

Aircraft Industries Association of America, Inc.

Annual Report

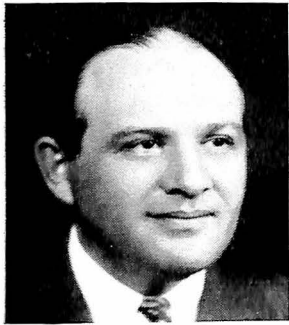


1956

BOARD OF GOVERNORS



C. W. LAPIERRE
Vice President, General Electric
AIA Chairman, first half 1956



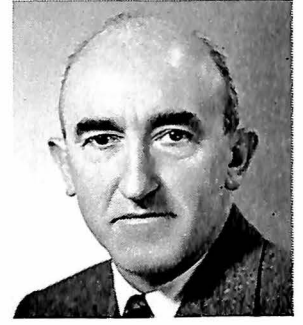
VICTOR EMANUEL
Chairman, Avco Manufacturing Corp.



LAWRENCE D. BELL*
Chairman, Bell Aircraft Corp.



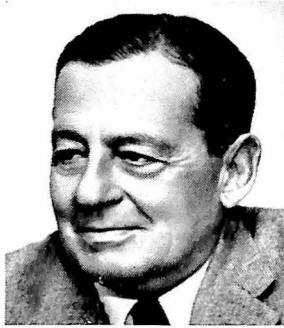
MALCOLM P. FERGUSON
President, Bendix Aviation Corp.



WILLIAM M. ALLEN
President, Boeing Airplane Co.



ROY T. HURLEY
Chairman, Curtiss-Wright Corp.



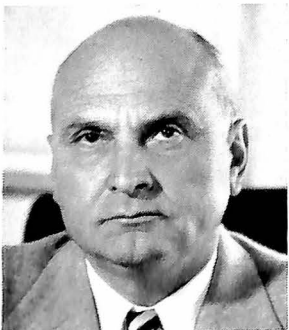
DONALD W. DOUGLAS
President, Douglas Aircraft Co.



RICHARD S. BOUTELLE
President, Fairchild Engine & Airplane Corp.



J. C. GARRETT
Chairman, The Garrett Corporation



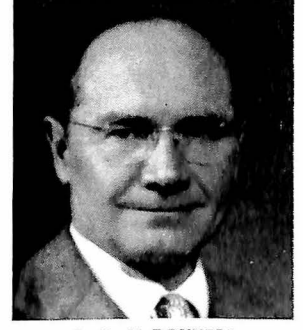
IRA C. EAKER
Vice President, Hughes Aircraft Company



ROBERT E. GROSS
Chairman, Lockheed Aircraft Corp.



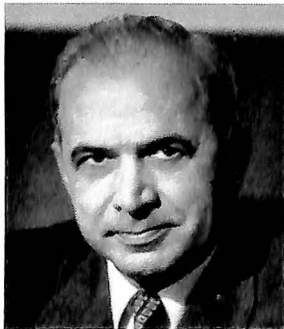
GEORGE M. BUNKER
Chairman, The Glenn L. Martin Company



J. S. McDONNELL
President, McDonnell Aircraft Corp.



MUNDY I. PEALE
President, Republic Aviation Corp.



T. CLAUDE RYAN
President, The Ryan Aeronautical Company



CARL G. HOLSCHUH
Vice President & General Manager, Sperry Gyroscope Co.

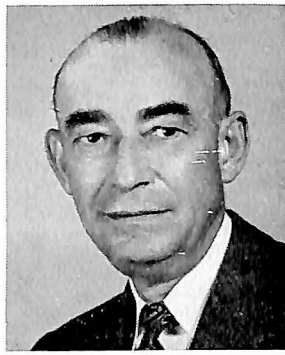


FREDERICK C. CRAWFORD
Chairman, Thompson Products Inc.

*Deceased October 20, 1956



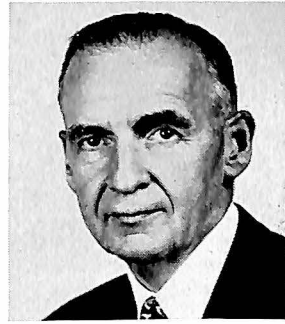
D. C. RAMSEY
AIA President



JOSEPH T. McNARNEY
President, Convair, Div. of General Dynamics; AIA Chairman, second half 1956



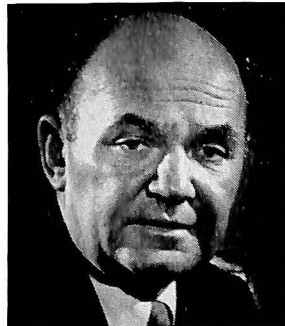
DWANE L. WALLACE
President, Cessna Aircraft Co.



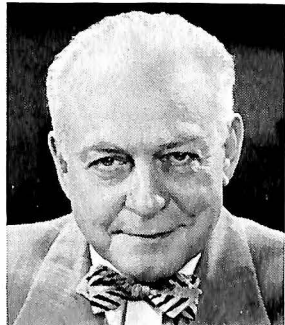
C. J. McCARTHY
Chairman, Chance Vought Aircraft, Inc.



E. B. NEWILL
General Manager, Allison Div., General Motors Corp.



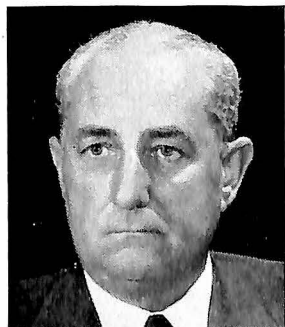
LEON A. SWIRBUL
President, Grumman Aircraft Engineering Corp.



J. H. KINDEBERGER
Chairman, North American Aviation



WHITLEY C. COLLINS
President, Northrop Aircraft Inc.



H. M. HORNER
Chairman, United Aircraft Corp.



L. E. LYNDE
Vice President, Westinghouse Electric Corp.



1956 ANNUAL REPORT

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Inside Front Cover: AIA Board of Governors
Inside Back Cover: AIA Organization Chart

LELAND D. WEBB <i>Vice President and Western Region Manager</i>
HARRISON BRAND, JR. <i>Secretary-Treasurer</i>
HAROLD G. MOSIER <i>Legislative Advisor</i>
HENRY G. HOTCHKISS <i>Legal Counsel</i>



Admiral DeWitt C. Ramsey (*USN, Ret.*)

TO THE BOARD OF GOVERNORS

SIGNAL progress on both the military and civil fronts marked the activities of the aircraft industry during its fiscal year ended October 31, 1956. The industry not only substantially maintained its military production schedules, it simultaneously brought into service many manned aircraft and guided missiles of highly advanced capabilities. New engines of greater thrust have been introduced. Aircraft operation and safety have been improved by the development of new systems and components. Long strides have been made in developing both the vehicles and the markets for a new era in air transportation, using both turbojet and turboprop-powered aircraft. At the same time, the business and utility aircraft markets have been extended importantly.

Research and development, much of it sponsored at great expense by the private companies, has been expanded during the past fiscal year. The fruits of these efforts have been felt widely during the year, with notable breakthroughs on many technical fronts. More importantly, these research activities are opening up avenues of remarkable new advances in the aeronautical state of the art. Facilities for such work are demanding reinvestment of percentages of the aircraft companies' earnings far higher than those of other industries.

During the year, the Air Force accepted substantial quantities of "century series" supersonic fighters and the Navy's air arm also took delivery of high-speed types. As a result, the three Marine air wings and the 17 Navy carrier air groups are now almost completely equipped with modern aircraft types. During the same period, the

first heavy jet bomber wings were activated by the Air Force. The first of a series of fighters capable of flying twice the speed of sound took to the air. At the end of the fiscal year, America's first supersonic jet bomber was undergoing taxi tests preparatory to its maiden flight. And advanced production stages were attained on a fleet of jet tanker planes which will greatly improve the Air Force's long-range combat air capability.

During the same reporting period, man attained speeds and altitudes once believed physically impossible. A research aircraft flew faster than 2000 miles per hour and set altitude marks of well over 20 miles.

By July 1957, the minimum target strengths set for the air services several years ago will have been reached. These goals embrace 137 wings for the Air Force, 17 modern carrier air groups and proportionate strength for the Army and Marine Corps. They were devised on a time-table basis as those military planners considered necessary to assure the defensive and retaliatory capabilities required to discourage aggression against this country and her allies.

To what extent these strength levels may be affected by changing degrees of world tension, or by the obvious progress of Soviet air power, is not known. As a result, it is currently impossible to determine what greater or lesser requirements may be made on the production capacity of the aircraft industry. Military planners will take periodic "new looks" at the world situation and the aircraft industry will undertake whatever development and applied research and production activities the military services require as a result of these appraisals. It is certain, however, that there will be no compromise with quality in aeronautical products. The industry will be expected to develop and produce advanced weapons superior in all respects to those which can be developed and produced by potential enemies. It will be a continuing task to keep our military units supplied with such equipment.

Production

The aircraft industry produced about 13,000 aircraft during the year, of which fewer than 7000 were military types and more than 7500 were for civil use. This represents approximately the same number of units as in fiscal 1955, when about 13,000 aircraft, including 8400 for the military services, were delivered. While the number of military planes produced dropped, the growth of the guided missile field served to keep overall sales and employment at a high level.

The maintenance of the numerical level in aircraft production is attributable principally to the growth of general aviation. Business, farmers and a sizeable segment of the public at large have learned of the advantages of the private airplane. As a result, deliveries of private aircraft have climbed from 3071 airplanes valued at \$58 million in 1954 to 4434 aircraft worth \$75 million last year. And AIA's Utility Airplane Council currently esti-

mates that 1956 production will reach at least 6500 units valued at \$125 million. A substantial portion of these private aircraft are twin-engine types.

Although the "leveling-off" period of military production has almost been reached, new military and commercial orders booked during the year have caused the overall industry backlog to rise. The Bureau of the Census reports that the aircraft industry's backlog of orders has climbed from \$13.9 billion in the third quarter of 1955 to \$18.4 billion in September 1956.

It should also be noted that while the aircraft industry is still delivering piston-powered aircraft to both military and commercial users and will continue to do so for several years, the era of large orders for this type of aircraft is past. Manufacturers of personal and business aircraft are continuing to book orders for piston airplanes but producers of larger airplanes have noticed a decided shift in military and airline orders toward turboprop and turbojet aircraft in the last 12 months.

Guided Missiles

The military services had nine different types of guided missiles in operational use when the fiscal year began but several additional missiles evolved from the development stage and were ordered into production during the ensuing 12 months.

It was also during the year just ended that the Defense Department and the National Security Council decided to give the strategic ballistic missile program, specifically the intercontinental ballistic missile (ICBM) and the intermediate range ballistic missile (IRBM), top priorities on manpower, materials and test facilities in this country. During the period, the IRBM was established as a new project and additional contractors were brought into the ICBM program. The Secretary of Defense concurrently named a Special Assistant for Guided Missiles, Eger V. Murphree, to monitor the overall program with special emphasis on the ballistic types.

The growth of guided missiles was additionally emphasized during the reporting period by various statements of military leaders who reported that missiles will account for 35 per cent of the Air Force's budget in 1959. Procurement of missiles during the current fiscal year by the military services will account for well over \$2.6 billion. It is estimated that eventually half of the Strategic Air Command's tasks, a third of those of the Tactical Air Command and up to 90 per cent of the Air Defense Command's mission will be accomplished by using unmanned aircraft.

It therefore appears that in the years to come, guided missiles will represent an ever-growing proportion of the aircraft industry's research, development, production and sales activities, although it is presently difficult to foresee the day when the missile might completely replace the manned airplane in military operations. For the next decade at least the missile will supplement and complement piloted aircraft but it is highly unlikely that any

important military aviation activities will be completely taken over by unmanned aircraft during the period.

Research and Development

The fiscal year just ended was characterized in the research and development field by a trend on the part of the aircraft industry to contribute more in the way of privately financed research. At the same time, manufacturers were being called on to meet the challenge of the Soviet air arm by developing newer and more powerful turbojet, turboprop, rocket and ramjet engines.

Significant progress was made by the industry in making preparations for the launching of the first artificial earth satellite during the International Geophysical Year ending December 31, 1958. Advances were also made in the development of nuclear-powered aircraft, both land and water-based, and starts were made on long-range, highly supersonic, chemically powered bombers which will utilize the "exotic" or non-petroleum-base fuels.

Numerous new research contracts were let to the industry by the military services for new aircraft types which will be able to take off and land either completely vertically or by utilizing very short runways. In addition, development continued on various other projects involving reduction of the sound of turbojet engines, thrust reversal for jet aircraft to cut down on airport runway lengths, proximity warning devices and numerous systems designed to improve flight operations and safety.

After his visit to Russia during the AIA fiscal year, General Nathan F. Twining, Air Force Chief of Staff, reported that the Soviet planes he had seen in operation had convinced him that U. S. air power is still ahead, but added that there is no room for complacency. The aircraft industry can be expected to provide the necessary research and development activities in the months and years ahead if adequate support is forthcoming from the executive and legislative branches of the Government.

Employment

The aircraft industry became the nation's largest user of manpower on several occasions during the fiscal year, reaching the 814,400 mark during August. Although this was not the first time that aircraft companies had more men and women on the payroll than any other industrial group, it did represent the first occasion that the level was reached when the nation was not engaged in either a global or peripheral war. The rise in employment from the 740,000 mark at the end of 1955 AIA fiscal year was caused by many factors, notably increased commercial production at a time when military aircraft output was fairly constant and the need for a guided missile work force to augment manpower assigned to the production of manned aircraft.

Shortage of Scientists

Although the overall employment level climbed higher, the aircraft industry continued to find itself hampered in its research and development activities by the shortage

of scientists, engineers and other technical personnel. Unless the shortage problem can be solved by increased recruitment and better utilization of the available supply of scientific manpower, the nation is in peril of losing its lead in qualitative air power. The Soviets are known to be graduating far more engineers than we. Unless this trend is reversed, it is only a matter of time before America's air arm will lose its number one position.

Since the aircraft industry now finds itself competing for engineering talent with other defense industries and organizations turning out products for the civilian market only, there is only one solution to the problem for the long pull. By all practicable means, America's youth must be made more fully aware of the future opportunities in civil and military aviation and more young people must be encouraged to undertake the study of mathematics and science courses at the high school level.

Quality in aircraft is directly dependent on the quality of technical personnel. It is imperative that young people of outstanding capabilities be given every encouragement to develop their talents to the utmost.

The Defense Department indicated during the year that it was perpetually facing the loss of valuable technicians from all the Armed Services and asked AIA member companies to propose ways of changing this trend. During discussions at the Pentagon, it became apparent that the best way would be to add to the overall supply of technicians and engineers. This would be of help, not only to the Services, but to the aircraft companies, which are similarly affected by the shortage of scientists and engineers.

AIA then outlined for DOD what steps member companies were taking in (1) aiding the nation's school structure and (2) training in industry. Carter L. Burgess, Assistant Secretary of Defense for Manpower and Reserves, indicated he was highly pleased with the AIA programs along these lines, and commended such methods to other industries.

