



1962 ANNUAL REPORT

**AEROSPACE INDUSTRIES ASSOCIATION
OF AMERICA, INC.**

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Aerojet-General Corporation

WILLIAM M. ALLEN, *Vice Chairman of the Board*
The Boeing Company

GEORGE F. HANNAUM, *Vice President*

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J. W. CROSBY, *President, Thiokol Chemical Corporation*

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H. M. HORNER, *Chairman, United Aircraft Corporation*

ALBERT BOYD, *Vice President, Defense Products, Westinghouse Electric Corporation*



GEORGE F. HANNAUM
Vice President
Aerospace Industries Association

TO THE MEMBERSHIP



In mid-December 1962 a faintly musical signal was received on earth from the Mariner II spacecraft as it swept within 21,540 miles of Venus, and man learned the first concrete facts concerning the atmosphere and other physical characteristics of another planet in his solar system.

The full value of this event along with other aerospace accomplishments in 1962 cannot be fully assessed, but it would be difficult to select another year of greater technological impact and progress since the founding of this association in 1919.

The Mariner feat occurred just 48 days before the fifth anniversary of the successful orbiting of the first U. S. satellite, Explorer I, a 31-pound instrument that compares crudely in capability with the 447-pound Mariner II.

The crescendo of accomplishment can perhaps be better realized in comparison with the technological progress in large aircraft where the rule-of-thumb is 8 to 10 years from concept to operational status. Within the span of five years since Explorer I, man has moved, almost routinely, into space and plans are well under way to place him on the moon before the end of this decade.

Three successful manned space flights were made during the year under Project Mercury. Lt. Col. John H. Glenn, USMC, became the first American to orbit the earth. Glenn made a three-orbit Mercury flight in February. Navy Commander Scott Carpenter made a near-identical mission in May. The longest Mercury mission, a six-orbit trip, took place in October with Astronaut Commander Walter Schirra on board.

The first experiment in transoceanic TV and message relay by spacecraft started on July 10, with the launch of the commercially developed Telstar I.

The U. S. launched the first international satellites in cooperation with other nations. Ariel, a joint U.S.-U.K. project for ionospheric and radiation study, was launched in April. Alouette, a U. S.-Canadian program designed to investigate space noise and the upper levels of the ionosphere, was sent into orbit in September.

Other space programs included three launches of the Tiros weather satellites; first flight of the Orbiting Solar Observatory; and a partially successful lunar impact with the Ranger spacecraft.

The NASA-Air Force-Navy X-15 project continued to score new successes in its investigation of hypersonic flight characteristics in "inner space." The X-15 broke all previous speed and altitude records for winged craft with a flight to an altitude of 246,700 feet and a speed run at 4104 miles per hour.

In the field of missilery, the U. S. strengthened its operational forces while making developmental and test progress on some of the newer missiles. New quantities of Atlas missiles were emplaced at operational sites and the latest model, the "F" series, became operational. Titan I was declared operational in April and Titan II was being readied for operational service in early 1963. The first three squadrons slated to use the solid-fuel Minuteman ICBM were activated. The A-2 model of the Navy's Polaris missile, a 1,500-mile-range version, became operational during the year, as flight tests of the 2,500-mile A-3 got under way. The first battalion for the Army's Pershing short-range battlefield missile was activated. Tests continued on the Nike-Zeus anti-missile missile.

U. S.-built aircraft in military and commercial service continued to demonstrate their effectiveness by setting 120 new world records in a variety of categories.

The array of accomplishments adds up to a year of unprecedented scientific and technical progress.

Industry Sales

The sales of the aerospace industry in 1962 amounted to approximately \$15.5 billion, a slight increase over 1961. Production of military aircraft remained at the 2,000-unit level while expenditures for missiles and space vehicles continued to increase. The trend toward research and development as a dominant part of the industry's activities also continued.

Commercial Aircraft

Commercial aircraft during 1962 was estimated at 6,900 units having a value of about \$3.6 billion, compared with 7,472 units valued at \$3.7 billion in the previous year.

Exports

Exports, a sure barometer of the acceptability of U. S. aerospace products, amounted to more than \$1.3 billion, a gain over the \$1.2 billion reported for 1961. The aerospace exports were an important factor in stemming the outflow of gold due to the imbalance in foreign trade.

Utility Aircraft

Members of the AIA Utility Airplane Council delivered about 6,700 aircraft during 1962 with a retail value of \$180,000,000. This compares with 6,778 units produced in 1961 with a value of about \$170,000,000.

The increase in dollar value is due to the increased sales of heavier, better-equipped, multi-engine utility planes. The active fleet of utility aircraft in the U. S. now totals more than 80,000 aircraft.

Vertical Lift Aircraft

The name of the Helicopter Council was changed at the beginning of the year to the Vertical Lift Aircraft Council in order to cover more properly the broadening utilization of this versatile equipment. Sales of helicopters and the number of operators gained significantly during the year rising from 265 operators with 882 craft in 1961 to 322 operators with 994 helicopters. Turbine-powered helicopters in service with scheduled carriers are providing major gains in operating efficiency.

Aerospace Earnings

The Securities and Exchange Commission reported that 51 companies identified as aerospace companies earned an estimated \$350 million in 1962 compared with \$257 million in 1961. The earnings increase is primarily due to the write-off in the previous year of the huge costs involved in development and sales of large turbine-powered aircraft and an over-all increase in sales.

The aerospace industry, with the national responsibility inherent in its products, faces urgent challenges. The prime problem can be stated simply: Expedient translation of laboratory breakthroughs into operational equipment. We are in a technological race and the stake is survival.

There are no sure solutions. However, failure in the aerospace industry to support a major technological gain with resolute managerial action far transcends the usual effects associated with forfeited opportunities in commercial fields. A decision in this industry is an indivisible part of national security.

Breakthroughs, large and small, occur almost daily, causing shifts and realignment of company structure and direction. Aerospace management is characterized by flexibility, a willingness to scrap a proven plan of operations, and assume a task that has no other guideline but promise.

The aerospace industry in its dealings with the agencies of the Department of Defense and the National Aeronautics and Space Administration has found a high degree of cooperation in its formidable task of managing a volatile technology.

Another pressing problem is the trend by the Government toward a managed economy, a trend we share with most U. S. businesses, except to a greater degree.

There is no question that there should be some Government controls over or continuing review of industry's operations. The question is one of degree. Controls can and do mushroom to an extent that the advantages of a private enterprise system are stultified.

The aerospace industry intends to speak forthrightly and specifically regarding the inroads of Government management that erode its technological capability, its

competitive ability and the well-spring of accomplishment, the profit incentive.

AIA Operations

The huge costs involved in today's aerospace projects has made cost control the prime objective of AIA's extensive committee structure. The AIA staff and committee members have moved vigorously during the year to improve the efficiency of practically every aspect of the operations of member companies.

The Missile and Space Council seeks to pre-empt duplicating lines of research, and sponsors interchange of data on technological matters. The Traffic Service has saved the industry and the Government millions of dollars through its representations before the Interstate Commerce Commission on discriminatory rates.

Details of all committee efforts are contained in the reports of the Services and Councils.

Spare Parts Procurement

In one major instance, AIA has expended considerable effort to achieve the goal of the Secretary of Defense in seeking savings through increased competition in the procurement of aeronautical replenishment spare parts. AIA has recommended, after concerted action by several committees, an effective method of determining which aerospace replenishment spare parts can be procured competitively. It appears this recommendation, in essence, will be implemented by the Department of Defense.

Congressional Testimony

AIA, as part of its responsibility to its membership, has submitted upon request, its views on legislation to various Congressional committees. Testimony on the Trade Expansion Act, and the Revenue Act among others, was furnished to appropriate committees.

Organization Cooperation

AIA has also cooperated with other organizations in furthering programs of mutual interest. These include the National Aircraft Noise Abatement Council, which is making good progress in noise control efforts at airports; the Armour Research Institute, which has assumed development responsibility for AIA's Automatic Programmed Tool System; and the National Aerospace Education Council, which continues to bring the aerospace story to students and instructors.

Economic Study

The Stanford Research Institute at year's end had nearly completed the initial report on an objective economic survey of the aerospace industry, a comprehensive study of the vast subject.

The survey is directed toward three major areas:

- The nature and interrelationships of institutions in Government and industry;
- Economic, financial and technical characteristics of representative segments of the aerospace industry;

- The impact of legislative and regulatory factors on the industry.

The report is scheduled to be published early in 1963.

Information Program

A primary goal of AIA during the year was to tell the story of the aerospace industry's accomplishments and problems. This effort will be accelerated in 1963. This industry is responsible for designing, developing, testing and manufacturing 85 per cent of the hardware for our national defense and space exploration programs. The funds involved represent a substantial portion of the Federal budget. There is a clear obligation to inform the public of our stewardship of these vital programs. Every form of communication, from television films to speeches by industry executives, will be used.

During the year, as an example of telling the industry story, news was released of a program adopted by seventeen AIA companies to channel aerospace industry subcontracts into surplus labor areas. The Department of Defense praised the industry action for its "understanding and concern for the problem of defense." The program is coordinated by the Small Business Subcommittee of the AIA Materials Procurement Committee.

The first of three films aimed primarily for television audiences was completed at the end of the year. The film, *All Systems Go*, reports dramatically on our space exploration program. The other two will report on defense weapons and air transport.

Technical Forecast

The eighth *Aerospace Technical Forecast*, prepared by seven committees of AIA's Technical Service and appreciably larger than previous editions, was published in November. The *Forecast* describes in detail the anticipated requirements of the industry to meet national aerospace goals. It represents the body of opinion of the more than 500 scientists and engineers in the industry who participated in the preparation of the *Forecast*.


New Offices

In December, AIA moved to new quarters at 1725 De Sales Street, N.W., in Washington.

Resignation of President

Mr. August C. Eesenwein, who assumed the presidency of AIA in January, resigned May 15, 1962, for reasons of health. Selection of a new president was pending before the Board of Governors at year's end.

Respectfully submitted,



GEORGE F. HANNAUM
Vice President
Aerospace Industries Association



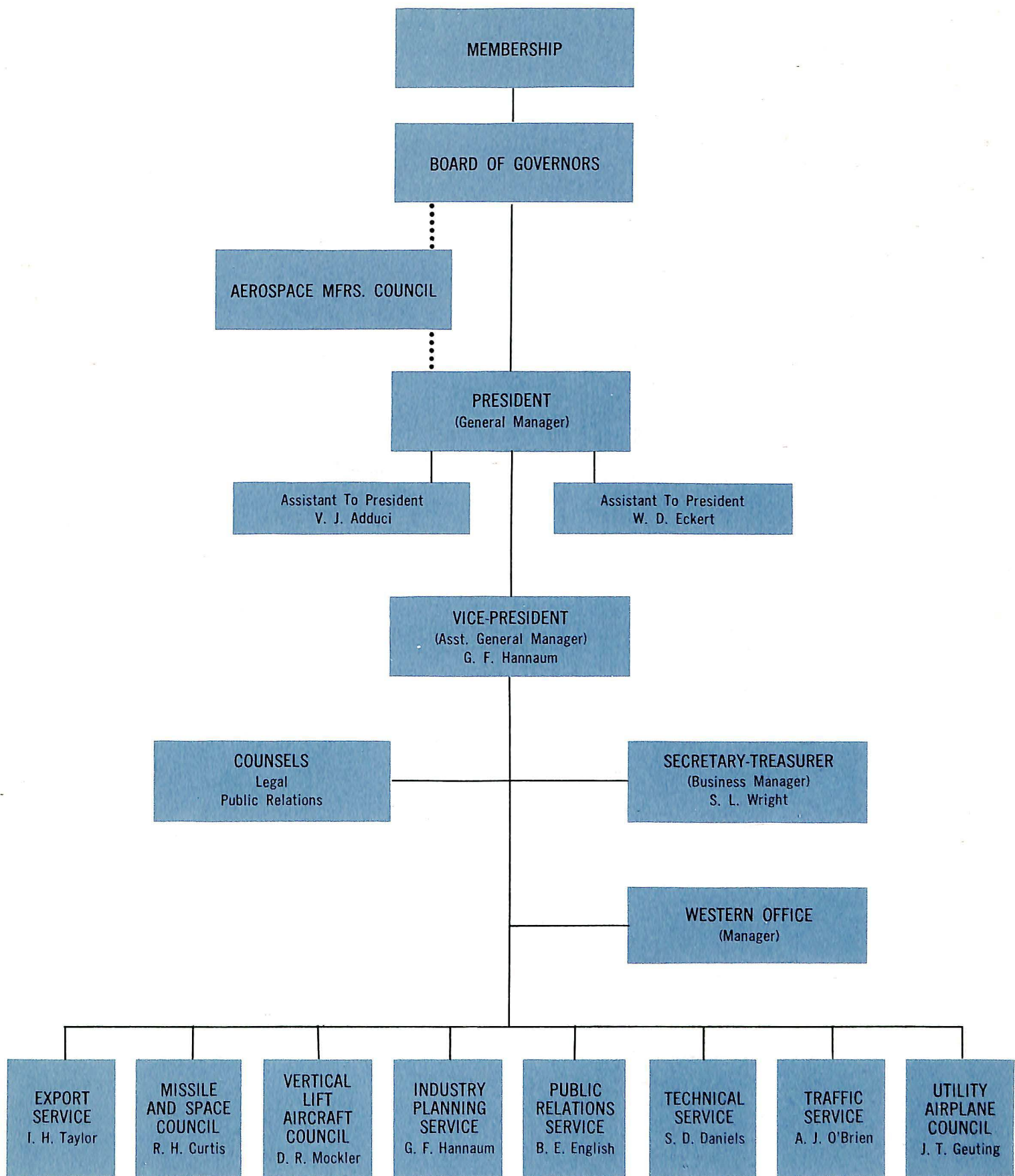
AIA ORGANIZATION AND FUNCTIONS

The Aerospace Industries Association of America, Inc. is the national trade association of the manufacturers of aircraft, guided missiles, spacecraft or propulsion, navigation and guidance systems, accessories, parts, materials and components used in the construction and operation of these aerospace products.

Association policy is determined by a Board of Governors consisting of senior executives of twenty-six member companies plus the AIA President. The President, who is also General Manager, is responsible to the Board for execution of its policies.

With its staff organized as shown on the next page, the Association provides a medium for collaboration on non-competitive problems common to the industries or a major segment of the industries, which comprise its membership.

Membership of the Association totals 105, including 61 Division A (manufacturing) members, 20 Division B members, and 24 affiliate members.







