorities immediately embarked upon a positive program, replete with propaganda, to induce social change in Eastern Germany. The elements of this program were the distinct disassociation of the German people with the late Nazi regime, confiscation of all Nazi property and virtually all bank accounts, full encouragement to the political revival of all German institutions of an "anti-fascist" (distinct from anti-Nazi) character, and the use of German nationals to administrate the breaking down of the old bureaucratic structure. As a result Soviet policy clearly weakened the industrialists and smashed the large landowners and bureaucracy as entrenched political forces in Eastern Germany.

Professor Krieger concludes that at the end of the "Inter-Regnum" Eastern Germany was in the process of dynamic social transformation, while Western Germany was yet under a static military occupation governmental setup politically administrated by German nationals.

> "In the West the traditional native control system, dominated by traditional ruling groups, maintained the existing class relationships and was prepared to use its mandate as the nonpolitical instrument of order to block or divert any movement for the fundamental transformation of society. In the East, the future development of the society was being determined by a new control system in the hands of the radical Left dictating the conditions for political and social change."

Thus the Allied entrance upon the joint rule of Germany with their inherent ideological conflicts became prominently embodied in the two Germanies, and "created a lasting debit for the future foreign policies of the Great Powers."—**E.M.E.**

Julian Amery, "The Inexcusable War," The Nineteenth Century and After, January 1950, pp. 1-11.

THIS THOUGHT-PROVOKING ARTICLE is written from a distinctly British point of view. It takes the position that while the Western powers still have the lead in the matter of atomic weapons, they should "bring matters with Russia to a head." Such a policy, the author insists, really offers the only reasonable prospect of saving Britain and Europe from complete domination by the Soviet system. In building up his thesis Mr. Amery, without resorting to any formal documentation, traverses some ground familiar to all who have attempted to keep informed on international developments. Principally he rests on factors relating to the advance of Red armies and the infiltration of Communist party doctrine in Europe and the Far East. Developed, as the author insists, despite rather than because of Yalta, the extension of Russian influence, particularly in Western Europe, Greece, and China, could have been thwarted by positive action on the part of the United States and Britain. Be all that as it may, Russia has now incorporated in her system, satellite and otherwise, a large portion of Europe and has extended control over North Korea and China, increasing the population under her sway from some 180,000,000 to approximately 700,000,000. There is little reason to doubt, says the writer, that the Politburo hopes to conquer the world for Communism. This the leaders would like to do without war, but believe that is impossible.

The view presented here holds that even though Russian intentions are everything but pacific, at any time within the last four and one-half years the Western powers could have struck back at the Russian menace without provoking a war. That was because Russia will not risk an armed conflict as long as she fears the possibility of a defeat. A monopoly of the atomic bomb by the West spelled the difference. In fact, it prevented Russian conquest of western Europe and made the West in general safe from attack. Now the picture is changing; and it may not be long before the Soviet "smaller stock pile of atom bombs, matched to an otherwise superior war machine, will give them an overall superiority." This will mean war.

The chances still are excellent that an insistence upon a show-down with Russia could be accomplished without conflict. If not, however, the West could hope to avoid the worst effects of war. Suggested steps in the process of forcing Russia to withdraw within her own frontiers include a strengthening of Britain's defenses, the "recreation" of Europe, and assuming the initiative in the "cold war." Since she has more at stake than any other Western power, Britain, reversing her policy as respects the United States, should take the lead in whatever is done. The major responsibility is hers. Therefore, she should impose her will upon the "Foreign Policy of the Western Union." Even though it is the stronger partner in that association the United States, the writer feels, would be willing to support Britain in the attempt to gain the desired end. In all this discussion no consideration whatever is given to the machinery of the United Nations as a hope of solving this momentous world problem.

The author of "The Inexcusable War" holds that World War II may properly be called the "unnecessary war." This is due to the fact that by adopting a policy of appeasement, France and Britain muffed an excel-

lent chance of preventing it. That was an unnecessary and grievous error, but withal an understandable one. The Third World War, into which we are now drifting, however, may well be dubbed the "Inexcusable War"; because for over four years the American and British diplomats have known how to cope with the Russian danger, but have lacked the will to act on their knowledge. In another year or so they will also lack the power. —**R.E.McC.**

Hanson W. Baldwin, "Our Worst Blunders in the War," Atlantic Monthly, January 1950, pp. 3-39; February 1950, pp. 30-38.

HANSON W. BALDWIN, military editor of the *New York Times* since 1942, deals with the "worst blunders" of the war in two articles, the first being concerned primarily with Europe and the Russians, the second with Japan and the Russians. In both the Russians are the main object of concern, for the peace appears to have been lost to them.

Beginning with an analysis of American political immaturity, Baldwin notes that our war policies were "founded basically on four great and *false* premises," namely, that the Politburo had abandoned the policy of world revolution, that Joseph Stalin was a man with whom bargains could be struck and kept, that (contradictorily) Russia might make a separate peace with Germany, and that Russian entry into the war against Japan was necessary either to ensure victory or to save American lives.

Upon these premises, Baldwin affirms, both military leaders and statesmen proceeded to erect a series of blunders—blunders that inevitably put us in our present international difficulties, since the Russians have been able to take advantage of them.

Making it clear that he is not presenting "a comprehensive catalogue of errors," Baldwin selects a few of the "broad and far-reaching" ones. First is the doctrine of "unconditional surrender," a doctrine that Woodrow Wilson had rejected in the First World War, but a doctrine that led to "unconditional resistance" in the Second World War and "confirmed our lack of a reasoned program for peace." Second is the invasion of Western Europe, undertaken in August 1944 "when the British finally failed in their last effort to persuade us to undertake a Balkan invasion" instead. This inevitably led to the loss of Eastern Europe to the Soviets. The next blunder noted arose both from a series of diplomatic decisions expressed in agreements at Quebec and Yalta and from a series of military decisions made on the field of battle. These resulted in the loss of Central Europe to the Russians, exemplified in one spectacular result, the making of "Berlin an island in a Russian sea."

