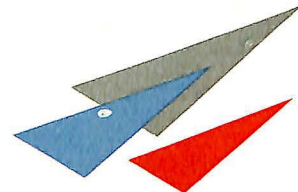


AIA
FILE COPY
NOT TO BE GIVEN AWAY

AIA



1958
ANNUAL
REPORT



AIRCRAFT INDUSTRIES ASSOCIATION
OF AMERICA INCORPORATED

AIA OFFICERS

Chairman of the Board C. J. McCARTHY
Chance Vought Aircraft, Inc.

Vice Chairman DEWITT C. RAMSEY

President ORVAL R. COOK

Vice President J. S. McDONNELL, JR.
McDonnell Aircraft Corporation

*Vice President and
Western Region Manager* LELAND D. WEBB

Secretary-Treasurer HARRISON BRAND, JR.

EXECUTIVE COMMITTEE

President, AIA ORVAL R. COOK

Vice Chairman of the Board, AIA DEWITT C. RAMSEY

Chance Vought Aircraft, Inc. C. J. McCARTHY

McDonnell Aircraft Corporation J. S. McDONNELL, JR.

Boeing Airplane Company W. M. ALLEN

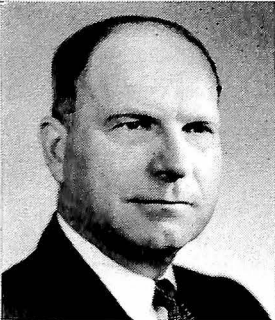
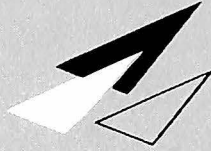
*Grumman Aircraft Engineering
Corp.* L. A. SWIRBUL

BOARD OF GOVERNORS

JOHN A. LAWLER <i>President, Aeronca Manufacturing Corp.</i>	L. A. SWIRBUL <i>President, Grumman Aircraft Engineering Corp.</i>
VICTOR EMANUEL <i>Chairman, Auco Manufacturing Corporation</i>	L. A. HYLAND <i>Vice President, Hughes Aircraft Company</i>
JOHN P. GATY <i>Vice President, Beech Aircraft Corporation</i>	F. R. KOHNSTAMM <i>President, Jack & Heintz, Inc.</i>
L. P. FANEUF <i>President, Bell Aircraft Corporation</i>	ROBERT E. GROSS <i>Chairman, Lockheed Aircraft Corporation</i>
M. P. FERGUSON <i>President, Bendix Aviation Corporation</i>	GEORGE M. BUNKER <i>Chairman, The Martin Company</i>
W. M. ALLEN <i>President, Boeing Airplane Company</i>	J. S. McDONNELL <i>President, McDonnell Aircraft Corporation</i>
DWANE L. WALLACE <i>President, Cessna Aircraft Company</i>	J. H. KINDELBERGER <i>Chairman, North American Aviation, Inc.</i>
C. J. McCARTHY <i>Chairman, Chance Vought Aircraft Inc.</i>	MUNDY I. PEALE <i>President, Republic Aviation Corporation</i>
C. J. REESE <i>President, Continental Motors Corporation</i>	CARL G. HOLSCHUH <i>Executive Vice Pres., Sperry Rand Corporation</i>
J. V. NAISH <i>President, Convair, a div. of Gen. Dynamics Corp.</i>	J. D. WRIGHT <i>Chairman, Thompson Ramo Wooldridge Inc.</i>
R. T. HURLEY <i>Chairman, Curtiss-Wright Corporation</i>	H. M. HORNER <i>Chairman, United Aircraft Corporation</i>
DONALD W. DOUGLAS, JR. <i>President, Douglas Aircraft Co., Inc.</i>	ALBERT BOYD <i>Vice President, Westinghouse Electric Corporation - Defense Products Group</i>
R. S. BOUTELLE <i>Vice Chairman, Fairchild Engine & Airplane Corp.</i>	ORVAL R. COOK <i>President, Aircraft Industries Association</i>
C. W. LA PIERRE <i>Executive Vice Pres., General Electric Co.—Atomic Energy & Defense Products Group</i>	DEWITT C. RAMSEY <i>Vice Chairman, Aircraft Industries Association</i>

1958 ANNUAL REPORT

<i>Page</i>	
2	President's Message
8	Organization and Functions
10	Export Service
12	Industry Planning Service
18	Public Relations Service
21	Technical Service
30	Traffic Service
33	Helicopter Council
34	Utility Airplane Council
36	AIA Member Companies



TO THE MEMBERSHIP

The fiscal year ended October 31, 1958, has been one marked by signal achievement, even in the face of extreme pressures and great changes in the aircraft industry's scope, base and methods of operation.

The year, which began in an atmosphere of national alarm over Russia's manifestations of swift scientific and technological progress, ended on a much more optimistic note. In those twelve months the United States had placed its own satellites in orbit. We had advanced both our intermediate-range and intercontinental ballistic missile programs with production under way on the two IRBM's. And we had rounded out a complete family of other guided missiles for both offense and defense.

There have been failures, of course, but from each we have gained experience and knowledge and, in very many cases, valuable scientific data which have lessened or nullified the loss.

In non-military areas this nation had shot a moon probe over 79,000 miles into space—the greatest altitude any man-made vehicle had yet attained. While the ultimate end (orbit of the moon) was not attained in this effort, it paved the way for other imminent steps in the lunar exploration program. We also rolled into public view what may be the first manned spaceship. And, of extreme importance to the future of world intercourse, the fiscal year's end saw the first American jet transport put into service, with a backlog of around \$3 billion worth of turbojet and propjet airliners to follow on steady production schedules.

Beyond all of this, significant gains also have been made in research, development and planning for even greater future achievements in air and space.

Changing Conditions

These were but fulfillments, of course, of long years of military-industry and civil-industry planning and work. The urgency of popular demand that we gain and maintain the lead in air and space resulted in accelerated progress. Congress reacted promptly and favorably to public pressures for more emphasis on research and development. Supplemental funds were voted for 1958 and a somewhat larger defense budget for 1959. The national debt ceiling was raised to permit the Government to continue payments for essential equipment which was on order.

But despite these positive moves Government concern over the costs of modern weaponry and of space exploration brought realignment of priorities, changes in research and development and production contracts and tighter controls over expenditures. Greater demands were made on the aircraft industry to increase its own financial and business risks. The Defense Department policy, announced just before the beginning of the last fiscal year, reducing progress payments to contractors for work accomplished and re-

quiring much greater investment by the companies in even their cost-plus-fixed-fee business, was continued. Such requirements have been exceedingly difficult and extremely large borrowings have been necessary for the major prime contractors.

Expenditure Controls to Continue

Any thought that defense expenditures will be increased in large degree in the coming fiscal year has been dispelled by the military services.

The industry has been told that strict controls will be kept, not only on total military expenditures for the coming year, but on the *rate* of expenditure by quarters. We have also been informed that, in event of threatened excess of spending, it may be necessary to cut back programs to keep within limits.

This situation is not greatly different from that which arose in the latter part of fiscal year 1957, with one important exception. We are given ample notice this year, where in 1957 our companies were caught totally unprepared and the disruptions and confusion that resulted were both costly and damaging.

The aircraft industry will continue to do everything possible to cooperate with the services in keeping costs down and expenditures within planned limits. However, it seems fair to warn that the enormous complexity of developing and producing modern weapons, plus scientific progress of break-through proportions, are not always conducive to strict month-by-month expenditure apportionment. If the penalty for such variable and imponderable factors is to be cut-back, stretch-out and cancellation, then the effects on the industry member of the team, as well as on the total defense effort, could be profound.

It is most earnestly to be hoped that it will not be necessary to impose sudden reductions of work predetermined to be important. The consequent loss of time, money and efficiency is not easily recovered.

The changing demands in military requirements and the cut-backs and cancellations of contracts necessitated by the Government's critical fiscal situation has brought about a steadily lowering level of production activity. Employment declined from 982,000 to 743,000, and is expected to level out at around 750,000, at least for the next several months.

It is pertinent to note that there has been a gradual but continuing change in the composition of the industry's labor force. Despite smaller production volume and reduced employment, payroll costs have remained high. This is explained by the nature of the work being performed by the industry. Volume production has given way to shorter production runs of complex, high performance weapons which require more highly skilled employees, greater emphasis on research and testing, and more exacting and elaborate development, testing and production facilities.

New Government Agencies

During the year, there were several governmental actions of unusual significance to industry. Foremost, especially from the long-range viewpoint, was the establishment of the National Aeronautics and Space Administration, which was charged with the responsibility for the nation's efforts in the peaceful exploration of outer space. The aircraft industry strongly supported the choice of the National Advisory Committee for Aeronautics as the nucleus for this new agency, as opposed to a new organization without an initial foundation. Another new organization whose activities will affect the industry is the Federal Aviation Agency, charged with administering the nation's airspace.

Also of great importance to the industry was the reorganization of the Department of Defense, which resulted in an increase in authority and responsibility being vested in the Office of the Secretary, especially in the fields of research, development and production. This has already resulted in immediate and more positive decisions, reducing the vacillation and uncertainty which once delayed many important projects.

Legislation

Important legislative actions in which the industry was vitally interested included extension of the Renegotiation Act for six months instead of two years, as had been originally proposed. The Association testified against extension of the Act in its present form. The Chairman of the House Ways and Means Committee has given assurance that full-scale hearings on the subject would be held by his committee in the first session of the 86th Congress.

The Association called to the attention of Congress the hazards to the Defense Department and to the industry contained in H.R. 8002—a bill designed to put Federal budgeting on an annual accrued expenditure basis. This, as originally proposed, would have had the effect of rebudgeting contract funds each year, lapsing unexpended balances and delaying work on contracts whose funds had run out until new assignments could be made. The interruptions and delays resulting from such procedure would have been extremely serious. As a result of industry's representations, as well as those of other interested organizations, a substantially amended version of the legislation was passed which eliminated the significant objectionable features.

Also passed and made a part of permanent law were certain important in-time-of-emergency provisions of Title II of the First War Powers Act, which permits the President to authorize any department or agency exercising functions in connection with national defense to enter into contracts or amendments or modification of contracts, or to make advance payments with-

out regard to other laws relating to Government contracts whenever such action facilitates the national defense. The Association supported this legislation.

Because of insufficient time for study, no Congressional action was taken on industry-endorsed legislation to provide indemnification for extra hazardous risks. It is anticipated that legislation on this subject will be considered in the coming Congress.

From the standpoint of legislative affairs, the past year was one of the most active in the Association's history, and in anticipation of an equally active year for 1959, Association staff and industry committees are at work preparing the industry viewpoint on legislative matters which affect its capabilities.

Introduction of Jet Transports

The Civil Jet Age in the United States got under way on October 26 when the first American-built jet transport was placed in service with a scheduled airline. This plane was the first unit of a total of more than 600 turbine aircraft ordered by domestic and foreign airlines. This large-scale re-equipment program will result in great benefits to the air traveler in the form of reduced time in transit, more luxurious and less fatiguing flight. In the United States it also benefits the defense structure because of the increased lift capacity available to the Civil Reserve Air Fleet.

This long step in civil air progress was achieved, not only through the tremendous design and construction effort which went into the planes but, perhaps more importantly, through a major investment program which made their manufacture possible.

In order to finance the technical end of the program, the aircraft industry invested some \$1.6 billion for research, development, testing, facilities, promotion and other miscellaneous costs before the first airplane was delivered. This represented a huge investment for an industry whose earnings rate has consistently been among the lowest, percentage-wise, of all industries, and it involved large-scale borrowings.

To finance the purchase of these turbine planes and their related equipment, the airline industry is making similar large investments and borrowings at a time when its financial condition generally is not good, due primarily to increased operating costs and Government-imposed limitations on fare rates. The aircraft industry firmly believes that a financially stable airline system is important to the national economy and endorses the view that the airlines should be permitted to regain financial health.

Airports and Airways Modernization

The introduction of jet transports emphasizes the importance of adequate airports and adequate control of the nation's airspace to insure maximum utilization commensurate with over-riding priority for safety; and, at the same time, to insure availability of the air-

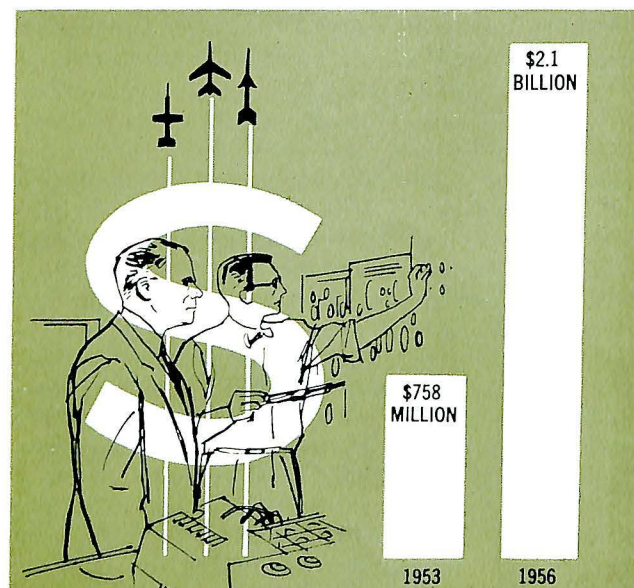
space to airlines, the military, general aviation, and aircraft manufacturers.

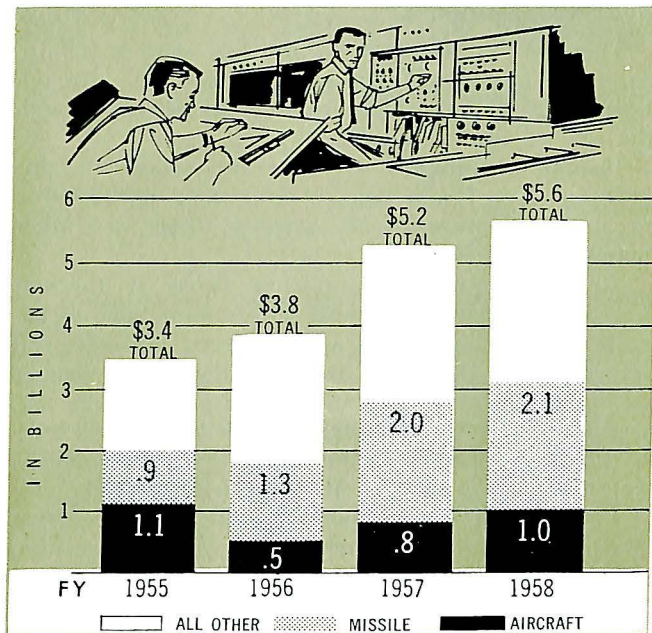
The establishment of the Federal Aviation Agency under the leadership of Mr. Elwood R. Quesada is an important first step in achieving this goal. The AIA has pledged its assistance and support to this Agency in its efforts to implement the recommendations of the Airways Modernization Board. At the same time, the Association was disturbed that legislation for Federal support of airports was vetoed. It is hoped and expected that it will be reconsidered when the 86th Congress convenes.

Problem of Surplus Transports

The deliveries of new jet and turboprop transports to the nation's airlines and to military customers, resulting in the availability of substantial numbers of used piston-engined transports, is posing a severe problem to all aviation interests. Estimates of the totals of these aircraft surpluses range from 1,000 to

The unparalleled technical requirements for aircraft, missiles and spacecraft have caused sharp increases in research and development investment. For example, R & D expenditures by both government and industry for these programs increased from \$758 million in 1953 to \$2.1 billion in 1956, a gain of 177 per cent. This compares with an average increase of 76 per cent for all industries for research and development financed by government and private sources. Research and development expenditures are expected to continue at a high level to meet the demands for the highly sophisticated aeronautic and astronautic systems on which the aircraft industry is now working.





The total defense research and development effort has increased from \$3.4 billion in Fiscal Year 1955 to \$5.6 billion in Fiscal Year 1958, a gain of about 40 per cent in three years. The aircraft and missile portion accounts for more than half of the total research and development program financed from all appropriations of the military services. In addition, the aircraft industry in the years since World War II has invested \$1 billion of its earnings in research and development programs and facilities and will have expended another \$1 billion by 1960.

3,000 units. As a result, industry representatives and cognizant Government agencies have held a series of conferences to devise a solution to what now appears to be an impending transport surplus. While it is far too early to appraise the results of these Government-industry efforts, solutions to the problem will undoubtedly be found during this next year.

A moderate decline of about 3 per cent during 1957 in overseas shipments of military aircraft and related equipment was largely offset by increased direct factory export sales. During 1957 export sales of new transport aircraft increased 36 per cent in value and 35 per cent by units—the lighter, utility type aircraft moved up to 19 per cent in value and over 13 per cent in units.

Continued leveling off of aeronautical exports has been manifest during 1958 with increased non-military shipments, especially heavier transports, offsetting the military aid decline. The outlook for 1959, bolstered by overseas deliveries of the first from the mounting order backlog for jet and propjet airliners, appears most encouraging.