Commercial Air Development

The fiscal year was marked by the placement of large-scale orders for jet and turboprop airliners for use by both U. S. and foreign airlines after 1958-1959.

By the end of the fiscal year, the American aircraft industry held firm orders or options for a total of 601 gas-turbine powered transport planes valued at more than \$2 billion. Included were 259 turboprops and 342 jet transports.

Indicative of the continuing esteem in which American-built transport planes are held by foreign airlines is the fact that more than 100 of these jets and turboprops have been contracted for by major carriers in France, Great Britain, Japan, Canada, The Netherlands, Germany, Belgium, Switzerland, Scandinavian countries and Australia, even though aircraft manufacturers in several of those nations have competitive aircraft designs.

Subcontracting

The aircraft industry's historic practice of subcontracting as many components as possible to companies capable of producing them was expanded during the year. As aircraft components became even more complex, it became increasingly necessary to find experienced firms with adequate facilities and employing highly skilled craftsmen capable of working to close tolerances.

During the year, the industry made full use of both large and small business concerns for the work they had to subcontract, simultaneously taking special pains to make certain that the smaller companies got as much aircraft business as they were fully qualified to undertake. As in previous years, major companies in the aircraft industry obtained the parts and equipment they needed for their completed products from vendors, suppliers and subcontractors in each of the 48 states. It is estimated that upward of 50,000 subcontractors and suppliers serve the members of AIA.

Congressional Inquiries

Two major hearings and a score of others dealing with aviation matters were conducted by House and Senate subcommittees during the year. The first major Congressional probe, in which representatives of all leading airframe companies were called to testify, was undertaken by the investigations subcommittee of the House Armed Services Committee to determine how the aircraft industry's sales, earnings, costs and other financial aspects compare with other industrial groups. In its final report, the investigations subcommittee concluded that—"there has been no showing that, on the average, the profits allowed are excessive." The House group also indicated, "It is our opinion that the Government is getting substantial value" out of its expenditures with the aircraft industry.

There is no question that this investigation provided a rare opportunity for the industry to show publicly its great achievements in the national interest.

The second investigation, conducted by an airpower subcommittee of the Senate Armed Services Committee, was an attempt to assess America's and Russia's present and future combat capabilities in the aircraft and guided missile fields. The report and recommendations of that subcommittee have not yet been made public.

Aviation Education

The Aircraft Industries Association continued its financial and operational support of the National Aviation Education Council's Materials of Instruction program during the fiscal year. These educational materials, designed to interest boys and girls in aviation at primary and secondary grade levels, are provided to schools all across the country at cost. Working with NAEC's Materials of Instruction Committee on the project are a subcommittee of the AIA Public Relations Advisory Committee and members of the AIA staff.

Industry Pioneers

Within this reporting period, the aircraft industry suffered heavily in the loss of several of its great pioneers. Death came to Glenn L. Martin, founder of The Glenn L. Martin Company; Frederick B. Rentschler, founder of United Aircraft Corporation; Lawrence D. Bell, founder of Bell Aircraft Corporation; William E. Boeing, founder of Boeing Airplane Company; Earl N. Findley, pioneer aviation editor and former AIA board member, and Lester D. Gardner, president of the Aeronautical Chamber of Commerce in 1928.

Not only the aviation industry, but the whole world, is the poorer for the loss of these great men who devoted their lives to the advancement of aviation.

Facilities Planning

In recognition of the expansion of civil and military aviation activities and the resulting inadequacy of existing facilities, President Eisenhower appointed Edward P. Curtis his Special Assistant for Aviation Facilities Planning during the year. Several AIA groups, notably representatives of the Helicopter Council and the Utility Airplane Council, have maintained contact with Mr. Curtis, providing him with all possible data to help him make recommendations to the President and Congress.

Heliport Program

A strong effort was made by the AIA Helicopter Council to have communities prepare for the advent of the commercial rotary-wing aircraft by providing adequate heliports. Members of the Helicopter Council financed the printing of 5000 copies of a booklet on "Heliport Location and Design," which has been widely distributed. Various states have already taken important steps in this direction. Expanded efforts to expedite heliport planning are under way.

West Coast Office

The West Coast office reflected, in nearly all departments, the work of AIA services and committees.

Physical arrangements of the West Coast office were expanded during the year by the addition of more than 1200 square feet of office space and provision of a conference room. These changes provide the space needed for the expanded staff, especially the Technical Service, and make available a conference room completely under the control of the AIA office.

Administrative, Finances, Membership

A fiscal 1957 budget has been approved by the Board of Governors. This represents an increase of about 23 per cent over the 1956 budget and will cause membership dues to rise about 25 per cent.

AIA has had a net gain of eight members during the year, five of them in the manufacturing divisions.

Respectfully submitted,

DeWitt C. Ramsey



REPORT ON OPERATIONS

FOR THE FISCAL YEAR ENDED OCTOBER 31, 1956

Organization and Functions

THE Aircraft Industries Association of America, Inc., is the national trade association of the manufacturers of aircraft, engines and accessories, parts, and materials used in the construction and operation of aircraft. All major airframe and engine manufacturers, and many major suppliers of aircraft equipment, are members of AIA and participate in its activities.

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 common 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 production and aircraft industry management. Each committee consists of high level company representatives especially qualified in the various fields of responsibility.

Through its seven Services and 27 Committees the Association provides facilities for handling the multitude of technical, financial, legal, tax, public and industrial relations, patent, traffic 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 147 members, 126 of voting members and 21 of affiliates. The categories of voting membership are:

	<i>Members</i>
Division A—Manufacturers of aircraft and aircraft engines	42
Division B—Manufacturers of accessories, parts or materials used in aircraft construction or operation....	58
Division C—This class includes miscellaneous persons and firms interested in aviation. (New applicants of this type are only eligible for "Division of Affiliates" membership)	26

The Association is organized under a Board of Governors and under regional (Eastern and Western) Executive Committees of the Aircraft Manufacturers Council. 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



THE Export Service, working through the Export Committee and six specialized subcommittees, and in close cooperation with the several cognizant agencies of the Government, deals with the foreign trade interests and problems which are of common concern to the aircraft industry in its business relations with 60 or more political entities abroad. In no two of these overseas trading areas are the conditions of trading the same. New conditions are constantly arising and only through unified effort, as can be successfully exerted through a national trade association, can most of these situations be resolved or rationalized for industry.

The work done by the Export Service, directly with the members and through the Export Committee and its subsidiary groups, is increasingly important. The competitive situation resulting from the rapidly recovering overseas aviation industries, together with the recurrent wave of protectionist devices instituted abroad, has more than doubled the volume of the work which, within the last two years, the Export Service has been called upon to do.

THE IMPORTANCE OF EXPORTS

Exports of the American aviation manufacturing industry for 1955 totaled \$728,300,000—an increase of more than 17 per cent over 1954. The 1955 figure represented 10.1 per cent of the industry's total production and can be computed as having provided daily employment for more than 74,000 workers. Projecting 1956 figures, on the basis of data for the first six months, the total dollar volume of aviation exports may well run as high as \$1,137,450,000, a 56 per cent increase over 1955. (Total official aviation export figures, January 1956 through June 1956, were \$568,725,000.)

ORGANIZATION—AIA EXPORT COMMITTEE AND STAFF

The Export Committee comprises 71 export executives, representing 36 AIA manufacturing members. There were almost 200 Export Service Memoranda distributed to 205 individuals in 77 member companies. These included numerous items, consisting of reports of U. S. and foreign regulations affecting our exports, foreign market reports and inquiries of value to various member companies.

In addition to the many daily direct services rendered by the Export staff, the foreign trade interests of the industry are furthered by the activities of the Export Committee and its six specialized subcommittees. These latter are: *Advisory*—consisting of 23 members and 19

alternates; *Export Finance*—consisting of 17 members and 15 alternates; *Military Aid*—consisting of 14 members; *Civil Liaison*—consisting of 12 members; *Military Liaison*—consisting of 12 members; *Surplus Disposal*—consisting of 10 members.

At midyear in 1956, following the retirement of the Export Director, the Associate Director was promoted and a staff assistant employed.

ACTIVITIES OF AIA EXPORT COMMITTEE

Four major meetings were held during the year. The first, in Washington in March, covered foreign military liaison, and the second, in New York in June, dealt with civil liaison matters. At the end of August, the Export Service sponsored a symposium on military aid and the North Atlantic Treaty Organization, but the most ambitious project involved a Latin American Aviation Conference scheduled for Miami Beach (Bal Harbour) in mid-November.

About 300 individuals were expected to attend this non-commercial conference, whose primary purpose was the promotion of the Hemispheric Solidarity Program as it relates to civil and military aviation. Representatives from all Latin American Air Forces, the USAF (Pentagon, Air Materiel Command, Caribbean Air Command), major Latin American air carriers, U. S. airlines operating to the Latin American region, bankers and representatives of several U. S. civil agencies were scheduled to attend. Due for special emphasis during the discussions were such items as requirements and availability, export-import problems, procurement and financing. The meeting was called to:

- (1) Improve the Western Hemisphere defense program.
- (2) Stimulate further development of air transportation in Latin America.
- (3) Identify common hemispheric aviation problems and seek solutions.

U. S. GOVERNMENT—FOREIGN MARKET REPORTS

The problem of obtaining sufficient satisfactory reports pertaining to foreign aviation markets from the various U. S. Government representatives (primarily the Department of State) has been acute for the past three years. The Export Service, under the guidance of the Civil Liaison Subcommittee, has a well advanced project for the improvement of this service. The most obviously deficient foreign aviation reporting areas have been contacted by Export Service and informally guided in this connection. Immediate results are not always easy to

evaluate, but they have been encouraging from the standpoint of interest. It is expected that closer cooperation between the Export Service and Government agencies will improve this situation.

EXPORT FINANCE

Meetings with the leading financial organizations (Government and private) and their representatives have been instrumental in giving the financiers a clearer understanding of the industry's requirements. A more liberal viewpoint on the part of the export financing agencies has become obvious, and our industry's export financing facilities during 1956 have been greatly enhanced.

Whereas there has been considerable improvement in this area during the past year, the availability of more competitive financing conditions continues to be a serious export sales problem.

MILITARY SURPLUS DISPOSAL

The Export Committee has continued surveillance of the foreign market implications of aviation surplus sales and has maintained liaison with the various Government agencies concerned. A comprehensive and complete set of "Proposed Principles Governing the Offering and Disposal of Aviation Property which is Determined to be in Excess of the U. S. Government Requirements" was prepared by the Surplus Disposal Subcommittee. This set of principles was formally presented to all U. S. Government agencies which were either directly or indirectly

concerned with the surplus program. Concrete evidence has been received indicating that the Government not only recognizes the industry's position in this matter, but is using these principles as a guide in the surplus disposal program.

FOREIGN MILITARY AID

As the Military Aid program has been modified in different areas of the world, and as the tapering off of aid continues, the Committee has given more attention to the more permanent programs of NATO.

FOREIGN MILITARY/CIVIL LIAISON

Receptions and luncheons were held honoring foreign military and civil aviation missions from the following countries: Norway, Haiti, France, The Netherlands, Italy, Vietnam, Australia and New Zealand, Belgium, Lebanon, Japan, Germany and India.

These missions, headed by chiefs of the air forces or civil aviation members of the governments listed, were in this country as guests of the U. S. Government. The military groups made tours of U. S. air bases and visited aviation plants, and the civil missions discussed or negotiated airline agreements. The industry members attending these meetings expressed themselves as deriving much benefit to their companies from these unusual opportunities for personal contact with aviation leaders from abroad. There were five events during 1955. It was expected that there would be at least 20 of these occasions during 1956.



INDUSTRY PLANNING SERVICE

THE Industry Planning Service is concerned with the business, legal and administrative operations of the aircraft industry. To accomplish its objectives, close liaison is maintained with all military services and other Government agencies on matters involving the hundreds of laws, regulations, directives, specifications and orders which affect the business activities of AIA members.

INDUSTRIAL RELATIONS COMMITTEE

During the past year the Industrial Relations Committee has been concerned principally with labor-management relations, particularly with respect to new trends in collective bargaining, and with problems relating to skilled manpower retention and recruitment.

Engineering Shortage—Although employment in the industry has increased moderately over a year ago, the manpower supply has been adequate except for engineering and scientific personnel and certain highly skilled

technicians and mechanics who continue to be in very short supply. A Department of Defense-industry conference was held in May 1956 at the Pentagon to familiarize industry representatives with the manpower problems of the Armed Forces and to formulate plans for determining how industry could be of assistance. The conference was attended by representatives of 12 member companies and by representatives of other industries, mostly from the electronics industry. AIA representatives referred the matter to the Industrial Relations Committee for further consideration of the military services' problems and for development of recommendations as to how AIA's membership could be of assistance. In recent years AIA member companies have undertaken a wide variety of programs, both short and long-range, in an attempt to develop, utilize and conserve the nation's supply of skilled manpower. The Committee undertook an extensive study of these programs of a representative group of member companies in order to report to DOD what was being done

and to appraise the effectiveness of the various programs. Subsequently, a report was submitted summarizing these companies' activities in the fields of (1) assistance to the nation's school structure, (2) training programs, and (3) recruitment and employment practices.

The report was favorably received. The Committee will continue a program of analyzing existing programs, studying new proposals, encouraging constructive measures and reporting to and cooperating with the Department of Defense.

Labor-Management Relations—The Committee continued its normal function of exchanging information on labor-management relations in the industry and on trends in collective bargaining in both this and other industries. New trends in collective bargaining, including supplemental unemployment benefits and related practices, extension and liberalization of pension and group insurance programs, long term collective bargaining agreements with deferred increases and the persistent increase in craft severance cases were matters of particular concern. *Surveys*—The staff conducted a number of surveys, mostly on member companies' personnel practices, in accordance with the instructions of the Committee.

INDUSTRIAL SECURITY COMMITTEE

Industrial Security Manual—Although the Industrial Security Manual was issued in revised form in May 1955 for the fourth time, DOD continued to propose further revisions during 1956 and a new revision was released to be effective December 1, 1956. During the year the Industrial Security Committee prepared and submitted recommendations on the proposed revision and met with DOD security personnel at a national meeting to further discuss and explain AIA's recommendations.

Industrial Security Advisory Committee to the DOD—Six members of AIA's Industrial Security Committee continued to serve throughout the year on the 17-man Industrial Security Advisory Committee of the Department of Defense.

Commission on Government Security—AIA, as well as many of its member companies, received a letter from the Commission on Government Security, which had been established by Public Law 304 of the 84th Congress. The letter requested suggestions and/or recommendations for the improvement of the Government's industrial security program. The regional committees' meetings separately provided a number of suggestions which were considered at the national meeting in September 1956. The Committee realized that with so many member companies sending in comments as individuals, AIA's reply would be restricted to those areas on which there was unanimous agreement by all companies. The Committee authorized the national chairman to draft an answer for signature of the AIA president. The Committee and individual member companies will continue to cooperate with the commission in every way possible.