In Asia the first mistakes were the result of an incorrect estimate of the military situation, especially attributable to General MacArthur, but once these had been overcome, the same pattern of mistakes made in Europe was made all over again in Asia: Insistance on unconditional surrender (reaffirmed at Potsdam), loss of Northeast Asia to the Russians because of military insistance that the Russians enter the war against Japan, and loss of moral leadership by the unnecessary and ruthless employment of the atomic bomb at a time when victory was already in sight.

Both articles are well-reasoned and faithful to the facts as known, but the second lacks the unity and objectivity of the first because of a

seeming effort to condemn the leadership of MacArthur (albeit with some justice) and to extoll the role of the Navy in bringing the conflict to an issue.—**W.A.H.**

Bernard Brodie, "Strategic Implications of the North Atlantic Pact," The Yale Review, Winter 1950, pp. 193-208.

PROFESSOR BRODIE calls the North Atlantic Pact the "most revolutionary engagement in American diplomatic history." In this article he declares that the people and the Congress of the United States took this step without fully realizing its implications. Nor did the military services apparently make a realistic appraisal of the requirements of the Pact. According to the author, "it is conceivable that military judgments were held of minor importance on just that occasion in our foreign relations when they were most clearly relevant."

Over a short-term view the Pact is a liability to us. No one in Western Europe is now capable of coping with the Soviet armies. Yet, under the Pact, the European nations expect the United States to defend them from invasion. This we are scarcely prepared to do. Being realistic, the Europeans west of the satellite belt may prefer to surrender to threats of Russian atomic bombing. Thus the existence of the Pact may mean for us the loss of Western Europe.

On another score—the program of victory through primary if not exclusive reliance upon strategic airpower—the Pact, in Brodie's opinion, can remain both a short-term and a long-term liability to the United States. The only way to avoid this, he says, is to assume a clear division of military labor between ourselves and our allies. If they contribute a far greater proportion of land forces, together with materiel and air tactical support, while we specialize in the air offensive and the maintenance of sea lines of communication, a war against the USSR might not prove disastrous. For, the author writes, "an army of . . . sixty divisions in Western Europe, well equipped and strongly supported by tactical and strategic air power, would be something to give the Soviet armies real pause."

The article is written with Professor Brodie's customary facility for combining ideas and words. Its conclusion is that the Pact is likely to deter Russia, to cause the Soviets to move cautiously in both the military and non-military spheres, thereby giving the western allies time to add strength to their forces—armed, economic, political, and ideological. The article reads well and provokes thought. —**H.P.G.**

James B. Conant, "Science and Politics in the Twentieth Century," Foreign Affairs Quarterly, January 1950, pp. 189-202.

DR. CONANT, one of America's foremost scientists, says, "the concern of the politician with science and scientists is a relatively new phenomenon." In this respect the politician probably has kept pace with those to whom he owed his office—the taxpayer and the stockholder. These two elements of the population, like the politician, today "are ready to take on faith the statement that science is important even if it costs the nation or the industrial corporation considerable sums of money."

Dr. Conant holds no brief for the Communist attitude toward science and the frequent subversion of pure and applied science to political necessity.* His belief that too close a linkage between science and politics in any nation will be detrimental to science is apparent in his statement: "That a wholehearted acceptance of science by politicians can lead to the curtailment of the work of scientists seems to have been clearly demonstrated."

Although aware that science faces certain restrictions in working more closely with governmental agencies, *i.e.*, politicians, Dr. Conant recognizes that such a fusion of interests is inevitable. His interest lies in helping to keep the applied and pure sciences in proper balance and in having science concentrate attention on those problems of human relations confronting the politician and all other leaders of human enterprise. In this field, where so much remains to be done, he believes science can prove of great benefit. As a means of assisting those in the top echelons of government, he proposes the creation of an organization of lay experts whose function would be that of passing judgment on the merit of technological developments requiring official decision.

In Dr. Conant's opinion science and politics in 1950 must bed down together. No longer can the scientist and the politician travel their own paths with only casual awareness of the other.—**R.E.**

Leonard W. Doob, "The Strategies of Psychological Warfare," The Public Opinion Quarterly, Winter 1949-50, pp. 635-644.

IN THE FIELDS OF PROPAGANDA AND PUBLIC OPINION RESEARCH the name of Professor Doob is respected for his ability to present his subject in a readable and understandable fashion. This article, however, is for a far more technically equipped audience than its title indicates. The inexpert reader is invited to a discussion of the broad principles of psychological warfare, but he shortly finds himself in a veritable fog of involved language, code symbols, and value tables out of which he emerges confused, if he finishes the article at all. Professor Doob cheerfully states part of his way along: "Eventually the entire analysis can be grasped at a glance!" Perhaps it can, if one is a regular reader of the mystic jargon of the "analysis crowd," and if one can keep in mind the meanings of such logotypes as PGOAL, PRES, FUSIT, FURES, PTK, FUCRED, and FUGOAL, which are used as the dependent and independent variables determining the strategy of psychological warfare campaigns.

The purpose of the article, according to the author, is to make psychological warfare a little less artistic and a little more scientific "through the presentation of a systematic typology." Mathematic computations, equations, tables of interrelations, and discussions of the variables give the appearance of scientific analysis to the framework of the few certainties of psychological warfare campaigns.

In such campaigns, says Doob, "specific impulses must be evoked by means of particular appeals. Behind the attempt to achieve any PGOAL [Present Goal] are strategic presumptions which may or may not correspond to what the propagandist himself thinks he is trying to accom-

*Ably discussed by Prof. Julian Huxley in his **Heredity East and West** (Schuman, 1949). See our last issue, Winter 1949, pp. 95-96. —**Ed.**

plish." It is the contention of the author that the strategies of psychological warfare "are reducible to a finite number of types," enabling the analyst to fit most of the problems of any psychological warfare situation into tabular solutions.