Space Efforts

During 1958, the aircraft industry continued its efforts, started well before the launching of the first earth satellite, toward development of vehicles and equipment for space exploration. Its vast technological background, acquired in decades of research and development on aircraft, missiles, and their control and guidance systems put the aircraft industry in an ideal position to develop these newer, extra-atmosphere vehicles. The authorities in charge of space programs have placed with industry the major developmental responsibilities in the national space effort, as is evidenced by such assignments as development of an orbital bomber, a stabilized reconnaissance satellite and a manned rocket-propelled spacecraft.

Guided Missiles

Production of manned aircraft continued to be the aircraft industry's major assignment in the defense effort, but development and manufacture of guided missiles for the inventories of the armed services involved a much greater proportion of the industry's defense workload than it had in the past.

The pattern of progressively increased emphasis on guided missiles which started in 1951 was again reflected in 1958. From a \$21 million expenditure in 1951, missile programs have increased more than a hundredfold to 1958's \$2.7 billion. Throughout this period of missile growth, the aircraft industry consistently maintained its position as the top supplier of guided weapons and associated equipment. Such was again the case in 1958.

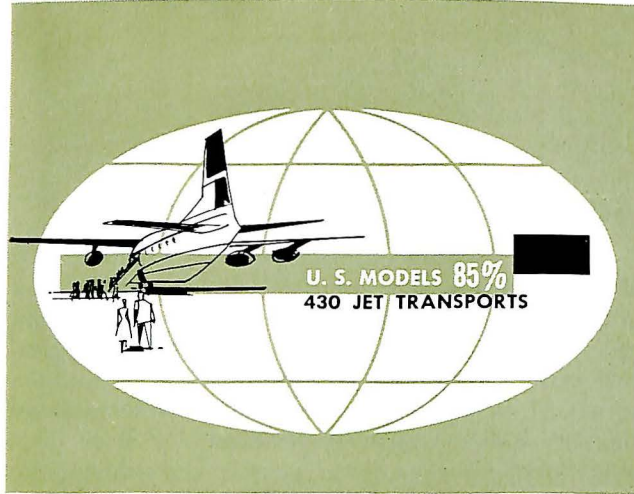
A recent survey shows that aircraft industry companies hold prime contracts for most of the 40 missiles in development or production and are building one or more of the key elements for all of them.

At the same time, the industry adopted tighter-than-ever methods of cutting development and production costs in an effort to combat the steadily increasing costs of missile hardware which result from increased performance requirements and their attendant complexity.

Research and Development

The changing character of the industry is dramatically shown in the budgets for aircraft and missile research and development programs. Since Fiscal Year 1955, when the amount for missile research and development was less than aircraft, the missile budget in FY 1959 is nearly four times that for aircraft research and development.

Research and development expenditures by industry have been substantial, and the trend is toward even larger industry investments. In the ten years following the end of World War II, our industry invested \$1 billion of its earnings in research and development programs and facilities for aircraft and missiles, and



Preference for U. S.-built commercial airliners is dramatically shown in the orders placed for turbo-jet transports by 39 U. S. and foreign airlines. The latest tabulation shows that out of approximately 430 jet transports on order for delivery starting this year through 1961, more than 85 per cent are U. S. models. This overwhelming endorsement is a tribute to the succession of safe, economical and comfortable transport planes designed and produced by the U. S. aircraft industry. The U. S. manufacturers have a global program of after-sales service to customers that insures continued safety and maximum operational time for their aviation products.

by 1960 will have invested in excess of another \$1 billion.

Industry Finance

Some 82 per cent of our revenues are derived from Government contracts for weapons for the three services. A slightly larger percentage of our research and development efforts are for military purposes. An even higher percentage of the funds the industry is spending for new facilities—new plants, new test centers, new tools—are for military use.

The companies comprising the Aircraft Industries Association are now developing and producing by far the largest percentage of the new weapons for our military inventories. Of the total dollars being spent on aerial vehicles—aircraft and missiles—at least 85 per cent is contracted to these companies. A large percentage of this money does not stay in our hands but is passed along to the tens of thousands of suppliers and subcontractors who comprise the total defense industry complex.

The transition from the weapons of World War II to those in use now, and those that we see coming over the horizon, has created financial problems of a magnitude heretofore unknown in the aircraft industry.

A major problem confronting top management in our industry today is how to acquire the capital needed for new production and test facilities; to finance an ever-increasing amount of inventories and accounts receivable; and to carry on the additional research and development work that will be necessary to exploit fully the rapid advances made during recent years in all of the sciences.

Sources of Capital

There are, of course, three principal ways to acquire capital—(1) through retained earnings, (2) through borrowings, and (3) by increasing risk capital through the sale of equity securities.

Insofar as retained earnings are concerned, this industry has, for a number of years, reinvested a greater percentage of its earnings than any other manufacturing industry.

Another means of acquiring funds is through borrowings, either of a short term nature, such as unsecured bank loans, or of a longer term, through bond issues. From December 31, 1950, through December 31, 1957, fifteen of our major airframe, missile and engine manufacturers increased their borrowings from \$25 million to \$563 million, or 23-fold. We may be approaching the limit of our borrowing capacity.

Perhaps the most important method of acquiring new capital is through the sale of equity securities. Acquiring risk capital of this nature, however, means the competitive conditions in the money markets for risk capital must be met. On this subject, a recent report of the Aviation Securities Committee of Investment Bankers Association of America commented that “free competition in the investment market has reduced aircraft manufacturers to a low priority for new capital investment.” In connection with the investment market appraisal of aircraft manufacturers, the report stated: “Due to the above shifts in Defense Department policy as much as to historic industry problems, the investment community has judged aircraft manufacturers’ stability inadequate for the risks involved.”

The historically low earnings in the aircraft industry, when compared with other industries, places us at a disadvantage with other industries in the capital markets. Furthermore, the delays inherent in the present renegotiation process, and the fact that only the Renegotiation Board itself can define what it considers to be “excessive profits” certainly contributes nothing to the financial strength of the industry.

Finances, Membership

The Board of Governors has approved a budget for 1959 2.6 per cent higher than it was for 1958. Despite this increase, the dues rate has been reduced 3.2 per cent.

AIA has a total of 121 members, 75 in the manufacturing division, 24 other voting members, and 22 non-voting members.

Respectfully submitted,

President

Solutions to New Problems Speeded by Experience with Aircraft

By THEODORE VON KARMAN

It is natural that spectacular, new, scientific ventures should catch the public eye, particularly in the present impetus to "inaugurate the space age."

But the success of a few worthy projects in space technology has resulted in some extraordinary conclusions by a number of serious people, including scientists, engineers and industrialists. They seem to believe that most problems in the domain of so-called conventional aircraft or jet engines, which we considered quite important a year ago, are no longer significant.

There are few voices that have the courage to point out that the new age of space science and technology is essentially an extension of our activities in the same direction that science and technology followed in the last half century.

We like to talk of certain "barriers" to flight. The first was the sound barrier, although there never was a convincing reason why an aircraft should not fly faster than sound; ballisticians took for granted two hundred years ago that projectiles accelerated in a gun barrel would fly with supersonic speeds. Science trailed along behind, in that the ballisticians took the empirical point of view while theoretical aerodynamicists first achieved an understanding of the laws of supersonic flight in the early thirties. To be sure, the theory of supersonic flow in nozzles was considerably older.

Two more barriers were supposed to limit speed and altitude; the new barrier to speed was called the "heat barrier," due to the high temperatures developed by air friction at very high flying speeds; the barrier of altitude seemed to be given by the limits of functioning of air-breathing engines.

Space flight is not limited by either of these barriers. The heat barrier may cause serious difficulties when we want to re-enter the dense atmosphere of our own planet or enter the environments of other planets, moons, or stars. However, this is a transient process, whose



Dr. Theodore von Karman is the chairman emeritus of the USAF's Scientific Advisory Board, and served as its first chairman. He is also chairman of NATO's Advisory Group for Aeronautical Research and Development (AGARD). Dr. von Karman is regarded as one of the world's foremost authorities on aeronautics, and holds degrees from the University of Goettingen (Germany), University of California and Princeton University.

duration can be limited, and many solutions are already promised. The altitude problem requires several developments: stretching of the possibilities of air-breathing engines to higher mach numbers and lower densities than are accepted nowadays, more scientific developments of rockets and "unconventional" propulsion methods like plasma-jets, the exploitation of secondary power sources such as solar energy and electric and electromagnetic fields for particle acceleration.

I do not see any point in these developments which would indicate that:

a) our aeronautical research institutions, such as the National Advisory Committee for Aeronautics, the university and industrial research laboratories cannot do the basic and exploratory research and

the collection of theories and facts, as they did with such evident success in the domain of flight within the atmosphere;

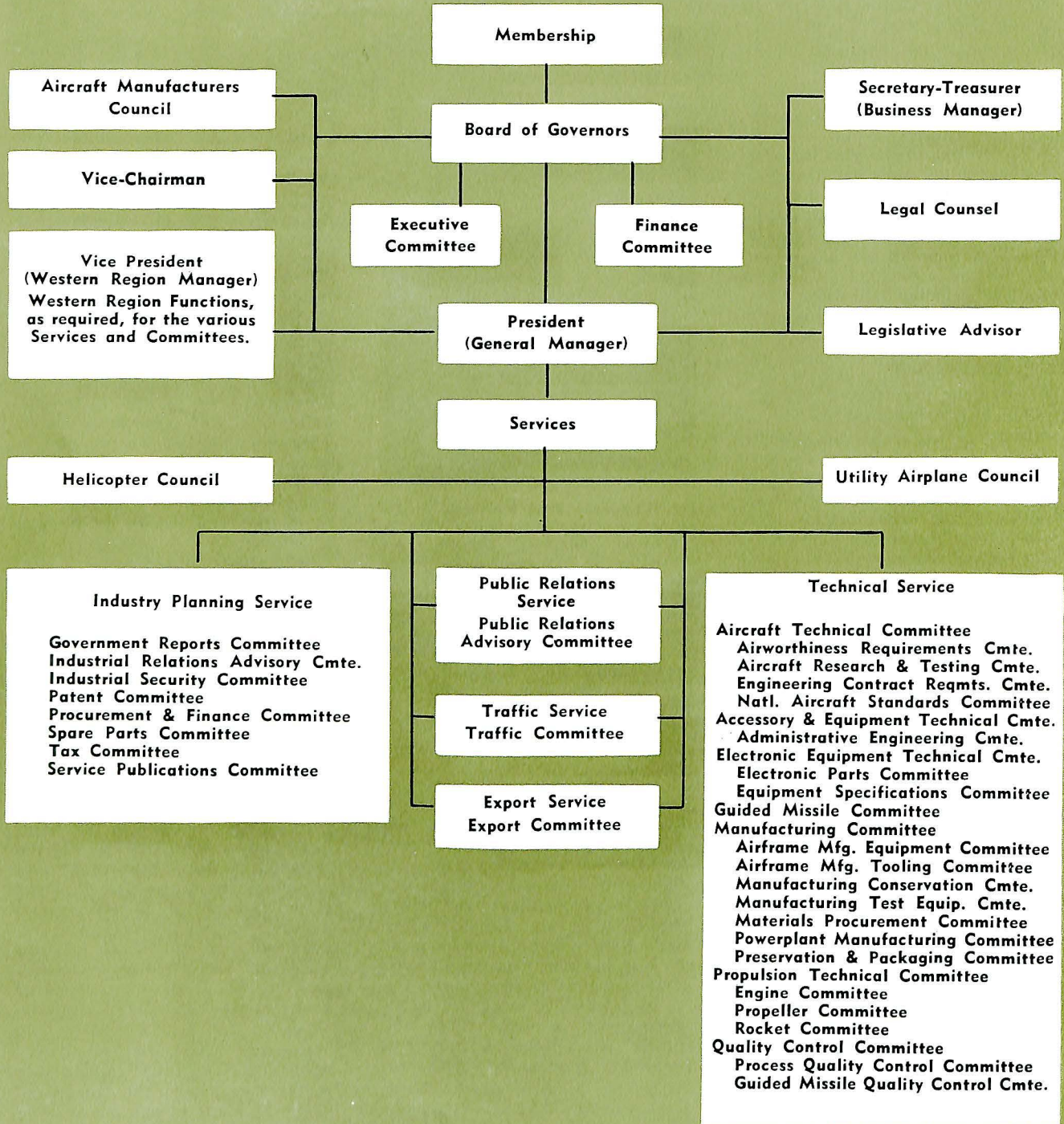
b) the military services should not consider the new activities as a natural extension of their missions and carry out the operations within the framework of their command system;

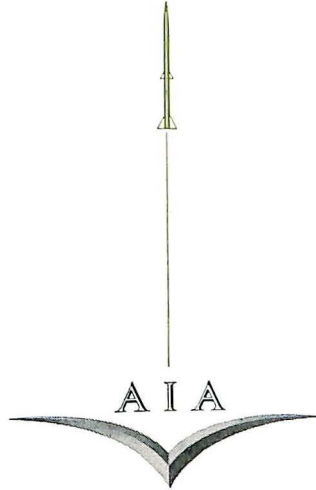
c) the aeronautical industry should not undertake the design of prototypes and production of standardized items on the same basis as they developed radically new types within the limits of atmospheric flight. I am also convinced that the solution of the new problems will be greatly facilitated by use of the experienced staffs of the companies now engaged in aircraft and engine design and production.

Of course, we aeronautical engineers have to broaden our views and fields of investigation. In addition to thermodynamics, which has always been involved in the problems of high-speed flight and engine design, we have already combined aerodynamics with chemistry for the solution of combustion problems, especially in jet engines and rockets. I suggested the term "Aerothermochemistry" for this branch of the aeronautical sciences, and aerothermochemistry has become more and more important because of the chemical changes—dissociation and recombination—occurring in flight at the frontiers of the atmosphere. Finally, we have to renew and expand our high school knowledge of astronomy, and perhaps devote time and thought to a new branch of fluid dynamics: "Magnetohydrodynamics."

However, those who would say that all that we teach and all that we investigate under the name Aeronautical Engineering is obsolete seem to assume that by some miracle the designers of space vehicles will not encounter problems involving such classical sciences as fluid mechanics, structures, materials, and vibrations: I am sure that this will not be the case.

AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC





ORGANIZATION AND FUNCTIONS

The Aircraft Industries Association of America, Inc., is the national trade association of the manufacturers of aircraft, guided missiles, rockets and engines, accessories, parts, materials and components used in the construction and operation of complete aircraft, missiles and spacecraft. Its organization includes all major airframe and engine producers and many major suppliers of aircraft and missile equipment.

AIA is concerned with the industry-wide aspects of aircraft research, development and production. It represents the industry's viewpoints and interests to the Government, the Congress, the military services, allied and other industries and to the many segments of the public. It is cognizant of legislation and regulations that might affect the aircraft industry. It attempts to work out cooperatively among its members and with appropriate agencies and organizations the solutions to problems of interest.

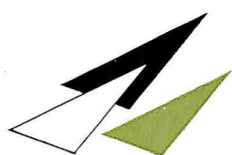
Policy direction of the Association's activities is vested in a Board of Governors which is composed of the chief executive officers of various member companies. Under this policy, AIA activities are carried on by committees and councils representing

every phase of aircraft, propulsion systems, missiles and associated components and accessories production and their industry management. Each committee consists of high level company representatives especially qualified in the various fields of responsibility.

Through its five Services, two Councils, 17 main Committees, and 20 Subcommittees, the Association provides facilities for handling the multitude of technical, financial, legal, tax, public and industrial relations, patent, traffic, maintenance support and other problems. The helicopter and utility airplane interests of the Association are banded under councils, each of which has staff service.

AIA is made up of 121 members, including 99 voting members and 22 affiliates.

Chief executive officer is the President, who also is General Manager, while a Vice-President performs the duties of general manager of the Western Region office at Los Angeles. The seven AIA Services, including the Utility Airplane Council and the Helicopter Council, operate under direction of the President. The Secretary-Treasurer acts as business manager and handles all membership and financial matters.



EXPORT SERVICE



A moderate decline of about three per cent during 1957 in overseas shipments of military aircraft and related equipment was largely offset by increased direct factory export sales. A total of \$1,029 million of U.S. aircraft and related equipment was exported in 1957. During 1957 export sales of new transport aircraft increased 36 per cent in value and 35 per cent by units—the lighter, utility type aircraft moved up 19 per cent in value and over 13 per cent in units.

Continued leveling off of aeronautical exports has been manifest during 1958 with increased non-military shipments, especially heavier transports, offsetting the military aid decline. The outlook for 1958, bolstered by overseas deliveries of the first from the mounting order backlog for jet and propjet airliners, appears most encouraging.

American aviation world leadership in the jet age, and the heavy overseas requirements in support of the vast foreign airline and military air force fleets utilizing American aircraft, assures continued growth of this sustaining phase of our country's leading defense industry. Overseas dollar shortages, and tight security restrictions placed on disclosure abroad of details relating to latest design developments, still impose serious competitive handicaps. However, reliability, economy of operation and other factors essential to civil and military operations continue to thrust the products of America's aviation industry well ahead in the competitive international market.