Utilization of Field Service Personnel—USAF representatives indicated in December 1955 that the constant growth and resultant cost of the maintenance program demand some changes in the accounting system. In other words, the AF said, contractors would be expected to furnish their technical personnel on a contract basis. In May 1956 Air Force Regulation 66-18, covering "Maintenance Engineering-Contract Technical Services," was released. After a meeting between the AF and the Field Service Representatives Group in June, AIA's president sent DOD a letter expressing AIA's concern over the trend to displace the long-established methods used by contractors to supply field service or technical representatives. In September DOD's Office of Maintenance Engineering invited industry comments on a new instruction covering "Industrial and Commercial Technical Services." Company comments were consolidated and forwarded to DOD in October.

Broadened Scope of Committee Activities—Both the eastern and western regional committees took preliminary action to broaden the scope of the activities of the Committee to include such related areas as police protection, fire protection, security enforcement, investigation and civil defense.

SPARE PARTS COMMITTEE

The Spare Parts Committee assists the Air Force and Navy in the development of procedures that will provide the most effective utilization of the products of this industry through on-time availability of spare parts, special tools, test equipment, ground handling equipment, training equipment and related spare parts data. The expansion of the weapons system concept calls for a higher degree of service from prime contractors and, in the spare parts area, a larger paperwork load, closer coordination and faster communications.

The Committee, whose members are the spare parts managers of companies manufacturing airframes, engines, propellers, electronic equipment and accessories, completed action on more than 20 projects during the past year. Some of the Committee's tasks are:

DOD Provisioning Regulations—The Department of Defense is working on the standardization of provisioning methods between the three services including the various technical bureaus and branches. The Committee has established a special Panel to work closely with the DOD in its general spares regulations as well as the specific procedures, e.g., an electronics document which is now being written.

Department of Army Spares—This industry is receiving an increased volume of business from and for the Department of the Army, particularly to supply the Signal Corps, Transportation Corps and Ordnance. An Army Spares Panel has been formed in the Spare Parts Committee to establish liaison with the Army offices in which spare parts policies and procedures are developed. It is

hoped that the Committee will experience with the Army the same high degree of coordination that it now enjoys with the Air Force and the air arm of the Navy. Initial contacts made during the past year are promising.

Spares Studies in New Areas—At Air Force request, the Committee is investigating the possibilities of new types of economies in spare parts ordering. Presently being considered are the areas of coordination and bi-lateral agreements that would permit (1) scheduling sporadic issuance of "insurance" type spares of high value ahead of production requirements to permit borrowing for early spares requirements, (2) return of unneeded or obsolescent expensive spares to contractors for rework or for use in production.

Federal Cataloging—One of the Committee's long range tasks is the monitorship of the Federal Cataloging operation as it affects the products of this industry and particularly contractors' ability to ship spare parts and technical spares data on time. In this connection, the Committee has studied and furnished its views on the Air Force proposed revision of MIL-D-26715, the specification governing preparation of item descriptions by Air Force contractors.

Other Activities—The Committee also devoted efforts to recommendations that the USAF purchase low value spare parts in larger quantities at first so that adequate quantities will be on hand for a longer period of an airplane's useful life. Also stressed were recommendations on ways to facilitate the interchange of spare parts data between prime contractors, vendors and the military services and on the introduction of electronic data processing equipment in spare parts and supply logistics operations.

MATERIALS COMMITTEE

DOD Small Business Program—In the absence of a standardized procedure for reporting values of defense subcontracts placed with small business, Committee members continued, on their own initiative, compilation of such data for their respective companies. This facilitated compliance with various requests for data received from the military services and from the House Select Committee on Small Business. This procedure will no longer be necessary because the Bureau of the Budget approved a uniform method of reporting—Form DD1140, Semi-annual Report of Participating Companies, Defense Subcontracting Small Business Programs. The Committee contributed materially to the development of the semi-annual report form by submitting recommendations to the Department of Defense and by participating in the final Bureau of the Budget hearing. The companies concerned will submit their first reports on Form DD1140 on January 1.

The Committee also maintained liaison with the Small Defense Industries Association on matters involving subcontracting operations.

Defense Materials System (DMS)—Business and Defense Service Administration's order M-1B added nickel alloys

to the list of controlled materials. In a Committee meeting held soon after the issuance of the order, the members had an opportunity to hear a representative of BDSA explain the reasons for the order and the rules providing preferential deliveries to defense contractors, and thereby were able to adjust their reporting procedures with minimum effort. The DMS functioned smoothly during the steel strike, eliminating any serious interferences with defense production.

Other Actions—The Materials Committee also worked closely with the Aircraft Production Resources Agency on various metals on the controlled materials list and kept aware of military directives dealing with maintenance of the mobilization base, including industrial production readiness, dispersal and allocation of Government-owned production equipment.

PATENT COMMITTEE

During the past year, the Patent Committee's activities were centered on careful review of changes and proposed changes to Armed Services Procurement Regulation (ASPR) and progress of patent legislation before Congress. Moreover, as member companies increased their activity in the atomic energy field, the Committee focused commensurate attention on the patent provisions of the Atomic Energy Act and the rules made by the AEC under the Act.

ASPR Section IX

(a) Part 1, "Patents"—The Department of Defense issued a change to paragraph 9-107.1(e), "Filing of Applications in Foreign Countries," to remove a procedural conflict which the Committee had pointed out; but it has not acted upon a recommendation concerning paragraphs 9-102, "Authorization and Consent," and 9-103, "Patent Indemnity." A subcommittee is at work preparing a re-submittal.

(b) Part 2, "Data and Copyrights"—On April 6, another draft of this controversial section was released to the interested industry associations for review and comment. Representatives of the Committee jointly with representatives of five other associations prepared a combined industry statement on the proposed Part 2. The combined statement, containing basic industry objections and recommended principles of a fair technical data regulation, was submitted to the Department of Defense on June 8; as a result, DOD deferred the issuance of the new Part 2 pending further study and revision.

QUALITY CONTROL COMMITTEE

The Committee carried out normal committee activities including national and regional meetings, cooperation with other AIA committees, liaison with quality control organizations of the Defense Department and the military services and review of current quality control specifications and requirements.

In particular it placed special emphasis on advancing

quality control techniques to meet the demands of the "black box" and "supermaterials" development trends in air weapons systems. The areas receiving attention were:

Reliability—Members exchanged and assembled information on the highly refined procedures necessary to assure the reliability required of the new weapons systems. The Committee and its officers also cooperated with Government representatives in preliminary work on comprehensive reliability specifications for quality control.

Process Control—A subcommittee to undertake work vitally needed in the area of process quality control was created. In this respect, the subcommittee has virtually completed an industry specification for inspection requirements for titanium sheet and has programmed work on specifications for ultrasonic test blocks and quality control of brazed stainless steel sandwich assemblies.

Non-Destructive Testing—Increased use of scarce and costly high performance materials has called for fullest use of non-destructive inspection methods. Committee members exchanged technical information regarding uses of gamma radiography with artificial radio isotopes for detecting flaws. Ultrasonic immersion testing procedures were improved.

PRESERVATION AND PACKAGING COMMITTEE

The Committee tried to help the Defense Department and the military services achieve the standardization of preservation, packaging and marking of materials required by Public Law 436. In the effort it took every opportunity to introduce more practical and more economical methods with resulting benefit to both the Government and industry and to the individual participating member companies.

Important subjects of detailed recommendations were:

- a)—Multiplicity of specifications.
- b)—Marking for shipment and storage.
- c)—Methods of preservation.
- d)—Preparation for delivery of Aeronautical Equipment.
- e)—Methods of Preservation and Packaging and Instructions for Coding.
- f)—Cost Reduction.
- g)—Cushioning Materials.
- h)—Reusable Containers.

Committee members took part in the Joint Military-Industry Packaging and Materials Handling Symposium and the Air Force Packaging Conference. To further liaison, the Committee held its 1956 national meeting concurrently with the National Protective Packaging and Materials Handling Exposition of the Society of Packaging and Materials Handling Engineers. It also maintained liaison with the Forest Products Laboratory and with the National Institute of Packaging, Handling and Logistic Engineers, a group recently formed with headquarters in Washington, D. C.

STATISTICS AND REPORTS COMMITTEE

A Presidential directive, stimulated in part by the evidence gathered and presented by Committee members showing the excessive costs incurred in storing the "dead" papers whose retention is required by the regulations of the services and the General Accounting Office, became effective in May. Committee members have also assisted the Bureau of the Budget in drafting an order to Federal agencies which will provide for shortened record retention periods. This Presidential directive and a parallel action of the Assistant Secretary of Defense's Aircraft Study Group recommending "... more streamlined methods of periodic communication between the prime contractor and the authoritative military echelons ..." are the high points in the Committee's efforts to cut costs by reducing paperwork. The day-to-day work of the Committee to streamline paperwork and to adapt Government reporting requirements to established bookkeeping systems of contractors is facilitated by such policy statements and directives.

As a result of the Committee's close work with the services, 16 governmental or contractual reporting requirements were eliminated. Detailed study of more than 45 other reports led to the adoption of additional Committee recommendations for simplification.

Proposed Census of Transportation—The proposed Censuses of Transportation, currently under development in the Department of Commerce, Bureau of the Census, will produce for the first time statistics on the quantity and type of freight, its origin and destination, and the quantities carried by air, rail, water and truck. The Committee has been invited to participate in planning these censuses to produce statistics of maximum usefulness. Data gathered in these censuses are expected to prove invaluable to many companies in AIA, notably those interested in the air cargo field.

"Aviation Facts and Figures"—The 1956 edition, published in May, brought up to date the material in earlier editions. Preparatory work on the 1957 edition is underway, and the release for publication of certain heretofore classified material has been obtained.

Statistics—The Statistics and Reports Staff, in collaboration with the Helicopter Council, inaugurated a series showing helicopter sales and backlog. Publication of data on civil aircraft, employment, finances, labor turnover, average hours and earnings and military aircraft procurement was continued.

ACCOUNTING AND CONTROLLERS COMMITTEE

Contract Cost Principles—For several 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 but also to fixed-price contracts and would cover settlement of terminated contracts of either type. This proposal is still under development within the Department

of Defense, with further activities expected to be a cooperative effort between industry and the Government. The AIA Accounting and Controllers Committee has been and will continue to work with the Department of Defense and the military services on this project.

As an intermediate step, there has also been under development within DOD a revision of Section XV of the Armed Services Procurement Regulation and drafts have been submitted to AIA for review and comment. Principal objections of AIA pertain to the treatment of particular costs, such as compensation and general research, and also to the changes in established accounting methods and procedures which would be required in a contractor's accounting system. AIA feels that while existing provisions of ASPR Section XV are not perfect, they are preferable to the proposed substitute. Thus far, the Department of Defense has not issued a revision of ASPR Section XV.

Progress Payments—This Committee has had under consideration a DOD proposal on new contract clauses governing the making and liquidation of progress payments. DOD has been endeavoring to provide contract clauses for general use as a replacement for the numerous types of clauses currently appearing in contracts with the military services. In addition to the making and liquidation of progress payments, these clauses deal with the extent of the Government's title to and control of the property covered by such payments and also special provisions covering the reduction and suspension of such payments, the rights of the Government and the contractor upon termination for default, and the treatment of progress payments to subcontractors. This Committee has reviewed and submitted comments concerning the various drafts of these proposed clauses and has held meetings with the DOD Finance Committee trying to reconcile the differences. The principal difference involves the method of liquidating progress payments, covered by DOD Directive 7840.1 and dated April 22, 1954. AIA has requested that the same basis for making progress payments—percentage of costs—be used for liquidation.

Recoupment of Overpayments—Because of certain delays in connection with the finalization of contract prices under incentive type price redetermination contracts and because of the lack of a suitable mechanism for making refunds before the negotiation of final prices, some contractors had in their possession sums of money which constituted overpayments of the amount due under the contract, as finally determined. To correct the situation, which this industry considered the result primarily of military "housekeeping" methods, DOD Directive 4105.7, which has been referred to as the 105 per cent directive, was issued last December. It provided a mechanism for making refunds of overpayments and required certifications on the part of contractors that the amounts received under such contracts were not in excess of 105 per cent of all costs, together with detailed reporting provisions, particularly on price redetermination contracts

up to final contract performance and after firm prices had been established. Meetings were held with DOD representatives to make the policy more workable and acceptable to this industry. Thereafter, two revisions of the Directive were issued. Although there are still certain objections, major trouble areas have been corrected.

Negotiated Overhead Rates—The Committee cooperated with DOD and the services in the operation of a new policy covering allowances for overhead. A decision by the Comptroller General held that the practice then in use on the negotiation of predetermined overhead rates was illegal, since it was contrary to the prohibition against cost-plus-a-percentage-of-cost contracting. Although certain difficulties were encountered at first, there do not appear to be any major problems at this time.

Renegotiation—This Committee, in cooperation with the Legal Committee, prepared certain recommendations on the need for the continuation of the Renegotiation Act and its administration. Although considerable doubt was expressed as to the need for extension, certain recommendations were made to the Joint Congressional Committee on Internal Revenue Taxation for changes in the Act and the administration thereof. One of the suggestions pertained to the elimination of "net worth" as a factor in determining whether or not a contractor had made excessive profits. This concept has since been recognized by amendments to the renegotiation regulations and by policy statements of the Renegotiation Board. Another recommendation dealt with the period of time which elapses after the contractor files his report and the completion of renegotiation proceedings. When the Renegotiation Act was extended until December 31, 1956, it provided that, in the absence of fraud, etc., if the renegotiation proceedings are not begun within one year of the date the contractor files his report, renegotiation proceedings may not take place.

Compensation Payable to Contractor Personnel at Air Force Test Bases—In cooperation with the Air Force, this Committee is endeavoring to arrive at a satisfactory policy covering compensation of contractor personnel stationed at isolated Air Force test bases. The matter is still pending.

Other Problems—During the past year, some of the other problems considered by this Committee involved the retention of records, engineering change procedures, contract termination, incentive revision of fees (CPFF contracts), clauses for cost reimbursement in research and development contracts, master bailment agreements, price escalation contract clauses (labor and materials), and the liability for and insurance aspects of "aircraft in the open."

TAX COMMITTEE

Personal Property Taxes—Although interested in all tax problems, the Committee's principal concern during the

past year has been with respect to state and local tax matters.

Of major interest have been the problems incident to the taxes assessed by certain counties in California on personal property in the possession of contractors intended as an end item sold to the Federal Government or with respect to which title has already vested in the Government. The members of this Committee have consulted with and furnished advice to the members of the Accounting and Controllers Committee and the Legal Committee on the various ramifications of this problem.

The situation which exists in California arose in 1953 but test cases for that year are only now being brought to trial. Although the companies involved in these test cases are the nominal parties in interest, all activity with respect thereto is being carried on with the advice and assistance of the U. S. Government, which is the primary interested party.