In conclusion Doob states that his method of analysis "by no means excludes artistry and sagacity from PW. . . ." On the contrary it enables a strict accounting of the hazards of hit-or-miss campaigns, so that ingenuity and improvisation pay off for the operator who has analyzed the situation properly.—**H.P.G.**

David F. Cavers, "An Interim Plan for International Control of Atomic Energy," Bulletin of the Atomic Scientists, January 1950, pp. 13-16.

ONE OF THE MOST pressing reasons for examining an interim plan of control is the fact that the longer international control is delayed, the less security any control plan can give. This is due to the difficulty of finding out just how much nuclear fuel has been produced by any nation between the start of operations and the inception of control. We are now in the interim between discovery of the use of nuclear fission in bombs and development of its use for industrial power. This interim may continue for 10 or 20 more years. During this time we shall lack facts essential to design an adequate permanent-control plan.

David F. Cavers, Professor of Law in Harvard University, proposes an interim plan which would (1) forbid the use of atomic weapons, (2) create an International Control Agency, and (3) set rules of control to continue for a prescribed period of years. Both the political and the technological obstacles are recognized as formidable. The latter are discussed in more detail. One major obstacle for winning acceptance for this or any control plan is the need of elaborate precautions in the disposal or control of existing stock piles. Professor Cavers proposes central storage under international control subject to instant destruction by any one of the controlling parties.—**C.M.T.**

Frederick H. Hartmann, "Settlement for Germany," The Yale Review, Winter 1950, pp. 240-254.

ADMITTEDLY the question of Germany is not easily solved, but "no solution" might be better than one that concedes everything to the opponent. Mr. Hartmann's proposals might be acceptable among contestants who play "by the book" or whose respect for international agreements is proved. But in the present situation the stakes are among the most important of the postwar period, and to win the USSR can be expected to commit whatever forces are necessary. For this reason the author's suggested settlement seems to play into Soviet hands. His proposals to evacuate Germany and leave her a neutral state subject to future action by the unanimous vote of the signatory powers and even to reoccupation seem plausible on the surface. But it is here that the author's case is weakest. Given a subject of such a controversial nature as that at hand, there is little evidence in the postwar period that a unanimous vote could be achieved among the powers involved. His assumption that once out of Germany the Western

powers could again reoccupy their former zones at their own convenience is naïve.

A withdrawal from Germany probably would be agreed to by the USSR without hesitation. She has much to gain under such a proposal, for through the potent arm of the German Communist Party she might expect soon to dominate all Germany. The operations and functions of the Communist Party as a direct instrument of the Soviet government is a factor to which the author gives toc little consideration in analysis of his subject. —**R.E.**

Fred M. Hechinger, "The Eagle Without the Swastika," Harper's Magazine, January 1950, pp. 54-62.

MR. HECHINGER'S OBSERVATIONS on present-day Germany are far from reassuring to those who have hoped and thought that Germany might be made a bulwark of democracy. He thinks that the occupation government has failed almost completely in the task of reconstructing Germany; and he cites numerous instances to prove that the same elements which brought about the rise of Hitler still exist and are powerful.

There were fundamentals which made the task almost impossible: (1) lack of realism on our part, born of idealism, ignorance, and arrogance; (2) the East-West conflict, with each side using the Germans as partners in the cold war.

To have made mistakes, he therefore finds understandable, but he considers inexcusable the failure to recognize mistakes and correct them. The main reason for this failure, he says, was the complete ignorance of the German background, of the deep roots from which Nazism grew. As a result the occupation authorities largely overlooked the real job—the task of reconstructing the German mind.

Other blocks to a successful occupation were disagreement among the Western Allies, lack of real contact between the occupation government and the German people, treatment of the Germans as an inferior race, high-handed tactics in dealing with German employees, and the influence of sexual considerations on occupation policies.

On the positive side the author finds isolated instances of brilliant individual achievement and sees some hope of avoiding complete disaster by strengthening and encouraging those Germans who have gained a vision of democracy.—**R.W.S.**

Jules Menken, "Stalin and his Russia," The Nineteenth Century and After, December 1949, pp. 395-404; January 1950, pp. 17-34.

THE AUTHOR of this well-written and interesting study of the Soviet government and its central figure has divided it into two parts: "Legend and Reality" and "Personality, Policy, Power." The peculiar applicability of Marxism-Leninism in Soviet Russia to the uses of the political legend forms an interesting portion of Part I. The Bolshevik leaders identified their regime from the beginning with a paradise of economic and social equality, as well as with a great desire for universal and eternal peace. The Iron Curtain serves to maintain the legend intact, both for the Soviet peoples and for foreigners who have the faith. The purge trials in 1937-

1938 were actually political dramas designed to bolster the legend of Soviet transcendental virtue, perfection, and wisdom. The author then examines the realities lying behind a few of the favorite myths, especially those concerning economic, political, and social equality, education, treatment of subject peoples and the so-called planned economy. These myths have been fostered with one principal aim in view: the acquisition and maintenance of power—power which is at once personal and institutional. An analysis of the inextricable and delicate blending of these two facets of power is the theme of the second installment.

Fundamentally Part II consists of an examination of Stalin's personality and an analysis of its effect on the organization and policy of Soviet Russia.* The author traces Stalin's early life in order to show the development of his outstanding characteristics. Among these characteristics his will-to-power, his sense of inferiority, coupled with a crafty aggressiveness, are declared to have had a tremendous influence on the Soviet state.

As the author points out, it is difficult to delimit the respective influences of policy and the drive for personal power. The history of Stalin's rule has certainly been a delicate balance of the two. His elimination of the Old Bolsheviks was policy, but it was also personal revenge for his secondary political and intellectual position during their zenith of power. His handling of the peasants was another example of his power-mania. It is trenchantly demonstrated that to argue the necessity of Stalin's career from Hitler's invasion in 1941 is "very much *post hoc ergo propter hoc*." Three Soviet domestic phenomena, the secret police, the hierarchical and administrative aspects of planning, and agricultural collectivization "illustrate the complex interactions of policy and power" and show the irresistible will of Stalin to complete dominance. In each of these developments, Mr. Menken concludes, his action was governed both by desire for accumulation of personal power and of power for the centralized state.