EXPORT SERVICE



W. JEROME KANE
*Boeing International
Corporation
Chairman, Export
Committee*

Export Committee

Export Advisory Committee
International Finance Committee
Military Program Support Committee
Trade Development Committee

International trade is the basis of developing understanding among nations. Acquiring and retaining allies has been largely based upon the success of U. S. economic relations.

Thoroughly utilized by our Government, further expansion of overseas sales of U. S. manufactured aerospace products could prove an even more effective instrument of foreign policy. The high rate of acceptability of "Made-In-America" aerospace equipment not only bolsters but adds luster to our national prestige. The obvious additional dividend in cultivating the expansion of aerospace export is its healthy support in the correction of the imbalance of international payments plaguing our economy.

Russian economic assistance, advanced in several African areas during 1962, using its airlines and Russian-manufactured aeronautical equipment as a medium for the extension of foreign policy, proved the vast and diversified capability of aerospace equipment in the implementation of its national policy.

Calling its concern to the attention of the Department of State for implementation by the U. S. Foreign Service, this Association has again in its 43rd year stressed the importance of promoting national economic goals in direct support of the national interest on the part of U. S. representatives stationed abroad.

U. S. Aerospace Exports

Maintaining the record-breaking, peacetime plateau attained in 1960 and 1961 of well over \$1 billion in annual aerospace exports, 1962 is the third consecutive year for this significant accomplishment by the U. S. aerospace manufacturing industry. Certain missiles, rockets, and associated equipment have been exported on a government-to-government basis, primarily in support of mutual defense assistance programs; however, the U. S. Government does not release export statistics for these products. A percentage of the other categories of export products in the aerospace spectrum have been released by categories. American aerospace exports, both civil and military, are therefore greater than the official U. S. Government statistics portray.

This year, the second highest year for utility aircraft, the released figures showed exports exceeding \$29,000,000. Helicopter exports showed a modest advance during the year. Engines, parts, and accessories continued to provide a significant level of exports on a world-wide basis during the year.

The aerospace industry's exports during 1961 totaled \$1.21 billion, which does not include the expanding overseas yield, from manufacturing licensing agreements, other manufacturing investments, technical assistance contracts, etc. This represents a 9 per cent decrease from the peace-time record of \$1.33 billion attained in 1960. The 1961 aerospace export total was 5.8 per cent of the nation's total of merchandise exports.

The principal factor was the anticipated decline in the sale of jet transports, which reached a record peak

in a major portion of the international airline re-equipment program in 1960. The drop was from 92 units valued at \$464.3 million to 52 units valued at \$255.2 million — a reduction of 43.5 per cent in units and 45.1 per cent in value. These jets represented 35 per cent of the value of all aerospace exports in 1960 and only 21 per cent in 1961.

The lower volume of the big jet export sales was cushioned by rises in other important categories — utility aircraft up about 17 per cent in value, and the miscellaneous category (includes military aircraft and parts) which was up 12 per cent.

Based on official figures through June, the conclusion is that the year-end result should be a little better than in 1961 — possibly even exceeding the 1960 record of \$1.33 billion.

Cooperative Activities

Two outstanding phases of the Export Committee program for 1962, through positive action, have resulted in gratifying and progressive developments affecting both military and civil aerospace exports. The Export Committee has been dealing primarily with the Executive branches in relation to U. S. Government liaison and cooperation.

A series of meetings with Department of Defense officials concerning the international logistics program primarily developed for the NATO area were conducted during 1962. These meetings, called on an interim basis, provided significant guidelines and goals for both industry and Government achievement during the immediate years ahead. Because specific accomplishments, however, cannot often be measured in programs involving Government-industry cooperation, the importance of balance of payment correction and the successful international logistics negotiations conducted by DOD officials must attest to progress in this area. The successfully planned procurement program of the Federal Republic of Germany, as an example, gives concrete evidence of the importance of this type of negotiation.

The Export Committee with the approval of the AIA Board of Governors developed a statement of position endorsing the Trade Expansion Act of 1962. This first major U. S. tariff legislation in twenty years, received the support of the aerospace industry as a result of the efforts of the Export Committee. The passage of this Act places the President in a position to negotiate tariff reductions, and places America on a competitive international trading basis with other nations and economic unions. This bold, new approach to international trade heralds a new era for U. S. exporters. However, the Committee expressed then, and still maintains, real concern in the unusual cartel-type competitive problem which inevitably will face U. S. aerospace manufacturers as they are confronted by competition owned, or controlled, by foreign governments.

International Space Programs

As a part of Trade Development Committee activity,

a review of the international programs dealing with the peaceful uses of outer space as envisaged by ELDO (European Launched Development Organization), ESRO (European Space Research Organization), and EURO-SPACE (Association of European Manufacturers Concerned with Aerospace Programs) was begun in 1962. Dealing primarily with the National Aeronautics and Space Administration and the Department of State in gaining guidelines and policy direction, member companies developed further plans in their international space equipment programs.

Obviously, successful long-range planning for the multi-national space programs is well under way; and AIA member companies are assuming a position of leadership in the development of equipment suitable for these international space programs.

Aerospace Imports

Portent of things to come is the record established during 1962 of U. S. aerospace imports. Exceeding \$150 million for the second consecutive year, together with the 20 per cent reduction of U. S. aircraft tariffs negotiated in Geneva during 1961, the ad valorem import tariff is down to 10 per cent — the lowest in U. S. history as of the first of July, 1963. The strong industrial emergence of the European Common Market has become a powerful international trading bloc. Facing the U. S., meanwhile, are increasing material and labor costs. It is certain, as a result, that American export ingenuity will be severely challenged in the decade ahead.

The U. S. aerospace industry has taken pride in cooperating with Government in the reduction of U. S. aerospace tariffs over the years which were 30 per cent ad valorem in the 1930's to 11 per cent ad valorem in July 1962. With foreign competition being backed strongly with foreign government ownership or control, it appears wise for the industry to classify its products into several categories in preparation for tariff negotiations during 1963 and in the years beyond. Classification of different tariff rates for categories of aerospace products coming into the U. S. is a system which has been adopted by the European Common Market. It would be well for U. S. aerospace exporters to propose a similar course in preparation for future tariff reductions.

Canadian, British, and French aerospace manufacturers supplied the largest percentage of U. S. aerospace imports during 1962. These countries will continue to lead in this respect in the immediate years ahead.

Licensing and Manufacturing Abroad

American know-how and state-of-the-art progress have proven strong catalysts for the continuing formation of U. S. aerospace licensing and subsidiary manufacturing arrangements abroad. A number of these American-foreign cooperative manufacturing arrangements have been developed in recent years. Business of this type has done a great deal to enhance foreign industrial development often-time at a lower profit level

for U. S. manufacturers. Nevertheless, U. S. aerospace manufacturers have not only broadened their line of products, but have vastly increased their world-wide manufacturing capability. As a result, U. S. manufacturers are usually in a better position to meet severe competitive problems confronting firms actively pursuing international trade.

U. S. export licensing requirements affecting unclassified technical data despite sporadic relief during 1962, continued to be an irritant and an obstacle to effective export selling. This archaic phase of the International Traffic in Arms Regulations has deterred U. S. export sales and has provided sales lead time which foreign competitors would not have otherwise received.

International Financing

Financing continued to be one of the greatest challenges to successful aerospace export programs again in 1962. It has proven to be a critical factor in the export of military aerospace equipment. International financing concepts normally do not include military aerospace equipment as eligible products for financing. Neither friendly foreign governments, allies, or defense partners are recognized by the U. S. money market. No. U. S. Government guarantees have been developed to endorse this category of export business which could make good use of traditional commercial sources of finance.

Additionally, this international finance barrier includes placing military trainer aircraft, utility aircraft and helicopters used in local police work in the so-called *overall military aircraft category*. As such, these potential sales are not qualified to receive conventional export financing.

The FCIA (Foreign Credit Insurance Association) was established in 1962. It is the first organization of its kind in the U. S. which is able to issue a comprehensive policy covering both political and commercial credit risks. During the year this quasi-governmental organization developed programs for short-term and medium-term risk coverage. As experience accrues, it is expected that the FCIA will also provide long-term coverage. Such will prove of valuable aid to the aerospace industry in the export of its commercial aerospace equipment. To a large extent, this credit insurance program improves the posture of the Export-Import Bank loan program.

The Export-Import Bank with its traditionally conservative policies, even in face of the imbalance of international payments, proved again to be of great help to the industry during 1962 in the export of civil aviation equipment.

Organization and Functions — Export Committee

The AIA Export Committee is composed of representatives of forty-one leading manufacturers and most active exporters. There are four working committees: Advisory, International Finance, Military Program Support, and Trade Development. The full Export Com-

mittee holds at least two national meetings each year to consider matters which have been referred to it by the working committees although it is always subject to call if circumstances warrant.

The working committees are on a constant, alert basis and, in the interest of utilizing the industry's specialized export manpower to the best advantage, call meetings (full committees or task groups, according to the nature of the requirement) only when matters of importance arise.

It is mandatory that matters brought before the AIA Export Committee must (1) be of broad and important interest to the membership, (2) be of non-competitive nature with regard to member companies, (3) not be in the process of handling by another association, and (4) must be handled in such a way that no action will be taken which conflicts with the interests of any AIA members.

The majority of the export problems coming before the Committee are continuing in nature. Some problems are solved quickly; others may be alleviated, while a few remain through periods of dormancy. Unless settlement is final, the appropriate working committee keeps the subject under surveillance. Export Committee organization members and AIA Export staff are constantly prepared to meet incipient problems so that defensive action may be taken early to avoid the necessity of attempting to cope with a "frozen" situation. Because of this capability, the industry is often called into consultation on proposed developments such as new or revised Government regulations before their promulgation.

Export Services

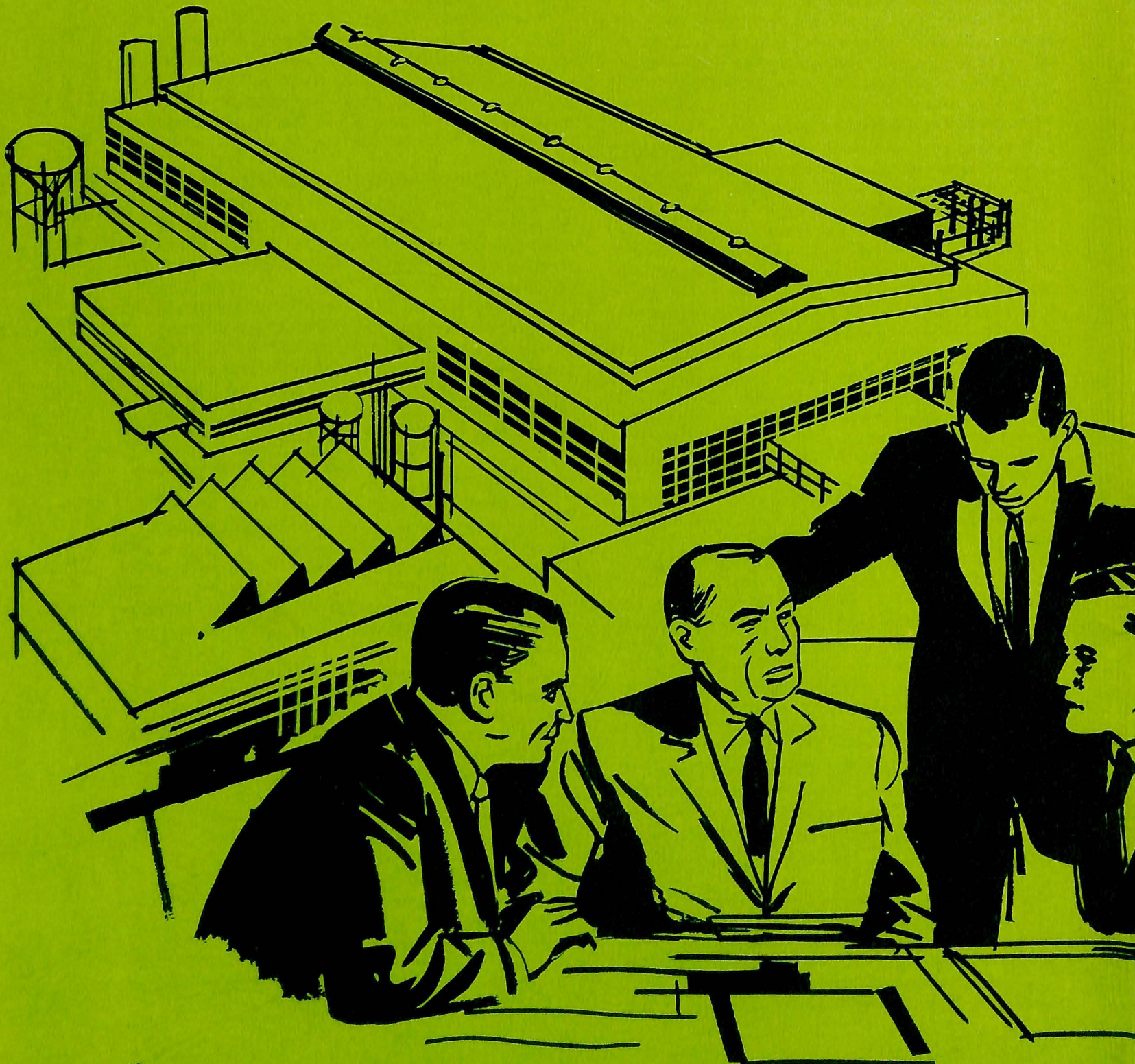
The Export Committee and the Export Service, in addition to its normal routine, added several projects to its programs and refined others.

Among the new projects were: 1. The collection and consolidation of detailed transport aircraft and engine sales figures over a six-year period by international carriers (accomplished by cooperation with AIA Statistical Department).

2. Supplying current order and sales statistics on aerospace exports to U. S. Government economists for the purpose of a detailed analysis relative to the imbalance of international payments (in cooperation with AIA Government Reports Committee).

Additional emphasis during 1962 was placed on expanding and improving "World Directory of AIA Member Foreign Offices", an annual publication which was distributed throughout the U. S. Foreign Service and the U. S. Air Attache Corps.

During 1962, the four "in training" classes of U. S. Air Attaches were again addressed by an industry export representative relative to foreign trade objectives and appropriate U. S. Government support at our embassies abroad. The 1962 series concluded the twentieth such presentation of the Export Service conducted in cooperation with USAF.