Although they have not reached the same condition of development, corresponding problems exist with respect to the assessment by California counties of the contractor interest in "special tooling" and also general sales and use taxes.

Other Problems—This Committee has also been concerned with the tax treatment of amounts paid to employees as tuition and to prospective employees for travel expenses in connection with interviews. The Committee also has been concerned with the regulations of the Internal Revenue Service with respect to the treatment of research and experimental expenditures and depreciation allowances and also the regulations governing payments to employees during periods of sickness.

LEGAL COMMITTEE

Atomic and Other Unusual Hazards—This Committee has been concerned with the extent of liability of a contractor engaged in atomic or other hazardous operations. A special task group has been cooperating with the Depart-

ment of Defense in attempting to arrive at a solution of the many complicated problems involved. To the extent that a particular activity is in the field of research and development, the military services have the authority to provide for indemnification under Public Law 557. For supply contracts, AIA's position is that authority exists in Title II of the "First War Powers Act, 1941," to provide for indemnification. Accordingly, attempts have been made to secure the exercise of such power.

During the last session of Congress, a proposal was introduced and recommendations made by the Joint Committee on Atomic Energy which would provide indemnification under contracts with the Atomic Energy Commission. Although the measure did not become law, it is anticipated that it will receive further consideration during the 85th Congress. When the 85th Congress convenes, it is expected that the Department of Defense will urge the inclusion of the military services or will recommend the adoption of separate legislation on this subject limited to the military services.

Other Problems—During the past year, some of the other problems considered by this Committee related to the rights of a contractor under the disputes clause, the obligation procedure of the military services with respect to the procurement of spare parts, the retention of contract records, the use of predetermined overhead rates, the Air Force safety and accident prevention clause, the BuAer correction of defects clause, and the proprietary rights of a contractor in drawings and technical data.

The Legal Committee also cooperated with other AIA committees on such projects as extension of the Renegotiation Act, modifications of the "title" provisions of contract clauses dealing with progress payments, changes in the "control of production" clause which interfered with management prerogatives and alterations in the regulations which required manufacturers to provide extensive details of their subcontracting structure when submitting proposals.

PUBLIC RELATIONS SERVICE



BECAUSE of the growing importance of the aircraft industry to the social, economic and defense welfare of the nation, public understanding has long been a matter of vital concern. This has been especially true during times of international tensions when a major proportion of the industry's output was produced for the United States Government.

Responsibility for creating and maintaining under-

standing among both special and general groups of the American public rests in large measure upon the Aircraft Industries Association's Public Relations Service. This service not only counsels the president of AIA and the other services and committees in public relations aspects of Association affairs, but it handles the flow of information about the industry's operations, problems and progress.

During the last fiscal year, the Board of Governors authorized an expansion of the AIA public relations program. This was considered advisable when an extensive poll disclosed areas of misunderstanding of the functions and problems of the aircraft industry. It was apparent that the scope of overall effort involved in an undertaking of such magnitude had left many questions unanswered in the public mind. A special effort is being made to cast further light on the current problems and objectives.

Information Service

In addition to extending its present information and publications services, AIA has increased its contacts with public media, as well as its liaison with the public information sections of various Government agencies, especially the military services, and with national organizations. As in past years, information centers were operated in Washington, New York and Los Angeles to service inquiries from various parts of the country. In preparation is a series of short report-type films for television, group and school use.

With the constantly growing importance of air power as the dominant factor in the nation's defense planning, and as great strides are made in commercial and business aircraft, helicopters and other aeronautical products, the staff is being asked for information constantly. During the past 12 months, newspapers, wire services, members of Congress, magazines, representatives of radio, television and other media, educators, financial interests and other groups and organizations have requested and received information from the Public Relations Service. In addition, the staff stepped up its output of releases on the aircraft industry and its progress and problems throughout the year. Several important speeches were made before major groups by the AIA president and western region manager. The Public Relations Service also issued background memoranda on industry achievements, lead time and costs for use by the press. It provided daily coverage of important Congressional hearings for AIA member companies.

Public Relations Advisory Committee

AIA's Public Relations Advisory Committee, which is made up of the public relations directors of the major airframe, engine and components manufacturers, held several meetings during the year to discuss problems and policies and to provide guidance for the Public Relations Service staff. A special effort will be made to tighten the relationship between company public relations officials and PR staff members serving in Washington. A PRAC Executive Committee has been established to meet with the staff on a regular basis to pass judgment on the general state of health of the public relations program.

Publications

PLANES, official AIA publication which emphasizes the industry's accomplishments, has been increasing its circulation and has attained a distribution figure of 75,000. It continues to be widely quoted by the press. One

feature added during the year is the inclusion of a four-page insert of magazine-type articles on subjects of importance to the aircraft industry, allied industries and the Government. These are the products of individuals known throughout the nation.

AIA continued to provide information for the LEGION AIR REVIEW which is circulated to 18,000 American Legion posts. By order of the Legion's national commander, the publication is being used to acquaint Legionnaires with the air power program and to enlist their understanding and support.

LETTER TO AVIATION WRITERS is a new monthly bulletin started during the year to provide both background and current information for individuals who specialize in writing about aviation matters.

New booklets completed during the year included PLANE VIEWS, a reprint with added material of interesting aviation information which first appeared in past issues of PLANES, and one on CAREER OPPORTUNITIES IN THE AIRCRAFT INDUSTRY, which outlines the types of positions available now and in the future and is designed to encourage the nation's youth to make aviation a career.

New editions of AVIATION FACTS AND FIGURES, the AIRCRAFT YEARBOOK and U. S. AVIATION TODAY, standard reference works, were published during the year.

Radio—TV

The Public Relations Service aided in preparation of a series of six transcribed radio programs on "Survival in the Air Age." Top-ranking military and civil air power leaders appeared on the radio series, which was broadcast by hundreds of stations throughout the country. Also completed at the end of the fiscal year was a 30-minute film on air power and the progress made by the aircraft industry over the past few years titled "Design for Survival."

Aviation Education Program

In a further effort to interest America's youth in aviation, close and effective relationships have been maintained with the National Aviation Education Council. The program is now in its fourth year and has resulted in the publication of eight booklets on aviation prepared by teachers. These booklets are being made available to educators and school systems at low cost through the NAEC.

Industrial Editors Program

Editors of both internal and external publications of AIA members were brought together three years ago to form the Aircraft Industry Editors Conference. The purpose of that organization, under sponsorship of the Public Relations Service, is three-fold: (1) To help improve company communications to the three or four million industry employees and family members; (2) To encourage interchange of information between industry editors in open forum workshop sessions; and (3) To encourage discussions in print of overall industry problems and achievements.

TECHNICAL SERVICE



THE technical committees, representing AIA member companies, have continued to provide industry assistance to the Department of Defense and the military services through coordinated action on engineering design, testing and production problems. Reliance upon AIA committees as a source of authoritative industry information on the effects of specification and design requirement changes on such factors as cost, delivery schedules, manufacturing capabilities, sources of supply, etc., has permitted the procuring services to proceed with greater confidence in issuing new and revised requirements.

Services-Industry Responsibilities

The advent of the services' policy of "fly before buy" places unparalleled responsibility on the resourcefulness, design ingenuity, integrity and initiative of the companies for the prototype article. In industry's opinion, still greater benefit could result if these same industry characteristics were recognized in the services' subsequent procurement and production contracts where all design and manufacturing processes and materials are now rigidly controlled by ever increasing volumes of detailed specification requirements.

Representation on ASA Board of Directors

Upon invitation from the American Standards Association for aircraft industry representation on its board of directors, D. Roy Shoults, general manager of the General Electric Company's Aircraft Nuclear Propulsion Department, was nominated by the AIA. Mr. Shoults is also serving on another important ASA activity in behalf of the industry, the Nuclear Standards Board.

S. D. Daniels, of the AIA Technical Service Staff, continues to serve on the ASA Standards Board.

Nominations for NACA Committees

As in previous years, assistance has been rendered the National Advisory Committee for Aeronautics (NACA) to facilitate its selection of engineering and scientific personnel to serve on the NACA's numerous technical committees and subcommittees. A list of outstanding industry personnel available in the various scientific fields has been compiled by the Technical Service from nominations submitted by the Aircraft, Engine, Rocket-engine and Propeller Technical Committees of the AIA.

Government-Industry Relationship re Civil Type Certification

Early in the year, the AIA commented unfavorably on a Civil Aeronautics Administration proposed legislative change to Section 603 of the Civil Aeronautics Act of 1938 which would have, in effect, required manufacturers

to certify that their products were safe. The CAA Administrator agreed that the proposal was unsound in this respect and a more acceptable redraft was prepared by CAA counsel. The industry does not object to an increase in manufacturers' responsibility for type certification, but strongly holds that any company statements or affidavits of compliance be linked directly to the civil airworthiness rules and not to some undefined reference to safety. Final agreement between the CAA and industry on desired changes to the Act of 1938 on this subject is still pending.

Environmental Criteria and Test Evaluation

An important job is being performed by the Wright Air Development Center (WADC) Environmental Criteria Branch in the complex area of environmental design requirements and evaluation testing of aeronautical equipment. During the year, an Air Force film has been initiated, with the cooperation of three major aircraft companies, to illustrate and emphasize the tremendous importance of environmental criteria to satisfactory high altitude-high speed operational performance in aircraft and missiles. This movie, called "Design for Environment," will be completed January 1, 1957.

At the invitation of the Air Force, representatives from all interested AIA technical committees met with WADC Environmental Criteria personnel at Dayton to exchange information on current problems and future needs for improved evaluation testing of equipment such as (a) possibility of combining various environments during a single test, (b) effects of interaction of nuclear environments with others, (c) laboratory simulation of environmental effects of age and wear, (d) determination of the optimum quantity of test items, and (e) evaluation of effect of sequencing of environmental factors of the upper atmosphere.

European Office of the USAF Air Research and Development Command

Through dissemination of information to the AIA's main technical committee members and a special briefing (in Brussels) of industry representatives in Europe, increasing U. S. company use is being made of European scientists and research facilities. Aided by the services of the USAF Air Research and Development Command office in Brussels, the program is intended to provide for:

- An exchange of scientific information with certain European countries.
- Reciprocal visits by European and American scientists.
- Financial support of contract research work.

Record Maintenance Through Design

In response to a request from the USAF Deputy Chief of Staff for Materiel, increased industry attention will be devoted to better design for ease of maintenance. Skilled personnel in the services are in critical supply and the Air Force has stated that "maintainability will be more heavily weighted in the selection of future equipment for procurement. Two main principles are involved; the first is that maintenance consideration must be given at the bread-board stage; second, specifications must be incorporated into contracts to specify maintainability requirements."

Service Publications Activity

This is an area of increasing interest and activity within the Technical Service where the publications chiefs of the member companies have recently been organized in three groups representing airframe, powerplant, electronic and equipment manufacturers. These groups are currently resolving mutual problems connected with the weapons system concept of procuring publications and contractor printing.

Within the Airframe Panel, an active guided missile group has started work on the problems of technical manuals in this field. This is complicated by the fact that maintenance concepts have yet to be stabilized by the Government, while service publications must be phased into production and delivery schedules.

A meeting of all groups with representatives of the Congressional Joint Committee on Printing is scheduled for this year. The importance of this aspect of aircraft procurement is evidenced by the fact that an estimated quarter billion dollars is spent each year for the contractual preparation of technical publications.

Drafting Practices

Drafting Practices Panels of airframe, accessory and equipment, electronic, and engine-propeller industry segments have continued to function on an active basis throughout the year. Of primary concern to the entire industry was the services' proposed Revision "B" of MIL-D-5028, Drawing and Data Lists. The Panels, representing 148 companies or divisions, were successful in their efforts to present a consolidated industry viewpoint. A subsequent coordination meeting with the services' representatives was successful in producing a final revision of the document, which, it is believed, will eliminate many questionable past requirements and serve to produce satisfactorily uniform drawings.

The Panels are continuing work on portions of MIL-D-5028 with respect to drawings for vendor designed and manufactured articles. The fruits of this work are expected to be incorporated in a subsequent revision in 1957.

Closely allied to work accomplished by the Drafting Practices Panels has been the coordination of ANA Bulletin No. 391, which deals with engineering change procedures of the engine-propeller and accessory-equipment segments in their dealings with the services. Final draft

of a proposed revision to the bulletin was coordinated with the military services through the Aeronautical Standards Group in October.

AIRCRAFT TECHNICAL COMMITTEE

The Aircraft Technical Committee has devoted its primary attention to surveillance of the numerous programs of the ATC subcommittees. The Committee also served to determine the nature and extent of airplane industry support to be given to other organizations such as the Society of Automotive Engineers, Society of Aeronautical Weight Engineers, and American Standards Association.

Transport Prototype — Public Law 867 — Termination — After five years on the books, Public Law 867 expired in September 1955 with none of the \$12,500,000 having been allocated or used for certification flight testing or simulated airline operation of turbine-powered transports. Although initially supported by the industry in passage by Congress, this legislation had always been recognized by industry as being inadequate to provide any special incentive for U.S. jet transport development and the companies preferred to proceed on their own when suitable turbine engines and an airline market had developed. Consequently, in September of 1955, there was no industry support for extension of PL 867 or for adoption of any of the several new prototype bills introduced in Congress last year.

CAA Operation of Military Jet Bombers — Although subscribing to the CAA's objectives to operate military jet bombers to better determine the air navigation and traffic control needs of the coming jet transports, the AIA and the Air Transport Association have both cautioned the Administrator that the usefulness of the B-47 and B-57 airplanes is limited to a check of air navigation aids at altitude. Jet bomber operation might easily result in erroneous information for evaluation of turbine transports in regard to let-down procedures, minimum control speeds, traffic patterns and airport needs.

Aviation Inquiry by Committee on Government Operations — Engineering representatives of the U. S. transport aircraft manufacturers appeared, upon request, before the House legal and monetary affairs subcommittee to provide technical data and information to specific questions on:

- a. Status of manufacturers' efforts and developments aimed at reduction of in-flight noise of commercial turbine aircraft.
- b. Airport facilities and runway requirements for jet transports and relationship of continued future growth of aircraft in weight and size and any potential developments tending to decrease airport requirements.
- c. Air navigation and traffic control problems areas as seen by the manufacturers.

H.R. 11065, looking to the creation of a "Hoover-type" commission with respect to the Federal role in civil aviation, formed the legislative background for these hearings.

AIRWORTHINESS REQUIREMENTS COMMITTEE

Although the Airworthiness Requirements Committee's principal efforts were carried on through the separate divisions of Transport, Personal Aircraft and Helicopters, certain general subjects received attention by all segments, such as:

Air Force-Navy-Civil Design Criteria Program — Following termination of the Aeronautical Board, proper Government sponsorship of this program has been missing and the important materials strength and design allowables documents, ANC-5 (metal), ANC-17 (plastics) and ANC-23 (sandwich construction), have not received adequate attention. AIA has asked Air Coordinating Committee consideration of the sponsorship problem.