It is interesting to contrast this view of Stalin as the evil genius of the Soviet government with that of Bertrand Russell, in his *Theory and Practice of Bolshevism*, written in 1920, who maintained that the U.S.S.R. was destined to be a totalitarian, monolithic structure by the very nature of Lenin's actions and premises, regardless of the personalities involved. —**L. B. A.**

"Red Stars in the Sky," Inter Avia, November 1949, pp. 641-49.

A SURVEY OF SOVIET AIR POWER, this article is concerned with the Soviet Air Force and the Soviet aircraft industry.

The various types of Soviet aircraft in operation or in the experimental stage are discussed, from the piston-engine La-11 and jet Mig-9 and Yak-21 fighter craft to the principal types of trainers in use. Numerical strength of the Soviet Air Force in mid-1949 is placed at about 25,000 first-line aircraft and 550,000 personnel, and equipment for first-line squadrons is considered "excellent by any yardstick."

The author is convinced that the Soviet Air Force is fully cognizant

*See also Isaac Deutscher's definitive Stalin (Oxford University Press, 1949) for more detailed treatment of the leaven Stalin the pragmatist worked into practical Soviet government and national policy. —Ed.

of the implications of global strategy. This he induces from the separate place given to the strategic force in Air Force organization, from the fact that forty per cent of the Soviet Air Force is now engaged in strategic functions, and from the emphasis placed on the "polar bombing route."

Although pilot training standards equal those of the West, maintenance training, especially non-commissioned, is unsatisfactory. In all, the following weaknesses of Soviet air power are listed: (1) lack of experience in design of long-range bombers, (2) lack of experience in long-range strategic bombing, (3) lack of night fighters, (4) deficiencies in air defense coordination, (5) deficiencies in training of technical maintenance personnel, and, the "most glaring," (6) neglect of the naval air arm. It is asserted that these weaknesses are rapidly being remedied. All in all, it is held that the Soviet Air Force is "numerically strong, of good operational and technological quality—and improving."

The aircraft industry is given a clean bill of health both as to size and vigor. All told, there are some thirty-seven airframe and engine factories, employing about 440,000 workers. The author estimates the industry's production as 25,000 aircraft during 1949. An interesting discussion is also given of research and development, in which the Russians' difficulty with gas-turbine engines is admitted but their success with liquid and solid-fuel rockets is highly commended.

It is seldom desirable to treat two principal subjects within the confines of a single article. Nine-tenths of this study is an excellent survey of Soviet air power; the last one-tenth is an ineffective attempt to deal with international power politics.—**L.B.A.**

Edgar Salin, "Social Forces in Germany Today," Foreign Affairs, January 1950, pp. 265-77.

THE UNIQUE CHANGES in German society since 1914—an evolutionary process in which the Nazi terror was only a ghastly interlude—are realistically analyzed by Professor Salin in this scholarly article. Virtually dominated by the old feudal order until 1919, the social structure of Germany underwent profound alteration during the astronomic economic dislocation of the early 1920's which completely bankrupted the middle classes upon whom the Weimar Republic was politically dependent, consolidated the reins of the national economy in the hands of the Rhenish "Junkers," and further disillusioned the younger generation of the Social Democratic laboring classes. Contrary to the predictions of Karl Marx, however, the impoverished but idealistic middle classes did not join the ranks of the Communists. Instead they supported the seemingly progressive but irreconcilable Nazi program for bread, liberty, and security for all Germans. The resulting "New Order" of the Nazis was not a "living social body." It merely extended the disintegration of German society to the utmost limit.

Since the diverse policies of the occupational powers have instituted two Germanies, Professor Salin focuses his attention on Western Germany, in which present-day society is particularly rent by the social pressures of the "New Nomads": the *Volksdeutsche* brought home by the Nazis from Eastern Europe, the Volga, and the South Tyrol, the millions made literally homeless by Allied aerial bombardment, and the thousands of

refugees pushed into Western Germany by the Red Army. Out of a total Western German population of 45,000,000, the "Nomads" account for 12,000,000 to 14,000,000 people who are essentially economically destitute and politically opportunistic.

To ensure that the renaissance of a German nation augment the campaign of the West against Bolshevik machinations to dominate Europe, perhaps the world, Professor Salin concludes: (1) the inevitable upsurgence of German nationalism must be viewed objectively by the occupation powers, even to the extent of recognizing the failure of the "denazification" program and the limited "sense of justice" instituted by the Nuremberg Trials; (2) only social democracy, not the bourgeoisie-capitalistic brand, has any realistic opportunity for success in Germany; (3) occupation policies must augment the political independence of the Bonn Government despite the continuing necessity for economic aid and moral support; and, (4) only successful steps toward the integration of all of Europe would furnish effective support for bringing Germany back into the Western family of nations.—**E.M.E.**

Col. Philip Schwartz, "Bombing Accuracy," Ordnance, January-February 1950, pp. 230-233.

HITTING TARGETS ON THE NOSE is the Air Force's goal. The United States Air Force does not advocate indiscriminate area bombing and mass murder of enemy civilians. In examining its bombing policy, aims and not results are the only valid basis for deciding that a course designed to achieve the maximum of victory with a minimum of loss of life for both sides has, or has not, been pursued.

In order to demonstrate the validity of these theses, Colonel Schwartz examines the record of bombing training in the United States prior to World War II, the experiences of the recent war, the testimony of the United States Strategic Bombing Survey as to increase in bombing accuracy between 1943 and 1945, and the trends of postwar development. Conditions beyond the control of the Air Force, directly attributable to enemy action or to climatic variations, have been responsible for such instances of excessive civilian casualties as resulted from bombing missions of the Army Air Forces. He concludes that Air Force personnel are more concerned about accurately hitting military targets than is anyone outside the Air Force. —**C.M.T.**

Leo Szilard, "Can We Have International Control of Atomic Energy?" Bulletin of the Atomic Scientists, January 1950, pp. 9-12, 16.