INDUSTRY PLANNING SERVICE

The committees of the Industry Planning Service, as liaison with the policy-making and regulation-drafting offices of the military services and NASA, bring a representative industry viewpoint to the Government officials.

Each committee of the Industry Planning Service is made up of company experts. The suggestions of these experts are sifted and summarized and are presented as advisory recommendations from industry to the DOD, the military services, NASA and the AEC. In the descriptions of the work of the individual committees that follow, it is impossible to delineate the many hours of industry effort underlying their accomplishments.

PROCUREMENT AND FINANCE COMMITTEE

This Committee is charged with the responsibility in

areas of the Association's interests dealing with financial, tax, contractual, accounting and general procurement problems of this industry. Although the Committee itself meets only once a year, task groups are constituted for the purpose of handling particular problems within its sphere of interest. The problems are considered and acted upon as required throughout the year.

Improved Procurement Practices

During the year 1962, the Committee continued to build and maintain close liaison with personnel of the Department of Defense, the military services, the Atomic Energy Commission, and the National Aeronautics and Space Administration. Particular efforts were made by the Committee to devise and perfect contracting techniques which would result in maintaining high contract





WILLIAM HUMMEL
*North American
 Aviation, Inc.*
 Chairman, Government
 Reports Committee



WALTER J. JASON
*General Dynamics
 Corporation*
 Chairman, Patent
 Committee



R. S. LIVINGSTONE
*Thompson Ramo
 Wooldridge, Inc.*
 Chairman, Industrial
 Relations Advisory
 Committee



JOHN F. SUTHERLAND
*McDonnell Aircraft
 Corporation*
 Chairman, Product
 Support Committee



ROBERT R. BLACKWELL
*General Motors
 Corporation*
 Chairman, Industrial
 Security Committee



R. H. LAMBKA
The Bendix Corporation
 Chairman, Service
 Publications Committee



JAMES B. GORDON
The Bendix Corporation
 Chairman, Procurement
 & Finance Committee



ROBERT E. BIDDINGER
*Martin Company,
 Denver Division*
 Chairman, Spare
 Parts Committee

GOVERNMENT REPORTS COMMITTEE

Electronic Data Processing
 Program Progress Reporting
 Aeronautical Manufacturers Planning Reports
 Records Management

INDUSTRIAL RELATIONS ADVISORY COMMITTEE

Safety
 Unemployment Insurance
 Wage and Salary

INDUSTRIAL SECURITY COMMITTEE

PROCUREMENT AND FINANCE COMMITTEE

Contract Cost Principles
 Accounting Procedures and Principles
 Equal Employment Opportunity
 Termination Settlements
 Reserves Pending Execution of Release
 Facilities Policy
 Depreciation Policies
 Procurement Legislation
 Federal Tax Legislation
 State Taxation of Government Owned Property
 Indemnification Against Unusually Hazardous Risks
 Record Retention
 Proprietary Rights
 Make or Buy Policies
 Duty and Customs
 Renegotiation
 Federal Patent Policy

PATENT COMMITTEE

Proprietary Rights in Technical Data
 Patent Provisions of the Space Act
 Federal Patent Policy
 MIL-D 70327
 NASA Data Requirements Clause
 Multiple Sources of Supply
 ASPR Section IX, Part I
 Infringement of Copyrights

PRODUCT SUPPORT COMMITTEE

Integrated Single Support Concept
 Contract Technical Service Personnel
 BuWeps Weapon Readiness Achievement Program
 Information Panel
 Spare Parts Procurement Policies
 Data Problems in Product Support
 Military Personnel Training Requirements
 Failure Reporting

SERVICE PUBLICATIONS COMMITTEE

Exchange of Cost Saving Techniques
 General Requirements for Military Manuals
 Manuals for Missiles and Space Systems
 Minimum Maintenance Data for R&D Test Equipment
 Navy Maintenance Manuals
 Army 5-Part Manuals
 Navy Aircraft Periodical Maintenance
 ATA-100 Service Publications Specification
 Technical Manual Printing and Distribution
 Information Panel
 Handbook and Catalog Preparation by EDP Methods
 Standardization of Manual Specifications
 Preparation of Navy Letter-Type Technical Directives

SPARE PARTS COMMITTEE

Federal Cataloging and Prescreening Data Requirements
 Uniform Technical Documentation Provisioning
 Format Requirements
 Spare Parts Provisioning Policies and Procedures
 Aerospace Ground Equipment Provisioning Documentation
 Contractor Support Procedures for Army, Navy and
 Air Force and NASA
 Weapon System Periodic Maintenance Requirements
 Design Change Procedures Documentation
 Spare Parts Replenishment Procurement Policy & Practices

performance while reducing costs and increasing incentives. The Committee, calling upon its working groups and the resources of other AIA committees, has continued to supply information and personnel for consultation service to the DOD, AEC and NASA.

Efforts are being continued to lessen the amount of paper work involved in performing Government contracts in order to reduce the man-hours of work and the costs required to perform such contracts.

Indemnification Against Unusually Hazardous Risks

A growing problem facing the aerospace industry involves the risks incurred in performance of many of their defense and space contracts. Owing to the nature of the risks involved, adequate insurance coverage generally is not available. Consequently, the assets of the contractors are continually being placed in jeopardy to the extent that insurance is not available to cover such risks. Until adequate insurance coverage is available, the Government should assume this liability.

Indemnification legislation in behalf of NASA research and development contracts, while considered and passed by the House of Representatives during the 87th Congress, unfortunately was not acted upon by the Senate. Efforts continue for the purpose of providing the background and understanding of the indemnification problem by the Congress in order that positive action may be taken by the 88th Congress.

Renegotiation

The Joint Committee on Internal Revenue Taxation, in its report to Congress, recommended extension without amendment of the Renegotiation Act of 1951 for another four years, to June 30, 1966. However, the Procurement and Finance Committee presented the views of this Association with respect to renegotiation to the Joint Committee on Internal Revenue Taxation, the Chairman of the House Committee on Ways and Means, and to the members of the Senate Finance Committee while extension of the Renegotiation Act was being considered. The Congress, as a result of the hearings, then extended the Renegotiation Act for only two years, to June 30, 1964, and incorporated an amendment which provided for review of tax court decisions in renegotiation cases by United States Courts of Appeals. It is expected that the 88th Congress will again consider the Renegotiation Act of 1951 as to the necessity for further extension or modification.

Depreciation

Considerable time and effort on the part of this Committee has been devoted to the depreciation policy of the Government. In the past, this policy has been especially important to the aerospace industry because of the increasingly high obsolescence factor of its facilities and the inhibition the policy has had on modernization of facilities.

In 1961, the industry's views on the Administration's

proposal of a tax credit for business concerns as an incentive to acquire or construct new facilities were expressed by the Procurement and Finance Committee to the House Ways and Means Committee. The AIA position then was that, although certain benefits would accrue to certain industries, the proposed tax credit was too complex and would be administratively cumbersome. The AIA indicated to the Congress that this appeared to be only a stop-gap measure, far short of a solution to the larger problem of a permanent, realistic depreciation policy. Early in 1962, the Internal Revenue Service announced that liberalized depreciation standards would be issued in mid-year. The AIA then restated its views to the Senate Finance Committee, supporting the tax investment credit — but only if coupled with a liberalization of Treasury depreciation standards, not as a substitute for general depreciation reform. The Treasury Department issued revised Depreciation Guidelines and Rules in July, 1962. Following consultation with Treasury personnel, it was determined by AIA that the new Depreciation Guidelines and Rules were based on obsolete data and that shorter, useful lives should be permitted. Efforts are being continued to accomplish this objective with the Treasury Department.

It is the view of the Association that, although the Revenue Act of 1962 provides for an "investment tax credit", it is so qualified that it is of doubtful value as an incentive for additional investment in facilities in the aerospace industry.

Government-Owned Facilities

The Procurement and Finance Committee has worked closely with the DOD, the military services, and NASA toward the development of acceptable policies covering the furnishing and use of Government-owned facilities, particularly special test equipment and other special tooling.

The problem of Government-owned facilities is closely linked with the depreciation problem for both tax and contract cost purposes. New Depreciation Guidelines and Rules by the Treasury Department, partially liberalizing the depreciation policy of the Government, were issued this year. However, the present depreciation policy, when coupled with the over-all uncertainty involved in defense programming and high cost acquisition, is not considered to be an adequate incentive. This is particularly true of defense contractors who must provide specialized facilities — particularly those needed for research and test purposes — for the performance of certain contracts. Therefore, the Government has necessarily had to partially support the cost of those facilities required in highly speculative utilization risks. Nevertheless, the industry continues to invest about 70% of its earnings in order to provide necessary facilities for the performance of defense contracts, greatly exceeding the amount provided by the Government.

Activities of the Procurement and Finance Commit-

tee with respect to facilities continue to be coordinated with other interested AIA committees. Of particular importance at the present time are the tax and contract cost aspects of special tooling acquisition and management.

Contract Cost Principles

The new contract cost principles have been in effect for two years. As policy problems have arisen in regard to their administration, the Procurement and Finance Committee has expended considerable effort to reconcile differences between the Government and its contractors relative to negotiation, performance and termination of contracts.



Cost reduction campaigns are an integral part of aerospace industry operations. A cost control program on a major weapon system in about two years reduced the unit cost by approximately 40 per cent. Aerospace firms constantly press for cost control ideas and systems.

In November, 1961, the Department of Defense proposed revisions to the cost principles pertaining to the treatment of research and development expense, bid and proposal expense, and material costs. In January, 1962, the AIA presented its comments with respect to these proposals to the DOD. The Defense Department then prepared further provisions which were considered by this Committee and, in September, 1962, were discussed anew with the DOD. In all probability, the DOD will issue final revisions of the contract cost principles early in 1963.

Of continuing concern to the industry is the administration of provisions of cost principles pertaining to contractor-generated and other independent research

and development. Primarily, the problem is one of Government contracting personnel deviating from both the intent and the language clearly set forth in the Armed Services Procurement Regulation pertaining to the allowability and allocability of these expenses.

Of similar interest to the industry is the consideration given by the Bureau of the Budget to the establishment of a uniform set of contract cost principles for application by all Government agencies. These cost principles pertain to the treatment of independent research and development expense, bid and proposal expense, and home office expense. The AIA has offered its cooperation to the Bureau of the Budget in the development of a set of uniform cost principles by supplying pertinent information and the views of this industry on the subject.

Incentives For Contract Performance

The Logistics Management Institute, at the request of the Department of Defense, is preparing recommendations to the DOD ASPR Committee with respect to improving the standards for determining that portion of the contract price which constitutes profit. The objective of the LMI study is to provide recommendations for the inclusion of an incentive factor provision in contracts which would allow contractors higher, adjusted profits for good performance and, conversely, lower profits for less than target performance.

Settlement of Terminated Contracts

The Procurement and Finance Committee continues a close watch on the policies and procedures of the DOD and the military services in the final settlement of contracts terminated for the convenience of the Government, and, in particular, when projects are cancelled that affect large segments of the industry.

As a result of the DOD-industry cooperation, an improvement in the ASPR provision for the discontinuation of vouchers as a means for speeding up the settlement process has been effected.

Of continuing concern to the Committee is the use of the profit formula in termination proceedings and the treatment of claims by subcontractors. In this area, the Committee is continuing its efforts to improve termination procedures and settlements.

Proprietary Rights In Technical Data

Increasingly serious difficulties are encountered by the aerospace industry in the administration of the provisions of the Armed Services Procurement Regulation pertaining to the rights of contractors in technical data developed at the contractor's expense. When issued, (October 3, 1958), the industry was requested to "accept" those ASPR provisions (Section IX, Part 2) and operate under them in good faith for a year. This was considered necessary in order to ascertain weaknesses and in what areas correction would be required. Industry has given these provisions more than a fair trial and has found that in their administration many inequities exist. As a result of industry representations, some

activity toward correcting outstanding inequities in Section IX of the ASPR was generated in 1960 by the DOD. However, despite considerable time and effort devoted to the project at that time and since by both Government and industry representatives, a general revision of this portion of the ASPR has not yet been accomplished. Indications are that the DOD is awaiting the results of a study of the subject by the Logistics Management Institute. In the meantime, problems arising with respect to the current ASPR provisions continue to hamper the administration of proprietary rights in technical data under defense contracts.

It is anticipated that a continuing endeavor will be made for revision of DOD policies on proprietary rights in technical data in order to achieve a policy equitable to both the Government and industry.

The very existence of many companies depends upon the reconciliation of the problem of proprietary rights in manufacturing processes and data pertinent to processes which make these firms the best qualified to produce a particular article. Data on these exclusive capabilities would not be for sale at any price, because the knowledge has been acquired and developed over the years through the expenditure of much time, effort, and money. The question of protecting the private property of design manufacturers of aeronautical and space equipment has been and will continue to be a most serious problem, not only for the prime contractors but particularly for the thousands of small companies which design and develop so many of the essential items needed in modern weapons systems.

Patent Policies

The Procurement and Finance Committee, in conjunction with the Patent Committee, has sought adoption of certain amendments to the patent provisions of the National Aeronautical Space Act. These amendments would remove the requirements that title to all inventions made or first reduced to practice, under a contract with NASA be vested in the Government, unless a waiver is granted by the Administrator. Legislation considered by the 87th Congress to obtain this objective was not enacted, despite the fact that considerable attention was devoted to the NASA patent policy by the Space Committee of the House of Representatives.

It is the position of this Association that the Government's patent policy should be flexible and provide the necessary incentive to promote the advancement of science and invention. Further, the contractors who produce inventions and discoveries, whether supported wholly or only in part by Government contracts, should be entitled to exclusive rights for sales in commercial markets.

The 87th Congress considered legislation which would provide that the Government take title to inventions arising from contracts supported wholly or in part by Government funds. While this proposed legislation received a great deal of consideration, no affirmative

action was taken. But, it is anticipated that similar legislation will receive greater consideration by the 88th Congress. The Procurement and Finance Committee, cooperating with the Patent Committee, will again present the position of this Association to the appropriate committees of the Congress.

Armed Services Procurement Regulation

Other problems pertaining to the numerous contract clauses which have been issued by the military services, not specifically authorized by the Armed Services Procurement Regulation, have been under consideration and surveillance by this Committee. Additionally, individual ASPR clauses relating to facilities contracts, audit and records, import duties and customs, assignment of payments, and make-or-buy policies, have been considered by the Committee and appropriate representations made to the Department of Defense.