Post-World War II Exports Seven Billion

During the twelve and a half years following World War II (1946 through June 1958) U.S. aviation exports have aggregated \$7 billion in value—from the start (1939) of WW II to date the total has been

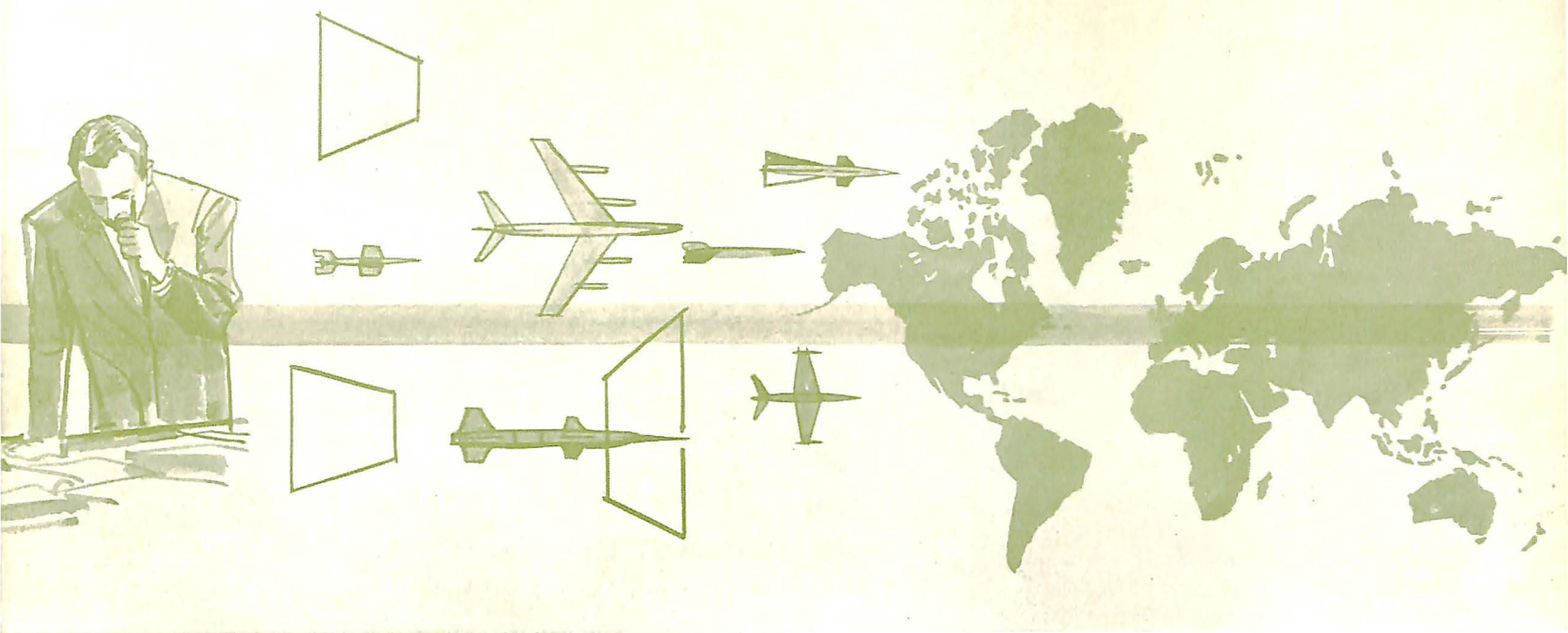
\$15.5 billion. The great measure of importance of this overseas business to the American aviation industry may be judged from the fact that the extent of total production exported in recent years ranged from a high of 16 per cent in 1949 (a big re-equipment year), down to 7.5 per cent in 1954 and up to 9 per cent in 1957—an average of 10.1 per cent during the 1948-1957 period. In the last five years the value of aviation overseas shipments has averaged 5 per cent of total U.S. merchandise exports. These figures clearly indicate the significance of aviation exports to our national economy, security and prestige, employment and defense posture.

For the first six months of 1958, U.S. aviation exports fell off 4.7 per cent. If the current rate continues during the balance of the year, the net decline from 1957 will be not more than .4 per cent. Heavy transports are up about 3 per cent, and the value of used transport sales advanced 5 per cent.

All of these statistics necessarily *exclude* important items of "invisible" military exports of off-shore procurement (U.S. designed aircraft, parts, etc.) for distribution to the NATO air forces and aviation equipment transferred overseas to allied forces.

More Export Financing for Aircraft

The AIA Export Finance Subcommittee has, during the past year, accelerated its activities in cooperating on behalf of the entire aviation industry in seeking the development of a broader and more adequate basis for funding its overseas sales. In spite of acute dollar shortages in most countries abroad, the requirements appear to have been adequately met thus far. The understanding of bankers, furthered through numerous group meetings of the manufacturers and export



financing organizations, has been most encouraging. The Export-Import Bank, the World Bank, commercial banks, insurance companies, and private financing firms are individually and, in several cases, collectively rising to meet the occasion. Barring extraordinary intercession by other governments subsidizing their countries' aviation exports, continuance of sound, competitive financing by American financing institutions should meet the situation.

The Surplus Transport Problem

There has been a resurgence of studies of the problem of what to do with the piston-engined transports (airline categories) released in the wake of deliveries to U.S. and foreign airlines of jets and propjet types. Estimates of the totals of these aircraft surpluses range from 1,000 to 3,000 units. Authorities examining this threateningly acute situation have been prone to assume an initial premise that most of this equipment would be absorbed in overseas markets. As a result the Export Committee has moved to generate collective thinking on this subject. The Committee has been instrumental in devising group participation by industry representatives in a series of meetings, co-sponsored by cognizant Government agencies, designed to find a solution. While far too early to appraise the results of these Government-industry efforts, promising solutions of the problem are being generated.

Government and Industry Cooperation on Export Promotion

Export subcommittees have, with the Departments of State and Commerce, worked out a comprehensive, cooperative educational program to develop a more effective program of aviation foreign market reporting,

and to strengthen aviation exports. In addition, the industry has been awarded a place on the curricula of the classes of U.S. Air Attache-designees to acquaint these officers with the industry's export problems and to enable them to be better prepared to cooperate on a non-competitive basis when they arrive at their overseas posts. The Committee has formulated, for the guidance of U.S. Government and industry's own people abroad, an outline of what cooperation our exporters require from Government to accomplish a more effective job.

International Meetings Further Understanding

Throughout the year the Export Committee has continued to work closely with the USAF (Foreign Liaison Branch) and Department of State (Aviation Division) in the formulation of plans for the U.S. tours of foreign air force and civil aviation missions. At the culmination of these tours, the Committee sponsors Washington receptions honoring the missions to enable industry's executives and visiting dignitaries to become mutually acquainted. During the first nine months of 1958, receptions were held honoring aeronautical visitors from Greece, Denmark, Brazil, Italy, Portugal, Turkey, Peru, Germany, Japan and the Netherlands.

During recent years a mutually beneficial liaison has been maintained with the aviation industries of other countries through their respective national trade associations. Among these are the industries of the United Kingdom, Canada, France, Italy, Germany and Japan. Numerous problems, of a non-competitive nature, are dealt with effectively. There is also an interchange of statistical data pertaining to production, exports, imports, etc.

INDUSTRY PLANNING SERVICE

THE AIA's Industry Planning Service is responsible for dealing with all important problems influencing the business and administrative operations of the aircraft and missile industry. It maintains close working relationships with the various military services and other Government organizations on the laws, regulations, directives, specifications and orders of various types which have a bearing on the industry's business activities. To accomplish its objectives, the Industry Planning Service works through six committees.

INDUSTRIAL RELATIONS

The most important development occurring during 1958 in the Industrial Relations field was the announcement in June that the Wage-Hour and Public Contracts Divisions of the U.S. Labor Department would undertake a wage survey of the aircraft manufacturing industry with a view to establishing a new minimum wage under the Walsh-Healey Act. The present minimum is \$1.05 per hour.

Many changes in manufacturing and procurement practices relating to industry's end products have taken place since the 1949 definition. As a result, the Labor Department has published a proposed new definition of the scope of the industry and gave interested parties until October 20, 1958, to submit comments.

The Industrial Relations Committee at its national meeting adopted an industry definition which was proposed together with supporting arguments to the Wage-Hour Division within the time imposed. The Committee will continue to be responsible, with the assistance of retained Counsel, for representing the aircraft industry throughout the entire minimum wage re-determination proceedings.

Fringe Benefit Study

A new and complete fringe benefit study has been completed, reproduced, and mailed to all member companies. The study is a compilation of fringe benefits data supplied by individual members. Similar surveys of Group Insurance Plans and another of Pension Plans are in the process of compilation.

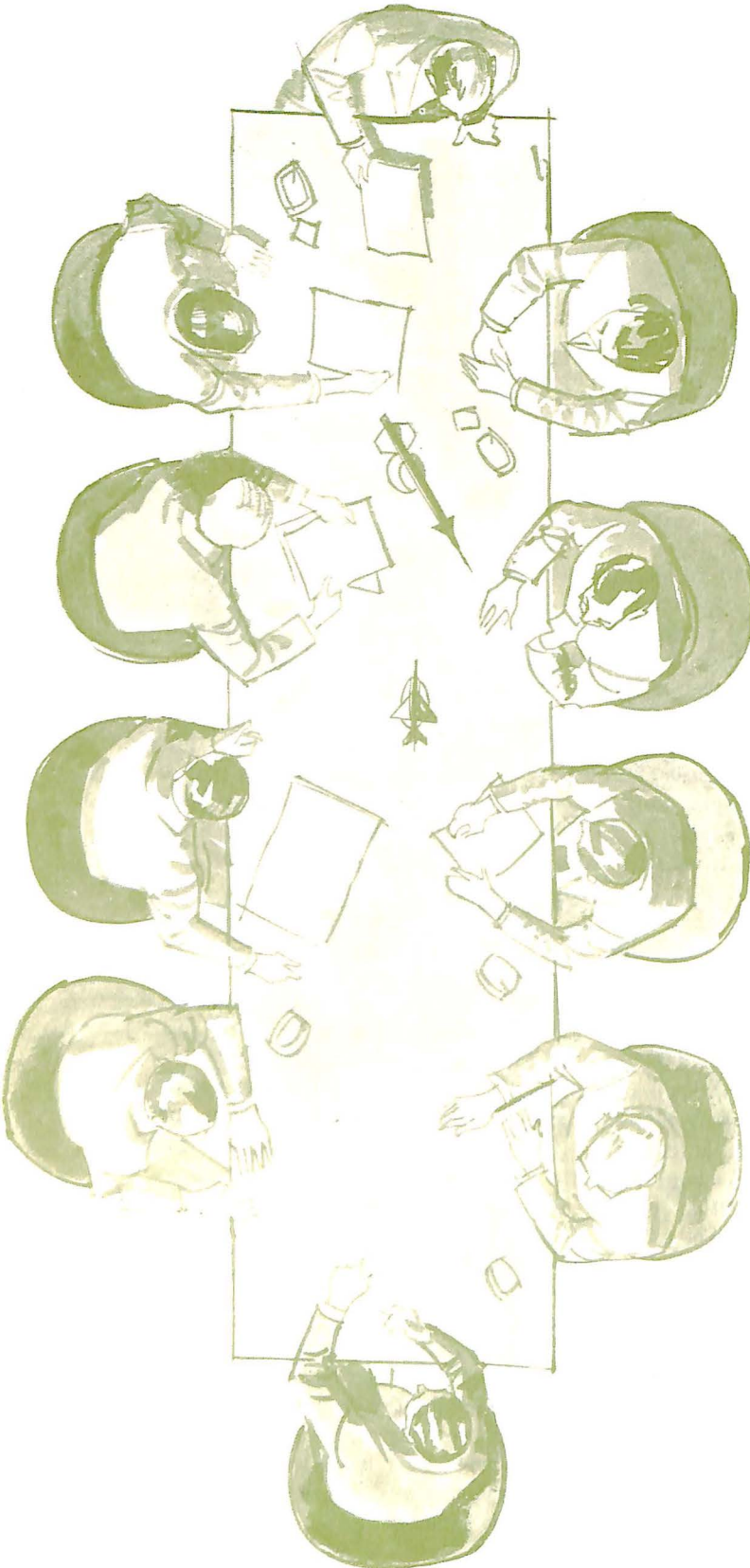
Negotiations

During 1958 most member companies negotiated two-year collective bargaining agreements with their major unions. Accordingly, there is little reason to expect important Labor-Management problems in 1959.

PATENTS

National Aeronautics and Space Administration

At the last minute, the Congress agreed on extensive



provisions in Public Law 85-568 covering "Property Rights in Inventions" and "Contributions Awards." Although the intent of the legislators was to provide incentive to industry, and, at the same time, protect the Government's interest, this objective was not achieved. Failure to cover the subject in the hearings and thereby obtain the benefit of expert knowledge on its complexity undoubtedly contributed to the inadequacy of the legislation.

The Aircraft Industries Association will seek amendment by the 86th Congress of this law to make its patent provisions parallel those of the Department of Defense. Such an amendment will enable contractors doing R&D work for the military departments and the Space Administration to operate under one set of rules governing patents. In the interim, the Association will urge the Administrator of NASA to establish rules and regulations that will alleviate, insofar as possible, the cumbersome procedures possible under the law.

Atomic Energy Commission

The AEC held a hearing on 13 April 1958 on the patent provisions of the Atomic Energy Act, at which AIA filed a statement pointing out how the act handicaps U.S. manufacturers who attempt to sell reactors in the foreign markets. There has been no indication from the AEC that any of the suggestions made by AIA and others will be adopted.

Proprietary Rights

For the entire period covered by this report, member companies experienced extreme difficulty in carrying out contracting negotiations with respect to proprietary data. The theoretical rules established by the Department of Defense could not in actual practice be adapted to actual contracting situations. In its statement presented on January 22, 1958, the Association forcefully brought this inconsistency to the direct attention of the Secretary of Defense. Company representatives followed up the presentation with individual explanations and arguments to DOD procurement officials. Concurrently, it became evident to small businesses that although the rules professed to be in their behalf, in actuality the rules operated to the detriment of proficient small businesses. Directly and through their representatives in Congress, small business organizations and individual businesses made this fact known to the Department of Defense.

The combined efforts of industry have prevailed to the extent that the Department of Defense has issued a complete revision of its regulations covering procurement of proprietary information. The revision is an improvement, and meets in part the recommendations made to Secretary McElroy earlier this year by the "Committee of 12" of the AIA Board of Governors.

The Association, in accordance with a Department

of Defense request, will defer commenting on the revision until practical experience has been gained from its operation.

PROCUREMENT AND FINANCE

The Procurement and Finance Committee, created in 1957, handles all matters which had been under the jurisdiction of the Accounting and Controllers Committee and its Procurement Regulations Subcommittee, as well as the Legal Committee.

Indemnification Against Unusually Hazardous Risks

One of the most important problems with which the member companies of this Association are concerned pertains to the risks involved in the performance of most of the defense contracts now in the process of production. Adequate insurance coverage is not available. As a result, contractors are continually forced to place all their assets in jeopardy, and their very existence is endangered should there be a catastrophe resulting in property damage or personal injury to third parties.

The Aircraft Industries Association has been cooperating with the Department of Defense in preparing suitable legislation for indemnifying contractors against loss or damage sustained in connection with operations of a hazardous nature.

During the 85th Congress, a bill in this connection, sponsored by the Department of Defense, was introduced; but, by reason of priority given to other matters, consideration thereof was postponed until the 86th Congress. This Association is continuing to cooperate with the Department of Defense and other interested industry groups, including the insurance industry, and is hopeful that suitable legislation with respect to this subject will be on the statute books early in the year 1959.

Contract Cost Principles

For approximately eight years, the Department of Defense has been considering the adoption of a single set of contract cost principles. These would be applicable not only to cost-reimbursement type contracts, as is the case with the existing cost principles, but also to fixed-price type contracts and would cover the settlement of all terminated contracts. During this period, but particularly during the last two or three years, this Association has been coordinating with the Department of Defense the various drafts with respect to such a proposal.

A meeting of industry representatives with personnel of the DOD was held on October 15, 1958, as a final effort toward reconciling the positions of the Defense Department and industry on certain phases of this proposal which have heretofore been in controversy. A new Comprehensive Set of Contract Cost



Principles, to replace those currently contained in Part 2 of Section XV and Part 4 of Section VIII of the Armed Services Procurement Regulation, is expected to be published shortly.

Renegotiation

The Renegotiation Act of 1951, as amended, has been administered to the detriment of the aircraft and missile manufacturing industry. As a result, efforts were made during the 85th Congress to amend such Act so as to provide less confusing standards for determining whether or not a defense contractor has earned excessive profits. Testimony in this connection was presented by representatives of this Association at hearings held during the 85th Congress by the House Committee on Ways and Means.

While efforts to provide more suitable standards for guidance of the Renegotiation Board were not completely successful, partial success was attained, since the Renegotiation Act was extended for a six-month period only. Determination, therefore, must be made by the Congress prior to June 30, 1959, as to whether there is any continuing need for legislation of this type. The Aircraft Industries Association will continue to expend every effort to point out the harm which has resulted from the Renegotiation Act. It will seek the adoption of appropriate amendments which will provide for more suitable standards than now exist or, preferably, a decision on the part of Congress that there is no longer any need for legislation on this subject.

Depreciation

Perhaps one of the most important subjects of concern to the aircraft and missile industry pertains to the depreciation policies of the Government for tax purposes and for cost purposes.