THE POLICY OF THE UNITED STATES to strive for an agreement eliminating atomic bombs from national armaments originated in 1945 with President Truman. There is no evidence that he has ever given up the hope that this policy may be put into effect. There seems to be a general feeling in the minds of many persons that we ought to try to stop the arms race by a standstill agreement on armaments which will give us a breathing spell. Leo Szilard, Professor of Biophysics in the University of Chicago, does not believe that these policies point the way to the solution of the problem. He foresees failure unless we first review our over-all foreign policy,

because the real issue is the question of what is the main goal of our present foreign policy, especially in Germany.

Agreement will be of no value unless it is based on policies that will reconcile and ensure the vital interests of both Russia and the United States. This article examines proposals for security of European nations, based upon the assumption that the United States would accept the fact that Russia will have a militarily dominant position on the continent of Europe. It is recognized that the feasibility of such policies is doubtful, and that Russia might even then reject a proposal involving atomic inspection. The alternative seems to be an atomic arms race.—**C.M.T.**

George E. Taylor, "An Effective Approach in Asia," The Virginia Quarterly Review, Winter 1950, pp. 28-43.

MR. TAYLOR, Director of the Far Eastern and Russian Institute of the University of Washington and formerly (1945-46) Chief of the Far Eastern Division of the Office of Information and Cultural Affairs of the Department of State, reviews American policy and action in China during and since the war and attempts to formulate a statement for "an effective approach to Asia." For the time being, he says, Communist rule in China should be formally accepted, and trade with China should be fostered to provide for the economic recovery of Japan. Our objective should be "to avoid war with the Soviet Union," but in doing so, to contain its "imperialistic expansion." To do this will require an "appropriate mixture of all the instruments at hand for the implementation of policy—military force, negotiation, economic means, and propaganda." No completely satisfactory solution to every problem can be expected, but decisions should be made with full awareness that gains can be achieved only by taking some losses. Our approach to containing Soviet ambitions in Europe offers the best approach for doing the same thing in Asia.

Mr. Taylor's article appears to be well-grounded in facts. It is in line with much expert opinion, but perhaps it fails, as many other articles on the Far East have done, in not grappling with the East's problem of population, which some observers consider the fundamental difficulty to be overcome.—**W.A.H.**

Benjamin H. Williams, "The Importance of Research and Development to National Security," Military Review, February 1950, pp. 10-16.

THE RELATIONSHIP between research and development and national security has long been known. The Royal Society in Great Britain was formed during the 17th century, partly with the aim of aiding the English in their naval rivalry with the Dutch. In the United States the National Academy of Sciences, the National Research Council, and the Office of Scientific Research and Development became important instruments for winning victory in successive wars since 1860.

Today this relationship has developed to predominant significance. Dr. Williams, member of the faculty of the Industrial College of the Armed Forces, cites numerous illustrations to prove this point, if proof is necessary. The course of research and development is traced through the

necessary stages. Basic research is an essential prerequisite. It is study and investigation carried on for the purpose of gaining new knowledge and understanding. Facts are uncovered and relationships between facts are perceived. Without strong basic research progress soon slows down. The United States has been weak in basic research and pure science as compared to European nations. The need for high class scientists, of which there is a perennial shortage, is only in degree more critical than is the necessity for developing the art of administration of scientists. This administration requires an appreciation of scholarship and an understanding of the methods by which scholarly results are obtained. The mobilization of information for scientific work presents difficulties. Facts which are discovered in one laboratory must be made readily available to scores of scientists working elsewhere on the same problem, or progress is slowed down and frustration resulting from command performances may even enter basic research.

Great is the responsibility of the military services in the field of research and development. If another war is to come, it is certain that the research and development part of that conflict is being fought at this moment, for adequate basic research is seldom possible after a war starts. In 1947 eighty per cent of the Government's total expenditures was made by the military services. The Government provided, in that year, fifty-six per cent of all public and private budgets for research and development in this country. Eighty-six percent of such budgets came from private or corporate funds in 1930. The responsibility for the administration of scientists is shifting more and more from private or corporate organizations to the armed forces. The art of this administration must be mastered by all concerned.—**C.M.T.**

Recommended Reading

Aviation Week, Feb. 27, 1950, featuring the "Seventeenth Annual Inventory of Air Power."

H. R. King, "Military Aircraft," *Flight*, Jan. 26, 1950, pp. 97-134.

Lt. Col. P. M. Morril and Capt. W. G. Bell, "1900-1950, A Half-Century of War." *Armored Cavalry Journal*, Jan.-Feb. 1950, pp. 4-11.

Lieutenant-Commander G. W. R. Niholl, R.N., "The Functions of Air Power," *Royal Air Force Quarterly*, Jan. 1950, pp. 17-20.

Quartermaster Review, Jan.-Feb. 1950, featuring the Dept. of Defense.

Col. N. F. Silsbee, "Combat—8 Miles Up," *Skyways*, Feb. 1950, pp. 14-5, 43, 45, 46.

M. H. Williams, "Weapon of the Next War—I," *Technology Review*, Feb. 1950, pp. 203-204, 220, 222, 224, 226.

Periodical Press reviews are by Mr. Littleton B. Atkinson, Dr. Eugene M. Emme, Dr. Raymond Estep, Dr. Hilton P. Goss, Dr. Woodford A. Heflin, Dr. R. Earl McClendon, Mr. Robert W. Schmidt and Dr. Charles M. Thomas, all of the Studies and Research Branch of the AU Library directed by Dr. Thomas.