Economic Study of the Aerospace Industry

In November, 1961, it was determined that the AIA would conduct a thorough study and analysis of the economics of the aerospace industry for a better understanding of the industry's economic problems and for insight into new solutions. Responsibility for organizing such a study was placed with the Procurement and Finance Committee. The Stanford Research Institute was awarded a contract by the AIA for the purpose of conducting an economic study of the aerospace industry. It is expected that this study will develop recommendations and quantitative evidence regarding: the aerospace industry's contributions and requirements in meeting national needs; the economic structure of the aerospace industry in contrast to other basic industries; the impact of Government statutes and administrative regulations on the industry; the size and adequacy of earnings and other benefits for enterprises which achieve scientific discoveries or technological break-throughs and produce reliable new products; and the ability of the aerospace industry to compete with the rest of the economy and with the Government for scientists, technicians, materials, facilities, and capital.

An initial report of this study is scheduled for completion by SRI early in 1963.

PATENT COMMITTEE

Federal Patent Policy

The Patent Committee, in cooperation with the Procurement and Finance Committee, has worked continuously in the development of testimony and legislative recommendations supporting the patent system. During the second session of the 87th Congress, legislative proposals which would require the Government to take title to patents arising out of work funded wholly or in part by Government contracts, grants, or other financial support, were defeated. The Patent Committee will continue its efforts to support equitable patent legislation beneficial to the American patent system.

NASA Patent Licensing Regulations

Provisions in the Space Act currently require that the Government receive title to all inventions and discoveries made in connection with, and during performance of, a contract with NASA, except where specific waivers can be negotiated. Although proposed "waiver" regulations were reviewed by industry and a public hearing held with respect thereto early in 1959, such regulations were not issued. In October, 1962, another draft of its proposed waiver regulations was released by NASA for industry review and comment and for discussion at a public hearing on December 10, 1962. The comments of this Association regarding such proposed regulations were presented to NASA.

On October 26, 1962, NASA issued its Patent Licensing Regulations. These differed significantly from the proposal submitted to industry for review and comment in September, 1961. While the new Patent Licensing Regulations constitute an improvement over those proposed in 1961, efforts will be continued for achievement of more fully acceptable regulations.

Proprietary Rights In Technical Data

The Patent Committee, in cooperation with the Procurement and Finance Committee, is continuing its efforts to obtain revision of the Armed Services Procurement Regulation provisions pertaining to proprietary rights in technical data through both formal and informal representations to the Department of Defense.

Unduly complicated contractual data requirements prescribed by the military services continue to hamper the industry. In this regard, the Patent Committee also cooperates with the AIA Engineering Contract Requirements Committee in efforts to secure solutions to the problems presented.

Other Activities

In other areas, the Committee has concerned itself with certain contract clauses pertaining to rights in proprietary data prescribed by the military services from time to time without prior approval by the DOD and not in conformity with the ASPR.

The Patent Committee has maintained surveillance of the United Nations activities in the patent area, as well as proposals made by Common Market countries for a Common Market area patent agreement.

A number of legislative proposals dealing with patents, trademarks, and copyrights introduced during the 87th Congress have been considered by the Patent Committee, and the position of this industry, where considered appropriate, has been made known to the Congress. The Patent Committee has also interested itself in the improvement of U. S. Patent Office practices in order that the backlog of patent applications, and the time taken to process them, may be reduced.

INDUSTRIAL RELATIONS ADVISORY COMMITTEE

The Industrial Relations Advisory Committee concerns itself with the problems of manpower, training,



union regulations, wages, fringe benefits, and other areas related to the work forces of our member companies. It is composed of the chief industrial relations executives from forty-seven AIA member companies, meeting in forum twice a year, where mutual problems and practices in the field may be discussed to the benefit of all members.

The past year has provided a considerable amount of work for the Committee and staff as a result of the increasing emphasis on missile and spacecraft manufacture. Mention was made in our 1961 Annual Report of the Committee's cooperative efforts with the "Holland Committee." It will be recalled that this committee was appointed by the Secretary of Labor to work out criteria for the division of work at the missile sites. Upon invitation from the Secretary of Labor in February 1962, a subcommittee of the IRAC met with an Assistant Secretary of Labor to discuss the report which had been submitted by the Holland Committee. Counsel and a staff representative of the IRAC were also in attendance and presented a statement prepared from material provided by the subcommittee.



With the cost of wages, salaries and fringe benefits amounting to roughly one-third of the total cost of the end-product, the skills of the management team negotiating a union contract become of paramount importance if the company is to remain in a competitive position when bidding on new contracts. During the union contract negotiations in many of our companies this year, there has been an unprecedented trend by the Administration to set the pattern of the settlements through the use of a Presidential Committee appointed to resolve differences between the companies and the unions involved.

As a result of the problems arising over the division of work between the industrial and building trades unions, the House Special Subcommittee on Labor (the Roosevelt Subcommittee) called hearings on the administration of the Davis-Bacon Act which regulates construction work done under Government contract. In June, following a request to do so, a representative of the Association appeared before this Subcommittee to testify as to conditions at the missile construction sites. After other organizations — including constructor asso-

ciations and the building trades unions — had testified, AIA counsel filed a rebuttal with the Roosevelt Subcommittee. In July, after the hearings had been concluded, AIA was again requested to testify at a special hearing on the same subject.

Indicative that the industry is being given increasing opportunity to present its views at the law-making level, as well as at the policy-making level of Government agencies involved in industrial relations matters, is the fact that a member of the IRAC is an industry representative on the United States delegation to the International Labor Organization. He attended a meeting in Geneva this summer with representatives from 24 other countries, during which the chief topic was "The Effect of Technical Progress in Metal Trades." Another member of the Committee is a member of the Labor Department's "Missile Sites Labor Commission", while another Committee member services on the Labor Department's "Advisory Committee on Unemployment."

Staff, with the cooperation of the Committee members, is able to collect information and make surveys on a number of subjects. This information is made available to all Committee members and is used in making replies to Government agencies seeking information on our industry.

INDUSTRIAL SECURITY COMMITTEE

The field of activity of this Committee includes the protection of classified material, civil defense, plant protection and operational procedures in the execution of the responsibilities involved in those areas.

During the past year, Committee members and staff have continued to maintain close liaison with officials of the Department of Defense and other Government agencies having security cognizance of the classified contracts in our plants. The exchange of information between the Security Directors of member companies and those Government officials who formulate the security regulations under which contracts are performed is valuable in developing sound security practices.

Late in 1961, the Civil Defense Administration was reorganized with a major portion of its responsibilities shifted to the Department of Defense. In January of this year, a Civil Defense subcommittee of this Committee met with the, then, newly appointed Assistant Secretary of Defense for Security and his staff to discuss the problems and policies of Civil Defense as they pertain to the defense industry.

In April, forty-one Security Directors representing our companies met with fourteen top security officers and civilian officials of the Department of Defense and other Government agencies. This meeting was devoted to serious across-the-table discussions on security regulations and practices as well as the administration of the security program.

PRODUCT SUPPORT COMMITTEE

The Product Support Committee serves military operations and maintenance. In all, more than 25%



of the U. S. defense budget goes directly for maintenance of equipment and facilities. Approximately *one million man-years* of military and civilian effort goes into equipment maintenance annually.

The Committee and its members are generally responsible for the policy and operations involved in the broad product support area which includes: Maintenance support planning; military operational and maintenance personnel training; contractor technical services personnel; contractor modification and repair of equipment; configuration and compatibility control; qualitative and quantitative maintenance analysis; failure reporting analysis; support aspects of maintainability, reliability, and maintenance engineering; real property installed equipment support.

This Committee is representative of the trend in Government and industry to pull together all in-house functions which contribute to the successful use of the aerospace products this industry delivers to the military departments, NASA and other customers. Its membership is comprised of 83 executives managing their com-

pany's Product Support divisions, also known variously as Logistics, Customer Service, etc.

Operationally, as a main committee, the Product Support Committee maintains administrative control over the Spare Parts and Service Publications Committees. These committees receive assignments from and report regularly to the Product Support Committee.

Committee Initiated Actions: Development of the AIA "Integrated System Support Concept," submitted to the Department of Defense for consideration in September, was probably the most significant item of Committee initiative during the year. The Committee concept calls for support planning and action to begin at the inception of weapon system design and to continue for the useful life of the system. The training, operational and maintenance plans are all analyzed together and supported on a coordinated basis. The Department of Defense is studying the AIA recommendation that the best parts of this and other current support programs be assembled into a DOD program for use by the military departments.

Committee members supplied a large part of the effort of the Ad Hoc Committee on Spare Parts Procurement, which Committee acted as consultant to AIA in the development of AIA's recent proposals to DOD on spare parts procurement policies.

The Committee views with alarm the fragmentation process in which individual elements of support, heretofore furnished by the aerospace contractors in coordinated packages, are being channeled to others. Committee presentations are under preparation in these and other areas where a combination of such factors may adversely affect operational capability and safety. Needless to say, if the fragmentation process is carried to the extreme, contractors will not be able to finance such assistance and the cohesion supplied by the contractor will be lost.

Review of Proposed Specifications: At all times the Committee has under way the review of proposed specifications, procedures and policies which affect the contractors. Some of the major items reviewed during the past year are:

XWR-30 — Weapon Readiness Achievement Program, developed by the Bureau of Naval Weapons to prescribe all elements of fleet readiness maintainability requirements and support programs;

AFSCM 80-10 — System Evaluation Data Criteria, developed by the Air Force Systems Command to manage the acquisition of product support data as well as engineering data for aerospace system development and production programs.

The review of the above items was a team effort also involving the Spare Parts Committee, Service Publications Committee and other interested committees of AIA.

MIL-T-27382 (USAF) — Training Equipment Technical Data, developed by the AFSC Aeronautical Systems Division, and subsequently included in

AFSCM 80-10.

Also, the Committee, together with its working committees, developed for the Army a set of recommendations for integrating equipment procedures in the Army reorganization plan.

Information Services: AIA provides information services concerning new developments to the Product Support Committee from the Government and to the Government from the Committee. The product support services rendered by the industry are not always understood in various levels of Government and industry. Therefore, the Committee established an Information Panel to prepare clarification and information articles for the trade press and other communication media.

The Product Support Committee, at one of its three meetings held this year, set aside a day for off-the-record discussions of support problems with ranking Army, Navy, and Air Force representatives. Additionally, distribution is made by AIA to the Committee of copies of policy statements, speeches, organization charts, information concerning Government agency reorganization, bulletins of other AIA committees, and other information of interest to product support managers.

SPARE PARTS COMMITTEE

Rapid changes in the concepts of warfare, together with continuing technological advances, have made it mandatory that effective support of modern weapons be maintained on a timely basis. Essential to this support is the need for constant improvement in logistics management — a fact realized by both the military and industry. For example, the value of aircraft in the Air Force has almost doubled, from \$14 billion in 1955 to \$27 billion in 1962, and has more than doubled in complexity. The ratio of spare parts to that 1955 inventory was about 75%. Since then, the value of the spares has actually decreased 20%, from \$9.6 billion to \$7.7 billion. And, through improved responsiveness and management, the rate of aircraft out of commission for spare parts has been reduced from 5.7% to 2.7%.

These results, indicative of the effectiveness gained by the military's support management, are being matched by their opposite numbers in industry. The Spare Parts Committee is comprised of 129 managers and assistant managers of supply and spare parts departments from all segments of the aerospace industry. This Committee is concerned with the policies, procedures and practices for the selection and ordering of spare parts, aerospace ground and test equipment, special tools, training aids and training equipment. For almost twenty years, it has worked closely with the military departments, coordinating and making recommendations for new developments and revisions in these areas. Through reviews of proposed procedures and amendments made available to them prior to official release, the Committee seeks to eliminate many of the causes for project delays and procedural deviations.

Improvements in support operations and cost savings result.

Supplementing these results are joint industry/Government meetings, which are held in conjunction with the semi-annual national meetings of the Committee. At these meetings, the interchange of ideas, policies, and plans is proving mutually beneficial. Additional understanding of support operations and the problems being experienced is also being gained by meeting participants through field trips to military locations.

Industry-Initiated Actions

In addition to the assistance provided for the review of Government-initiated projects and policies, the Committee initiates its own actions in developing new support procedures or amendments for updating existing procedures and specifications. For example, the National Aeronautics and Space Administration accepted the Committee's offer to consider NASA spare parts documentation requirements and to recommend suggested support procedures. Subsequently, a proposed procedure, designed to provide support for the research and development type of programs featured by NASA, was prepared and submitted to them. In furtherance of this action, an orientation program for NASA field activities covering these support aspects is being considered by the Committee.

Presently, members of the Committee are studying the results of a survey which was conducted among industry to determine the causes and extent of problems arising from variations of the shipping instructions for spares used by the military departments. Recommendations to both industry and Government for the clarification of these instructions are expected to result.

Another Committee-initiated program involves a review of the Air Force's Technical Information File to improve its descriptive coverage of aerospace ground equipment so that design engineers can more readily determine which items already in the Air Force inventory are suitable for use in connection with new weapon systems. The recommendations developed from this review have been referred to the Air Force.

Replenishment Spare Parts Activities

In connection with the Association's activities concerning competitive procurement of spare parts, the Committee developed a list of criteria to be used for determining the sources from which to procure these parts. This list, which was subsequently submitted to the Department of Defense, provides an awareness of the technical, legal, engineering, operational and maintenance factors involved in determining qualified sources.

Since then, the Committee has participated in monitoring a breakout program for competitive procurement of spare parts which has undergone service testing at selected Army, Navy and Air Force locations. An alternate proposal, developed and tested by several AIA member companies, was adopted and refined by the

Committee for accomplishing the objectives required by the breakout program. Additional refinements to this proposal were made by the Ad Hoc Committee on Spare Parts Procurement. Following a series of presentations to the military departments, it was submitted to the Department of Defense. The resulting favorable reactions brought forth a request for a statement of principles which would serve as guidelines in the implementation of Department of Defense competitive procurement policies. Feeling that these principles should serve for both the Government and industry, the Committee, in association with the Ad Hoc Committee on Spare Parts Procurement, undertook the development and submittal of such a statement. Its implementation will provide for equitable procurement practices without adversely compromising quality, reliability, availability, logistics support or systems improvement, and without misusing proprietary information.

Weapon System Support and Maintenance Procedures

Within the military departments, various maintenance support plans are under development which recognize the operational requirements and peculiarities of a weapons system and provide for coordination of these factors at all levels of management. Two such projects under proposal are the Bureau of Naval Weapons "Weapon Readiness Achievement Program," (otherwise known as WRAP), and the Air Force Systems Command's Manual 80-10, entitled "System Evaluation Data Criteria."