During each of the last two national emergencies, a provision has been made in the tax laws for accelerated amortization of defense facilities certified as necessary for the furtherance of the defense program. The current legislation on the subject is scheduled to expire on August 31, 1959.

Although the Internal Revenue Code of 1954 liberalized to some extent the methods for computing depreciation deduction for tax purposes, these provisions are only a step in the direction of a realistic depreciation policy. Accordingly, efforts will be made by the Aircraft Industries Association to establish, for tax and contract cost purposes, a depreciation policy providing for the recovery of the cost of facilities much earlier than currently permitted. Such a policy will inevitably result in more modern facilities in defense and other industries, as well as reduce the need for the Government to supply such facilities in a future national emergency.

Overtime Policies

One result of the acute 1957 cash situation in the military services has been a restriction placed upon the use of overtime in the performance of defense contracts. Unfortunately, the Department of Defense Directive issued on this subject presented many ambiguities. Accordingly, an effort was made by Aircraft Industries Association to clarify the established policy, so as to prevent certain inequities and the incurring of certain costs anticipated had the original policy been maintained without modification.

The member companies of the AIA have cooperated with the Department of Defense and the military services in avoiding unnecessary overtime which has resulted, in many instances, in reduced costs. The DOD policy regarding overtime necessarily was modified to permit overtime in certain situations which would, in the long run, result in reduced costs as well as the avoidance of inequitable situations.

Settlement of Contracts

Section VIII of the Armed Services Procurement Regulation, although coordinated with the aircraft industry prior to its issuance in 1952, has proven most unsatisfactory with respect to administration of certain of its provisions. Accordingly, the Department of Defense began, late in 1953, an intensive study of the procedures followed by the military services in the settlement of terminated contracts, under the then recently issued section of the ASPR. It was not, however, until late in 1957 that a draft of a proposed revision was released for industry review.

The Aircraft Industries Association has, however, participated in the coordination with Department of Defense of a document published on September 5, 1958, as a replacement for the original DOD regulation on this subject. While many improvements have occurred, a task group of the AIA Procurement and Finance Committee continues to review the procedures in this area and will endeavor, to the extent possible, to obtain improvements.

Ground and Flight Risk Clause

The Ground and Flight Risk Contract Clause has similarly been a knotty problem. By reason of a policy adopted by the Government to be a self-insurer with respect to aircraft in the open and during the course of various flights prior to acceptance of the aircraft by the Government, the Aircraft Industries Association has been working with the Department of Defense in arriving at a satisfactory contract clause to cover all types of situations in this area. This coordination has been carried on for approximately two years. It is expected, however, that a satisfactory contract clause will be prescribed in the reasonably near future.

Emergency Contracting Authority

By reason of the conclusion that there exists a continuing need for emergency contracting authority, such as has been contained in Title II of the First War Powers Act, 1941, the industry was convinced that year-by-year extension of such authority should not be required. As a result, efforts were made by this Association to provide permanent legislation which would permit the Department of Defense, during national emergency periods, to waive certain provisions of law pertaining to the making, performance, and modification of contracts whenever deemed necessary to facilitate the national defense programs. Cooperation with the Department of Defense in the preparation of such legislation and subsequent testimony before the Congress proved successful, and this legislation was enacted during the 85th Congress.

Accrued Expenditure Appropriations (H.R. 8002)

The effectiveness of such a law as originally proposed in H.R. 8002 would have depended entirely upon an exact coincidence between contract estimates and contract expenditures. This was unrealistic, denying any element of flexibility in these projects. Long, hard-won experience has shown conclusively that contractors cannot avoid variations in contract schedules, especially on complex, long lead time items. The prime contractor for a weapons system is dependent on thousands of subcontractors and suppliers with the pace necessarily geared to the slowest. The difficulty of maintaining strict schedules is apparent. And, it is not possible to anticipate such factors as strikes and other labor shortages, price and wage increases, changes in money rates and changes in procurement techniques which all cause delays.

The complexities of administering such a law as originally written would have been enormous. With thousands of contracts involved, appropriation for each must be made on estimates for the next year. If the fund provided for a single contract is exhausted early in the fiscal year, there is no provision for further funding the contract even though it may be a long lead time item extending over several years.

Such legislation, if enacted as originally proposed, would have resulted in irreparable damage to the defense program and would have had other disruptive effects upon the performance of defense contracts. Concerted efforts made by the Aircraft Industries Association during the 85th Congress were successful in modifying the legislation. As finally enacted, the legislation did not include the provisions to which objection was made by this Association.

Contract Financing

One of the most difficult problems with which this industry has been faced during the past year and,

apparently, will continue to be confronted, is the contract financing policies of the Government.

Because of the nature of the aircraft and missile industry, the costs of the items produced, and the fact that this industry has never been able to retain adequate earnings to build up a reserve, it is often necessary that payments be made to contractors during the production process. With respect to fixed-price contracts, this is handled by the making of progress payments, based upon a percentage of costs incurred by the contractor, with liquidation of such payments occurring when deliveries are made and billings submitted by contractors. The percentage of progress payments which are being made to contractors in this industry has been reduced to 70 per cent of all costs incurred. Regarding the liquidation of such progress payments, a problem exists with the Air Force: once deliveries are started, substantially less than 70 per cent of costs incurred are permitted to be retained by contractors of the amount paid as progress payments. Efforts are still being made to solve this problem.

Historically, under cost-reimbursement type contracts a contractor has, until recently, been reimbursed for 100 per cent of all properly allowable costs incurred. This is inherent in the nature of the type of contract and the work being pursued, since this type of contract is never supposed to be used except in those instances where the total price is unknown or so indefinite that it cannot be fixed with reasonable certainty. Similarly, this type of contract is supposed to remove the burden of certain risks, including those incident to financing, from the shoulders of contractors. Recently, however, the Department of Defense established a policy of reimbursement to contractors under this type of contract at a rate of only 80 per cent of costs incurred. The problems of contractors and subcontractors which resulted from this policy have been many. These are in the process of being worked out with the Department of Defense, with a satisfactory solution expected in the reasonably near future.

The reduction of the progress payments rate, the concomitant problem involved in liquidation of such payments, together with policy relating to reimbursement to contractors under cost-reimbursement contracts, has caused serious financing difficulties to the industry. Although the member companies of this Association are seeking other sources for the financing of defense contracts, many problems still remain to be solved.

MAINTENANCE SUPPORT

The costs of maintenance support of missiles and high performance aircraft have become a very substantial part of the procurement dollar of the military services. The increasing co-relationship of all of the elements of maintenance support under the weapon system concept prompted AIA to bring these services

together and consolidate them within the Industry Planning Service. Included are the services pertaining to Spare Parts, Service Publications, Field Service Representatives, Contract Maintenance, Ground Support Equipment, Training Aids and Equipment. It is believed that this will permit increased service to the membership and to the Government.

SPARE PARTS

Spare Parts Provisioning Procedures

Significantly, from a point of cost reduction and savings to the industry, the Spare Parts Committee assisted the Department of Defense in the development of a standardized provisioning format for all military services. It also undertook with the Air Force and the Navy preparation of new provisioning procedures for spare parts. These procedures are the same for all commodities, thereby making possible substantial savings due to format standardization. This is particularly applicable in connection with the weapon system concept under which the prime contractors and the suppliers are brought into much closer contact than previously.

Logistics Support

The military services are relying on the contractor's spare parts departments for an ever greater amount of management assistance in the support of weapon systems. Members of the Committee are participating in planning with the Air Force, looking toward cataloging existing ground support equipment to permit the GSE designers to use such equipment whenever possible in lieu of designing specialized equipment. If industry-military teamwork is successful, the savings to the Air Force should be substantial, due to the multiple use of existing equipment. The Committee also participated in the revision of the provisioning procedure for ground support equipment, as well as in the document under which the contractors provide support for the initial test periods for end articles of equipment. The Committee also provided a series of recommendations to a Navy Board established to look into aeronautical support problems of the Navy and to make recommendations thereon.

Military/Industry Logistics Study Group

With the rapid acceptance of electronic data processing equipment among industrial and military establishments, the contractors are demanding immediate study group guidance so that they may exchange spares data with their customers through data processing and wire transmission in lieu of the exchange of voluminous paper work. Exact knowledge as to spares inventories and rapid communication of re-shipment orders, usage data, etc., should assist materially in improving maintenance capabilities and weapon availability.

With membership of the DOD, the military services and the Committee members, the Logistics Study Group progressed to the point where a full time task force of military and industry representatives had to be established to develop the practical application of the concepts which had been developed. Presentations were made to acquaint interested headquarters, military and DOD representatives, as well as other industries, with the work of the Study Group as well as future plans and to obtain their participation.

Ballistic Missiles

In reviewing proposed spares procedures, the Committee gives consideration to the effect of such procedures on ballistic missiles because of the importance of those weapons from the basis of the dollar value and the national security. In connection with the national Committee meeting, the Ballistics Missiles Program of the Air Force was made known to the Committee members from the support standpoint and a field trip of ballistic missiles facilities was arranged. The greatest possible range of information on this subject should be possessed by the spare parts departments so that, with all of the facts, the industry can contribute substantially to the missiles program.

Cataloging

Under the Federal Cataloging Program the industry has been called upon to perform additional functions for the military services, especially with reference to the preparation of item descriptions. In the drafting of a recent revision to an Air Force procedure thereon, significant progress was made in arranging for limitations on the amount of work which the contractors could be required to perform. Also, due to the ever-changing details of the Federal Cataloging Programming, AIA has provided revised information to its members as received from the Services.

SERVICE PUBLICATIONS

Established on January 1, 1958, the Service Publications Committee took the place of three Panels of Technical Committees, in accordance with the recommendation of the Special Committee on AIA reorganization, which was approved by the Board of Governors. During the past ten months, the Committee has had two national meetings, in one of which representatives of the military services were in attendance for the purpose of outlining their plans and programs to the Committee members. The Committee, operating under a charter adopted in its first meeting, presently is considering approximately one dozen active items and five "information" items. Sixteen subjects which were under consideration have been completed. The increased complication of weapon systems, and the rapid turnover of military maintenance people, places increased reliance on Service Publications for the maintenance of equipment.

Standardization

Possibly the most important long-range Committee activity is a study of military handbook standardization. The feasibility has been confirmed and the interest of the DOD in a handbook standardization project will be sought.

Another standardization project involves the resolution of the conflict that exists in electronic test point designations in various equipment and publications specifications. A set of recommendations to correct this was agreed to by the Committee for transmittal to the Air Force and the Navy.

Use of Automatic Data Processing Equipment on Handbook Formats

New developments in computers, automatic check-out procedures, microfilming, etc., will probably affect the future preparation of instruction booklets and other instruction media. The Committee is studying the direction in which the future preparation of instruction data is headed, so that the contractors may take advantage of developments in data processing, graphic arts and photography.

Prime Contractor Acquisition of Vendor Handbook Data

A workable prime contractor/vendor relationship in the preparation of handbooks that provide complete and timely instruction data is most important, particularly under the weapon system concept. The Committee is studying solutions to existing problem areas.

Handbook Cost Reduction Techniques

The Committee has as one of its objectives the increased use of cost reduction techniques. Two hours of each future meeting will be devoted to the making of presentations by Committee members describing such techniques for the benefit of other Committee members and, through the meeting minutes, of other AIA members.

GOVERNMENT REPORTS

The Government Reports Committee regularly makes available to any Government Agency the voluntary services of company experts with extensive specialized knowledge of paper work systems. One such group of five experts, active during the year at the request of the Air Materiel Command, has been developing procedures for measuring facility construction activities. The Air Force, in addition, assigned fifty Government employees and military officers to participate in the project. Specific proposals were transmitted to the Air Materiel Command for their study, revision and adoption. The bulk of the experts' recommendations have been adopted by the Air Force, substantially as recommended, and others are still in process.

Cost Reduction

The Government Reports Committee continues to spend considerable time and effort in attempting to meet demands of the Air Force, Bureau of Aeronautics and the Army Ballistic Missile Agency for reductions in overhead costs. Since paper work accounts for such a large share of overhead costs, cutback in the paper work required to do business with the Government is a fruitful place to start reducing overhead. During the year, Committee members and staff have had some 20 Government reporting requirements under study for simplification. During the first half of the year, 11 reporting requirements of the military services were eliminated or withdrawn as a result of Committee study and recommendation.

AMC Plan for Improving Contractor Reporting

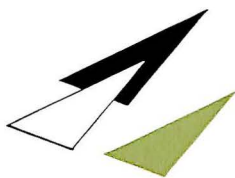
At the end of September, a sweeping Air Materiel Command order was issued to bring a much more stringent control to existing and proposed reporting requirements of that Command. One compelling reason for the issuance of the order has been the demonstration during the past few years by the Government Reports Committee of the uncoordinated, expensive paper work required of Government contractors, and the showing of cost savings realized with the streamlining and control of paper work.

Research and Development

Members of the Government Reports Committee have been in the forefront of developing new methods of making information available to top management for the proper guidance of large-scale single time projects. Particular assistance has been rendered the Special Project Office of the Navy, the Air Research and Development Command's Comptroller Staff and the Weapons Systems Project Office of the Air Materiel Command. Industry representatives have developed new reporting techniques to single out significant facts and to prevent the transmission of masses of data of lesser significance. These emerging techniques will be of increasing importance as the industry moves into the more complicated developmental programs of escaping the earth's gravitational field and proceeding through space.

Statistics

Statistical measurements of production and finance, compiled by staff, are uniquely available through the Government Reports Committee. The statistics of Government agencies are continually reviewed for accuracy; advice is given for statistical changes that will more accurately reflect what is taking place. The Committee continues to select the significant Government series on labor and on military finances for reprinting and distribution.



PUBLIC RELATIONS SERVICE

TWO major problems continued to affect the aircraft industry during the past year which resulted in national concern for the health of the industry and its ability to discharge its responsibilities for the maintenance of the nation's security.

First, the economic crisis which confronted the Federal Government in 1957 continued to reduce the level of activity of the industry in the aircraft manufacturing field. It had been planned to effect these reductions through normal attrition over a period of years. However, due to circumstances beyond the control of the industry, these actions had to be taken virtually overnight with resultant dislocation of local economies.

Second, mushrooming importance of the missile as a production weapon, the orderly transition of its developmental and production organizations from manned aircraft to guided missiles and outer space exploration, has greatly increased with much resultant confusion—outside our industry—as to “roles and missions” of industry in this area.

Interpretation of these changes in the status of the industry placed an unusually heavy and complex work load on the industry's Public Relations Service. In addition, the basic AIA program to keep the public informed on all problems and activities of the aircraft and missile industry continued.

Public Relations Advisory Committee

The AIA Public Relations Advisory Committee, made up of the Public Relations Directors of member

companies in the industry, convened twice during the twelve month period to review plans and programs of the Public Relations Service, to study mutual problems and to provide direction for members of Public Relations Service staff. The Executive Committee of the PRAC additionally met on two occasions during the year to give interim guidance to staff.

Elements and Activities

In addition to the basic long- and short-range objectives of the AIA program, the Board of Governors at its Phoenix meeting gave the Association authority to oppose H.R. 3002 in its original form, to endeavor to obtain relief from the Renegotiation Act as administered, to obtain extension of certain provisions of Title II of the First War Powers Act, and to support legislation providing indemnification for unusual hazards (H.R. 11639). Also, the Association was authorized to present to the Government the industry's position with regard to other areas of concern, such as proprietary rights, progress payments, and research and development.

Most of the effort of the Public Relations staff has been directed toward these matters, toward obtaining public awareness of this industry's role in the missile and space age, and in trying to obtain public understanding of the relationship of aircraft and missiles in the national defense structure.

Information Service

The requirements for information on the industry, its products, and its problems increased during 1958.



Requests for materials and information, especially from students and teachers, and especially concerning missiles and space activities, rose from 250 per week in late 1957 to 900 per week during March and, following a summer decline, have again increased to more than 500 per week.

The President of the Aircraft Industries Association and other members of the staff have continued to take an active part in speaking for the Association at both formal and informal gatherings. In addition to appearances before the National Security Commission of the American Legion and other groups, the President and the Director of Public Relations were the chairman and moderator, respectively, of a half-day panel on governmental responsibilities in the missile-space age.

An important adjunct of Public Relations Service is informational support to organizations, societies, and associations having aeronautical interests. For example, as a part of its cooperative program with the American Legion, AIA continues to provide information for the monthly *LEGION AIR REVIEW*, which is widely quoted in the national press. The publication is currently distributed to approximately 18,000 American Legion Posts and selected military and congressional officials.

Publications

In January 1958, because of budget limitations, *PLANES* circulation was reduced from 73,500 to 37,500 and, since, has gradually increased to 39,500. At the same time, four-page insert features were

dropped. *PLANES* continues to be well received by the press as the basic source of information on the aircraft industry, and is widely read by Congress, other Government leaders, and opinion leaders.

Press acceptance of *LETTER TO AVIATION WRITERS* has continued to increase with approximately 1,700 being distributed monthly. In this publication, AIA activities, industry-wide statistics, data on the Federal Budget, such as expenditures and obligations, has been stressed. Considerable editorial emphasis on identification of the aircraft industry with the missile industry has also been made. A new section recently added to the *LETTER TO AVIATION WRITERS*—a page of short fillers—has proven popular with press and radio media.