AIR ANTHOLOGY

AIRLIFT TO VICTORY*

Men on the way to war, men who conducted the air passage, and men coming home—selections representing the story of the Air Transport Command by its wartime Chief Historian, Novelist Oliver La Farge.

Ave atque Vale

YOU SAW THEM at the flyaway points for ferried aircraft, at Morrison Field in Florida, Mather Field near San Francisco, Presque Isle in Maine. They tended to be of medium stature or a little over, rather lean, in good physical condition, not at all stupid or heavy looking, and above all, young. The beards they were so fond of raising could not disguise that quality. They were usually not very good beards, perhaps they got better later; they were likely to be rather thin, fine, curly, and to make a circle around the mouth and the lower part of the chin, leaving the lower lip and front of the jaw clear, as in portraits of mediaeval kings.

Before them lay their first real departure from the nest, the long flight over an empty ocean where there were no emergency landing fields, and if all went well, the time when they would pass the point of no return, irrevocably committed to their venture. Beyond that flight, out of England, or Australia, or Saipan, or India, or China behind the Himalayas, lay combat. They were afraid, in part, as any reasonable man must be afraid of known dangers which he has made up his mind to face. They were also afraid with the more difficult fear of the unknown. They had trained and strained towards this final departure month after month, it was their goal, not to be here

*Title and subtitles have been added by the Editor for presentation of the selections out of context.

and readying to go would have been a personal disaster for each one of them, and yet now that they were here, they seemed to feel a bewilderment. A very great change was about to take place. It was the feeling of the canoe caught in the pull of the rapids, the point at which one begins playing for keeps.

These things showed in their faces as they lounged about with an emphasized insouciance. They did not intend that any such things should show. They were combat pilots and crewmen, the pick of the land, teams finely blended and trained and strung up for battle. They were the *raison d'etre* of the Air Corps, and whatever might happen to any of them individually, they knew with great certainty that nothing can stop the Army Air Corps.

They would not willingly show a trace of nervousness, they lounged about, consciously apart from the A.T.C. personnel who served, guided, and prepared them, intimate among themselves, the crews tending to hold together. They preferred to wear their monkey suits with various articles stuck onto the awkward-looking pockets in front of their shins. Their weapons might have been checked, or the magazines simply removed from their pistols, but they liked to wear their underarm holsters and their long knives. Their caps were the most flexible obtainable, and commonly they jumped upon them, twisted them, wet them, did everything possible to make them completely limp and give them "that old ten thousand-hour look." They wore these caps adhering miraculously to one side or the extreme back of the head. With numerous exceptions, they tended to affect as much sloppiness as they could get away with. It was part of the casualness, the attitude of the trained and ready airman killing time, sweating out the time until he should be told, "Number Easy eight six zero six, you will take off at zero three hundred hours tomorrow morning."

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They and their aircraft were checked in every possible way. The compasses were tested. The navigators' instruments were tested and, when necessary, adjusted. Both the pilots' and navigators training and experience were ascertained, to be sure that as a group they were ready for their long flight. It was found that many crew members had not properly completed the arrangement of their personal affairs—allotments, powers of attorney, wills, and insurance—so these were gone

wore his three ribbons, which had become rather frayed by the end of 1944. There was no going home after thirty missions for him, there were no automatic Air Medals and Distinguished Flying Crosses, no battle stars. He probably never would have more over his pocket than he had earned in 1942, although up his sleeve was slowly creeping a golden ladder of overseas stripes. He would stay on, flying where he was told to fly, until that thing called Washington, which was as unknown, mysterious, powerful, and incomprehensible to him as it is to the average Indian on his reservation, decreed that he might come home.

We had a couple of drinks of watery, war-time Scotch whisky at the bar, then as we went to chow, I stopped to speak to a friend, so he went in alone. I ran into him again as I came out, pacing the hallway, shaking with helpless anger and humiliation. At chow he had sat next to a "happy warrior," a P-38 pilot who had completed his missions and was now on his way home via A.T.C. with his ribbons and oak-leaf clusters and battle-stars brilliant and new upon his chest. There had been technical talk of flying, and Weaver, who had been a pilot while the pea-shooter boy was in school and seen service overseas while he was making up his mind to volunteer, took exception to a procedure he described. The fighter pilot rounded upon him, wanting to know by what right he put his two-bit's worth in when all he did was chauffeur a lousy transport up and down Britain. The young whelp got away with it for the same reason that so many of his fellows got away with much the same thing, which was also the reason why it hurt the men of A.T.C. so badly. No matter how well they knew the needfulness of their job, no matter that you do not pick your assignment in the Army but you do what you are told, no matter what their inner reservations about some of these gay young blades, no healthy man could help respecting the ones who had been in mortal combat. No man worth his salt in the Air Transport Command who did not have deep within him a regret that his duties would not lead him into combat.

Therefore they took it, and they got it on the chin, the nasty catchwords, "Allergic To Combat" and "Army of Terrified Civilians." These were said, not with a smile, but with full intent to wound. It happened to me again in 1947, when I encountered a man who had been an officer (and served with outstanding heroism, I assume) with a Troop Carrier outfit. The men up front know very well how necessary to them are

the men behind them. They know that they are under fire and that others are serving in safety, not through choice, but through the decisions of an authority from which there is no appeal. Yet among the ones up front there is, at least in the American Army, a proportion which cannot abide the thought that anyone failed to endure what they endured, and who exploit the honor which all men willingly pay them to enjoy themselves with sneers and insults.

This was by no means universal. The thousands of wounded who found themselves within the United States forty-eight hours after the stretcher-bearers picked them up, the tens of thousands of ground troops whose battle service ended with that single swift ride home, were often touchingly grateful to the organization which so carried them. Curiously, it was our fellows of the Air Corps who were the worst.