Gust Loads Requirements for Military Aircraft — A special ARC Gust Loads Subcommittee was established to work with the Air Force in revising MIL-S-5702 Gust Requirements, which, according to industry, are so conservative as to place great structural weight penalties on future Air Force aircraft.

Military Aircrew Standardization Panel — The Committee has followed and assisted the efforts of the Air Force, Army and Navy to develop uniform requirements for such items as cockpit dimensions, location and actuation of controls, instrument panels, and control knobs as well as to advance the study of physiological aspects of crew training and capabilities.

Aviation Toxicology — Industry interest has continued in the Aviation Toxicology Bulletin series being published by the CAA Medical Division. Such information is useful to the aircraft designers and the airline operators.

Position and Anti-Collision Lights — Considerable study, activity and flight test demonstrations have been carried on by CAA and others with various exterior lighting systems to reduce the collision hazard. The Committee submitted recommendations to the Civil Aeronautics Board to improve its latest proposal and to limit application to night operations.

ARC Transport Committee — With the coming design, construction and flight test certification of over two billion dollars worth of jet transports, the work of the ARC Transport Committee has been greatly accelerated. Primary attention has been devoted to the Part 4b Civil Air Regulations with considerable effort on the CAA's Manual interpretations and policies for aircraft type certification.

CAB 1956 Annual Airworthiness Review — The Board's hearing in September in Washington, D. C., was the largest in its six-year history with about 150 representatives in attendance, 25 of whom were representing 10 foreign nations. Interest in the Transport Category Airworthiness Rules Part 4b has become particularly significant with the numerous U. S. and European designed turbine aircraft and engines all aiming at U.S. civil type certification. The ARC Transport Committee represented the U. S. manufacturers in discussing proposed regulatory

changes, including design airspeed and operating limitations, fatigue evaluation, landing gear and brake loads, instrument panel layout, oxygen equipment, emergency exit provisions, fire protection, turbine-engine rotor blade and wheel integrity, icing requirements and cockpit visibility.

Turbine Transport Performance Requirements — A major engineering effort has been devoted by the manufacturers, in cooperation with the airlines and the CAA, to develop performance requirements applicable to turbine transports to insure equivalent flight safety under all temperature conditions. Because of the increased sensitivity of turbine engines to changing temperature conditions, the CAB considers that changes to Part 40 (Operation Rules) must be made for turbine aircraft. A special ARC Performance Subcommittee has been established by the manufacturers to review the Board's proposal, to develop model data for airline trial route application and to meet with the CAB, CAA, ATA and ALPA representatives in the near future.

Civil Aeronautics Manual Policies — In its type certification activities, the CAA finds it necessary to develop policies and interpretations in administering the Part 4b airworthiness rules. The ARC Transport Committee cooperated with the CAA in developing manual material on many regulations, including brake capacity, auto-pilot systems, anti-skid devices, fire extinguishers, power-operated flight-control systems, stall-speed flight-test techniques and engine-out enroute climb.

International Civil Aviation Organization (ICAO) — The Committee has followed closely and participated where necessary in the CAB's efforts to reduce the ICAO Annex 8 Airworthiness Standards to broad, objective rules. Industry opposed extensive work in developing international Acceptable-Means-of-Compliance to the ICAO Annex 8 Standards, proposing, instead, to utilize any country's national airworthiness code as adequate for purposes of recognition of freedom-of-flight over member states under terms of the ICAO Convention.

ARC Powerplant Installation Subcommittee — This permanent subcommittee has been active in the CAB's Annual Airworthiness Review of the powerplant installation and fire protection regulations. Additional attention has been devoted to such problems as fuel tank construction, turbo-jet engines for guided missile applications, method of presentation of turbine engine performance data, accuracy of jet-engine airflow determination and propeller feathering hose assemblies.

ARC Personal Aircraft Committee — In addition to its usual efforts on the CAB's Annual Airworthiness Review and the development of CAA Manual policies for Civil Air Regulations Part 3, this Committee was particularly concerned with proposed changes to the Delegation Option Procedure for type certifications of aircraft under 5000 pounds gross weight. The industry strongly objected to the CAA Administrator for his proposed retraction of

the responsibilities the manufacturers have assumed under this option for product-airworthiness compliance. To revert back to the previous certification procedure of detailed data checking by CAA will delay new models and design improvements, increase cost to the aircraft owners and require a needless build-up of CAA engineering manpower.

ARC Helicopter Committee — Primary interest has centered on the promulgation, by the CAB, of a separate Part 7, Airworthiness Rules for Transport Category Helicopters. Concurrently, the Board has limited the application of CAR Part 6 to helicopters of not more than 6000 pounds gross weight. This division will permit gradual completion of the Part 7 flight performance rules, which are now in brief and objective form, as well as simplification of the existing Part 6 rules for small helicopters. The manufacturers' objective is maximum utilization of all helicopters through special CAA attention to the operational safety requirements in each instance. There is interest in a program to review and develop recommended changes to the series of existing MIL Helicopter Design and Construction Specifications in use by the Army, Navy and Air Force. Rapid technological progress and advancements in the state-of-the-art have tended to make many of the MIL requirements obsolete. In addition, little progress has been made during the year in clarifying the nature and extent of the services' intended use of the Civil Air Regulations as a basis for procurement of military helicopters.

AIRCRAFT RESEARCH & TESTING COMMITTEE

Organization, operation and long-range research and testing problems were of concern to the Aircraft Research & Testing Committee, particularly in respect to the growing size of the Committee, in increasing influence of current and anticipated missile and nuclear problems, the increasing complexities of the "communications" problem and the impact of engineering advances in design on manufacturing capability.

Ever-increasing demand for technical data resulting from testing and the growing importance of lead-time in research and development resulted in reorientation of the Committee organization within its present framework and in establishment of annual forecast technical requirements.

The reorientation, through assigned responsibility within the existing Committee, placed emphasis on keeping abreast of new developments and requirements and recommending Committee action in the separate fields of metallic materials, non-metallic materials, processes and methods and testing. Outstanding among those of current interest were problems concerning titanium, alloy steel, titanium and steel honeycomb and elevated temperature testing.

The forecast covers anticipated five- and ten-year requirements in materials, processes and testing, most of which are currently influenced by elevated temperature

and nuclear radiation effects. The 1956 forecast of requirements needed by 1961 and 1966 has been widely disseminated to industry through appropriate AIA technical committees and has been acclaimed by defense agencies for its usefulness as a guide in their operations.

Communications as a problem, both with respect to magnitude and nature, though of concern for years, has recently become acute. It has been the subject of recommendations to defense agencies; it has been responsible, in part, for the aforementioned reorientation; and it has been instrumental in extending Committee coordination and liaison with other technical committees, particularly those in manufacturing.

A number of projects and panels under ARTC direction were active on a wide variety of current problems. The ARTC itself met frequently and regularly on a regional basis and once on a national basis with representatives of the defense agencies. Projects and panels met as necessary, mostly on a closed industry basis, but also with defense agencies and other outside organizations to exchange information and develop recommendations and specifications to meet industry needs.

ENGINEERING CONTRACT REQUIREMENTS COMMITTEE

The Engineering Contract Requirements Committee is concerned with the engineering data requirements of contracts for aircraft and guided missiles. Activities of two major panels of this Committee in the fields of drafting and service publications are reviewed elsewhere in this report. The Committee has spent this past year in studying efforts aimed at streamlining Government approvals on a systems basis rather than component part approvals.

A consolidation of design data requirements for aircraft is a current project of the Committee aimed at a single document for data submittal requirements which should provide a tool for more effective estimates of contract proposals.

An Air Force proposal on block configuration control for aircraft production was discussed this year with the Committee, but further action on industry comments was postponed until a more specific presentation is developed by the Air Materiel Command.

The Committee is interested in standardization of aircraft service change procedures. Differences between Air Force and Navy requirements complicate their preparation and handling.

ACCESSORY AND EQUIPMENT TECHNICAL COMMITTEE

The Accessory and Equipment Technical Committee activities have been directed toward coordination of engineering policies and requirements with the military services, weapons systems primes, equipment manufacturers and suppliers of component parts and materials. The rapid technological advances of the year have magnified

equipment design problems through introduction of new extremes of temperature, altitude, radiation resistance and vibration. This, coupled with ever-increasing necessity for high performance, reliability, long-life, light weight, small size, maintainability, reproducibility and short lead-time from concept to production, have provided an urgent need for cooperation of AETC with both its customers and suppliers to refine engineering policies and requirements to provide the incentive and ability for design and production of the equipment required.

AETC objectives have been accomplished through its two national meetings and actions of its various subordinate committees, projects, panels and surveys. Following are some of the more important problems under consideration.

Proprietary Rights—Analysis of the general area of recognition and protection of the proprietary rights of accessory manufacturers, with particular emphasis on current requests of the Government and prime contractors for removal of the typical proprietary notices which industry, in general, places on design documentation.

Buying Policy—An AETC Panel is investigating and preparing recommendations on the proposed Air Force "Buying Policy for Aircraft Systems."

Environmental Data and Requirements—In cooperation with the military and other AIA committees, the AETC has collected and disseminated information on new environments being encountered and recommended improvements in current environmental test requirement.

Military Presentations—Considerable time and effort has been devoted to arranging presentations at national AETC meetings by key military representatives on current engineering policy problems, such as "Air Force Buying Policy for Aircraft Systems," "Atomic Energy and Facilities," "DOD Standardization Program for Aircraft Accessories" and "Air Force Implementation of DOD Standardization Program for Aircraft Accessories."

Field Use of Equipment—The AETC visit aboard an aircraft carrier and the Electronic Equipment Committee visit to Lincoln Air Force Base were arranged to obtain first-hand information on field usage and maintenance problems from those military men who are using and maintaining members' equipment.

Administrative Engineering Committee (AEGC)—Some of the more important problems under consideration by this Committee include: engineering change procedures, equipment approval procedures, recommendation that numerous military drafting procedures be consolidated into one combined procedure, definition and use of specification control drawings, specification and use of microfilm in place of van dykes.

POWERPLANT CONTROL COMMITTEE

This Committee represents all major control-system manufacturers in coordination of engineering problems

of control research, design and procurement. Major activities for 1956 included recommendations that the military initiate basic research in eight areas of vital importance to advancement of power-plant control art; discussions with the military of long-range control uses and missions; fuels and fuel problems related to control design and maintenance; technical advice to the Bureau of Aeronautics and Bureau of Standards on four basic control research projects and preparation with engine manufacturers of a simplified procedure for control reliability analysis.

Auxiliary Powerplant Subcommittee—This Subcommittee, established in 1955, has been more recently divided into two groups, according to spheres of activity. The primary Subcommittee is comprised of member companies producing auxiliary turbines which operate on self-generated power. These are known as "hot" turbines. Manufacturers of turbines which operate by ram-air or air bled from other sources (such as from jet engines of an airplane) have been grouped separately in the "air turbine" category. The hot turbine group has submitted recommendations to the military services, through the Aeronautical Standards Group, on the governing specification MIL-P-8686. It is expected that ASG will arrange a meeting of interested services' personnel with members of this Subcommittee for coordination of recommendations submitted.

The air turbine group has reviewed two USAF specifications governing this type of equipment. Recommendations developed are still in the formulative stage and will probably be sent to the Air Force in 1957.

ELECTRONIC EQUIPMENT COMMITTEE

The Electronic Equipment Committee represents 36 companies engaged in the design and manufacture of electronic equipment. EEC deals with problems of research, design, development, construction, testing and operational reliability of electronic equipment and systems. EEC activities encompass 62 items involving one subcommittee and numerous panels. Projects worthy of specific note include:

Reliability—The Reliability Panel has:

- Recommended to the military services a means for specifying reliability in quantitative numbers that can be used in equipment procurement documents.
- Studied measurement and test methods for demonstrating reliability and the improvement of reliability at the component and equipment level.
- Recommended necessary changes in component and equipment specifications for increased product reliability.
- Organized a session, "Trends in Airborne Equipment Reliability," to be presented at the Third National Reliability Symposium in January 1957, sponsored by

the Institute of Radio Engineers, American Society for Quality Control and the American Institute of Electrical Engineers.

- Maintained a close liaison with other industry and military reliability groups.

Tube Requirements—The Electron Tube Subcommittee has engaged in numerous projects related to environments in which electron tubes are used, the various aspects of transistor standardization and improvement in electron tubes used in guided missiles, as well as improvement in the military specifications.

Component Parts—Detailed specifications do not exist for about 80 per cent of the component parts which go into airborne electronic equipment. The military has not been able to supply these specifications to keep up with the increasing requirements of improved performance and reduced size because of test facilities and personnel limitations. This necessitates individual writing of specifications by the equipment manufacturers at a cost of \$2000 to \$5000 per specification, plus many man-hours of engineering effort. The result to the parts manufacturer and military is many specifications for the same part. Through Committee effort, coordinated with the parts manufacturers and the military, the Committee hopes to standardize specifications on component parts where feasible and applicable.

Other important areas that received Committee attention were commercial and patented articles, electronic drafting practices, definition of semi-conductor requirements, equipment design for ease of maintenance and accessibility, automation in electronic equipment assembly operations and improvement in MIL-C-5015 and MIL-C-8384, Connectors, as well as consideration of a new series of miniature electrical connectors.

ENGINE TECHNICAL COMMITTEE

The Engine Technical Committee has been concerned primarily with engineering procurement specifications for engines as issued by the military services and with Civil Air Regulations pertaining to type certifications, development and operation of engines in civil use. To carry out its responsibilities, the Committee has maintained close liaison with the military services and the regulatory agencies of the Civil Aeronautics Administration.

During the year, the Committee has acted on the following subjects, either directly or in cooperation with one of its specialist subcommittees:

Reciprocal Qualification Test Requirements of British and American Turbine Engines for Civil Use—A series of several meetings, arranged by the CAA at which ETC cooperated with CAA powerplant personnel in attempting to up-grade British engine testing requirements, resulted in complete acceptance of the American proposals by members of the British Air Registration Board and the Society of British Aircraft Constructors present at the meeting.

Council for Military Aircraft Propulsion Standards—A revised Charter and Rules of Procedure for CMAPS, as approved by the legal staffs of the Air Force and Bureau of Aeronautics, was submitted to the ETC for acceptability. Although several points remain to be resolved before the Charter can be submitted for signature of the services and industry representatives on the Council, it is anticipated that agreement of all concerned may be reached in the very near future.

Quick Attach-Detach Flanges, Mountings and Drives—A British proposal for standardization of quick attach-detach flanges, mountings and drives was presented to ETC through the offices of the Aeronautical Standards Group. Although no immediate usage of these drives is contemplated by the engine manufacturers in this country, some merit was seen in the British proposal. The ETC has submitted a counterproposal, with modifications to certain features, and a general reduction in the number of proposed applications.

Current Turbojet Engine Requirements—A classified list of questions presented to ETC by the Office of the Assistant Secretary of Defense for Applications Engineering received a detailed review by the Committee. Answers to the questions posed have been returned to OASD/AE as an ETC reply through AIA.