During 1958, background memoranda on the Aviation Aspects of the Federal Budget, the Year End Statement, and a statement of the industry's responsibilities and role in guided missile development and production, have been prepared and distributed. Also published in booklet form was a background memorandum, "Industry Enters The Space Age." The text was excerpted primarily from significant speeches made by General Cook on the subject. In addition to the discussion on industry's space age activities, the booklet stressed the importance of the financial strength of the industry to our national security and the significant role management plays in evolving modern weapon systems. Distribution of the booklet was to Congress, governmental officials, 10,000 security analysts, banking officials, and other financial and business leaders.

The AIRCRAFT YEAR BOOK for 1957-1958, in its new format, has been highly successful. Sales have exceeded those of previous years, with approximately 6,000 sold to date.

The 1958 edition of AVIATION FACTS AND FIGURES contained a substantially expanded discussion of guided missiles and several important new statistical tables dealing with guided missiles, research and development, and Federal Budgetary matters. The general format of the book will remain the same in 1959.

In cooperation with the Helicopter Council a booklet entitled "Your Heliport Design Guide" was prepared and distributed in May. This booklet was designed to focus attention on the specific requirements for local ordinances favorable to helicopter operations.

AIA testimony before the House Ways and Means Committee on modification of the Renegotiation Act was presented by Mr. William Allen, President of the Boeing Airplane Company. A special booklet was prepared to supplement Mr. Allen's testimony which was reproduced and distributed to all members of Congress, Government officials, press—with special emphasis on editors, editorial and financial writers, security analysts and other financial and business leaders.

National Aviation Education Council

Cooperation with the National Aviation Education Council is provided by Public Relations Service in support of the Council's public relations programs and publicity, as well as in providing liaison between the Council and other organizations, such as the American Legion.

Close liaison with the NAEC Materials of Instruction Committee is maintained with two members of Public Relations staff and two members of the Public Rela-

tions Advisory Committee monitoring activities of the Materials of Instruction Committee.

It is particularly gratifying to note that income from booklet sales of the NAEC Materials of Instruction have increased during 1958 some 84 per cent over that of 1957.

U. S. AVIATION TODAY—The Aircraft in Production, Guided Missile, and Outstanding Events chapters of the YEAR BOOK—has been unusually popular in its new format. AIA obtained only 2,000 copies for press, congressional and Government distribution.

Two years ago, because of the popularity of the book, it was made available to the National Aviation Education Council as a sale item for its Materials of Instruction program. As of September 1, 1958, NAEC had sold 11,400 copies with a total sale of 15,000 anticipated.

Television Films

Four films have been released to television presentation with the most recent, "Power in the Air," now in distribution. All four of these films have been well received. "Design for Survival" has been televised 196 times; "The High Road" 139; "Men and Missiles" 205; and "Power in the Air" 94 times.

Of the above total of 634 television showings approximately 28 per cent were televised during class "A" time; 57 per cent during class "B" time; and 15 per cent during class "C" time.

"Men and Missiles," it is interesting to note, was selected by T.V. station managers and program directors in 1958 as one of the top 50 public service films in the annual Variety Magazine poll. In addition, Public Relations Service has received nearly 200 requests from clubs, service groups, schools, etc.





TECHNICAL SERVICE

INDUSTRY PARTICIPATION IN NACA

UPON termination of World War II, Congress and the NACA realized that this nation's aeronautical research had not taken full advantage of the industry's knowledge and basic research needs. The technical committee structure of the NACA was then expanded and membership from industry greatly increased. A yearly procedure was initiated by the Aircraft and Propulsion Technical Committees, at the request of the NACA's Industry Consulting Committee, to provide the NACA with a comprehensive list of nominations of available industry scientists and top engineering specialists from which NACA might make its committee and subcommittee selections. This procedure, we believe, has been a most effective way of insuring that the nation's fundamental research efforts have provided the basic data in the areas so urgently needed by the industry for continued technological advancement in military weapons and research-type vehicles. This "team effort" between NACA and industry has been of significant value to our national defense and to our accomplishments in the jet transportation field.

We feel certain that NACA's successor agency, the National Aeronautics and Space Administration, will wish to make similar use of the industry's assistance in fulfilling NASA's responsibilities.

GUIDED MISSILES

Missiles have evolved as a logical supplement to conventional air, ground and sea power—to create a revolution in arms as profound as the mechanization of our forces which started before World War I. As an indication of the national emphasis during the past year, and the flexibility of our industry to meet changing requirements, a number of the Guided Missile Committee members are now representative of their companies' interests in "space" activities as well as in *guided missiles*. This has been necessary because a successful missile program demands much more than technical competence. The keystone is the ability to bring together the infinitely complicated systems so that the end result is a weapon that can not only accomplish a pre-determined task but also can be economically produced. This is system management. The

Guided Missile Committee is composed of company representatives who have responsible know-how for management.

The aircraft industry has pioneered and perfected the technique of managing complicated systems. A guided missile is a most sophisticated system. An airframe manufacturer does not usually build the engines, produce the materials, make the communications equipment, the landing gear or many of the hundreds of major components involved in an aircraft or a missile. Yet he does manufacture both. This is not a simple task of assembly. The highest degree of management and technical skills is required to make all of these intricate elements work together to accomplish the specific task.

Reliability of Weapon Systems

Design, development and production phases do not operate in individual vacuums with neat checkpoints marking the beginning and end of each phase. All work together throughout the life of the weapon project with only the emphasis shifting at appropriate times. Production engineers work alongside design engineers to insure that the designs can be produced.

It would be of no value to conceive and design an advanced weapons system, then present it to the production engineers only to find that the design is too far ahead of the production state-of-the-art.

The missile is regarded in the broad light of a weapon system, including ground equipment, maintenance, logistics support and operational suitability.

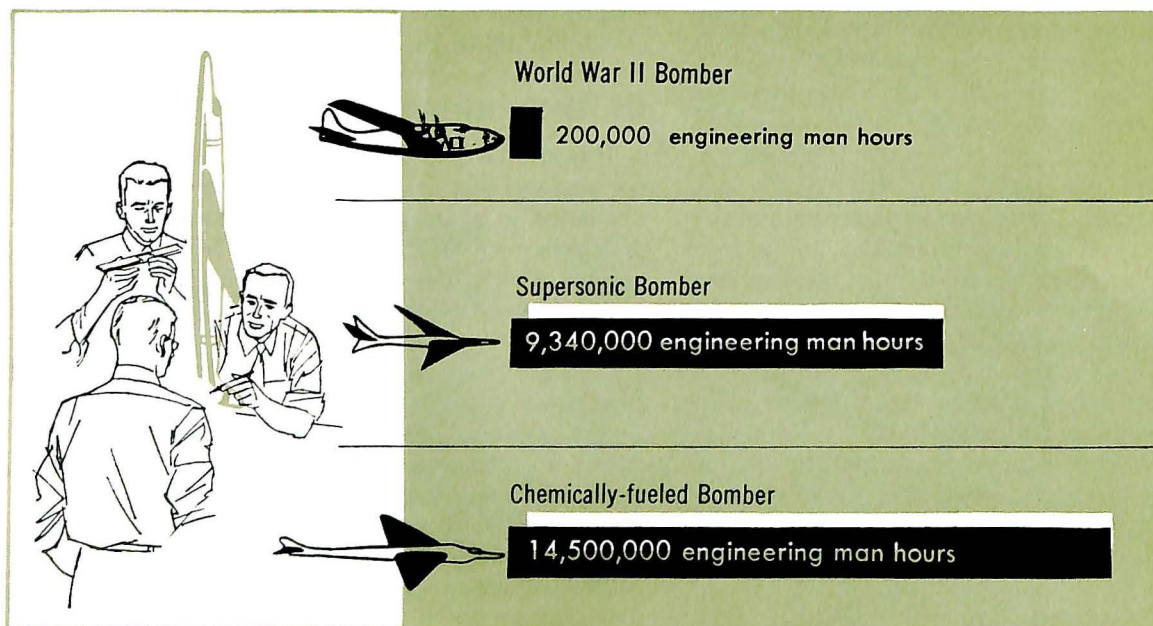
The problem of reliability, particularly the DOD "Proposed Reliability Monitoring Program," has received continuing study by the Guided Missiles Committee and the Committee's views made known to the Defense Department. It is expected that consideration of this subject will be a continuing effort.

STANDARDIZATION OF AIRCRAFT AND MISSILE COMPONENTS

Value of Industry Standards Increases

The usefulness of industry standards represented by the NAS (National Aircraft Standards) series and the AMS (Aeronautical Material Specifications) continues to increase with many of these converted to, or incorporated in, military documents. However, with more and more of the military documents being of interest to several agencies, the long time required

The demand for scientific and engineering talents in the aircraft industry is unparalleled in the history of modern manufacturing. Performance increases—planes today fly four times faster, operate at nearly 3 times the altitudes of World War II—coupled with the replacement of numerous functions of crew members by electromechanical equipment have caused a sharp increase in requirements for scientists and engineers. A World War II bomber required 200,000 engineering man hours to bring it to the point of first flight. A supersonic bomber just starting production required 9,340,000 engineering man hours. The estimate for an advanced, chemically-fueled bomber is 14,500,000 engineering man hours, a 70-fold increase in less than 20 years.



to release or revise fully coordinated military standards and specifications makes the industry standards indispensable. There are now approximately 600 active NAS standards representing contributions from the National Aircraft Standards Committee and other AIA committees. New standards being developed and recently released show increased emphasis on standards for missiles and ground handling equipment.

Customer Differences Introduce New Standards Problems

With additional branches and agencies of the military procuring weapons from the aircraft companies, the significance of the long-established working agreements, lines of communication and understandings with the Air Force and Bureau of Aeronautics through the Aeronautical Standards Group and the Council for Military Aircraft Standards have decreased. The new customers' nonacceptance of the direct use of industry standards and their different approach to standards have caused confusion and inefficient duplication within industry. AIA has recommended to the Department of Defense that: (1) the DOD establish a policy which would permit direct use of NAS and AMS standards and specifications on weapons procured by any military agency, and (2) The Council for Military Aircraft Standards be broadened to include representation from other military agencies such as Army Ordnance and Naval Ordnance. Industry believes that these moves would promote greater and more economical use of standard parts and materials.

Who Will Develop Needed New Equipment Standards?

Both the military and industry apparently agree that the standardization of hardware and materials is progressing fairly well. But in the area of the less complex equipment, much of which was formerly Government Furnished Equipment, increased standardization effort appears necessary. Under the GFE setup, standardization of equipment was carried on by the military, but these standards have never kept abreast with fast moving design requirements or improvement in the equipment design. The military is concerned that under the weapons system philosophy there may be even less equipment standardization.

In response to direct questions from the Air Force, AIA replied that: (1) increased standardization of less complex designs of equipment is possible and would pay off; (2) if the standards are going to be adequate for today's and tomorrow's weapon designs, they must be promulgated and kept current by the using industry, rather than by the military; (3) direct means must be found for paying industry for this standardization work. Recent efforts by the military to curtail overhead expenses have already reduced industry standardization activities.

AIR FORCE APPROVAL OF CONTRACTOR DEVELOPED MATERIAL

Through the intensive efforts of the AIA's Engineering Contract Requirements Committee, agreement has been reached with the Air Force on a streamlined procedure for approval of Contractor Developed Material. Preliminary experience in recent contracts points to considerable savings in cost and time delays to the contractor. To quote the Air Force Instruction on this new system:

"b. Present procedures for review and approval of contractor development items involve controls by ARDC of design quality at levels of components (black boxes). Serious consequences result through delays and costs attended with review of too many details; too many engineering man-hours are required and the development time cycle is too long. The contractor needs maximum design freedom to meet stringent performance requirements.

"c. Agreement on the approach to development, testing, and management must be reached with the contractor and Government agencies (Center-WSPO-AMC). Approval must be at a level of the largest subsystem or equipment grouping capable of independent operation, and suitable for evaluation and management as a functional entity.

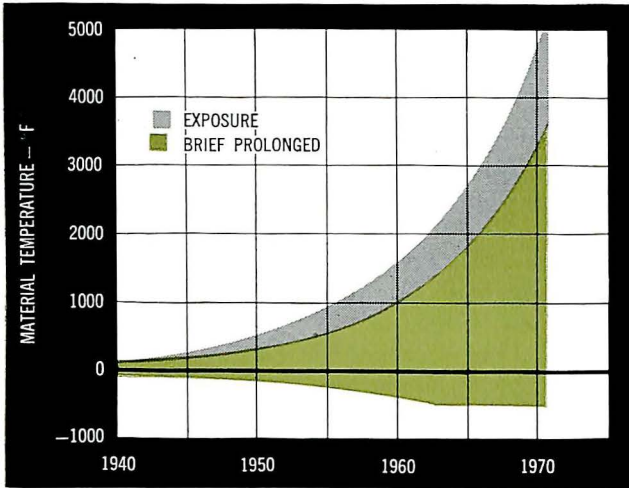
"d. ARDC cannot redelegate its responsibility for functional quality. ARDC must delegate maximum authority for design and performance. Contractors must account for their actions and must report their progress. Approval time must be reduced to a minimum."

MATERIALS AND PROCESSES RESEARCH

Newer propulsion systems developed by the industry, together with associated aerodynamic research achievements, have not been able to achieve maximum results because of serious shortcomings in structural materials and processes. This "bottleneck" in the industry's national defense effort has become critical and an all-out basic research effort is needed.

The AIA's Aircraft Research and Testing Committee has for the past several years, at the request of the Department of Defense, conducted an Annual Survey of Five and Ten-Year Requirements for Materials, Processes, Testing and Manufacturing Methods. In its 1958 report the Committee pointed out:

"As the result of increased performance, aircraft and missiles must be capable of efficient operation in a high temperature environment. Estimates of top operating temperatures within the next five years include 1200°F for prolonged exposure, and 2000°F for a few minutes. Within the next ten-year period, operational temperatures are expected to reach 2500°F for a few minutes, and 4000°F for a few seconds. Design data covering such extremes, there-



As speeds multiply and space travel nears, the critical temperature environments rapidly increase in severity. The ARTC has cited six advanced metals for structural development—Beryllium, Chromium, Vanadium, Molybdenum, Tantalum and Columbium.

fore, will be required within the next three/five years. Liquid propellants for missiles make low temperature properties, down to -450°F , also important.

“Recent developments in space flight emphasize the need to collect all possible data relative to operation in space. This should not only include the environment but also re-entry conditions with the associated temperatures and rate of temperature rise.

“Properties at temperature must approach the room temperature efficiency now possessed by commonly used structural materials. Ease of fabrication is as important as strength, and problems of joining, forming, machining, and heat treating should be studied. Moreover, the effects of nuclear radiation on metal properties should be determined. Attention should be given to reliability of metallic materials under environment of heat, cold, corrosion, and nuclear attack.”

Estimated requirements for metallic materials for the ten-year period are noted below.

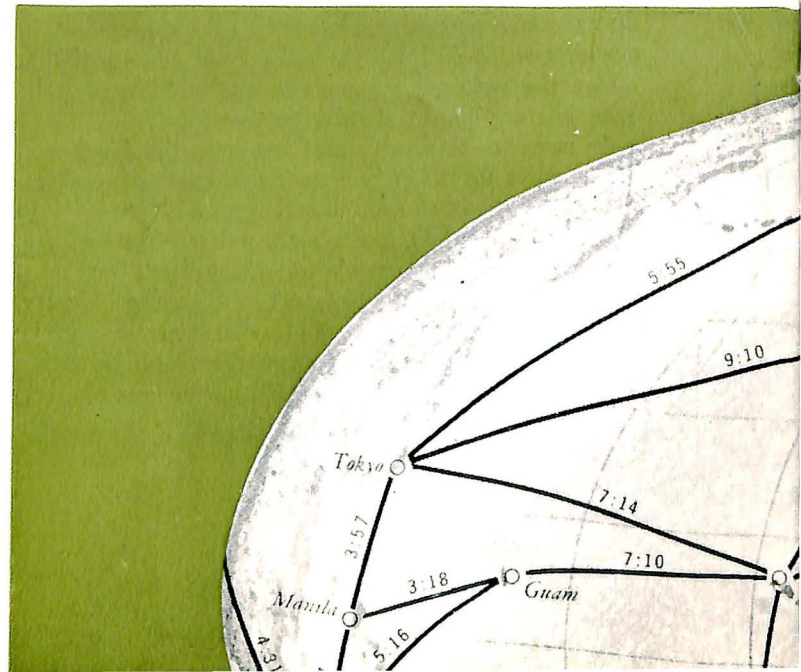
- Development of beryllium and its alloys into commercial materials suitable for structural applications up to 1000°F .
- Development of niobium, chromium, vanadium and their alloys for use up to 2000°F .
- Development of molybdenum and tantalum and their alloys for use up to 4000°F .
- Development of semi-conductors for use up to 1000°F .
- Investigation of additional composite structures such as waffle, metal and non-metal, glass reinforced metals and cermets.
- Development of high strength single crystal metallurgy.