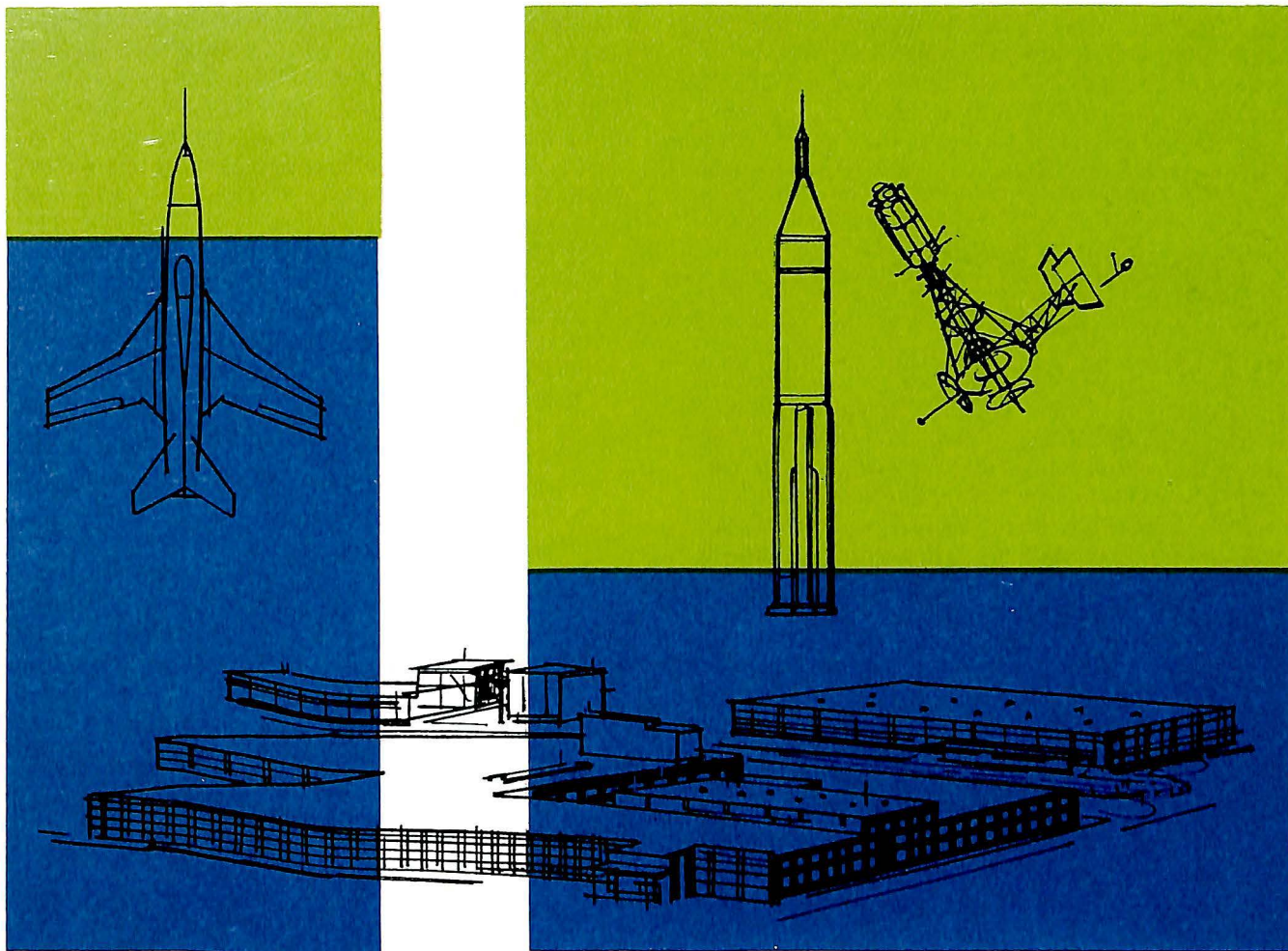
Presently, the Committee, along with other AIA committees, is assisting in a review of the proposed WRAP Program which is being conducted by the Product Support Committee. It is expected that all coordination will be completed in time for official implementation of this program before July, 1963.

The Air Force 80-10 project, which is designed for application to an aerospace system from development to production is expected to be made available for industry coordination during January, 1963. A plan of operation, similar to that now being conducted by AIA committees for WRAP, will be initiated when this proposed Air Force document is received for review.

During the past year, the Committee provided additional recommendations covering the Air Force's data requirements for aerospace ground equipment. These recommendations included clarification of instructions to enable industry to understand more readily its responsibilities for program support during the R&D and operational phases of a program.

Support Procedures

A wide range of activities is carried on continuously by the Committee with the military departments. For example, a review of a short form provisioning procedure for Air Force spare parts resulted in the development of a modified method which could be used for selected items of relatively simple design and low unit



A major aerospace firm engaged in both space, missile and aircraft projects reflects the changing nature of employment. A division engaged in aircraft projects has about 75 per cent of its total employment assigned to purely production jobs. Another division engaged in space and missile projects, with double the work force, has only 40 per cent of its employment in production tasks.

cost. Adoption of this modification will assure a reduction in documentation requirements and processing time.

In connection with the reorganization of the Army, the Committee has been invited to participate in a consolidation study of Army provisioning procedures. This study involves ten different procedures which were being used by the different Army services prior to their reorganization. Following a program of coordination, the results of this study will be presented to the Army. This activity follows a previous review project completed earlier this year in which the Committee submitted recommendations for integrating equipment support procedures in the plans for the Army reorganization.

The Defense Supply Agency, established at the beginning of the year to manage all items of supply common to the military departments, has developed a document prescribing suggested requirements for initial selection

and ordering of this equipment. At the invitation of the Agency, the Committee has initiated a review for possible effects to contractors by these requirements.

Cataloging

One of the Committee's long-range tasks is the monitoring of cataloging operations as they effect the products of this industry, especially the contractor's ability to ship spare parts and support data on a timely basis. In this connection, the Committee has studied and furnished its views on a proposed revision of MIL-I-19890, the specification governing preparation of item descriptions by Navy contractors.

Presently, industry is being called upon to perform additional services in conjunction with a year-long Air Force project entitled MINT, meaning "Materiel Identification and New Item Control Techniques." The primary objective of this project will be to review

Federal Stock Numbers against manufacturers' data to eliminate duplication and to insure consolidation of similar items and the development of interchangeability relationships. Members of the Committee are conducting preliminary surveys of cataloging data to determine the proper guidelines for industry participation in this project.

SERVICE PUBLICATIONS COMMITTEE

A missile weapon system today is made up of a million or more component parts supplied by several thousand contractors. Possibly 300 volumes of technical manuals must be written to describe the operation and maintenance of the entire system. Every single operation concerned with installation, testing, maintenance, count-down, firing, control, guidance and tracking is accomplished in accordance with technical manual instructions. The same is generally true for other weapon systems.

The more complicated the equipment becomes, the more important are technical manuals. The Service Publications Committee addresses itself to the task of simplifying and improving technical manuals through close coordination with its military, NASA and ATA customers. This AIA committee is comprised of 112 managers of aerospace Service Publications departments producing manuals, time compliance technical orders, bulletins, and illustrated parts breakdowns.

Industry-Initiated Actions: The Committee takes the initiative in undertaking projects in any area where industry can make a contribution to the solution of problems. During the past year, a number of important industry-initiated actions took place. For instance, when the Government Printing and Binding Regulations restricted the printing of technical manuals to Government printing sources, many contractors' contracts for administration of technical manual printing were terminated. Fearing that such action would delay distribution of handbooks and cause other complications in operations and maintenance, the Committee petitioned the Joint Committee on Printing and the military departments to review the situation. The contracts have been reinstated, but this subject is not yet resolved.

In another case, the Committee became concerned relative to planned changes in the management of the technical manual standardization program and made specific requests to the Department of Defense in connection therewith. Meanwhile, the Committee has been advised that interest in the program continues at a high level and that continued progress may be expected from the new managers of the project.

Another long-standing Committee activity is the exchange of cost-saving ideas, information on new methods and equipment, and other advancements in the state of the graphic arts. Part of each Committee meeting is set aside for the exchange of such information by members or outsiders. Members attending meetings often gain new ideas applicable to their own departments.

Review of Proposed or Existing Specifications: During

the past year, the Committee has been given the opportunity to review various specifications, amendments, policies, etc., proposed by the military departments and/or the commercial airlines. All Committee members review the proposals and comment thereon to AIA. Small panels of industry experts coordinate the recommendations for transmittal to the initiating agency. A few examples:

PD 55-1 — Preparation of Repair Parts Appendices to Handbooks, by the *Army Transportation Materiel Command*;

MIL-M-005474D (WEP) — General Preparation of Technical Manuals, by the *Naval Air Technical Services Facility* and the *Bureau of Naval Weapons*;

AFPI 71-531-(3) — Technical Publication Requirements for Missiles, by the *Air Force Logistics Command*;

ATA Spec. 100 — Specification for Manufacturers' Technical Data, prepared by the *Air Transport Association*.

Information Services: The Committee acts as a communication link between industry and Government, just as handbooks are the bridge between the manufacturers and the users of aerospace equipment. Government and industry addressees receive material prepared by or referred to the Committee to clarify and inform management and working levels concerning technical man-



uals, time compliance technical orders, bulletins, illustrated parts breakdowns, etc.

During the year, the Committee developed an Information Bulletin system for apprising Government and industry executives of Committee-prepared papers and magazine articles clarifying individual aspects of the technical manual system. Responses from recipients have been gratifying.

Maintenance and data specialists in the military departments are familiar with contractors' Service Publications department operations. However, there are many others in Government and industry, with peripheral responsibilities in the field of technical manuals, who do not fully understand the complexities in the preparation of manuals. Therefore, an information project has been undertaken by the Committee to describe the many capabilities which have been developed by aerospace contractors and the many coordinated actions which are taken by the Service Publications Departments and their administrators, technical writers, editors and artists in gathering the information for the preparation of handbooks. Another little-understood subject is the relationship between the aerospace contractors' Service Publications departments and the outside handbook sub-contractors who are employed to do some of the work. The Committee presentation will describe the working relationships between the contractors and the handbook subcontractors.

GOVERNMENT REPORTS COMMITTEE

The Government Reports Committee negotiates with the Bureau of the Budget in the approval or disapproval of Government Reports requirements under the provisions of the Federal Reports Act of 1942. Government agencies, in the operation of their far-flung activities, have a need for meaningful and essential data. Committee efforts, directed toward these goals, annually consume innumerable man-hours in evaluation of existing and proposed reporting requirements. It works toward elimination of requirements that are unwarranted, not justifiable, and burdensome, and recommends ways in which cost reductions to Government and industry may be achieved by simplification and elimination of duplicative or non-usable reports.

In 1962, emphasis was given the Committee's objectives by the expressed interest of the Secretary of Defense in the streamlining of DOD's industry reporting requirements.

The Air Force Systems Command, at an AF/Industry Management Conference in May, 1962, in Monterey, California, discussed the implementation of this DOD goal. Stemming from this conference, the Comptroller of AFSC requested that industry work with their opposite members in the Air Force Commands and System Project officers. The results hoped for would achieve compatibility of industry's internal requirements and those of the Air Force, so that the same data could be used to satisfy the needs of both. As a part of the

review, Air Force requirements, which are considered burdensome to industry and believed to be of little value to the Air Force, are to be specifically identified. Indicative of the cooperative environment that exists in this area are directives issued by the Air Force during this past year. Numerous working relationships and joint efforts have been developed between various subcommittees of the Government Reports Committee and Government agencies, resulting in standardization, simplification, or elimination of reporting requirements.

One subcommittee has concerned itself, over the past two years, with a review and simplification of the AMPR/MMPR/SEMPR complex of reports. In 1962, a simplified system, applicable to all types of activity, was approved by the Bureau of the Budget (BOB). This system will be implemented in early 1963.

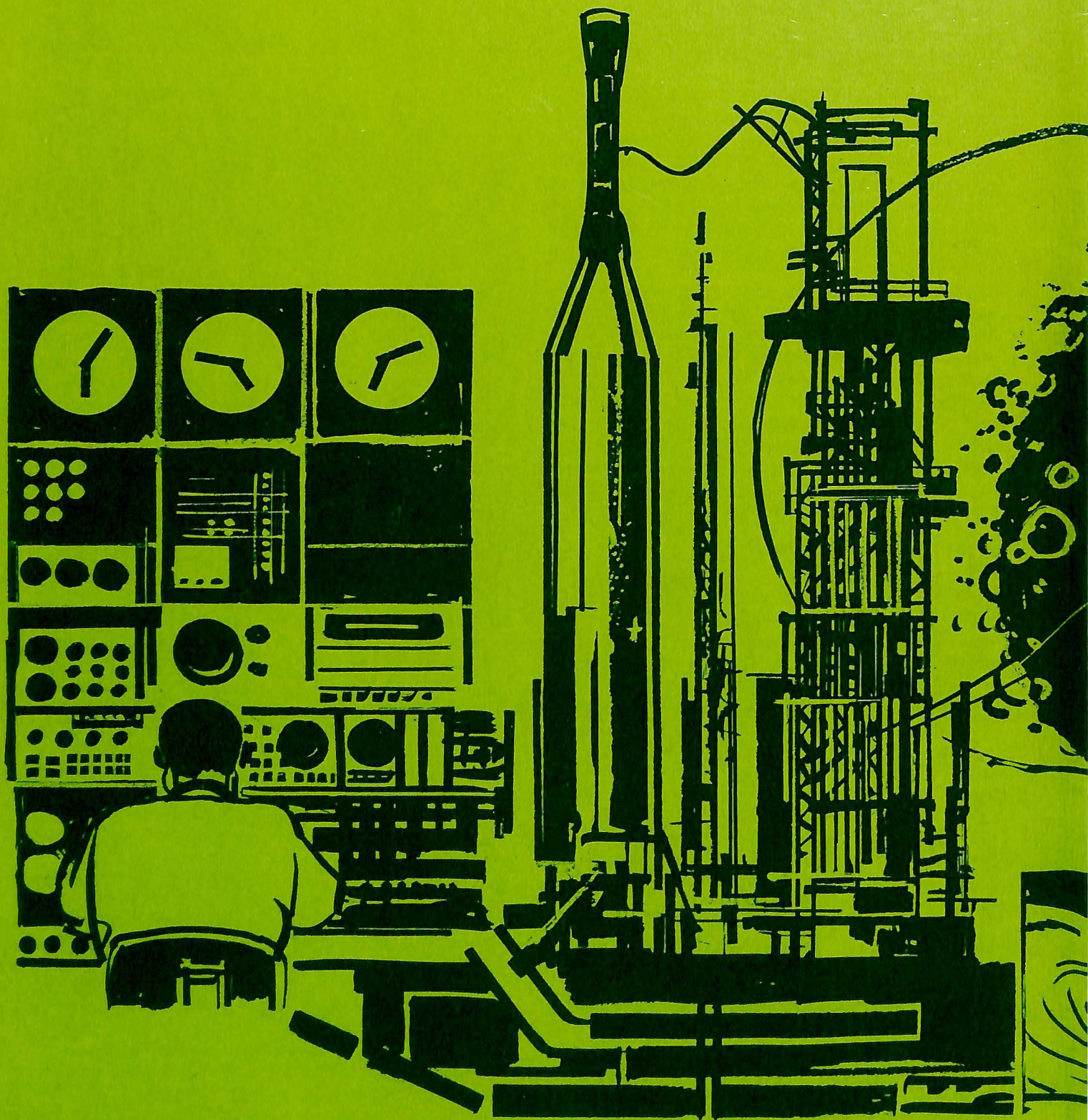
The Propulsion Unit Inventory Control Subcommittee has developed close working relationships with the Air Force to aid in the development of reporting requirements and procedures necessary to maintain the Air Force computerized inventory records for the management of engines from initial procurement to disposal. Another group developed a meaningful and simplified "Contractor Cost Study," which was previously included in AFBM Exhibit 58-1. This joint AFSC/industry project was instituted under the direction of the BOB and was successfully completed and approved by that bureau in October, 1962. Extensive internal coordination by AF and industry preceded the final negotiations, and the resulting document indicated that substantial savings in cost would accrue while providing the AF with essential data.