Re-Evaluation of the Use of Critical Materials in Jet Engines—The Air Force, realizing that the system of establishing critical materials usage on the basis of static sea level thrust has become somewhat outdated, requested suggestions for modernizing the method to recognize the higher performance requirements and capabilities of current and future jet engines.

As a result of this request, a Critical Materials Reporting Panel was established by the Engine Technical Committee to study the problem. Although the Panel is in agreement that a modern method for establishing critical materials usage is very much needed, there is considerable uncertainty as to whether any universal formula can be established for consideration of all performance factors involved. The Panel will continue study of the problem and will endeavor to formulate a more realistic method for evaluating critical materials usage in engines.

CAB Annual Review—With the advent of jet transports, the 1956 CAB Annual Airworthiness Review included several agenda items of major significance. CAA proposals on turbine wheel integrity and engine icing requirements were considered to be lacking in substantiation for the severity of design and qualification aspects.

GUIDED MISSILE COMMITTEE

During the past year the increased interest and participation by AIA companies in guided missile activities has been evidenced by an increasing number of member companies who hold prime contracts for complete missiles.

Accordingly, the number of companies eligible for Guided Missile Committee membership has increased approximately 20 per cent.

Atmospheric Gust Data—The GMC reviewed and gave approval to the findings of industry missile specialists concerning the need for an accelerated and extended research program for the development of data on atmospheric turbulence, winds and wind shears needed for missile design work. The National Advisory Committee for Aeronautics has been requested to consider the program recommended by the industry and the Army, Navy and Air Force have been requested to support the industry recommendations.

International Activities—Upon invitation, the GMC has participated in the guided missile activities of the Advisory Group for Aeronautical Research and Development of NATO. AGARD, whose activities encompass only unclassified aeronautical activities of NATO countries, has expanded its interests during the past year to include guided missiles. GMC members participated in the AGARD meetings in Munich, Germany and Venice, Italy. At the Venice meeting approximately 50 per cent of the presentations were made by representatives of GMC member companies.

Institute of the Aeronautical Sciences' Support—During the past year the Institute of the Aeronautical Sciences has shown increasing interest in the subject of guided missiles. The GMC has given informal encouragement to the IAS and has supported its interest by a joint visit on board a U. S. Navy missile ship.

Test Range Study—The GMC has initiated a study concerned with the adequacy of guided missile test ranges, particularly directed toward industry views concerning the capacity of the departments' ranges for present and future missile test and evaluation. The results of this study, together with conclusions and recommendations, are planned for presentation to the Department of Defense.

MANUFACTURING COMMITTEE

Sanctioned by top management throughout the aircraft industries, what previously had been the Manufacturing Methods Committee was reorganized under the name of Manufacturing Committee to reflect the increasing importance and responsibility of manufacturing and to strengthen the industries' cooperative endeavor.

Policy and operations were separated, the former becoming a principal concern of the Manufacturing Committee proper, the latter the principal concern of working committees replacing what previously had been called panels. New rosters were established for all committees.

Working committees named were: Airframe Manufacturing Tooling Committee, Airframe Manufacturing Equipment Committee, Powerplant Manufacturing Committee, Manufacturing Conservation Committee and Manufacturing Test Equipment Committee.

The Manufacturing Committee provided direction for the working committees and, itself, took steps to look into the needs of long-range planning, manufacturing research and development, technical manpower and potentialities of electronic computer-type devices as a means of improving manufacturing management operations.

The Committee held three national meetings, two of which were under the name of Manufacturing Methods Committee. A special meeting was held in New York in March with top manufacturing management executives to review the overall program and define new objectives. An outgrowth of this latter meeting was the Board of Governors' endorsement of an industry policy position and statement on conservation which was subsequently accepted by the Air Force.

AIRFRAME MANUFACTURING TOOLING COMMITTEE

The Airframe Manufacturing Tooling Committee has been active in the areas of standards development, manufacturing research and information interchange. Three national meetings were held and supporting these were numerous subcommittees, projects, etc., aimed at developing the necessary detail.

A standard was issued for spar mill workholders which will assure interchangeability of this costly tooling item with obvious day-to-day operation and mobilization benefits. Currently under development are standards for various type drills and optical tooling illumination equipment.

In the area of manufacturing research, the Committee is seriously concerning itself with cooperative efforts aimed at solving present and anticipated manufacturing problems with the many new materials being used in airframes. A collection of data on manufacturing techniques for heat-treatable steels was a highly successful undertaking and has resulted in a much better understanding of the overall problems and indicates where greatest emphasis is required. Recognition of the results of the study has led to current efforts to develop proposed research programs for more productive machine tool cutters and cutting materials. Paralleling this is a study of the most effective means of producing holes in the new high strength materials.

The AMTC is continuing its close cooperation with other affected committees. Specifically, it has undertaken a program to standardize spar and skin milling machines, cutters, arbors and spacers in support of machine tool specifications previously developed by the Airframe Manufacturing Equipment Committee.

AIRFRAME MANUFACTURING EQUIPMENT COMMITTEE

This Committee met four times during the year in actively pursuing one of its major functions, the development of machine tool specifications. Added to those previously published in the NAS series was NAS930 for

stretch presses. A specification for hydraulic presses has reached a point where publication is imminent. This particular activity of the AMEC is one of significant proportions and has resulted in a better understanding by all concerned as to the machine tool needs of the aircraft industry. Hand-in-hand with the development of the specifications has been the very close surveillance and direction given the USAF "Machine Tool Modernization Program." The biggest single contribution has been the technical direction available through the specifications and close liaison with the military authorities.

Currently the Committee is devoting considerable effort to the development of machine tool technical requirements to handle effectively high strength steels and titanium. The problems of higher horsepower, machine rigidity and higher cutting efficiencies are the primary areas of investigation. Much of the problem is being approached in conjunction with the AMTC, particularly in the areas of cutters and cutter materials.

Another highly significant undertaking has been the AMEC-sponsored studies of the Subcommittee for Numerical Controls. The impact of numerically controlled machine tools is about to be felt by the industry. The studies and cooperative efforts which have supplemented individual company efforts have been a major step in the assurance that the industry will be prepared to accept and integrate the revolutionary tools into its manufacturing plans.

POWERPLANT MANUFACTURING COMMITTEE

The Committee itself met three times and sponsored six other specialists meetings, three of which involved machine tool building industries.

Effort was maintained to keep the program concentrated on high priority items of common concern both from the mobilization and peace-time economy viewpoint. Activity was associated largely with machine tools. Increased future activity on tooling problems was foreseen.

The "project" approach, employing specialists from the participating companies, was used to determine research and development needs and new manufacturing machines and techniques and to develop standards aimed at improving the economy and productivity levels of existing types of equipment.

A specification was completed and recommendations made for an R&D program for machinery and fabricating technique for "chipless" machining of engine parts. An NAS standard was completed for dual turning lathes for turbine discs. Other NAS standards are under current development for fusion welding equipment. Investigation of ways and means of improving broaching equipment and techniques was undertaken.

MANUFACTURING CONSERVATION COMMITTEE

Three meetings of the Committee during the year resulted in an extensive interchange of proved operational

cost-cutters. The philosophy of the Committee, i.e., contribute one good idea and receive 40, is noteworthy and logical. The Committee continually searches for new and better means of information dissemination along with a continual up-grading of the exchanged ideas. The results of the previous year's idea exchange have resulted in the second supplement to the Conservation Handbook. The handbook itself, containing a wealth of suggestions for cost savings, has been widely distributed and is available to any organization having a need for it.

Specific projects are also undertaken from time to time and are aimed at developing better and more efficient procedures for doing things. Some of these projects are standard color coding of aluminum sheets for more efficient scrap control, better methods for spooling and handling electrical wire and cost savings in assembling electrical wire connectors.

The Committee has also actively negotiated with the USAF in determining the concept and guide lines of logical and effective industrial conservation programs.

MANUFACTURING TEST EQUIPMENT COMMITTEE

This new Committee was recently organized to secure, through the benefit of cooperative efforts, a better individual and industry-wide understanding of manufacturing test equipment problems. As the complexity of weapons systems increases day-by-day, so does the test equipment become more complex. The Committee has held two meetings and many studies are under way to compile information on power supplies, automatic wire analyzers, calibration laboratories, etc. Some of these studies will result in aircraft industry standards and others will be productive from the exchange-of-information viewpoint.

Realizing the economies possible from commercial standard parts, components and approaches, the Committee has begun to develop a general specification for production test equipment.

All types of equipment are being considered, such as electrical, hydraulic, pneumatic, etc. The primary emphasis to date has been in the electrical area.

NATIONAL AIRCRAFT STANDARDS COMMITTEE

This Committee's efforts are directed toward: (1) the standardization and specifications problems of aircraft and guided missile parts, systems, installations, components, materials and processes; (2) development, release and promotion of National Aircraft Standards; (3) participation with, and assistance to, the military services in their joint airplane, helicopter and guided missile standardization programs.

The Committee's current membership of 30 represents every manufacturer engaged in the design and production of military aircraft, including helicopters and guided missiles, in the aircraft industry.

The past year's activities have been a continuation of

the programs and projects mentioned in earlier reports, a few of which are highlighted below.

Coordination of Government Specifications — The number of military specifications and standards coordinated with the aircraft industry through NASC continues to increase. In the previous two years, the total number of documents went from 100 to 200, and this year is almost 300. This pre-audit of proposed specifications and standards serves the dual purpose of advising industry of the services' latest views on military requirements and assisting the Government in evaluating manufacturing capabilities. The objective is more realistic Government documents for procurement. Whereas this coordination program has been confined in the past to the Aeronautical Standards Group for the Air Force and Navy Bureau of Aeronautics, requests for aircraft industry views are now received from additional Government activities.

Titanium Fasteners — An important NASC project was completed this year with the release of the first industry specification and drawings in the form of National Aircraft Standards for titanium alloy bolts. This action makes available a procurement document for titanium fasteners which can be utilized in aircraft design to save weight without sacrificing strength. NASC also assisted the BDSA in a survey to determine rate of titanium utilization for aircraft fasteners in the industry.

National Aircraft Standards — Seventy-five new standards were released in this series during the past year covering items such as the titanium bolts mentioned above, other fasteners including miniature nuts for space and weight savings, fastener shank and hole tolerance limits, tube connectors, helicopter inspection requirements and cadmium plating. Thirty-five existing standards were also revised.

Aircraft Metals Stock List — This is the tenth consecutive year in which NASC has issued a list of aircraft metals, both alloys and sizes, which are stocked by warehouses for aircraft use. Five thousand copies of this year's Stock List were printed and distributed on request.

NOISE CONTROL COMMITTEE

This Committee was dissolved by the Board of Governors at its meeting in May upon evidence of the fact that the Committee had achieved the objective for which it was initially established in 1950.

Activities over the six-year period centered on the technical aspects of mufflers and cells for ground testing and operation of jet aircraft and powerplants.

Though relatively inactive during 1956, prior to that time the Committee established and maintained contact with outside organizations; exchanged information on design, development, construction and operation; established measurement standards; developed recommendations for research and development and held meetings and conferences within and outside the aircraft industry.

Future problems associated with noise control and suppression will be handled through other existing AIA committees.

PROPELLER TECHNICAL COMMITTEE

Activity of the Propeller Technical Committee during the past year has largely been in the Engine Technical Committee due to similarity of policies, problems and areas of interest in the engine-propeller powerplant package concept. Several of the specialized problems which remain to be solved to the satisfaction of the propeller industry include:

Test Facilities for Propellers — Availability of propeller testing facilities for advanced type propellers continues to be a problem which has shown little improvement in the past year. Although a lack of funds may be largely responsible for a lack of marked progress, PTC expects to continue its efforts in this regard in the hope that results may be forthcoming soon.

Propeller Performance Presentation — In view of the additional experience gained in the past year through service operation of turboprop-driven aircraft, it is expected that in the not-too-distant future, a single standardized method for presenting propeller performance data may be evolved. The Committee will continue to work toward that end.

Turbine-Propeller Type Certification Requirements — Civil Aeronautics Manual 14, in its draft form, was reviewed by PTC, with comments being submitted on the draft proposal in January of this year.

Additional Projects — PTC has been actively represented on panels dealing with drafting practices, engineering change proposals and the Council for Military Aircraft Propulsion Standards.

ROCKET TECHNICAL COMMITTEE

The Rocket Technical Committee has continued to be most active during the year. As previously contemplated, interest shown by the manufacturers of solid propellant rockets has, within the past year, been the cause for a division of the main RTC into two separate divisions, one of which deals with liquid propellant rocket engines, and one with solid propellant rockets. The two divisions will continue to operate separately since no reason can be foreseen for the two divisions to hold joint meetings.

During the year, the Liquid Propellant Division took action on the following subjects, either directly or through RTC specialist subcommittees or panels:

Handbook of Rocket Design and Installation Criteria — As a result of recommendations and material submitted to the military services in 1952, the proposed Handbook of Rocket Design and Installation Criteria has been published in the form of an ANA Bulletin. Inasmuch as the ANA Bulletin has now been printed and released, and is

specified in contractual requirements, the liquid propellant rocket-engine manufacturers plan to make periodic reviews for keeping the Bulletin material abreast with the current state-of-the-art.

Standardization of Rocket Components—A subcommittee dealing with industry standardization of liquid propellant rocket-engine components has finalized specifications covering solenoid valves and pressure switches that are in general use. The subcommittee is continuing its work and will shortly issue an invitation to the manufacturers of pressure regulators for a symposium to discuss contents of a pressure regulator specification. RTC member companies are utilizing these specifications in ordering the components involved.

Rocket Propellants—The RTC Propellants Panel has completed its review of the more universally used liquid propellants and has submitted comments to the military services on procurement specifications and, in the case of

several propellants, has submitted "use limit" specifications. The Panel will continue to function on a semi-annual basis for consideration of specifications dealing with propellants not presently covered by specifications and with mono-propellants.

Rocket Propulsion System Specification—The RTC Propulsion System Specification Panel held a series of meetings for developing a model specification to define the needs and responsibilities of a complete propulsion system.

RTC Solid Propellant Division—This Division, which will operate on the rules and procedures originally established for RTC, held two meetings during the year, the first of which was of an exploratory nature to discuss fields of common interest. Specialist subcommittees or panels may be necessary on problems peculiar to this segment of industry. As a result of formation of this Division, several companies have applied for membership in AIA.



TRAFFIC SERVICE

THE work of the Traffic Service is concerned with the traffic and transportation problems of the members. It operates to secure and maintain the lowest lawful freight charges on materials used by members; compiles and distributes information on methods of billing freight to assure the application of the lowest lawful rate; advises member companies on traffic matters; and coordinates the efforts of individual traffic departments in those situations where industry-wide action is required. Effective representation of the industry's position on traffic matters has saved the industry and the Government large sums through reductions in freight rates and through measures which have avoided rate increases.