You could not argue with them. Somehow you could not suggest that three years of desolation in one outpost after another could in any way be compared to their months of death and horror. You could not in any way compare thousands of hours of flying all over the world to even the briefest of combat missions, nor indicate that air raids on your base were comparable to battle, nor bring yourself to inquire just how much enemy interception this particular returning warrior had, in fact, encountered. All you could do was take it, and the men of the Air Transport Command did take it. They did more, they poured it onto themselves. Their real pride in their great achievement warred with an inner shame that they, personally, had not been shot at.

It was characteristic of these men that morale was highest on those bases which were either under enemy attack or overwhelmed with work under difficult conditions. Given a poor runway, inadequate equipment, a foul climate, too few men, and aircraft coming through at a rate that had all hands working far into the nights. desk officers unloading cargo, mechanics dreaming up repairs that are supposed to be made only at the great depots, and morale went up like a balloon. The planes going through told them that they were important in the war. They could see that what they were doing supported the men up front. Their unrelenting efforts placated them for not being up front themselves. While it lasted, they were content.

Of all the bases I visited, the morale was highest at two: At the base in northwestern Scotland where a handful of men, in

darkest secrecy, ran a shuttle line across enemy-occupied Norway to Sweden, and at Okinawa where another handful did the work of a hundred or more under nightly air attack.

Such was the Army of Terrified Civilians. The ones I have described do not add up even to a sample. They knew they were not heroes. They had a job to do and they did it. Late in the game, flights over the Hump were recognized as partaking of the nature of a combat mission and those flyers began collecting medals.* On the whole the A.T.C. men expected nothing but the long work, and the satisfaction of having a part in making something new and great.

The units requisitioned them by M.O.S.—Military Occupational Specialty—which is indicated by a number. Send us a 501, a 274, both in the grade of corporal, four privates 042's, a 9003 not higher than captain, and a second lieutenant 2421. Thus they were requisitioned and thus, in the main, Headquarters Personnel secured them from wherever they might be had. Sometimes the request was more specific: send us one Portuguese-speaking propeller specialist. In the wholesale moving of men you have to be impersonal, to get and send out "warm bodies" and trust to the law of averages to provide the necessary innate abilities. The good personnel officer—and A.T.C. Headquarters had many—was personal and human when he could be, but that was not often.

They were shipped out by air and by boat, the 501's, 274's, 379's, 2010's and the rest. They worked hard, learned new skills on the job, got promoted, even got decorated. They went on benders, went A.W.O.L., got into fights, and landed in the clink. They went off their heads. They wrote home desperately. They studied the local botany. They got married. They stole. They prayed. They were men and, later, women, human, varied, unequal. They rose to emergency after emergency, worked around the clock, and made the whole vast machine function.

Of Thee We Sing

FROM THEN ON, the regular flights eastward to California were loaded with returning men, men who knew that they were coming home for keeps. Often enough they came to the aircraft direct from the forward areas, still yellow with atabrine, in their gray-green monkey suits, relieved just the other day from the endless, deadly business of hunting down Japanese

*This was principally the result of persistent efforts on the part of Brigadier General Earl S. Hoag.

hold-outs. They came from fox-holes or from tents which were solid with tropical heat and heavy with the eternal dampness, from open-air chow-lines and cold C-rations.

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They climbed on board at the ends of the line, for a flight through a long morning to Guam, a chance to stretch their legs there, and then a solid ten hours over the emptiness of the Pacific, time enough to become bored, to have boredom die away a hundred times in the face of the thought of home, and after the transport had hurried into the westward-speeding night, to sleep, uneasily at first, then deeply, in the sound of the engines. They wakened to the sandy bleakness of Kwajalein, and dozed and turned and talked through nine hours to even more desolate Johnston. Day, night, and day, and at last Hawaii. Between them and the real United States, of which Hawaii was a sort of foretaste and sample, there remained only a slightly greater distance than a North Atlantic crossing. If anyone wants to know just how vast are the reaches of the Pacific, let him fly it.

At Oahu they lay over and got some sleep, before the final early morning departure. On this last leg excitement mounted, quietly, almost imperceptibly. Eleven to twelve hours of empty ocean, a box lunch, the very rare sight of a ship on the water. Always the sense of home grew stronger. Freedom of talk with such officers as might be on board increased. Coming in one time I sat next to a big, solid, blond, young combat infantryman. At first he was quiet. In mid-flight he began plying me with questions about flying. From then on we talked freely. The islands of the California coast came in view, then the coast itself, San Francisco, the Golden Gate. The men ran to the portholes like children, craning to one side and the other. They were not from here, but this was part of it. They could not see enough.

The landing warnings flashed on, "No smoking. Fasten Safety Belts." Everyone took his place. We came over Hamilton Field, circled, waited our turn, came in. As the wheels jarred on the runway the infantryman, acting as if he could not help himself, threw off his belt and stood up. Others were on their feet, although taxiing as we still were at high speed, the going was bumpy.

Then the man cried out, in a half strangled, keen voice, one word: "America!" I have never heard it said like that before or since.

Editor's Notes . . .

ONE THOUSAND WORDS TO HEAR are being searched out to make up an official airman's vocabulary. One thousand words are needed with sounds that can not be confused with the sounds of other words. These words must also have certain precise meanings. If they can be found, Civil Aeronautics Administration experts believe that a substantial reduction in air accidents will result from making sure that air-to-ground and other communications are clearly and completely understood. They are certain that under some circumstances an increase in the intelligibility of a term is equal to an increase in the signal strength. Accordingly, a staff of experts in the psychological section of the CAA is hard after words that will penetrate the defects of radio transmission and the noise of aircraft operation and also survive the vagaries of sectional pronunciation.

Wartime investigations proved that some words such as *woodpecker*, *dynamite*, *cornfield*, *highway*, and *porcupine* are very intelligible but that words such as *food*, *rings*, *Eleanor*, *nine*, and *dry* are extremely susceptible to confusion. On the model of the successful phonetic ABC's of *Able*, *Baker*, and *Charley*, the CAA began to hunt for good words by examining words frequently used in traffic-control communications. Hundreds of the recording loops on which the communications of tower operators are recorded are being checked to build up a list of the terms most frequently used. After undergoing intelligibility tests, the words failing to measure up to standards of clarity are to be replaced by acceptable synonyms. Through this process the CAA hopes to build up and establish a standard procedure vocabulary.