In addition, studies have been conducted by the Aircraft Research and Testing Committee on current flight test instrumentation practices and applications of automatic data processes, target specifications for high strength heat resistant steel, titanium and sealing compounds for integral fuel tanks as well as test procedures established for high temperature sandwich structures.

FEDERAL AVIATION AGENCY

A major development of 1958 was congressional action to establish a single Federal Aviation Agency, encompassing the Civil Aeronautics Administration, Airways Modernization Board and all rule-making functions of the Civil Aeronautics Board. AIA supported this action and industry hopes that revised policies of a basic nature can be developed under the new FAA Administrator to facilitate type certification of new engine and aircraft designs and to provide a better environment of FAA-industry cooperation, free from the “legal straight jacket” which has now enveloped and which controls all CAA field rule-administration decisions. We must return to an evaluation of product safety on the basis of technical rather than legal compliance with the airworthiness regulations.

With the present CAA-CAB organization, airworthiness design rules for aircraft, engine and propeller type certification are promulgated by the Civil Aeronautics Board. The administration of these rules is performed by the CAA, but the manufacturers (and CAA) have always had recourse back to the CAB (the rule-making body) for an objective and impartial review whenever an important CAA-manufacturer controversy arose. This distinct separation between Government legislative (CAB) and administrative (CAA) functions has provided a court-of-appeals which will no longer exist under the new FAA organ-



ization. President Eisenhower, in his June 13th Message to Congress, stated that: "Decisions of the Administrator with respect to such regulations should be final, subject, of course, to such appeals to the courts as may be appropriate." With respect to airworthiness regulations, which are complex technical rules having both safety and important economic implications, the courts, as such, would be totally inadequate to render a qualified decision. In effect, the manufacturer will have no recourse from a decision by the Administrator and we consider this unsound in principle. Further congressional amendment to the Act may be necessary if this situation becomes acute.

CIVIL TYPE CERTIFICATION OF PRODUCTS

The past year has established an all time peak in industry civil type certification of new aircraft and engines. Most significant, of course, has been the availability of turbine engines for civil aircraft. The thrust capabilities of the turbine, the effect of temperature and humidity on power and the high altitude, and high speed aircraft performance with turbine engines have created regulatory and certification problems of great importance. The AIA's Engine Committee and Airworthiness Requirements Committee have cooperated with the airlines, CAA and CAB to resolve the controversial airworthiness issues, many of which have an important bearing on economics that are deserving of management attention.

Turbine Transport Performance

In the Turbine Transport Category, performance rules of CAR 4b have had a major revision. Complete temperature and humidity accountability is now required and climb-ability, in terms of feet-per-minutes based on stalling speed, has been replaced by a new concept of gradients-of-climb to insure obstruction

such as rotational capability of the aircraft upon lift-off and on all-engine take-off, have not been resolved to the industry's satisfaction and unnecessarily long runways and extended clear areas may be required of the operators and airport owners—an economic penalty.

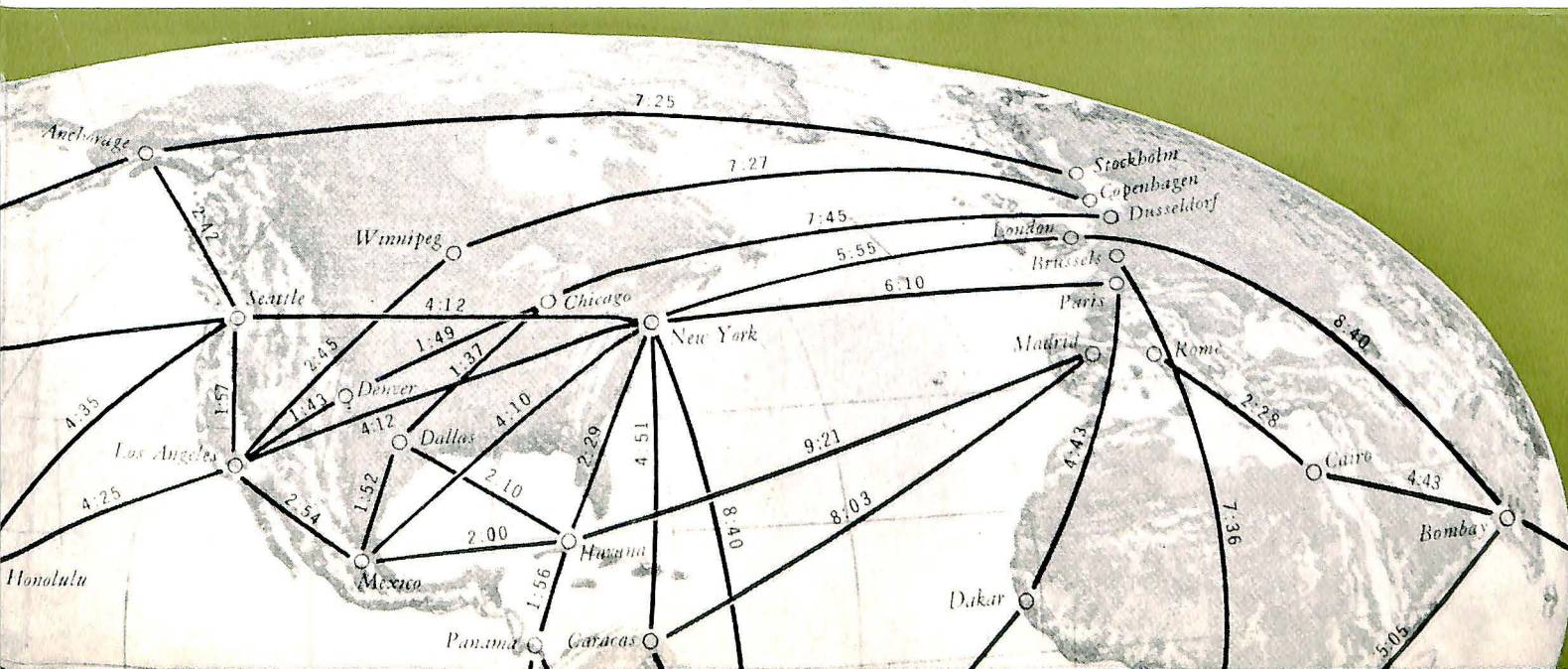
Decentralization of Engine Certification

Over the AIA Engine Committee's strongest objections, the CAA has shifted its previously centralized (Washington, D. C.) type certification of aircraft engines to the various CAA regions. This can only result in a piece-meal CAA operation with attendant inefficiencies to the manufacturers, communication delays, increase in total number of CAA powerplant specialists required, and coordination difficulties with the airframe companies located in all parts of the U.S. CAA has indicated that the shift was made "to benefit" industry. Recentralization of engine certification under the Federal Aeronautics Administration will be an industry objective.

Limitation on use of NX Certificated Aircraft

The present system of CAB certificates covering the airworthiness of aircraft used in civil operation has become inadequate to satisfy certain requirements. Seriously needed is a new class of airworthiness certificates to cover aircraft that may or may not be intended for eventual NC certification, but that have been proven in flight and are being used by the manufacturer for purposes of demonstration to potential customers, for operators' crew training, for safety design improvements, for product development, for new equipment check-out, for function and reliability testing and for a myriad of other uses found essential in the aircraft manufacturers' normal business. In solution, the Airworthiness Requirements Committee has recommended to the CAB that a new Special or

Jet travel times—if not airport runway limited.



Provisional airworthiness category be established to bridge the gap between NX and NC aircraft uses. When this is accomplished, the use of NX certificates can be restricted to apply to aircraft that are strictly experimental in nature.

FLIGHT TESTING AND USE OF AIRSPACE

Major difficulty has been experienced throughout the year in the manufacturers' aircraft flight test operations due to CAR Part 60 changes, CAA administrative flight limitations on NX aircraft, military directives on flight procedures for military aircraft and new or enlarged areas restricted for weapons testing. The severity and continued importance of this problem has prompted AIA to initiate an industry activity aimed at a solution. Tentative conclusions reached are:

- There is need for a full and comprehensive understanding, by the Airways Modernization Board and the ACC Airspace Division, of the manufacturers' flight test area needs and recognition of the established Approved Flight Test Areas in subsequent Regional Airspace Subcommittee deliberations.

- There is need for a public relations effort by ACC to acquaint all users of the airspace with the location and nature-of-utilization by the manufacturers of the Approved Flight Test Areas.

- There is need for an effective means of coordination of all outside "channels of communication" with the manufacturer regarding how and where he must perform his flight test operations.

- There is need for definitions that can apply to both military and civil aircraft, as well as for modification of the now too-broad application of NX certificates.

THE AIRPORT PROBLEM

The President's veto of the Federal Airport Aid Bill was a blow to those municipalities that have been planning enlarged airports for jet transport operations. The full capabilities of the Boeing 707, Douglas DC-8 and Convair 380 aircraft can provide the traveling public with heretofore economically impossible non-stop long-range flights if runway take-off lengths are not limiting.

The purpose of the CAA's Technical Standard Order TSO-N-6b was to establish the *maximum* runway lengths for which 50 per cent financial aid would be forthcoming under the Airport Aid Bill. The AIA's Airworthiness Requirements Committee has acknowledged the need for a standard for disbursing Federal funds, but has also pointed out the fallacy of using the TSO criteria as maximum requirements. In the ICAO classification, runway distances prescribed for various types of aircraft operation are the minimum required. It would be well to convert the TSO document into a guide for airport planners, using the run-

way dimensions as *minimums* in keeping with the ICAO policy (see charts pages 24-25).

PROPULSION SYSTEMS

Revised Specifications for Turbojet Engines

Proposed revisions to specifications which will cover what is probably the final "family" of turbojet engines, issued for industry review and comment, culminated in a Joint Services-Industry Meeting. The foremost change, written into the requirements for the first time, is the concept of inlet airflow and temperature constants, rather than guaranteed thrust. Other new requirements, aimed at producing more satisfactory engines for high mach number operations, include running the tests with a high amount of fuel contamination and for approximately seventy hours additional time at high altitude conditions.

Engine Performance Data on EAM Cards

During the year, performance and computer specialists of the engine, airframe, and missile manufacturers developed a Routine for Use on Electronic Automatic Machines to present engine performance data in a form readily usable by the airframe and missile manufacturers. When final details of the Routine are completed, they will be issued as an SAE Aeronautical Recommended Practice, available for use by the aircraft industry and Government.

Ratings for Helicopter Turbine Engines

At a special meeting called by the Civil Aeronautics Administration's Powerplant Branch, American engine manufacturers met with those of the United Kingdom, along with American and British manufacturers of helicopters and the Air Registration Board, to develop a more acceptable series of ratings and tests for turbine engines used in helicopters. The new ratings, which will permit the usage of maximum powers for short periods of time during emergency operations, will provide increased payloads and a sound basis for more economical helicopter operations.

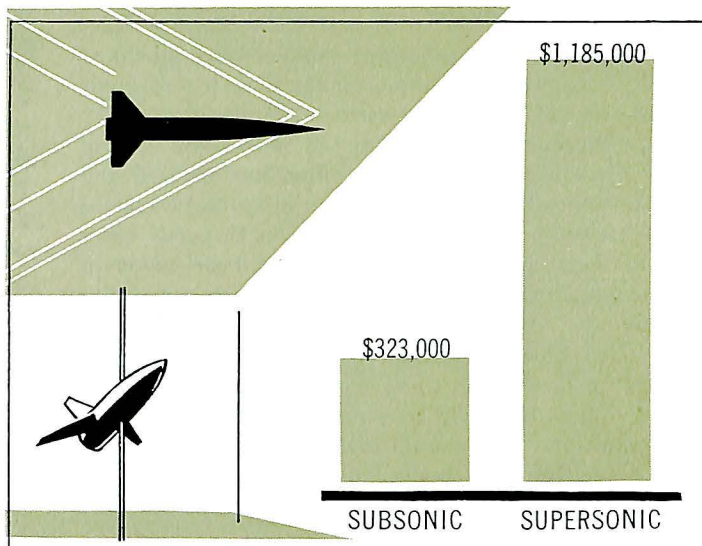
Propulsion System Specification

A specification has been developed by the Liquid Propellant Division of the Rocket Committee which is aimed at definition of responsibilities of the Weapon System Team members insofar as the propulsion system is concerned. Although the rocket and missile manufacturers have expressed a desire that the specification be retained as an industry document, copies have been provided the military services with a suggestion that it be used as a guide at such time as the military services contemplate issuing a similar specification.

Rocket Components Specifications

Specifications for use by the rocket engine manufacturers in the ordering of various system components have continued under development in conjunction with

The wind tunnel is one of the most valuable research tools in the aircraft industry. Feasibility of advanced designs are proved before a prototype is built and tested in actual flight. The cost of these tests has increased, however, as the U. S. aircraft industry moves into higher speed ranges. For example, the wind tunnel testing of a subsonic aircraft cost \$323,000, but the cost of a supersonic aircraft tunnel test amounted to \$1,185,000.



components manufacturers. Five specifications for the most commonly used components are presently in use. It is expected that specifications for similar additional applications will follow. Because some confusion existed in the military services due to lack of standardization in the area of performance presentation, the Rocket Committee developed a recommendation of standard conditions for performance comparisons. This affords the military services a direct means for comparing performance data presented by the manufacturers of solid propellant rocket engines.

The need for advanced materials to be used in rocket and missile construction prompted the Rocket Committee, acting in conjunction with the Aeronautical Materials Specification Group of the SAE, to establish a special panel to develop "target" material specifications for this use.

UNIFIED DRAFTING DOCUMENT

Considerable effort has been expended by the industry in cooperation with the Department of Defense to eliminate the necessity for manufacturers to prepare drawings in different format for the same items but purchased by different military departments. In August 1957, the Department of Defense inaugurated a project known as "DOD Project #703-27." Meetings of military and industry ad hoc groups at two-week intervals from that time until July of this year resulted in the completion of "Phase X" document. The initial objective was to produce a document which would supersede all other military drafting documents and which would require that only one set of drawings need ever be produced by a contractor, but this objective has been only partially achieved. The Joint Drafting Panel of the AIA will meet with the Department of Defense officials early in January 1959 in a final effort, and the new DOD document will be published about 1 May 1959.

ACCESSORIES AND EQUIPMENT

The Accessory and Equipment Technical Committee tightened its internal structure during 1958 in a reorganization which eliminated a number of unproductive Committee units, and focused its attention on problems believed to be of major concern to accessory and equipment companies.

Although primarily associated with the Armed Services Procurements Regulation, Section IX, the Proprietary Rights problem is an important aspect of the Unified Drafting Practices problem. Believing that equitable solution to the Proprietary Rights problem is of particular importance to the accessory and equipment companies, major attention was devoted to injecting the views of the equipment industry segment into the over-all industry recommendations to the DOD on both the ASPR revisions and on the Unified Drafting Practices project.

ELECTRONIC EQUIPMENT

Due to three or four-year delays between parts development and military documentation of buying and engineering information, only 20 per cent of parts needed for electronic systems design can be procured to military specifications. Eighty per cent of the parts needed have no reliable test data or procurement document. The system designer must, therefore, perform engineering tests of samples from dozens of vendors and write a specification for procurement, and obtain military approval of each of the hundreds of items selected. With duplicate effort by thousands of other designers with similar requirements a great waste of time, money and test facilities ensues. The AIA Electronic Parts Committee has urged the military to alleviate the problem by collecting and disseminating test data and procurement documentation. What is needed is a semi-annual catalog of parts available, backed by test data and procurement documentation.

Equipment Reliability

The significance of reliability has been brought into focus by the loss of million dollar missiles through malfunction of fifty cent switches and fifty dollar valves. Increasing complexity of electronic equipments demanding higher reliability has created the need for specifying reliability in quantitative terms as well as in specifying test procedures to verify compliance. Internal reorganizations have been made in many companies to realign and strengthen reliability control.

The AIA Electronic Reliability Panel is assisting the military in developing these requirements in the hope of arriving at a single tri-service reliability doctrine and definition. This should insure a minimum of conflicting requirements being imposed on designers by their various customers.

Semiconductors

The rapid increase in usage of semiconductor devices, together with their rapid technical improvement, has been one of the major breakthroughs in development of electronic systems in smaller, lighter and cooler packages, with reduced power requirements.

The AIA Electronic Parts Committee has led the way in defining users' future needs for new devices and in preparation of documentation of device characteristics and procurement and application data needed by equipment designers.

Teamwork Produces Sound Electronic Design Requirements

General design requirements for electronic equipment have been made dynamic and kept up-to-date through teamwork of Air Force, Navy BuAer and AIA/Electronic Specification Committee in regularly scheduled meetings. These meetings have served to channel thinking and provide substantial agreement on new requirements necessitated by the rapidly changing technological developments in electronic design. This is saving the military and industry time and money by reducing the number of divergent design requirements by different services, as well as reducing the number of deviation requests by designers and improving the product at the same time.

Acceptance Tests for High Reliability Parts

Test procedures in military electronic parts specifications are based on economy of inspection and protection of parts producer from having good lots rejected. These procedures provide no protection to the buyer against having to accept lots with from three to twelve per cent defective parts. Industry electronic systems designers believe this false economy since the cost of an adequate acceptance test is small compared to that of allowing three to twelve per cent defective parts

to get into production, and thereby introduce high cost of frequent reworking of systems on production floor to remove defective parts which may be encapsulated with dozens of other good parts, plus the losses of missiles and spacecraft due to defective parts not detected in production testing. The AIA Electronic Parts Committee has defined this problem and its solution awaits positive action by the military services to provide parts specifications with high reliability assurance provisions.