Committee Report on Transportation—In the 1955 Report of the Traffic Service, comment was made on proposals of the President's Cabinet Committee on Transportation to limit substantially the powers now exercised by the Interstate Commerce Commission (ICC) in the field of economic regulation and to restore dynamic competition among surface carriers. The proposals have received widespread shipper support and the two AIA traffic committees have unanimously endorsed the principle of the report.

Hearings on H.R. 6141, designed to implement the report, were held and the Director of Traffic Service appeared to present the views of the traffic committees. One part of H.R. 6141 would abrogate the powers now exercised by shippers to form associations to consolidate small shipments into carloads and to force the employment of forwarders in such movements. If this sort of legislation, which has been vigorously endorsed by the

ICC, is enacted, it will greatly increase the transportation costs of the aircraft manufacturers on the Pacific Coast. Strong representations have been made to the Department of Commerce, which sponsored H.R. 6141.

Participation Rate Proceedings—In Section 5a of the Interstate Commerce Act approved June 17, 1948, Congress gave carriers the right to form associations to agree on rates—a right generally denied to industry under the antitrust laws. In doing so, Congress emphatically provided that the Commission must refuse to authorize any agreement that does not assure each carrier member of the association "the free and unrestrained right to take independent action." Notwithstanding these positive assurances, the Commission not only has permitted but has encouraged associations to petition for the suspension of these independently published rates. As a result many have been suspended and cancelled before they went into effect.

So many complaints had been received by the Commission in this and related matters that it instituted an investigation, designated Ex Parte 194, inviting briefs in lieu of hearings. The examiner in his proposed report followed in substantial detail the recommendations contained in the AIA brief. The Commission, however, reversed the examiner and dismissed the proceeding. It also denied AIA's petition for reconsideration. This whole proposition is now before the Commission again. Since the complexion of the ICC has changed since this policy was conceived eight years ago, it is entirely possible a reversal of past practices and a close adherence to the intent of Congress will be realized. This will permit AIA members to carry

on individual negotiations with carriers—a practice which the Commission has diligently sought to discourage. *Increased Demurrage Charges*—An acute car shortage, principally east of the Mississippi River, has induced all U. S. railroads to apply for a large increase in demurrage charges assessed for car detention beyond the two days of free time allowed for loading and unloading. Under present rules, for cars which are unloaded in a single day, a one-day credit is allowed to offset charges in those instances where delays beyond two days have been encountered. AIA members very generally have unloaded rail equipment very quickly—some members incurring overtime in so doing. The plan now to curtail these credits will tend to impose substantial demurrage charges where none or a very minor amount is now incurred. Vigorous opposition to this proposal was voiced by the membership. AIA, with many others, filed a petition for suspension which was granted by the Commission. Hearings on these increased charges were to come up in November.

Released Valuation Cases—In January the ICC began a series of hearings on applications by railroads and motor carriers to limit their liability to \$3 per pound for loss or damage to goods. Under the common law, with very limited exceptions, carriers are insurers of the goods they transport. In Section 20(11) of the Interstate Commerce Act, Congress has largely reaffirmed this liability. This paragraph carries the proviso that carriers may limit their liability beyond that imposed by the common law where “expressly authorized” to do so. Thus a statute which clearly appears to give the Commission power to authorize a limited liability only in special cases is converted into one authorizing a very general limitation of liability. It is estimated that this limitation, if made effective, will cost the aircraft industry alone \$500,000 per year.

The director of Traffic Service appeared at three hearings and, through four witnesses supplied by the airframe manufacturers, opposed these proposals. To supply a substantial deficiency in their evidence, the railroad applicants and the motor carriers, with substantial support from the presiding examiner, sought to obtain from the aircraft industry a detailed list of the articles involved with the price of each. This was categorically refused.

The final hearing was scheduled to be held in Washington in November.

Government Bills of Lading—The General Accounting Office has insisted that Government bills of lading on Government-owned property be used unless the contract calls for delivery of Government freight at destination free of all freight charges. Delays in securing GBLs from Government agencies in the past have caused many problems, particularly in the movement of material and parts from vendors to prime contractors under cost-plus-fixed-fee contracts where the Government takes title to goods at vendors' plants. To a lesser degree it has occurred in movements under facilities contracts and contracts involving the movement of Government-furnished equipment.

Modifications in the orders prescribing the use of GBLs have been made, including the use of commercial bills of lading where Government bills are not readily procurable, with conversion to Government bills at destination.

While present arrangements are generally quite satisfactory to prime contractors, the Air Force finds that its record on contract performance on shipment of spares and in the proper allocation of transportation charges is incomplete. Under the new plan, with two general exceptions, it is contemplated that all Air Force property, where prime contractors are involved, will be moved on commercial bills of lading with the prime procuring agency of the Government responsible for converting to Government bills of lading. The two exceptions: (1) when there is a U. S. transportation officer located in the prime contractor's plant, (2) where Government-owned shipments now move into prime contractor's plant under CPFF contracts, shipments of less than 1000 pounds will continue to move on commercial bills without conversion. Efforts to arrive at a solution are now being discussed with the Air Materiel Command.

Streamlined Mixing Rule—For some 14 years the railroads operating between Chicago and New York and other eastern points have maintained a liberal rule for mixing a wide variety of articles at carload rates in a single car. The competing motor carriers attacked this rule and Division 2 of ICC ordered its cancellation. On appeal the Commission sustained Division 2, and, upon petition of freight forwarders and a large number of shippers, has again reopened this case for further evidence.

While our members possess only limited interest in the application of this rule in eastern territory, western members have a profound interest in its extension to the west because of the improved service and reduced charges which would result. A prime contractor witness has introduced evidence in support of the rule. Briefs were due November 15, 1956.

Single Management Concept—Pursuant to a Department of Defense directive issued in May, the Secretary of the Army was made responsible for the organization and operation of a Single Manager Service Assignment for traffic within the U. S. for all of the armed forces. Investigations so far made indicate that the utilization of existing organizations will affect only in a very minor way, if at all, the close working arrangement existing between member traffic departments, the AIA Traffic Service and the Air Materiel Command.

Miscellaneous Matters—The Traffic Service also has negotiated adjustments with the Classification Committees and has been able to avoid the adoption of proposals unsatisfactory to members. It has cooperated with the members in carrying on individual negotiations with carriers. The Traffic Committees have convened in seven meetings. Technical advice and information has been continuously supplied by the Traffic Service to the membership through the issuance of 140 bulletins.



HELICOPTER COUNCIL

OVER the last 12 months, in both the military and commercial fields, the helicopter continued to prove itself as one of the key factors in solving transportation problems in areas previously untouched by fixed-wing aircraft.

Although military commitments remain dominant in the industry's steadily increasing production schedule, the Civil Aeronautics Board has authorized expanded rotary-wing aircraft service in the Chicago area. The two other cities with certificated helicopter mail and passenger service (New York and Los Angeles) have also noted growth of helicopter use and still other areas are becoming aware of the need.

The helicopter is rapidly providing its practicability in augmenting regularly scheduled airline operations and it is in this field, along with short-haul inter-city service, that the rotorcraft may make its greatest impact as a public convenience.

Of equal significance, however, is the steadily increasing interest of large corporations, with plants in different areas, which are finding the helicopter an invaluable tool in the transport of company personnel and materials from plant to plant. The important field of fixed base and charter operations is also showing a continuing and healthy growth, as are specialized operations.

MAJOR OBJECTIVES

During the past year the Helicopter Council staff has continued its normal operations and its servicing of the press and local, city, state and federal planning groups, supplying them with educational materials, all aimed at intensifying interest and action needed for the ultimate purchase and use of the helicopter industry's products.

The staff has participated in important gatherings in all parts of the country where the interests of the helicopter could be furthered. Members of the Council financed, on a prorata basis, a special printing of 5000 copies of a 36-page booklet on "Heliport Location and Design," originated by the aviation department of the Port of New York Authority. This has been distributed to aviation officials of every state and to all Chambers of Commerce. In addition, through the cooperation of the American Society of Planning Officials, the book was placed in the hands of planning officials in every city of greater size and in 230 cities with a population of less than 250,000. Moreover, each member company was provided with copies with which to respond directly to inquiries received by them for this type of information.

Impact has already been felt. Governors Averell Harriman of New York and Edwin C. Johnson of Colorado have urged mayors of municipalities in their states to start planning for helicopter use by setting aside centrally located areas for use as heliports. Similar steps are expected to be taken by governors of other states. Pennsylvania, for example, has retained a specialist to survey its helicopter and heliport requirements.

The Council's general objectives received considerable impetus in August when the Urban Land Institute, an independent non-profit agency organized to study trends affecting real property and to advance research and education in replanning and rebuilding cities, announced a very comprehensive study it had inaugurated on the city planning implications of helicopter use. The Helicopter Council staff has established working contact with this group and arrangements have been made for the entire Council to meet with the parties concerned.

CONTACTS

On the national level, Edward P. Curtis, President Eisenhower's Special Assistant for Aviation Facilities Planning, has met with officials and staff members of the Helicopter Council. As a result, it is felt that the Curtis report and recommendations will fully recognize the importance of the helicopter and all that its use implies. Visits to several helicopter plants have been arranged for members of the Aviation Facilities Planning staff.

The Civil Aeronautics Administration during the year also took another step looking toward wider helicopter usage when it announced a first-hand study of navigation, communications and traffic control problems in inter-city helicopter operations. CAA will investigate a number of facility problems as well as pilot standards for helicopter instrument ratings.

Close and valued liaison was continued with the National Association of State Aviation Officials in the all-important field of revision of state aeronautical laws to relieve the helicopter of possible disadvantages arising from the interpretation placed on regulations adopted prior to the introduction of the helicopter with its special operational characteristics. A survey of helicopter operators, conducted by the Council, revealed many instances of difficulties encountered in actual experience due to this regulation difficulty, and the survey results have been summarized and distributed to those concerned with this problem.

Cooperation continues with the Civil Aeronautics Ad-

ministration and other branches of Government pertaining to aeronautics, as well as with the Aeronautics Committee of the American Bar Association and numerous other trade associations in which the helicopter is a factor.

EDUCATIONAL ACTIVITIES

Press attention given the helicopter for its leading role in rescue and other emergency missions is extremely satisfactory. Radio and television outlets continue to exploit the performance of this type of aircraft. All women helicopter pilots, assisted by the Council staff, formed an organization officially designated as "The Whirly Girls." This group has already attracted national and international feature press attention.

The industry, during the past year, has made remarkable progress in the penetration of foreign markets, both in military and commercial fields. The promise of substantial expansion in the export field is extremely encouraging.

The Council concludes its fiscal year with an increase of two in membership, making the present total 11, with an additional application pending Board approval. Present members are Bell Aircraft Corporation; Helicopter Division. Cessna Airplane Company; Doman Helicopters; Gyrodyne Company of America; Hiller Helicopters; Hughes Tool Company, Aircraft Division; Kaman Aircraft Corporation; Kellett Aircraft Corporation; McDonnell Aircraft Corporation; Sikorsky Aircraft Division, United Aircraft Corporation; and Vertol Aircraft Corporation.

UTILITY AIRPLANE COUNCIL



THE Utility Airplane Council's principal interest is in the field of general aviation, i.e., all forms of civil flying except airline transportation. Members of the Council include all AIA companies concerned with the manufacture of utility and executive-type airplanes and the engines to power them.

Although these manufacturers have the same basic interests as other AIA members and participate in various AIA activities, they are primarily involved with general aviation development. As a result, the Council has always maintained close liaison with other associations interested in the same field. Regular participation by the Council in activities concerned with the study and solution of general aviation problems has caused it to be recognized as the principal source of authoritative information and advice on this subject.

Growth of Business Flying—Utility aircraft are presently used extensively to transport company executives; in agriculture to spray chemicals and fertilizers; in air-taxi, specialized charter and other for-hire flying; for flying instruction; and for sport and pleasure. In 1954 a total of 3071 utility and executive aircraft worth \$58 million were delivered; the following year, units climbed to 4434 valued at \$75 million. It is estimated that in 1956 at least 6500 aircraft valued at \$125 million will be delivered. Between 1946 and the current year, private flying rose from two-and-one half million to more than 10 million hours. In other words, general aviation

accounted for three times as many flying hours as the scheduled domestic airlines and the large irregular carriers during the same period. Estimates by the Civil Aeronautics Administration indicate general aviation will climb at the rate of 400,000 flying hours a year through 1960—about 11½ million hours annually by that time—but qualified observers presently consider this estimate on the conservative side. The general aviation fleet now includes between 55,000 and 60,000 aircraft, approximately five times the size of the scheduled airline fleet. Corporations alone use 18,500 planes, ranging in size from single-engine executive types to larger twins and even four-engine transports.

Billion Dollar Business—Operation of the business aircraft fleet, including purchase of new equipment, spare parts and maintenance supplies, gasoline and oil, cost of hangaring and salaries for pilots and mechanics, runs about \$500 million a year, according to best available estimates. Since business flying accounts for about 40 per cent of all general aviation activities, the total for all general aviation is probably more than one billion dollars annually.

Military Support Activities—Apart from their utilization in civil fields, utility and executive aircraft are also finding extensive military utilization by the various services for liaison, light cargo, personnel transportation and other uses. The highest officials of the government, including the President, are now regularly transported in typical

light business aircraft. Many military models are for all practical purposes "off-the-shelf," being either identical or largely similar to civil aircraft in current production and use.

The lightplane and engine industry has been a consistent supplier of important quantities of military aircraft and their engines. In addition to the military liaison and executive transport types, the industry is a prime contractor in the design and manufacture of trainers, small jets and other types which are essentially military in character. As a subcontractor to other military plane and engine makers, the general aviation industry also supplies substantial quantities of major components, thereby forming an important part of the national mobilization base.

Production & Research Facilities—The production facilities of the general aircraft industry have been substantially increased during the past year. Many thousands of additional square feet of floor space, together with tools, production machinery and personnel to man these facilities, have been added to the industry's plant capacity during the past year. This has been required to accommodate the growing volume of civil business and also because of the continuing and substantial amounts of military production being supplied by this segment of the industry. As the business of the light aircraft and engine industry has increased, it has been possible to make corresponding increases in research and development work. The result of this enterprise is evidenced by the consistent improvements made in aircraft types for both civil and military purposes.

Importance to National Defense—The industry continues to be concerned with the fact that the Defense Materials System (DMS), which replaced the Controlled Materials Program (CMP) when controls were generally removed in July 1953, does not include non-carrier aircraft as an authorized program for which materials would be allocated. Because non-carrier (general) aviation was recognized as being essential and defense-supporting in character and because materials were allocated to it on a basis of demonstrated need under the Controlled Materials Plan (CMP) during the Korean emergency, the present shortcoming is evident, especially since DMS assistance remains available to the civil carrier (airline) industry. Material availability is not a current problem, but would become acute should another emergency invoke controls.