PLANS FOR THE XB-52 are being examined as part of the continuous review of existing and planned programs, but it has not yet been decided whether or not this aircraft will be dropped from its present status of planned successor to the B-36. Studies are being made to determine the extent of improvement the B-36 may be expected to attain with changes in design and power.

THE EARTH'S ATMOSPHERE is currently defined as consisting of four concentric gaseous layers: the troposphere, stratosphere, ionosphere, and exosphere. The first layer of the earth's atmosphere, the troposphere, extends from sea level to about 35,000 ft at middle latitudes, but varies from 54,000 ft. at the equator to 28,000 ft. at the poles. The stratosphere extends from 60 to 70 miles, the ionosphere extends some 186 miles, and the exosphere merges with interplanetary space.

In a thunderstorm project undertaken by the U.S. Weather Bureau, thunderstorms were flown into at different altitudes and the results

recorded. While this was the most comprehensive storm study ever undertaken, it merely proved what was already known—that thunderstorms are rough above six thousand feet and turbulence is great in the dark areas. The first rule of all storm flying is to go underneath, terrain permitting. In the lower atmosphere beneath a storm the air is not too violent, as there is little difference in air temperature. While flying low, a pilot avoids much turbulence and also hail and lightning. Lightning does hit between cloud and ground, and between two different clouds, but it is worst within the storm itself.

AIR FORCE JET PILOTS in the future will do their first high-speed "flying" in the Link Jet Trainer, which simulates jet-aircraft flight, combining training in techniques of flight and engine control and radio navigation. Both the student under the hood and the check pilot occupy places inside the new trainer. The instructor no longer checks a "Crab" path across the top of a separate table. Controls, instruments, and indicators function just as they do in actual flight. Rates of roll, climb, and acceleration are duplicates of similar aspects in high-speed plane performance, and the controls are loaded so that pressures vary with air speed. A series of emergency controls enable the introduction of a wide variety of operating difficulties.

A SPEED of more than ten times the speed of sound has been attained for the first time in a new hypersonic wind tunnel designed and built for the Army Ordnance Department at the California Institute of Technology. The new Ordnance-CalTech tunnel operates continuously, and air velocities of Mach 10 can be maintained for any length of time desired. The tunnel will be operated under Ordnance Department contract and will be used to obtain basic information about the design, performance, and instrumentation of tunnels for supersonic speeds. Basic experimental data on shock waves, boundary layers, and the flow past models at supersonic speeds will also be obtained. The test section, in which the models of missiles are mounted, is 5x5 inches, although the entire test section stretches to an over-all length of four feet. An optical system is used to photograph the fast moving air as it speeds past the model in the test section.

THE GREATEST PROBLEM to be encountered in possible future interplanetary travel is the accumulation of an adequate energy supply which would enable a space ship to overcome the gravitational field of celestial bodies, particularly that of the earth. The necessary amount of energy can hardly be procured by chemical fuels, and yet atomic energy, in its utilization for rocket-type power plants, has not reached the stage of perfection which would make it applicable for the solution of interplanetary travel. Eventual production of missiles for outer space is now a probability, but it seems that it will be extremely difficult to attain velocities high enough for orbiting missiles with rockets, because it is necessary for the

propellant burned during the last part of the burning stage to be wasted in accelerating a heavy mass of structure, such as large empty propellant tanks, fins, etc., that is no longer necessary for operation of the rocket. This situation may be avoided by designing the structure so that the unnecessary parts can be dropped off as soon as they are no longer needed.

The satellite rocket, which revolves around the earth like a satellite after its fuel supply has been exhausted, has definitely become a technological possibility. It needs to be but a fraction of the size of a manned satellite. An unmanned but instrument-equipped circumglobal satellite would be a valuable aid to science, since it could be used to transmit information about the cosmic-ray density near our planet but outside its atmosphere, the density of interplanetary gas, the temperature a body will assume in space near earth, and the drop in temperature which takes place when it enters the shadow of the planet. The orbits of satellite rockets can be calculated by well-known astronomical methods. Naturally there are quite a number of problems still to be solved before beginning to design one. Probably a three-step rocket will be needed to establish a small artificial satellite. On the basis of two assumptions it is possible to calculate the behavior of a required three-step rocket. One of these is that the mass ratio of each of the three steps is the same, namely, 3.5:1, which would result in a theoretical velocity of five-fourths of the exhaust velocity. The other assumption is that the exhaust velocity was assumed to be 7700 fps or about ten per cent higher than that of the V-2 motor. This means that each step, independently, would attain a theoretical velocity of 9625 fps. A three-step rocket with a take-off weight of 103 metric tons seems to be within reach of present-day rocket engineering.

THE INVENTION OF MAGNETIC FLUIDS with viscosities controllable as a function of magnetic flux density may lead to new clutch developments. Other proposed uses will be found in shock absorption, recoil mechanism, and the vibration damping of aircraft control surfaces. The fluid consists of finely divided iron particles, usually spherical, suspended in an appropriate medium. The space between three clutch plates (one connected to a motive force and the other two connected to the load) is filled with the iron-oil mixture. A coil is used to establish a magnetic field normal to the surfaces of the plates and through the interspersed fluid. The transferred force between clutch plates varies directly with the degree of magnetization of the separating fluid and thus regulates the torque of the clutch.

CORRECTION.—Mr. J. M. Spaight, author of "A Matter of Nomenclature" in our Fall issue writes us that the description of strategic bombing as "the clumsiest, most brutal and most wasteful of all forms of warfare" ascribed to Major General J. F. C. Fuller's *The Second World War* was correctly ascribed by him in his manuscript to Professor Cyril Falls' book of the same title. Our files reveal that Mr. Spaight did so correctly document his quotation.

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