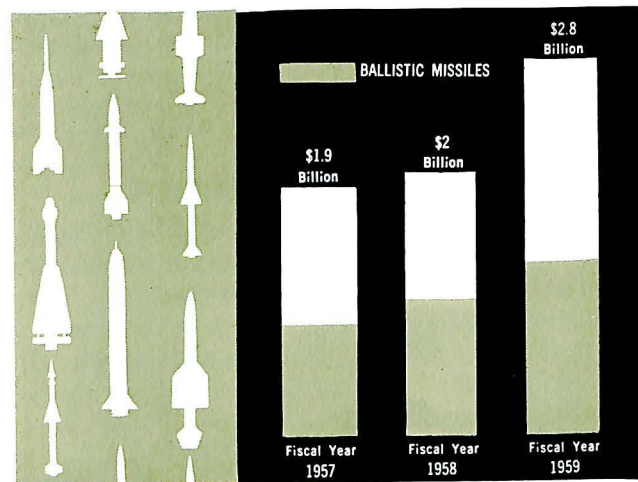
AIR FORCE MAKE-OR-BUY POLICY

The Air Force concern for cost, competition, and requirements for additional Government facilities, coupled with the trend to weapon system procurement, has led the Air Force to the development of the "Make-or-Buy" policy, as a management tool to focus attention on obtaining maximum support from available privately-financed production capacity. Our Materials Procurement Committee is currently studying proposed contract clauses intended to implement this policy. Industry is concerned over the extent of Air Force participation in management decisions and hence negotiation, as to the degree of subcontracting.

DEFENSE MATERIALS SYSTEM

Defense Materials System was originally conceived as a materials reporting and distribution system to assure defense needs and provide a basis for mobilization measures in the event of an emergency.

While recognizing the need for priority ratings, the Materials Procurement Committee is concerned that



Ballistic missiles in Fiscal Year 1959 will account for approximately one-half the \$2.8 billion scheduled for all Air Force missile programs. This amount does not include research and development or construction requirements. The member companies of the Aircraft Industries Association are the prime contractors for every major USAF missile and in programs for the other services these companies make one or more of the three major missile components—airframe, guidance or power plant.

the system has become obsolete in view of changing concepts of mobilization, and the cost of continuing cumbersome reporting requirements under the circumstances does not appear warranted.

QUALITY CONTROL AND INSPECTION

The Quality Control Committee assumed a top stature within AIA's Technical Service during 1958, with a principal objective of formulation of the industry's opinion on broad policy questions. Two working committees, subordinate to the main committee, were activated to work out problems requiring exacting study for development of solutions. Further, in line with the principle of grouping of committees having related fields of activity, the Technical Service assumed responsibility for providing staff service to the QCC and its working committees.

Reorganization in Government activities did not affect the quality control and inspection effort in industry; on the other hand, change in product mix did. As the volume of missile development, production, and test increased, the percentage of total effort expended in quality control and inspection increased more than proportionately. However, the change in product mix demanded more of the engineer type of quality control and inspection personnel.

A statistical summary compiled annually through cooperation of members of the Quality Control Committee enabled member companies to assess their distribution of quality control effort and effect changes which either increased the reliability of product or decreased costs depending on the circumstances. Participation in this "Quality Control System Reference Study" has increased from year to year.

The long sought DOD proposed Mil Specification, "Quality Control System Requirements," should become a reality by the end of the year. For the past several years, the Quality Control Committee has pressed for such a specification. It will provide uniform contract requirements regarding quality control systems and thereby will be of great assistance to contractors dealing simultaneously with the several military services.

NUMERICALLY CONTROLLED MACHINE TOOLS

The Aircraft Industries Association's Numerical Control Panel, working jointly with Air Materiel Command and Massachusetts Institute of Technology, is on the brink of the first major breakthrough in advanced computer programming systems to reduce the human effort required to program numerically controlled machines. The ultimate objectives of this effort encompass teaching electronic computers the machining art. Computer programmers of the future will define parts in terms of surfaces, and the electronic computer will produce the punched cards, magnetic tape or punched tape with the optimum signalled program

for machine motion control. Extensive activity is under way in the field of solving problems of the initial application of first generation numerically controlled machines. Carried on as cooperative development by the aircraft industry within the AIA structure, interchange of information between member companies has been extremely helpful in enabling the industry to make early and effective application of numerically controlled machine tools.

In-Plant Test Equipment

During 1958, the Manufacturing Test Equipment Committee (MTEC) continued effort on its long range objective to develop and produce and apply inplant test equipment with optimum product reliability at the lowest possible cost. Several significant project areas resulted in a more standardized approach to design and procurement of the equipment. Included were MTEC technical reports titled "General Specification for Design of Production Test Equipment," "Reference Specification for Portable 3-System Hydraulic Test Stand," "Preferred Standard Circuits in Electronic Test Equipment" and "Requirements for Calibration Laboratory for Inplant Test Equipment."

In addition to the foregoing, twelve formal projects are in progress dealing with many significant aspects of the design, procurement, manufacture, application, calibration and maintenance of all types of inplant test equipment. The principal problems under attack are those of high labor, material and cost for design and manufacture, and line utilization of new test equipment of ever increasing complexity. Significant effort will be concentrated in the forthcoming year on major problems such as fluid filtration, correlation techniques and practices, test equipment material standards and automatic programming of electrical and electronic test equipment.

CONSERVATION IN MANUFACTURING

Because of the wide and varied connotations of the term "Conservation," the Manufacturing Conservation Committee (MCC) has embraced a wide variety of efforts to reduce costs by more efficient utilization of materials through inplant educational programs. Geared for consumption at the working level in direct and indirect departments alike, substantial cost reductions have resulted. In excess of 300 "cost-cutting ideas" were interchanged between the member companies. Also released during 1958 was the revised Conservation Handbook which has received nationwide acceptance.

Progress has been made, working with four titanium suppliers, in the development of a standard color coding system for titanium sheet materials. Ultimately, fabricating costs should be lowered through proper selection of materials in the shop and scrap resale value substantially increased through means of accurately identifying and segregating titanium offal.

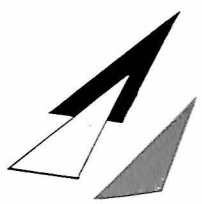


TRAFFIC SERVICE

WHILE the Government has the benefit of freight rates developed by the ingenuity of the traffic manager in industry in connection with articles generally found in commerce, rates on commodities used largely by the Government have remained on a very high level even though rates lower than published tariff rates may be accorded the Government under provisions of the Interstate Commerce Act. Following World War II, the Attorney General endeavored to recover some of the charges on these high-rated commodities but was denied by the Interstate Commerce Commission (294 I.C.C. 5). The reasons for this status are fairly clear.

Transportation legislation enacted in the past three and a half decades, primarily, has been at the instiga-

tion of carriers, with the result today we have regulation by the Interstate Commerce Commission not *of* carriers but *for* carriers. Regulation for the public good is largely determined by the good which is presumed to flow to the carriers. This has resulted in regulation, which, in important aspects, is the antithesis of that designed by the original 1887 Act to Regulate Commerce. Illustrative of this is the suspension proceedings now employed by the Commission. In 1910, upon representations of an aroused public when the railroads attempted to impose a radical increase in freight rates, Congress gave the Commission power to suspend increased rates. The increases were suspended and later were ordered by the



Commission to be canceled. So completely has this provision of the Act been reversed in its application that today 95 per cent of the suspension orders of the Commission are issued not to prevent rate increases but to prevent rate *reductions*.

In 1948, following four years of intensive effort by the railroads, carriers were relieved of the provisions of the anti-trust laws in their association agreements to make rates by concerted action. Some senators were extremely loath to enact this legislation, and finally, to bring about an agreement after extensive consideration, paragraph (6) Section 5a of the Interstate Commerce Act was adopted. It provided:

"The Commission shall not approve under this section any agreement which establishes a procedure for the determination of any matter through joint consideration unless it finds that under the agreement there is accorded to each party the free and unrestrained right to take independent action either before or after any determination arrived at through such procedure."

While this ruling seemed to assure independent action by individual carriers, actually these provisions of the law are circumvented by applications for suspension by carrier associations in the areas involved. Rates filed by independent action are usually suspended and ultimately ordered canceled by the Commission on default. Individual carriers usually cannot afford the cost of defending their rates. By this process the provision has largely been rendered innocuous.

The changes made in the Interstate Commerce Act have permitted innumerable applications by carriers for increases in rates, each compounded on its predecessor. In 1913, the year preceding the first general rate increase authorized by the Commission, the first-class freight rate between Chicago and New York was 75 cents per hundred pounds. Currently, it is \$4.53, a net increase of 504 per cent.

Today the progressive industry is striving to reduce its transportation costs and as relief in this respect cannot readily be secured from the Commission, resort is had to competition. How effective is the employment of competition may thus be illustrated. In August 1957, the Commission authorizing railroad rate increases in a proceeding known as Ex Parte 206, said:

"We have heretofore suggested that the time had probably come when consideration should be given to ways of increasing rates other than by means of horizontal increases. The carriers should give consideration to this suggestion. If tariffs are filed as outlined herein, they should reflect the results of this consideration."

The railroads interpreted this to mean that those who could divert the traffic from them would be accorded very moderate or no increase, while those who

could not divert their traffic would be accorded increases greater than the average to compensate for the deficiencies.

The carriers proposed an increase of 5 per cent on aircraft parts and aircraft engines, whereas, on machinery of substantially all other kinds no increase was proposed. The Department of Defense and Aircraft Industries Association submitted data showing that the rates on aircraft parts today were contributing more per ton to railroad dividends than was contributed by any other commodity. The railroads defended their proposals, asserting that if competition for this business increased they would reduce their rates accordingly. Although these data were not controverted, the Commission in its decision, handed down September 9 of this year, observed: "There may be specific movements of these commodities where competitive or other conditions would justify respondents in removing the proposed increase but this cannot be determined on this record." In this report, which showed the average increase to be 2.3 per cent, the Commission found the 5 per cent increase on aircraft parts just and reasonable and that the development of competition was the prime requisite for any reduction in these rates.

Because the routing control of this traffic is in the hands of the Military Traffic Management Agency, the aircraft industry is largely without power through routing to exercise restraint upon carriers in their imposition of rate increases on finished airplane parts moved as spares, on raw or semi-processed material or on equipment (factory or aircraft) where title rests in the Government.

Today the authority to route shipments of 1000 pounds or less owned by the Government is in the hands of the aircraft manufacturer. Shipments over 1000 and less than 10,000 pounds are in the hands of Air Materiel Command, those 10,000 pounds and over are controlled by the Military Traffic Management Agency. Air Materiel Command proposed that prime contractors be placed in control of all shipments to their plants from subcontractors and vendors, irrespective of weights.

Government control of shipments moving under CPFF contracts has created an anomalous situation. Although prime contractors under the weapon system concept have complete control of production in the selection and purchase of raw materials and in the manufacturing process conducted by the subcontractor, when these materials, semi-processed or fully-processed, come even temporarily into the possession of a carrier, the Government takes over if the prime contract is of the cost-reimbursable type. When that part of the transportation is completed, the article then returns to the control of the prime contractor. It seems strange that a contractor, entrusted with the complete development of the article from its inception to de-

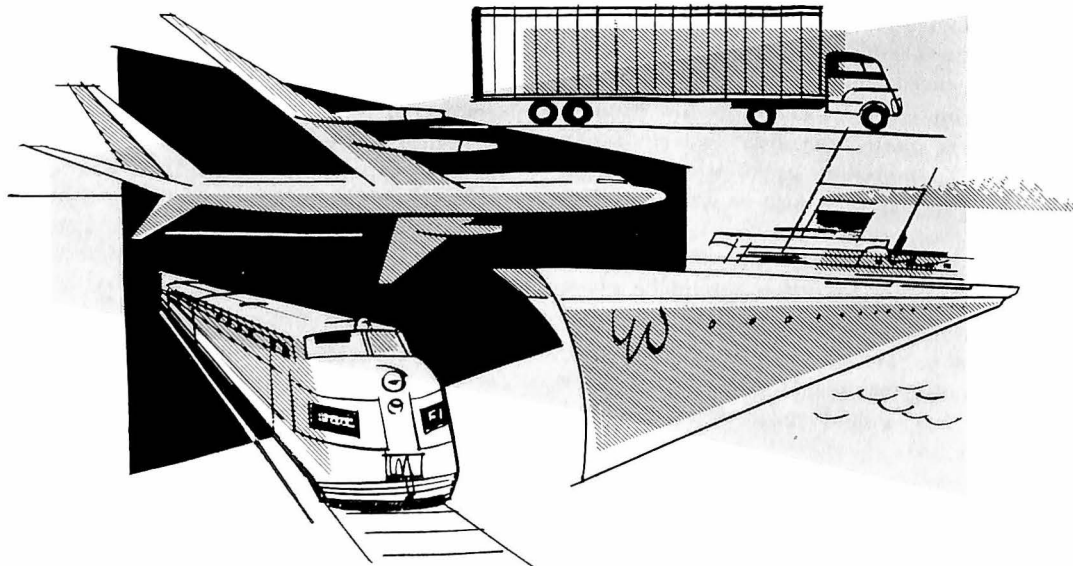
livery of the finished product, cannot be entrusted with supervision over its transportation. During World War II this created many delays because the use of Government bills of lading was mandatory and prime contractors were denied supplies of such documents on the theory they represented very substantial values. By some, it was presumed these documents were negotiable and, therefore, represented the value of the commodities transported. The burden thus created in the use of Government bills of lading has been partly alleviated, first, by permitting shipments of 1000 pounds or less to move on commercial bills under control of the prime contractor; second, by giving the prime contractor an ample supply of Government bill of lading forms; and, finally, by giving some prime contractors authority over all shipments less than 10,000 pounds.

The 10,000 pound limit presents its incongruities. The Pacific Coast aircraft manufacturers have been able to accomplish an average saving of \$1.60 per hundred pounds in freight charges by the consolidation of less carload shipments into carloads at eastern U. S. origin points on shipments involved in fixed-price contracts. For some time prime contractors have been trying to secure authority to consolidate, in these cars, shipments of Government-owned material moving under cost-plus-fixed-fee contracts. When this is done it is necessary for shipments to move on commercial bills of lading with complete control in the hands of the prime contractor. It now appears that authority will be issued to accomplish these consolidations on Government shipments weighing less than 10,000 pounds. This will be the result: On a shipment of 9,999 pounds, the prime contractor will be authorized to save the Government \$159.18; but on a shipment of 10,000 pounds or over, the prime contractor will be denied the opportunity to save the Government

\$160.00 or more because authority to route shipments of 10,000 pounds or over remains in the hands of the Military Traffic Management Agency.

While competition in the past has been a factor in making rates, the action of the carriers and the decision of the Commission in the recent Ex Parte 212 proceedings stamp it as the dominating factor in that process today. Failure to employ competitive forces is treated by carriers as a weakness which deserves no consideration in their scheme of rate making. Because of the advantages which flow to the Government, Air Materiel Command has proposed that the control of all shipments moving under cost-reimbursable type contracts, from vendors and subcontractors to prime contractors' plants, including use of commercial bills of lading, be vested in the prime contractor. Because of the restrictions which impede the armed forces in the routing of traffic, and thereby defeat the use of competition for the best interest of the Government, we would go further and urge that the control of movement of all Government-owned material, prior to completion of the end article and the movement of the end article to first destination, be placed in the hands of the prime contractor, and that Government bills of lading be employed except in those instances where the Government's best interest will be served by use of a commercial bill, such as shipments in consolidated cars.

In the course of its year's work, the Traffic Service has secured reduced rates for the movement of electronic equipment produced in connection with missile development, which will assure individual members a saving in transportation costs estimated for one year to be \$100,000, and it is engaged continuously in defeating carrier efforts through tariff interpretation to impose substantially higher rates than a lawful interpretation warrants.



HELICOPTER COUNCIL

ACTION taken by The American Legion at its 1958 national convention highlights increasing public support being given the helicopter producers in their program to overcome antiquated regulations which are delaying the introduction and development of helicopter service in many areas.