Aid to National Growth—The business airliner, when properly used, has proved to be a true economic tool, bringing a definite return on the investment. By enabling

executives to visit plants remote from headquarters, the company plane has helped spur the erection of subsidiary facilities in other states, thereby aiding the economy of other areas and the nation as a whole. Best salesmen for the general aviation industry have proved to be the aircraft users themselves who make a point of describing the business airliner's advantages to friends and associates.

Inadequate Facilities—The Government has recognized that the nation's aviation facilities—airports, airways, navigation aids and the communications equipment to link them—are rapidly becoming inadequate. General aviation is potentially, if not already, the largest user of those facilities. To cope with the problem, a Special Assistant for Aviation Facilities Planning was named by President Eisenhower early in the year. While the facts about airline and military aviation are well known and easily documented, the same cannot be said about general aviation even though its large fleet flies millions of hours each year. All segments of general aviation have formed the General Aviation Facilities Planning Group, an organization which closely coordinates its activities with the White House Office of Aviation Facilities Planning. The Utility Airplane Council is a member of GAFPG and is fully participating in all GAFPG activities.

Advisory Role and Liaison—In its search for information and in its dissemination of the facts of general aviation, the Utility Airplane Council regularly advises with other aviation organizations and with many agencies of government, federal, state and local. The survey work of the General Aviation Facilities Planning Group and its coordination with the Office of the Special Assistant to the President for Aviation Facilities Planning have been the principal concern of the Council for most of the year.

During the past year the Council manager has served on committees of the Air Coordinating Committee, the Airport Use Panel, the Manpower Working Committee of the Defense Air Transportation Administration and in many special activities where views of the Council were sought. The Council manager is a frequent speaker before other aviation organizations and groups, lectures regularly to air age aviation workshops and participates in related air age educational activities. He is secretary and a director of the National Aviation Education Council, and serves as a member of the board of directors of the National Aeronautic Association.

In such activities as these the Council, through its members and manager, constantly monitors the general aviation scene and takes an active part in those activities in which it is able to be of industry service.



AIA MEMBERS



DIVISION A

(42 voting members)

MANUFACTURERS OF AIRCRAFT, AIRCRAFT ENGINES OR AIRFRAMES

Aero Design & Engineering Company
Aerojet-General Corporation
Aeronca Manufacturing Corporation
Aircooled Motors, Inc.
Allison Division, General Motors Corporation
Aircraft Gas Turbine Division, General Electric Company
Avco Manufacturing Corporation

Beech Aircraft Corporation
Bell Aircraft Corporation
Bellanca Aircraft Corporation
Boeing Airplane Company

Cessna Aircraft Company
Chance Vought Aircraft, Inc.
Continental Motors Corporation
Convair, A Division of General Dynamics Corporation
Curtiss-Wright Corporation

Doman Helicopters, Inc.
Douglas Aircraft Company, Inc.

Fairchild Engine & Airplane Corporation

Goodyear Aircraft Corporation
Grumman Aircraft Engineering Corporation

Hiller Helicopters
Hughes Aircraft Company

Ingersoll Kalamazoo Division, Borg-Warner Corporation

The Kaman Aircraft Corporation
Kellett Aircraft Corporation

Lockheed Aircraft Corporation

Marquardt Aircraft Company
The Glenn L. Martin Company
McDonnell Aircraft Corporation

North American Aviation, Inc.
Northrop Aircraft, Inc.

Piasecki Aircraft Corporation
Piper Aircraft Corporation

Reaction Motors, Inc.
Republic Aviation Corporation
The Ryan Aeronautical Company

Stroukoff Aircraft Corporation

Temco Aircraft Corporation

United Aircraft Corporation

Vertol Aircraft Corporation

Westinghouse Electric Corporation

DIVISION B

(58 voting members)

MANUFACTURERS OF ACCESSORIES, PARTS OR MATERIAL USED IN AIRCRAFT CONSTRUCTION OR OPERATION

Aero Supply Manufacturing Company
Aerodex, Inc.
Aluminum Company of America
American Airmotive Corporation
Arcturus Manufacturing Corporation

The B. G. Corporation
Franklin Balmar Corporation
Bendix Aviation Corporation
Bridgeport Brass Company

Champion Spark Plug Company
Chandler-Evans Division, Pratt & Whitney Co., Inc.
The Cleveland Pneumatic Tool Company
The Connecticut Hard Rubber Company
Cook Electric Company

The Dow Chemical Company
Dumont Aircraft Fitting Company

Fletcher Aviation Corporation
Flexonics Corporation
Flight Refueling, Inc.

The Garrett Corporation
General Laboratory Associates, Inc.
The B. F. Goodrich Company
Gyrodyne Company of America, Inc.

Harvey Machine Company, Inc.
Hoffman Laboratories, Inc.
Hydro-Aire, Inc.

Jack & Heintz, Inc.

Kaiser Aircraft & Electronics Corporation
Kaiser Aluminum & Chemical Corporation
Kollsman Instrument Corporation

Land-Air, Inc.

Lear, Inc.

Longren Aircraft Company
Luria Engineering Company

The MB Manufacturing Co., Inc.
MacWhyte Company
Minneapolis-Honeywell Regulator Company

National Tapered Wings, Inc.

The New York Air Brake Company

Pacific Airmotive Corporation
Parker Aircraft Company

Radio Corporation of America. Defense Electronics
Products
Reynolds Metals Company
Rheem Manufacturing Company, Aircraft Division
Robertshaw-Fulton Controls Company
Rohr Aircraft Corporation

Simmonds Aeroaccessories, Inc.
Solar Aircraft Company
Sperry Gyroscope Company, Division of
Sperry Rand Corporation
Sundstrand Aviation Division of Sundstrand
Machine Tool Company

Thompson Products, Inc.
Thiokol Chemical Corporation
Tinnerman Products, Inc.
Transco Products, Inc.

Vickers, Inc., Division of Sperry Rand Corporation

Wm. R. Whittaker Company, Ltd.
The Franklin C. Wolfe Company, Inc.

Zenith Plastics Company

DIVISION C

(26 voting members)

AviQUIPO, Inc.

Parker & Company

Manufacturers Aircraft Association

Bellanca, G. M.
Brinckerhoff, Wm. W.
Brukner, Clayton J.
Bush, Charles T.

Chambers, Reed M.
Condon, Cyril Hyde

deSeversky, A. P.

Eggert, H. F.
Eubank, John A.

Fales, Herbert G.

Hanks, Col. Stedman Shumway
Hotchkiss, Henry G.

Kahn, Roger Wolfe
Kettering, C. F.

Litchfield, P. W.
Loening, Albert P.
Loening, Grover

McCarthy, J. F.
MacCracken, Wm. P., Jr.

Rodey, Pearce G.

Scholle, Howard A.
Sikorsky, I. I.
Sullivan, John Dwight

DIVISION OF AFFILIATED MEMBERS

(21 non-voting members)

Aviation Age
Aviation Week

The Babb Company, Inc.
Booz, Allen & Hamilton

Grand Central Aircraft Company

Johnson, Robert W.

Loomis, Suffern & Fernald
Lund Aviation, Inc.
Lybrand, Ross Bros. & Montgomery

National Aviation Corporation
National Credit Office, Inc.

Robert Schasseur, Inc.

Shell Oil Company
Smith, Kirkpatrick & Company, Inc.
Standard Oil Company of California
Steel Products Engineering Company

The Texas Company
Tubesales

U. S. Aviation Underwriters, Inc.

van Gestel, Col. T. J.
Vickers-Armstrongs, Inc.

AIA COMMITTEES



EXPORT SERVICE

Director: *Irving H. Taylor*

Export Committee—

Chairman: *Charles H. Shuff, Westinghouse Electric International Co.*

INDUSTRY PLANNING SERVICE

Director: *George F. Hannaum*

Accounting/Controllers Committee—

Chairman (Eastern Region): *Paul A. Reck, Sperry Gyroscope Co.*

Chairman (Western Region): *Clyde Skeen, Boeing Airplane Co.*

Industrial Relations Advisory Committee—

National Chairman: *Clayton D. Ruyle, Republic Aviation Corp.*

Industrial Security Committee—

National Chairman: *William Y. Humphreys, United Aircraft Corp.*

Legal Committee—

National Chairman: *Henry G. Hotchkiss, Aircraft Industries Association*

Materials Committee—

Eastern Region Chairman: *C. E. Reid, Republic Aviation Corp.*

Western Region Chairman: *M. K. Smith, Ryan Aeronautical Co.*

Patent Committee—

National Chairman: *Charles S. Wilson, Republic Aviation Corp.*

Preservation & Packaging Committee—

National Chairman: *D. R. Snelling, Boeing Airplane Co.*

Quality Control Committee—

National Chairman: *H. E. Moore, McDonnell Aircraft Corp.*

Spare Parts Committee—

National Chairman: *Daniel S. Stevenson, Lockheed Aircraft Corp.*

Statistics & Reports Committee—

National Chairman: *William Hummel, North American Aviation*

Tax Committee—

Chairman: *J. C. McDevitt, Convair*

PUBLIC RELATIONS SERVICE

Director: *Avery McBee*

Public Relations Advisory Committee—

National Chairman: *Roger C. Fleming, Allison Division, General Motors Corp.*

TECHNICAL SERVICE

Director: *I. C. Peterson*

Aircraft Technical Committee—

National Chairman: *Frank W. Fink, Ryan Aeronautical Co.*

Airworthiness Requirements Committee—

Transport Committee Chairman: *Warren T. Dickinson, Douglas Aircraft Co.*

Aircraft Research and Testing Committee—

Eastern Region Chairman: *Roy W. Lessard, Fairchild Engine & Airplane Corp.*

Western Region Chairman: *E. C. Bovee, Boeing Airplane Co.*

Engineering Contract Requirements Committee—

Chairman: *R. G. Vencill, Lockheed Aircraft Corp.*

National Aircraft Standards Committee—

National Chairman: *C. B. Sheckells, Douglas Aircraft Co.*

Accessory & Equipment Technical Committee—

Chairman: *R. J. Eschborn, Jack & Heintz*

Electronic Equipment Committee—

Chairman: *J. M. Glass, Hughes Aircraft Co.*

Engine Technical Committee—

Chairman: Rotates alphabetically by company for each meeting.

Guided Missile Committee—

Chairman: *William F. Ballhaus, Northrop Aircraft*

Manufacturing Committee—

National Chairman: *R. A. Fuhrer, Convair-Fort Worth*

Propeller Technical Committee—

Chairman: *T. B. Rhines, United Aircraft Corp.*

Rocket Technical Committee—

Chairman: Rotates alphabetically by company for each meeting.

TRAFFIC SERVICE

Director: *Harry R. Brashear*

Traffic Committee—

Eastern Region Chairman: *W. B. Francis, Curtiss-Wright Corp., Wright Aeronautical Division*

Western Region Chairman: *James W. Lee, Bendix Aviation Corp., Kansas City Division*

HELICOPTER COUNCIL

Director: *Don Ryan Mockler*

Helicopter Council—

Chairman: *Don R. Berlin, Vertol Aircraft Corp.*

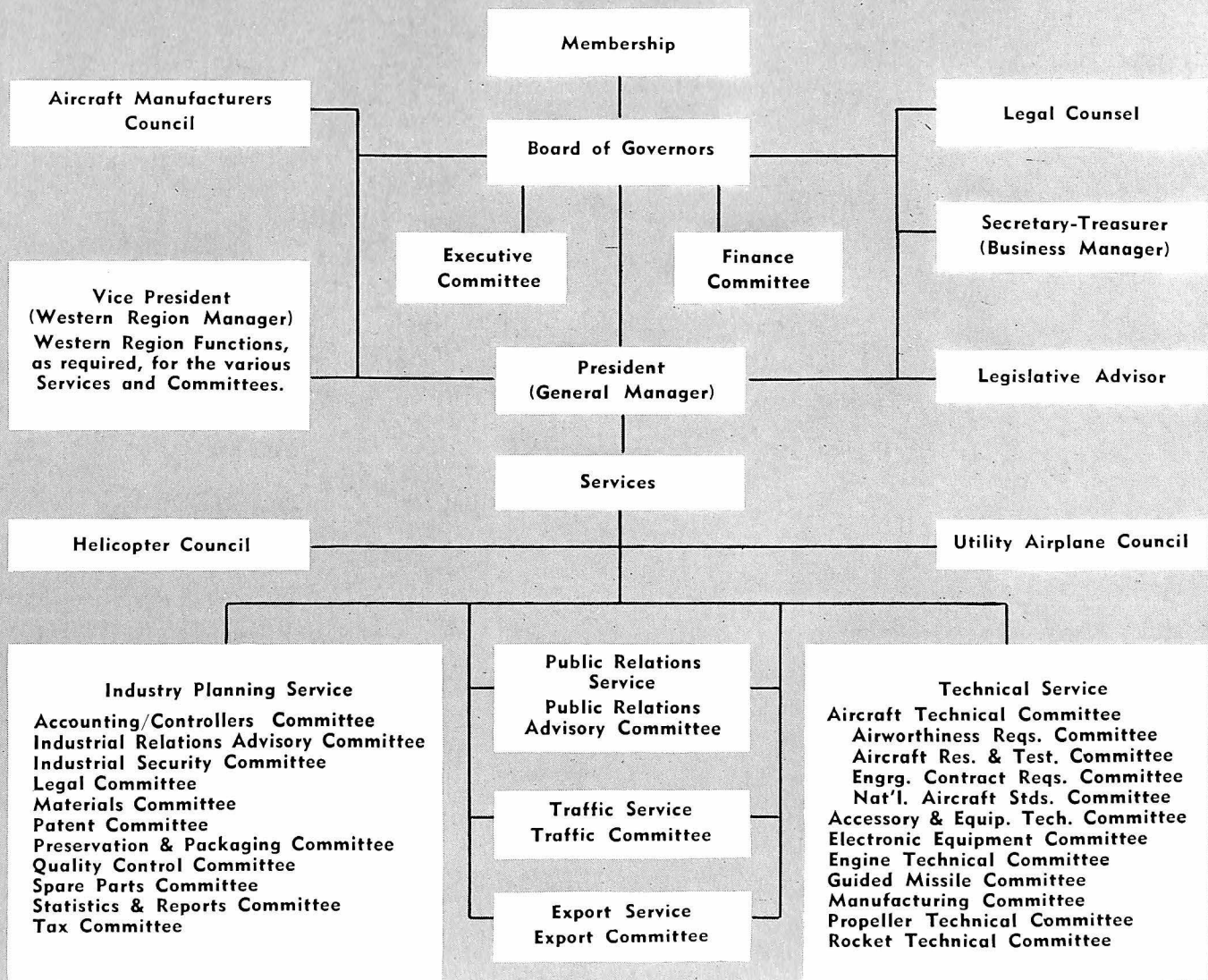
UTILITY AIRPLANE COUNCIL

Director: *J. T. Geuting, Jr*

Utility Airplane Council—

Chairman: *C. J. Reese, Continental Motors Corp.*

AIRCRAFT INDUSTRIES ASSOCIATION OF AMERICA, INC.





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