The NASA Data Requirements Subcommittee assisted effectively in the development of a simplified "NASA Financial Management Report" and related reporting requirements.

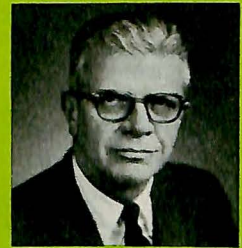
Another group, the Contractor Pilot Operations Personnel Approval Forms and Procedures Subcommittee, completed its task, initiated four years ago, when the jointly written AF/Navy regulation (AFR 84-7/BuWeps Inst 3710.6, dated 3 August 1962) was published, which outlines procedures to be followed in obtaining approval for company personnel to operate Government-owned aircraft.

In August, 1962, a joint Government Reports Committee and Procurement and Finance Committee task group was established to explore PERT COST procedures and the steps that could be taken to resolve differences between Government agencies and industry. This group is establishing principles and industry's position on a PERT/TIME/COST system to be submitted to the DOD and NASA.

The Committee's objectives of keeping member companies informed of reports and data systems requirements, of limiting these through the avenue of negotiation, and of being of assistance to Government agencies, are especially significant in the rapid changes in the industry.



MISSILE AND SPACE COUNCIL



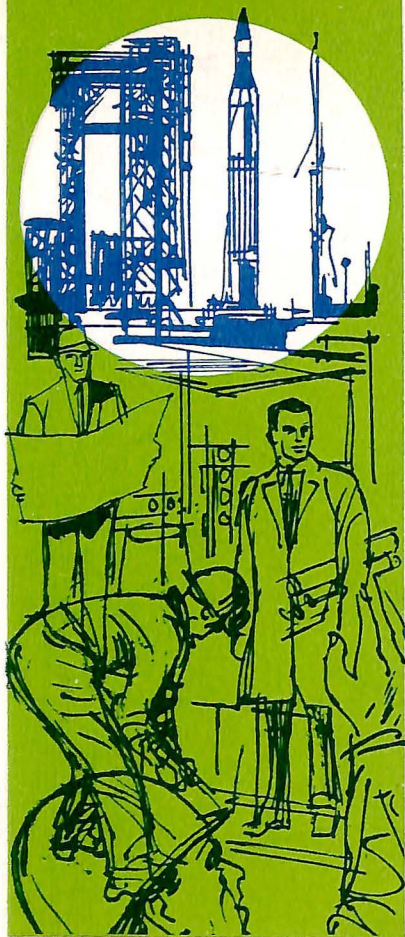
GEORGE F. METCALF
*Martin Company
Chairman, Missile
and Space Council*

The maintenance of an adequate defense posture and the achievement of our national goals in space are essential to our national security, well-being and prestige. The successful development, therefore, of superior guided missiles and space vehicles of the performance, flexibility and reliability required places a heavy responsibility on the Government-industry team.

In meeting the problems associated with the Nation's accelerated missile and space programs, the aerospace industry faces some of the most difficult tasks it has ever undertaken. Indeed, the program to land a man on the moon and then return him safely to earth is likely the most difficult and costly single task to ever face this Nation.

The aerospace industry is charged not only with the design and fabrication of the tremendous boosters, space vehicles and their navigational systems, and other devices required in the many-faceted U.S. missile and space program, but it is responsible for the design and manufacture of launch facilities, world-wide tracking systems and literally thousands of associated components, accessories, techniques, methods, etc., required in support.

In coming to grips with the challenges of the Nation's accelerated missile and space programs, industry has had to impose upon itself the most stringent demands for



The cost of launching an intercontinental missile, including the missile's share of research and development and training costs, is \$6-10 million. Of this cost, the labor involved — directly and indirectly — consumes approximately 90 per cent. The labor costs include the wages of everyone involved — from men who mine the metal to the airmen at the launching site.

precision design and manufacture to gain the extreme maximums in reliability. Needless to say, the membership of the AIA Missile and Space Council devotes a large measure of its time and efforts in seeking ever better solutions in problems to truly fail-safe reliability.

Technological developments accomplished by our member companies in behalf of our military and civil missile and space programs happily often offer their earliest contribution to the expanding U. S. civil economy. New materials, alloys, plastics, fabrics, miniature electronics, and a host of other techniques and processes are rapidly finding their most immediate application in products for the private consumer.

The Missile and Space Council has continued to foster a better and more comprehensive understanding of the Nation's guided missile and space vehicle requirements, both military and civil. Emphasis has been placed on the development of effective management and technological techniques necessary to translate these requirements into meaningful capabilities more rapidly, efficiently, and economically.

Many of the hard technical problems in the development of both missiles and space vehicles have been

solved. There is no longer any doubt of our eventual technological and productive capabilities to loft increasingly heavier pay-loads, both manned and unmanned, into near and outer space. The costs involved are of such magnitude, however, that every effort must be directed towards the achievement of significant cost reductions compatible with maximum mission performance. This responsibility is inherent at the beginning of a program and continues throughout its life. It involves simplification through intensive engineering of the basic design to the maximum possible extent. Further, it includes the marriage of many complex components — standardized and reduced in variety to improve reliability and lower unit cost through increased testing and volume production, and the delivery of thoroughly tested and integrated systems. Unwarranted duplication of effort, artificial restraints which impede technical progress and increase costs, waste of our resources of scientific, technological, and skilled productive manpower must be eliminated. The trade-off between program acceleration and cost must be weighed carefully. The ultimate pay-off is measured in terms of the Nation's safety and welfare derived from advanced and progressive aerospace programs which are responsive to clearly understood national goals. Effective and harmonious management at all levels by experienced, enlightened, imaginative and astute Government-industry leaders is of paramount importance.

Composition of the Council

Membership on the Missile and Space Council includes one member from each of those AIA companies who hold prime contracts for guided missiles or space vehicles. In addition, one-fourth of the Council membership is composed, on a selective basis, of representatives of AIA companies not holding prime contracts but whose interests encompass considerable design or manufacture of various elements of missile or space vehicles. The scope of the Council's activities encompass, on an industry-wide basis, top level company management problems concerning guided missiles and space vehicles including, but not limited to, engineering. Individual members are generally of corporate executive vice president or vice presidential level.

During 1962 the Council has continued to hold its meetings at Government establishments in an effort to gain a better understanding of mutual Government-industry problems relating to missiles and space vehicles.

PERT

The Council has followed closely the progress of the National Aeronautics and Space Administration and the Department of Defense in the development of a uniform set of management principles for common use by government and industry in the management of complex development projects. The extension of PERT (Program Evaluation and Review Techniques) to prediction and control of costs is of considerable interest to the Council.

Implementation of the basic principles of PERT costing, as announced by NASA/DOD, on a service test basis to develop internal procedures on a uniform basis as directed by the Department of Defense will be a matter of continuing concern to the Council. Industry evaluation and input to the language of contractual PERT/COST implementing instructions, compatibility with existing corporate practices, level of detail required, compatibility of statements of work to costing, and contractors "right to manage" are of considerable significance in the development of a uniform mutually acceptable and effective program.

Technical/Scientific Societies

The Council has continued its interest in the effectiveness of Technical/Scientific Societies' activities in the aerospace field and the trends toward amalgamation of those societies possessing similar fields of scientific interest, and objectives. Emphasis has been placed on the careful selection of individual employees' participation, the establishment of a high standard of quality for the presentation of employees technical papers, and the avoidance of costly and unnecessary exhibition of company products at such meetings or symposia.







PUBLIC RELATIONS SERVICE



TED BURKE
The Garrett Corporation
Chairman, Public
Relations Advisory
Committee

Public Relations Advisory Committee

Executive Committee
Editorial Subcommittee
Aviation Education Subcommittee
Shows & Exhibits Subcommittee
Aircraft Sound Subcommittee

Shifting patterns and doctrines in defense, space exploration and civil aviation made it even more imperative during the past year that the public, Government and news media be informed about the problems and accomplishments of the aerospace industry.

Dominating the Public Relations Service's activities was an awareness of the uncertainties and often unforeseeable adjustments which beset virtually all segments of the industry.

Indeed, so acute has the information-education challenge become that a reorientation of public relations efforts is being made. Accordingly, a series of new approaches has been approved by the Board of Governors and the Public Relations Advisory Committee. The results of this fresh analysis of the information requirements will become apparent to the membership during the coming year.

In the future, as in past years, the Service will continue its basic functions. These are: public information; channeling of information to the Government at all levels; advisory service to the membership on significant developments affecting the industry; carrying out the overall objectives of the association as established by the Board and by the Public Relations Ad-

visory Committee; disseminating market data; and cooperating with other AIA services and committees in the furtherance of their goals.

In the past year substantial contributions were made in placing the industry's viewpoints before appropriate audiences. This was accomplished through a variety of methods. Publications, press releases and speeches played an important part along with the staff's responses to inquiries from the public, news media, financial, Governmental and educational groups.

The year saw a remarkable increase in requests for all types of publications and other aids. Specialized requests for data from college students continued to grow.

Publications

At year's end, *Aerospace*, a monthly publication of the AIA for eighteen years, was changed to a quarterly publication of new concept and dimensions. *Aerospace*, as a monthly, has served the association and its readers well over the years. However, Public Relations Service, with the concurrence of the Board and the PRAC, has devised in its place a 24-page quarterly designed to be an even better vehicle to reflect the increasingly complex atmosphere in which the industry operates. It will present in each issue articles and picture stories covering the subjects with which the industry is concerned. It will be a publication of substance and impact aimed at both readers in and outside the industry.

At the time the changeover in *Aerospace* was undertaken, the monthly publication had a circulation of 47,500. Its readers were among the press, members of Congress and their staffs, educators, economists, the financial community, key persons in Government departments and agencies.

In the past year of its publication, *Aerospace* included among its more noteworthy presentations the following: lead article by Stuart G. Tipton, president of the Air Transport Association, on the effects of turbine-powered transports on the air transport industry; efforts of AIA committees to control defense costs, and an article demonstrating the civil benefits from space research. Outstanding editorials included: "The Aerospace Challenge," by Dan A. Kimball, chairman of the AIA's Board of Governors; another dealt with the industry's position in spare parts procurement, and the statement of the purpose and goals of the AIA economic study.

Among the inserts which attracted attention were the outlining of the NASA space exploration program for 1962 prepared by NASA Administrator James E. Webb; the need for liberalizing depreciation policies, and one which discussed the demands placed on industry for vigorous management techniques.

Aerospace Year Book

Approximately 4,500 copies of the 1962 *Aerospace Year Book* were published by American Aviation Publications. The forty-third edition of this standard reference work consisted of 484 pages of text and pictures.

Aerospace Facts and Figures

Because of the good reception accorded this publication in 1961, the printing order was increased by 1,000 for a total of 7,000 copies. As with the *Year Book*, this major compilation of material has become an accepted reference work.

Aerospace Forecast of Technical Requirements

Representing a major effort on the part of the Technical Services, this biennial publication was produced during the year in a considerably expanded version. Six thousand copies were published and distributed to key officials of the military establishment, to space-oriented agencies and committees and to the press and member companies. More than 1,000 copies were sold.

Annual Report

Continuing a trend, the association's *Annual Report* has further acquired a valuable function beyond its direct interest to the membership. It is a useful document for financial institutions, government agencies and news media. This report covers the calendar year of 1962 and conforms to the new calendar year basis of the association. Number of copies was increased from 7,000 to 7,500.

University Seminars

Plans were well under way during the year to hold the first of a series of seminars at universities on problems of the industry.

Memoranda

Staff continued the issuance of background memoranda reporting and interpreting significant developments affecting the industry. Staff also reprinted and distributed for use by members 3,000 copies of an article in the September issue of *Air Force and Space Digest* entitled "Private Enterprise and the Public Interest."

Aviation Education

Through the Service's continuing close cooperation with the National Aerospace Education Council and its own direct activities, the association again contributed significantly to aerospace education. The increasing interest in science and science teaching resulted in further demands upon available teaching and study materials.

More than 16,500 requests for aerospace educational material were received, an increase of 4,500 over the previous year. An apparent growth in aerospace-type school workshops was discerned. There was also a notable increase in letters from college students seeking assistance in the preparation of theses. Cooperation with educational offices, with technical societies and other trade associations was maintained.

Data Research

Marketing data research activities have increased. Through systematic analysis of Governmental reports,

trade journals, special bulletins and other sources, the Service continued to build up its quick reference system for use by members. Selected data was regularly distributed in bulletins to market researchers and corporate planners. During the year, twenty-two bulletins were issued covering military requirements, Department of Defense budgetary data, prime contract awards lists, and abstracts from special reports.