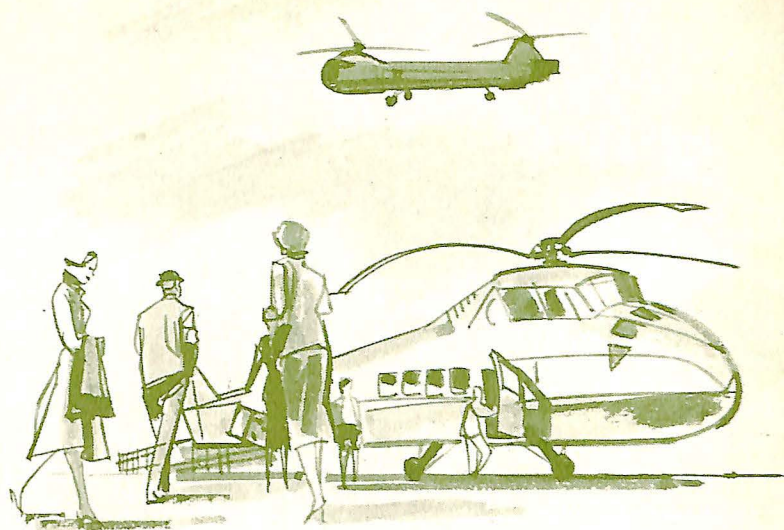
The Legion, in official resolution at its Chicago convention, pointed out the usefulness of the helicopter *"as a scheduled carrier of passengers, mail and cargo, an aerial bus or taxi, an emergency rescue vehicle and as a workhorse in a variety of tasks for both Government and private industry."* The resolution further recognized that *"the tremendous potential of the helicopter, our most versatile vehicle, will not be realized until we eliminate any and all administrative and regulatory roadblocks to its operation,"* and concluded by urging that "Legionnaires of our 17,000 Posts should take the lead in their communities in providing helpful information to municipal authorities as to the significance of helicopter operations in any given community and in preventing the adoption of any restrictive regulatory handicaps."

The strong support given the helicopter by the military forces has provided the basis for the development of a substantial commercial market. The great variety of essential services the helicopter performs for the armed services has served to draw the attention of commercial users who can as well apply the helicopter's adaptability to civil needs.

In the commercial field, the past year showed a 37 per cent increase in the number of operators in North America as against 1957, and a 37 per cent increase in the number of helicopters. A fourth-quarter summation shows more than 100 helicopters being operated for executive and company use; more than 500 by the 120 commercial operators; 25 by the three certificated airlines and 29 by 12 state and municipal agencies.

Rapid developments in the gas turbine and jet fields are also serving to speed the advent of inter-city transport by helicopter jointly with the development in the fixed-wing jet transport field. Thus, landing space requirements for fixed-wing serve to move the airport farther and farther away from main centers as contrasted to the helicopter's comparatively minor landing area requirements right in metropolitan areas.

The Civil Aeronautics Administration is faced with the publishing of a manual defining heliport establishment, construction and other pertinent qualifications. Due to the precedent nature of the manual, your Helicopter Council has remained in close liaison with those within CAA charged with preparation of the manual. At an industry/CAA conference September



17, the CAA agreed to form a small working group representing the Helicopter Council and other phases of the aviation industry to meet with CAA representatives and undertake the complete revision and updating of the CAA Manual. Plant visits to a number of Council member companies were scheduled to acquire the necessary technical and production planning of the industry.

Meetings of the Council held this year, and travel by staff, have been confined to gatherings considered of prime importance, such as the National Business Aircraft Association and the national forum of the American Helicopter Society. This latter was held in Washington with a staff member serving as Chairman. Participation in the October convention of the South-eastern Airport Managers' Convention sparked a Council project—to direct the attention of the nation's airport executives to the important place helicopter developments should have in their planning.

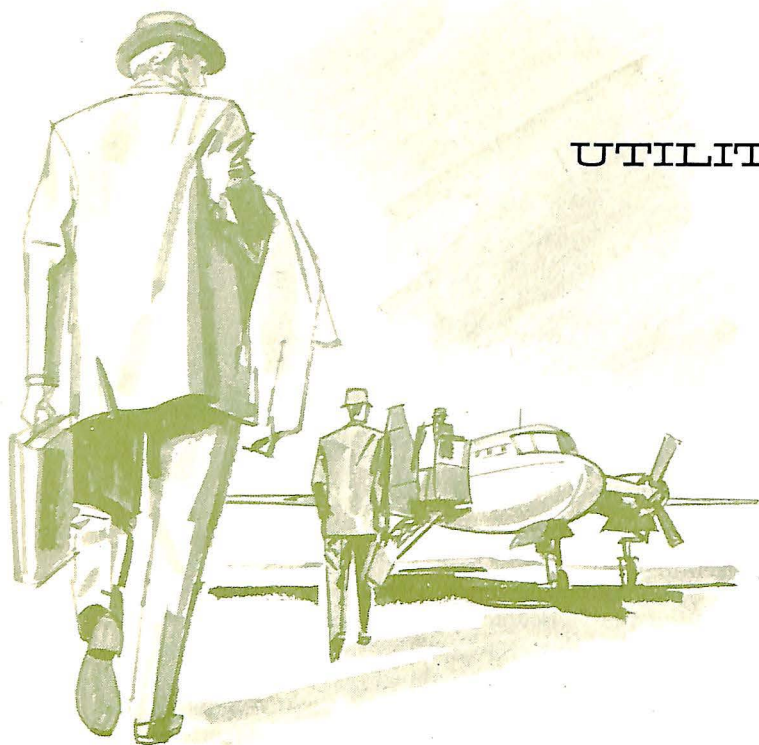
Official statements and testimony on behalf of the Council were made by staff before the Senate District Committee, the Congressional Joint Committee on Washington Metropolitan Problems, the Washington, D. C., Mass Transportation Survey and the Maryland-National Capital Park and Planning Commission.

A twelve-page Heliport Design Guide for charter and private operators was prepared by the Council's Heliport Committee and 10,000 copies published by the Council in early summer. At this writing, distribution has passed the 9,000 mark.

By the Will of the late L. D. Bell, one of the founders of the Council, our Chairman is named as one of three to constitute a selection committee from year to year to select the winner of the annual Grover E. Bell Award administered by the Buffalo Foundation.

Due to the increased concentration by the industry upon development of a very substantial civil market, there has been a sharp increase in the requirements for legal counsel in rendering requested service to officials throughout the country, who, facing a rising tide of public demand for helicopter services, turn to us for counsel.

UTILITY AIRPLANE COUNCIL



THE last five years has seen steady industry growth with almost a threefold increase in general aircraft sales between 1953 and 1957. 1957 sales were 6,118 aircraft with a retail value approximating \$125,000,000. This growth trend continues, as it is estimated 1958 sales will be about 6,300 units with a value at retail of about \$134,000,000. CAA data just disclosed covering annual hours of use also points up this trend, and reveals general aviation flew 8.9 million hours in 1954 as compared to 10.9 million in 1957.

President Eisenhower's Special Aviation Assistant, in connection with some economic studies he was conducting related to airways modernization, asked the Utility Airplane Council to estimate sales for the next five years. Based on information supplied the Council office by UAC members, the White House Assistant was told the industry expected to sell about one billion dollars worth of utility and executive type aircraft in the period 1958-1962.

Related to this sales data, but more difficult to estimate, the Utility Airplane Council members also commented on the wholesale and retail industry selling and servicing the general aircraft fleet. They place this volume currently at about \$500,000,000 and expect it will grow to more than a billion dollars by 1962. Estimates place the gross capital invested in these service companies at about \$200,000,000 which it is thought can easily triple by 1962; and, the utility airplane producing industry estimated it would itself expend almost \$100,000,000 on research and development and in new facilities and equipment during the next five years.

These figures are evidence of the very vital nature of the general aviation industry today, whose product

is now an accepted tool of modern business, industry, and agriculture. As a matter of fact, there are very few fields of endeavor which would not now be harmed were the use of general aircraft to be curtailed.

The active fleet of general aviation exceeds 65,000 units, outnumbering the nation's airline fleet at least forty times. During 1958, based on current rates, these aircraft will fly about 11,500,000 hours. About half of these hours will be for direct business purposes. These business flying hours will themselves exceed airline flying by about one and a half million. The great proportion of the balance will relate in some manner to the business of the user, with sport and non-business flying accounting for less than 20 per cent of the total.

Technical Standard Orders

Some proposed Technical Standard Orders (TSO's) have been proposed, which, if adopted by the Civil Aeronautics Board, could increase the cost and complexity of airborne electronic equipments needed for IFR flight operations. The Council thinks these proposed standards are unnecessarily stringent. They feel existing rules and regulations, along with normal competitive processes of the industry, provide adequate safeguards from the standpoint of safety and the development of new and improved equipments. In fact, Council members feel the great growth which has developed in general aviation in the past few years is in no small part due to the fine and greatly improved navigation and communication equipments which are dependable, simple, accurate, and of a cost, size and weight which make them especially useful to the private pilot. The Council's Engineering Committee coordinated its studies of this and related problems with the overall Technical Committee activities of the Association, and also with studies which were similarly being conducted by other associations active in specialized fields of general aviation.

Pilot Training Requirements

The Civil Aeronautics Administration has also proposed that the requirements for obtaining a private pilot's license be substantially changed, including an additional ten hours (for a total of 50) of supervised instruction and experience as a prerequisite to the private license. While Council members endorse the objective, which is to produce better private pilots, the Council questions the practicability of the proposal. Subsequent studies by the Council's Pilot Training Committee resulted in a recommendation that the requirements for a private license be divided into *two* steps: (1) a Primary License which would be based on demonstration of suitable ability and require a minimum of 25 hours of supervised instruction and experience



and, (2) an Advanced Private License which would impose fifteen additional hours of training and experience and demonstration of satisfactory ability to meet the added requirements.

These additional requirements would include demonstration of ability in the practical aspects of cross-country flying, flight planning, map reading, radio communication procedures, and radio navigation, recognition of dangerous weather conditions and evaluation of weather reports. It would also include five hours of instruction in the operation of aircraft solely by reference to instruments, aimed at convincing the pilot he cannot safely so fly without proper training, but to give him sufficient instrument ability to return to VFR (Visual) conditions should he inadvertently encounter instrument weather.

Council members think such a two-step procedure will result in much more competent private pilots without adding additional hours to the prescribed routine. But it will also require a substantial overhauling of the curriculum and methods now set forth in the Civil Air Regulations, which have not been changed substantially for a number of years, and are in many ways outmoded. The Council has indicated its willingness to assist fully in such revisions.

In this activity the pilot training committee also worked closely with a number of other areas of general aviation activity, through the General Aviation Facilities Planning Group (GAFPG). Its recommendations, along with others, were combined into a joint GAFPG presentation of comments to the Civil Aeronautics Board which carried the endorsement of the whole cross-section of general aviation.

Airport Shortage

The Utility Airplane Council has consistently been greatly interested in the development of an adequate system of airports. It feels there is need for many more small airports close to communities and that even the smallest community can and should have a landing strip to make it air accessible. The great value of general aircraft to the nation's business, already apparent, can be enormously enhanced by the addition of many more small airports and landing strips to those already in use.

Utility Airplane Council members also feel the traffic potential of larger airports can be greatly increased without lowering safety just by setting aside a smaller runway adjacent or parallel to the main runway, with a separate traffic pattern, to accommodate the smaller aircraft which do not need long runways. This would free the main runways for exclusive use by the heavy transports. These long runways are often congested because of the ever-increas-

ing volume of essential general aviation traffic added to that of the airlines. Availability of separate small, but simultaneously used runways and traffic patterns, would thus increase the capacity of these airports for airline traffic while at the same time also accepting a large volume of general aircraft movements.

Joint Activities with GAFPG

The rapid growth of general aviation has placed an ever-increasing burden on the nation's aviation facilities—airports, airways, air navigation aids, and the aviation communication and control system. General aviation shares the airspace and utilizes the nation's airports and radio navigation aids with the airline and military users. In the fall of 1956, the Utility Airplane Council banded together with ten other organizations to form the General Aviation Facilities Planning Group (GAFPG). Since that time, the UAC has participated fully in the activities of this Group directed toward assisting our nation's aviation officials as they develop and put into practice the plans and systems which will increase the capacity of the airways, make flying even safer than it now is, and even more utilitarian. A major accomplishment of the Group was the completion of an eleven-month study of the current significance of general aviation and its potential growth through 1976. Though now two years old, this study still remains as one of the most useful references for aviation planners.

The Group endorsed the legislation which resulted in the creation of the Federal Aviation Agency; and assisted the U.S. Government in its efforts, through an international symposium on short-range navigation aids, to explain the value of and support the VOR (very high frequency visual omni-directional range) and urged its continuation as the single international standard for track guidance and its extension all over the world.

Liaison with other Associations and Government

Council members and its staff are working constantly with other aviation organizations, Government agencies, and individuals to promote mutual objectives. During the past year the Council Manager has served on committees of the GAFPG, and as an advisor or consultant to various committees and panels of the U.S. Air Coordinating Committee. Council members and staff have had frequent contacts with the Special Assistant to the President for Aviation, officials of the Civil Aeronautics Administration and Civil Aeronautics Board, and the newly created Airways Modernization Board, conferring and advising on problems and requirements of general aviation.



AIA MEMBERS

DIVISION A

Manufacturers of aircraft (including but not limited to pilotless aircraft, guided missiles, and rockets); power plants for aircraft; and accessories, parts or material used in the construction or operation thereof.

Aero Design & Engineering Co.
Aerodex, Inc.
Aerojet-General Corp.
Aeronca Manufacturing Corp.
Allison Division, General Motors Corp.
Aluminum Company of America
American Airmotive Corp.
Avco Manufacturing Corp.
The B.G. Corporation
Beech Aircraft Corp.
Bell Aircraft Corp.
Bendix Aviation Corp.
Boeing Airplane Company
Cessna Aircraft Company
Chance Vought Aircraft, Inc.
Chandler-Evans Div., Pratt & Whitney Co., Inc.
Cleveland Pneumatic Industries, Inc.
Continental Motors Corp.
Cook Electric Company
Convair, a division of General Dynamics Corp.
Curtiss-Wright Corporation
Dallas Airmotive, Inc.
Douglas Aircraft Co., Inc.
Dow Chemical Co.
Fairchild Engine & Airplane Corp.
Flexonics Corporation
Flight Refueling, Inc.
The Garrett Corporation, AiResearch Div.
General Electric Company
 Aircraft Gas Turbine Div.
 Defense Electronics Div.
General Laboratory Associates, Inc.
The B. F. Goodrich Co.
Goodyear Aircraft Corp.
Grumman Aircraft Engineering Corp.
Gyrodyne Co. of America, Inc.
Harvey Aluminum
Hiller Aircraft Corporation
Hoffman Laboratories, Inc.
Hughes Aircraft Company
Hydro-Aire, Inc.
Ingersoll Kalamazoo Div., Borg-Warner Corp.
Jack & Heintz, Inc.
Kaiser Aircraft & Electronics, Division of Kaiser Industries Corp.
The Kaman Aircraft Corp.
Kollsman Instrument Corp.
Lear, Inc.
Lockheed Aircraft Corp.
Luria Engineering Co.
The M.B. Manufacturing Co., Inc.
Marquardt Aircraft Co.
The Martin Co.
McDonnell Aircraft Corp.
Minneapolis-Honeywell Regulator Co.
Motorola, Inc.
New York Air Brake Co.
North American Aviation, Inc.
Northrop Corporation
Omega Aircraft Corp.
Pacific Airmotive Corp.
Pesco Products Div., Borg-Warner Corp.
Piper Aircraft Corporation
Radio Corporation of America
 Defense Electronic Products
Republic Aviation Corp.
Reynolds Metals Co.
Robertshaw-Fulton Controls Co.,
 Aeronautical Div.
Rohr Aircraft Corp.
The Ryan Aeronautical Co.
Solar Aircraft Company
Sperry Rand Corporation
 Sperry Gyroscope Co.
 Vickers, Inc.
Sundstrand Aviation, Div. of Sundstrand Machine Tool Co.
Temco Aircraft Corp.
Thiokol Chemical Corp.
Thompson Ramo Wooldridge Inc.
United Aircraft Corp.
Vertol Aircraft Corp.
Westinghouse Electric Corp.
 Air Arm Division
 Aviation Gas Turbine Div.
Zenith Plastics Company

DIVISION B

13

AviQUIPO, Inc.
Parker & Company
Manufacturers Aircraft Assn.
Bellanca, G. M.
Brinckerhoff, Wm. W.
Brukner, Clayton J.
Bush, Charles T.
Chambers, Reed M.
Condon, Cyril Hyde
deSeversky, A. P.
Eggert, H. F.
Fales, Herbert G.
Hanks, Col. Stedman Shumway
Hotchkiss, Henry G.
Kahn, Roger Wolfe
Litchfield, P. W.
Loening, Albert P.
Loening, Grover
McCarthy, J. F.
MacCracken, Wm. P., Jr.
Scholle, Howard A.
Sikorsky, I. I.
Sullivan, John Dwight

**DIVISION OF
AFFILIATE MEMBERS**

Air Carrier Service Corp.
Aviation Week
The Babb Company, Inc.
Booz, Allen & Hamilton
Butler Overseas Corp.
Charlotte Aircraft Corp.
Grand Central Aircraft Co.
Robert W. Johnson
Lund Aviation, Inc.
Lybrand, Ross Bros. & Montgomery
National Aviation Corp.
National Credit Office, Inc.
Robert Schasseur, Inc.
Shell Oil Company
Smith, Kirkpatrick & Co. Inc.
Space/Aeronautics
Standard Oil Co. of Calif.
The Texas Company
Tubesales
U.S. Aviation Underwriters, Inc.
Vickers-Armstrongs, Inc.
Robert L. Walsh



THE AIRCRAFT INDUSTRIES ASSOCIATION
OF AMERICA, INCORPORATED

610 SHOREHAM BUILDING
WASHINGTON, D. C.