Publicity

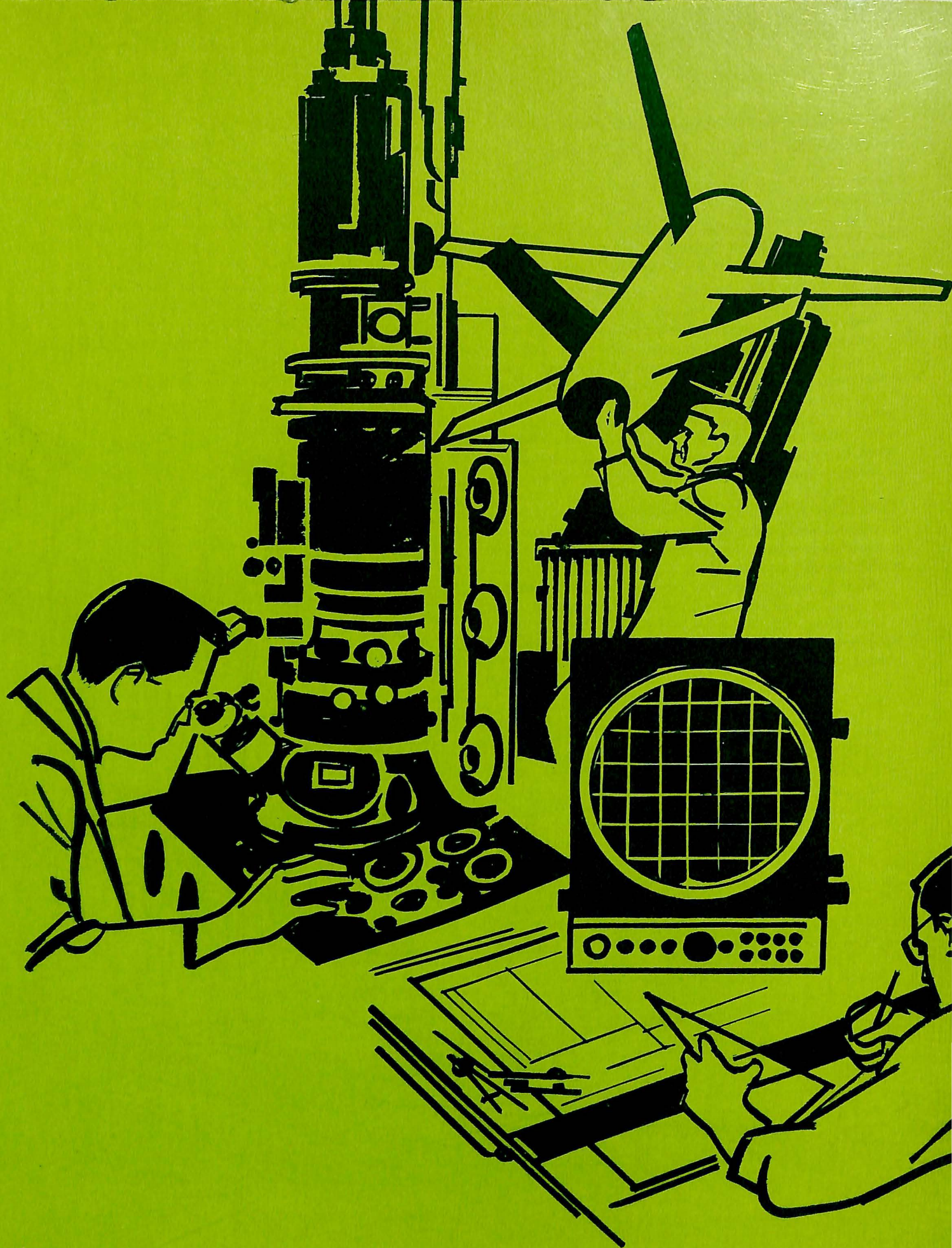
Sixty-nine news releases, 43 Public Relations memos and nine presentations designed for radio and television use were issued during the year. Circulation of the Letter to Aerospace Writers continued until September, but by a decision of the PRAC at its fall meeting the bulletin was terminated. Hundreds of specialized requests from news media, ranging from a single fact or figure to requirements involving lengthy research, were handled in the period.

Interchange With Other Organizations

Valuable service to members resulted from a reciprocal exchange with other organizations whose goals are related to the association's.

Among these groups are the Air Transport Association, and the International Air Transport Association. Cooperation with the ATA and Airline Pilots Association helped advance the work of the National Aircraft Noise Abatement Council.





TECHNICAL SERVICE

The key to the nation's space and defense efforts is vested primarily in the research, design, development and production efforts of the companies comprising this Association and identified as the aerospace industry. From this commitment of men, money and machines in scientific and engineering applications flows the nation's weaponry and space exploration hardware.

Equally significant is the technical fall-out realized from these efforts in the form of comforts and conveniences which enhance our daily life. Just as the architectural application of aluminum yesterday had its origin in this industry's utilization of this material in the past, so today's technology in electronics will establish new norms for our standard of living.

It is in this vast area that the Technical Service functions through its structure of committees, to harness those facets of knowledge, data and activity for the common good of the industry, Government, and the nation.

AIRCRAFT TECHNICAL COMMITTEE

The Aircraft Technical Committee is composed of principal engineering executives from member companies engaged in the design and production of aircraft.

During the past year the Committee held one formal meeting, and its activities were limited largely to a deter-

mination of financial support for technical activities and organizational problems.

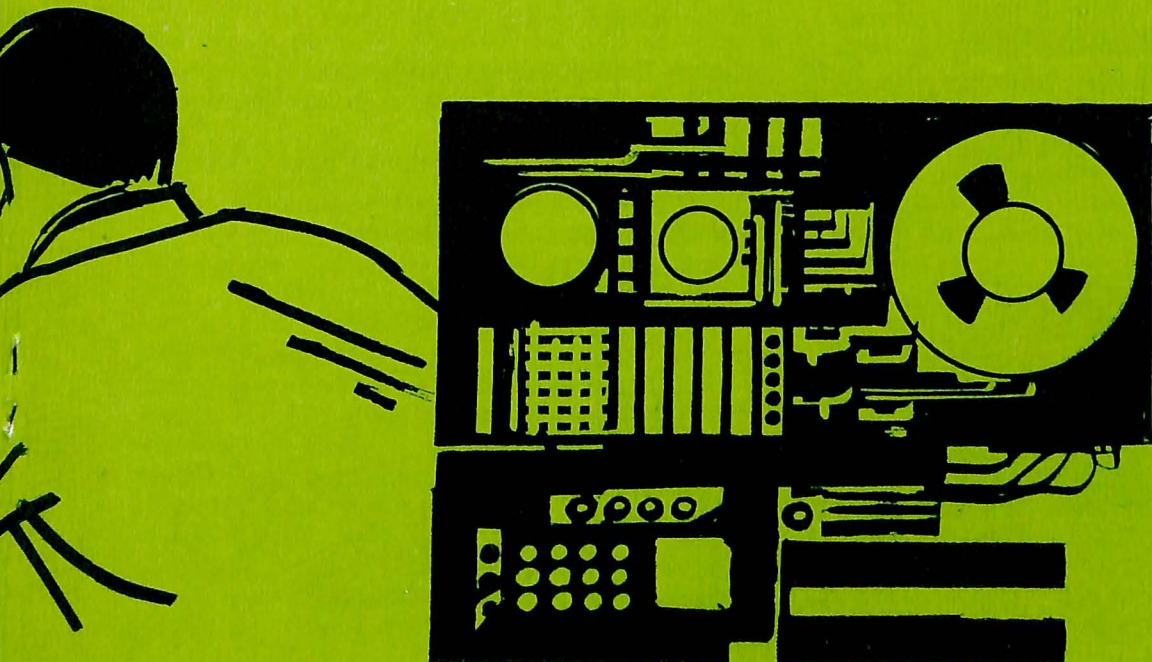
Committee members are concerned with the revolutionary changes in the industry, which need to be reflected in the Association's organization. It is anticipated that in the forthcoming year constructive steps will be taken in this direction.

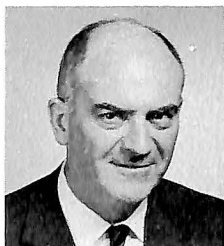
The ATC provides policy direction of its working committee programs through the Aerospace Research and Testing Committee, Airworthiness Requirements Committee, Engineering Contract Requirements Committee, National Aerospace Standards Committee, and the Powerplant Installation Committee.

AEROSPACE RESEARCH AND TESTING COMMITTEE

Publication of the eighth issue of the "Aerospace Technical Forecast" was a noteworthy accomplishment of seven Technical Service Committees under the task leadership of the Aerospace Research and Testing Committee. This document is aimed at providing advice and direction for research to Government agencies and associated industry, and has grown continuously in coverage and value with the publication of each issue.

Managers of structures, materials and testing activities from forty member companies engaged in design and production of aircraft, missiles and space vehicles, com-





LEO J. DEVLIN
*Douglas Aircraft
 Company, Inc.*
*Chairman, Aircraft
 Technical Committee*



BURT F. RAYNES
Rohr Corporation
*Chairman, Manufacturing
 Committee*



STANLEY B. SMITH
The Bendix Corporation
*Chairman, Accessory and
 Equipment Technical
 Committee*



FRANK A. GLASSOW
*United Aircraft
 Corporation*
*Chairman, Electronic
 Equipment Technical
 Committee*



W. ROBERT KIEFER
Ling-Temco-Vought, Inc.
*Chairman, Materials
 Procurement Committee*



JAMES W. KINNUCAN
*Continental Motors
 Corporation*
*Chairman, Propulsion
 Technical Committee*



MAX R. STANLEY
Northrop Corporation
*Chairman, Flight
 Operations Committee*



FRANK MCGINNIS
*Sperry Gyroscope
 Company*
*Chairman, Quality
 Control Committee*

AIRCRAFT TECHNICAL COMMITTEE

- Aerospace Research & Testing Committee
 - Dynamics & Aerolasticity Research
 - Flight Test Telemetry
 - Thermophysical Properties
- Airworthiness Requirements Committee
 - Personal Aircraft
 - Transport
 - Vertical Lift Aircraft
- Engineering Contract Requirements Committee
 - Drafting
- National Aerospace Standards Committee
- Powerplant Installation Committee

ACCESSORY & EQUIPMENT TECHNICAL COMMITTEE

- Administrative Engineering Committee
- Drafting for Numerical Control Machines
- Drafting Practices

ELECTRONIC EQUIPMENT TECHNICAL COMMITTEE

- Electronic Parts Committee
 - Connectors
 - Electron Tubes
 - Gyros
 - Relays
 - Semiconductor Devices
 - Wire
- Electronic Equipment Specifications Committee
- Radio Noise Interference
- Drafting
- Reliability

FLIGHT OPERATIONS COMMITTEE

- Safety

MANUFACTURING COMMITTEE

- APT Management Council
- Aerospace Manufacturing Engineering Committee
 - Numerical Panel
- Manufacturing Conservation Committee
- Manufacturing Equipment Committee
 - Welding Equipment
- Manufacturing Test Equipment Committee
 - Value Analysis
- Preservation & Packaging Committee

MATERIALS PROCUREMENT COMMITTEE

- Government Regulations
- Interassociation Relations
- Procurement Management
- Small Business

PROPULSION TECHNICAL COMMITTEE

- Engine Committee
 - Powerplant Airworthiness
 - Turbine & Jet Engine Requirements
- Propeller Committee
- Rocket Committee
 - Liquid Propellant Division
 - Accessory Components
 - Propellants
 - Solid Propellant Division
- Drafting
- Reliability

QUALITY CONTROL COMMITTEE

- Measurement Standards & Calibration
- Reliability Functions

prise the membership of the ARTC. As its name implies, the Committee is concerned primarily with applied research and testing in the allied fields of structures and materials.

The breadth of ARTC activities is illustrated by the subject matter of its three panels and 30 current projects. Numerous assignments in specialized fields are carried out by the following panels: Dynamics and Aeroelasticity Research; Flight Test Telemetry and Associated Data Handling Systems; and, Thermophysical Properties. The shorter term projects are concerned with problems in the areas of development of data and test procedures for new materials, standardization of test methods, development of target specifications for desired new materials, cooperative testing and exchange of data to reduce individual cost of collecting data, and development of acceptance standards for weldments, castings and other structural configurations and materials.

Twenty-seven projects have been completed during the past year. The culmination of these efforts have resulted in the presentation to the Department of Defense of a proposed program exemplifying the needs of the Industry in the new and fast-moving field of thermophysical properties of materials; in the publication of an extensive survey of facilities for space environment simulation, a compilation of existing test facilities in the United States; proposed specifications covering elastomeric parts, qualification of welders, spot welding, protective coatings for fuel tanks, non-hydrocarbon paints and solvents, and materials used in structural plastics and printed circuitry; development of new test procedures for evaluating cadmium plating, and testing materials for creep properties.

In addition, ARTC conducts many liaison activities with Government agencies and other technical groups. Comments and advice in its field are provided on request to such agencies as the Department of Defense, Air Force Systems Command, Federal Aviation Agency, the Bureau of Naval Weapons, National Aeronautics and Space Administration, and the National Academy of Sciences, as well as others.

AIRWORTHINESS REQUIREMENTS COMMITTEE

The Airworthiness Requirements Committee is composed of engineering representatives from those airframe manufacturers concerned with the certification of aircraft and rotorcraft. The Committee represents the industry with the Federal Aviation Agency in all certification and airworthiness matters. It initiates proposals for revision of the Civil Air Regulations and related policies and procedures where they concern airworthiness and certification. It similarly establishes the manufacturers' position when such proposed revisions are prepared by the FAA.

Since there is such a wide divergence of interest among the various aircraft and rotorcraft manufacturers, the Airworthiness Requirements Committee is divided into three groups — Transports, Personal Air-

craft and Helicopters. In effect there are three Airworthiness Requirements Committees.

During the past year the Airworthiness Requirements Committee reviewed, discussed and made recommendations on a number of FAA proposals. Included among the more significant are the following: performance and operating requirements for turbine powered transports, requirements for three engine turbine powered transports, consideration of the supersonic transport, requirements for turbine powered personal aircraft, delegation option procedures for the personal aircraft manufacturers, new privileges for the manufacturer to perform maintenance, authority for helicopters to carry external loads, and a new 30-minute rating for twin turbine powered helicopters. These subjects required several meetings with the FAA.

Of course, some of the above projects have not been concluded. For example, the requirements for the supersonic transport have yet to be established and we have urged FAA not to accomplish this prematurely. We have and will continue to advocate a carefully thought out program which would provide for the eventual establishment of airworthiness standards on a realistic basis.

The staff maintains continuous contact with appropriate FAA offices, other Government agencies, as well as non-government organizations involved in airworthiness and safety.

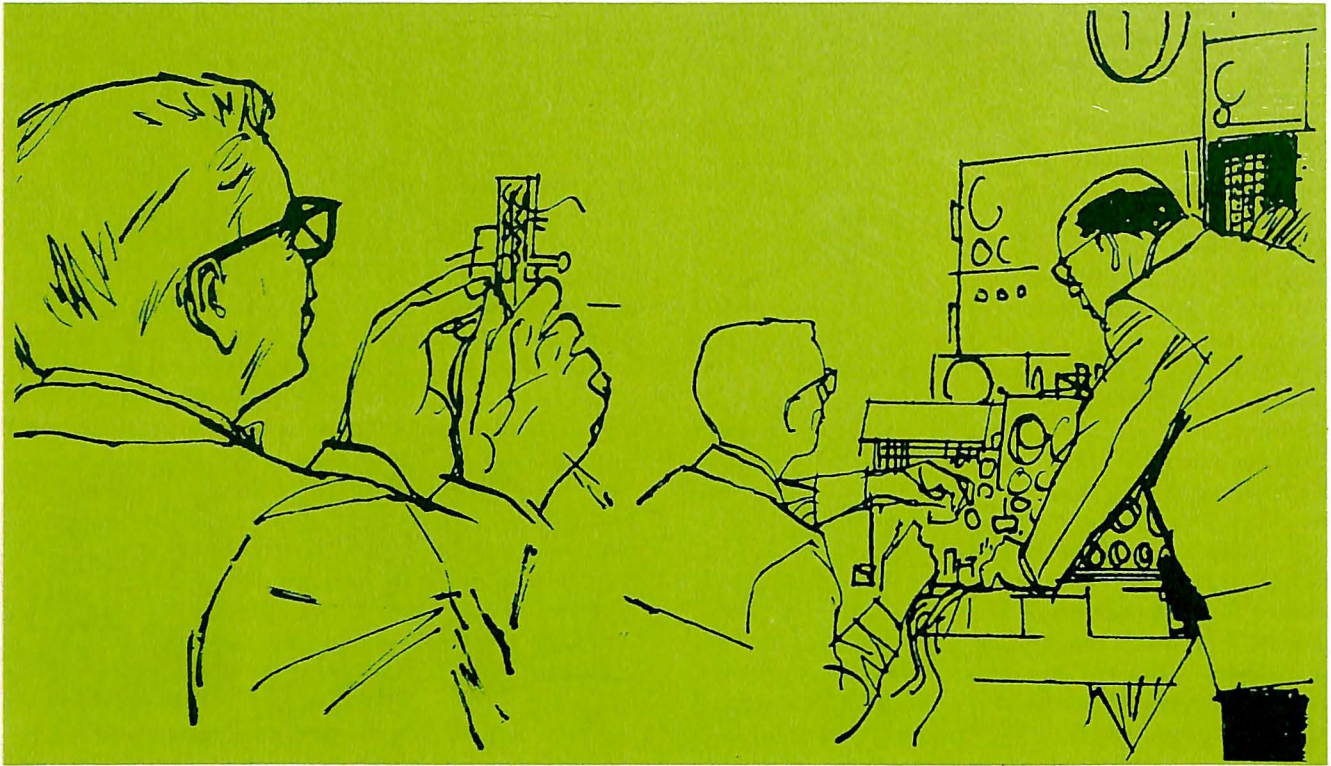
ENGINEERING CONTRACT REQUIREMENTS COMMITTEE

From its inception in late 1953 the ECRC has been a most active working committee. It is responsible to the Aircraft Technical Committee (ATC), and represents the prime missile and aircraft manufacturers in the area of engineering contract policies, procedures, general requirements for data requirements.

The ever-increasing complexity and sophistication of the current weapon and/or support systems have created many new engineering contractual requirements that are not always stated in the most efficient and economic manner. The constant endeavor of ECRC is, through cooperation and coordination with the customer, to help establish policies, procedures and requirements which are in current aerospace systems perspective and will lead to the most efficient and economical industry and customer operational needs.

To this end the Committee has, during the past year, reviewed, coordinated and presented industry views and recommendations to the customer (at times in joint action with other interested committees) on a number of very important documents — both new and revised.

To become better acquainted with the customer's intent in certain of his engineering contract requirements documents, the Committee has at most of its meetings invited key Government personnel to address the Committee, followed by open discussion. In most instances this has helped to create a better understanding and to produce more workable documents.



Research and development activities of the aerospace industry accounted for more than one third of the total R & D carried out in the U. S. during 1961, according to the latest survey by the National Science Foundation. The aerospace industry was responsible for \$3,964,000,000 of R & D out of a total of \$10,891,000,000 for all U. S. industry. Technological capability of the aerospace industry is a prime national asset.

Some of the more significant activities spearheaded by this Committee during the past year are:

1. The continuing effort to establish and maintain a realistic Engineering Qualification Approval Procedure (EQAP-AFSCR 375-2). Efforts are now being directed to establish a manual that will result in standard interpretation of the requirements of the program and its implementation.
2. The key sponsorship of proposed ANA Bulletin 445, which covers changes to systems and equipment. This document will be recognized as one of major importance since all changes to all systems and equipment in all commodity areas are regulated by its requirements. Extensive changes to this bulletin were recommended in an effort to keep Engineering Change Proposal (ECP) preparation costs within reason while still supplying the necessary information to the customer in a minimum of time.
3. The Navy Bureau of Naval Weapons Specifications and Requirements Improvement Program (STRIP) in which the Committee assisted the BuWeps in its effort to delete obsolete specifications.
4. The key sponsorship of BuWeps implementation documents WR-12 and WR-13 covering "Engineering Drawings, Associated Lists and Documents Referenced

Therein", and "BuWeps Class 1 Drawings, and BuWeps Field Activity Class 1 Drawings, Drawing Format, Authentication and Drawing Number Assignment" respectively. BuWeps action relative to Committee recommendation is pending.

5. The coordination of the revised contractual "Table 209" (MCP 71-510) "Engineering and Operational Development Data Requirements".

The new requirements noted above have caused requirements in many other documents to be in a constant state of flux. Top USAF specifications such as MIL-D-9310 — Data for Aeronautical Weapon Systems and Support Systems; MIL-D-9412 — Data for Aerospace Ground Equipment; MIL-S-8048 — Preparation of Aeronautical Weapon Systems Specifications; MIL-A-8730 — General Specification for Aircraft; MIL-R-27542 — Reliability Program Requirements for Aerospace Systems and Equipment; and MIL-M-26512 — Maintainability Requirements for Aerospace Systems and Equipment, to name a few, (and all coordinated either originally or through most of the amendments and revisions by ECRC) are about to be consolidated. ECRC views with considerable interest the release for coordination of this vital document.

Also of current importance and interest to the com-

mittee is the release of AFSCM 375-1 "Configuration Management During the Acquisition Phase". Effects of this document on many engineering contract phases is currently under review.

Of considerable importance to the Committee is the work performed by its Drafting Panel. Members of this panel are specialists in their field and maintain surveillance over customer documents in their specialized areas. Their recommendations monitored by the ECRC are coordinated by the Joint Drafting Panel prior to submittal through the AIA to the customer.

Industry must continue to expect adjustments to engineering contract policies, procedures and data requirements. Surveillance and alertness to changing conditions and requirements must be continued to maintain a well-balanced systems program package.

NATIONAL AEROSPACE STANDARDS COMMITTEE

The National Aerospace Standards Committee is composed of leading standards engineering personnel representing the major airframe, missile, and space systems manufacturers eligible for membership on the ATC and M&SC. Their function is the study of mutual standardization problems of aerospace system parts, components, materials, processes, and related standards, specifications and other documents. Their work is consummated by the adoption and promulgation of appropriate industry standards, promotion of their use consistent with improved design and providing the industry's viewpoint to cognizant Government agencies and other standardization activities.

The Committee completed its 21st year of operation in 1962 during which its activities have progressively increased. Industry standards and specifications issued as National Aerospace Standards (NAS's) have now grown to a four-volume, 2000-page set. By comparison the set consisted of one volume of 325 pages following World War II. Current volumes as well as new and updated standards are published and distributed for AIA by the National Standards Association, Inc. to over 1000 companies, colleges, technical schools, libraries, and individuals. This represents a 25 per cent increase over the 1961 figures. The widespread usage and significant contribution being made by the AIA member companies participating in this program is evident from the fact that during the year inquiries concerning NAS standards parts were received from twenty-one foreign countries throughout the world, including all members of NATO.

Accomplishments during the period of this report included the issuance of 216 new or revised NAS standards. Also, at the request of the Services the Committee reviewed some 250 individual military specifications, standards and related documents.

National meetings of the NASC were held on the regularly scheduled quarterly basis, with an average participation of 80% of the 41 members. Attendance by appointed Government liaison representatives from the

Air Force, Army, Navy, National Aeronautics and Space Administration, and the Defense Supply Agency afforded a timely exchange of information and assistance leading toward the resolution of many standardization problems.

Currently the Committee has in process 92 projects. Included is a program to develop an NASC Forecast of Standard Product Requirements. The forecast is intended to focus industry, Government, and supplier attention upon specific requirements for standard items which will be required during the 1963-1968 period. Encouragement to undertake this ambitious program was based on the large potential cost savings that can accrue in present day development of aerospace systems.

In spite of the widespread usage of NAS standards in military and commercial applications, documented recognition of industry standards by the Services has progressed slowly even though policy directives on this subject have been promulgated as early as June 1960. Some encouraging action has been taken by Government agencies during the final quarter of 1962 in this regard, and it is hoped that through cooperative efforts much greater progress will be made during the coming year.

POWERPLANT INSTALLATION COMMITTEE

The Powerplant Installation Committee is composed of representatives having technical and administrative responsibility for propulsion system installations and related matters in airframes, missiles and space vehicles. The objective of this committee is to provide an active technical group representing the aircraft, missile, and space vehicle manufacturers on matters involving propulsion system installation requirements and related problems, and to assist other committees of AIA in matters involving such engineering efforts.

Although this group has been in existence for a number of years as the Powerplant Installation Panel of the Airworthiness Requirements Committee, it was recently elevated to working committee status because of the multiplicity of subjects of a military nature it is called upon to review. During the past year the Committee's efforts were focused to a considerable extent on two subjects. The primary effort dealt with a complete revision to the MIL-E-8593 series turboprop engine specifications which had not been revised since 1953. Although such a task would normally fall to the Air Force or Bureau of Naval Weapons, AIA was requested to draft a proposal which subsequently would be reviewed by the military services. Furthermore, it was desired that the specification include provisions for turboshaft and turboprop engines in helicopters or VTOL aircraft.

As a result of this request, the PIC provided representation at several meetings with representatives of the engine manufacturers. Participation by the helicopter manufacturers considerably augmented discussions and posed problems for which new solutions were sought. Compromises were made with engine manufacturers in some instances, whereas in others, no compromise could be effected and optional wording was offered to the

Services for their determination.

In addition to the work done on military engine specifications, the PIC has virtually completed a revision to the Fire Protection Manual originally published and distributed through AIA in 1949. It is anticipated that the section of the manual applicable to piston engines will be brought up to date and then be retained for future reference without further revision. A second section of the manual will deal with turboprop and turbojet engine installations in current subsonic airplanes, reflecting the current state-of-the-art in this respect. This section will be revised as may become necessary in the future, on a continuing basis. As time progresses and more information is gained with respect to installations in supersonic aircraft, this data will be filed for future reference and use at the time it is needed. The Fire Protection Manual will apply only to civil aircraft installations.

Generally, the Committee is interested in all aspects of a propulsion system, the details of which are not engine-furnished. It is expected that the need may soon be apparent for a special group of this Committee to deal with problems relating to rocket engine installations in missiles and space vehicles.

ACCESSORY & EQUIPMENT TECHNICAL COMMITTEE

Representatives at the engineering manager level from twenty-five member companies of AIA in the field of accessories and equipment for aerospace systems, comprise the membership of the Accessory & Equipment Technical Committee. Their field of activity covers research, development, design, production, testing and engineering procurement matters pertaining to mechanical, hydraulic, pneumatic and electrical (other than electronic) accessories and equipment.

AETC and its working groups often join with other AIA technical committees in presenting Industry recommendations on Government specifications. The Administrative Engineering Committee (AEgC), comprised of representatives from the same companies but also including each division, concerns itself primarily with engineering contract requirements and data requirements. One panel of the AEgC is concerned with drafting for numerical control machines and problems such as the translation of taped information directly to layout. The other panel is concerned with drafting practices in general.

Effort, initiated last year, is being continued relative to the Air Force document MCP 71-77, "Engineering Data Requirements for Materiel and Services". An additional meeting was held with Air Force personnel which resulted in a clearer understanding of the requirements. Recommendations on similar Bureau of Naval Weapons documents were coordinated with other AIA committees and submitted to that agency.

AEgC participated along with other Technical Service Committees in the review and submittal of recommendations to the Air Force on MIL-STD-810, USAF,

"Environmental Test Methods for Military Equipment". Many of the industry recommendations were accepted by the military and the standard is now undergoing review by the other Services for adoption as a tri-Service standard. This Committee has also actively participated in the AIA Survey on Reduction of Data Requirements, the proposed changes to ANA Bulletin 445 on Engineering Changes, and the proposed USAF specification for Missile/Space System Safety.

In addition to setting policy and direction for its working groups, AETC participated along with other Technical Service Committees in the preparation of the 1962 issue of the "Aerospace Technical Forecast" as well as submitting comments and recommendations on the technical content of numerous military specifications covering accessory equipment items.

ELECTRONIC EQUIPMENT TECHNICAL COMMITTEE

Electronic engineering executives of thirty AIA member companies constitute this Committee, which provides electronic technical support to overall AIA goals, and coordinates industry-wide problems confronting electronic systems engineering management.

AIA electronic efforts are unique in reflecting defense electronic systems manufacturers' views to the Military and NASA on one hand, and to component producers on the other hand.

EETC has been active in areas such as reducing submittal requirements for engineering documentation; ten-year forecast of electronic system and component requirements; need for an AIA Electronic Manufacturing Committee and its close coordination with electronic engineering committees; need for improved means for policy guidance and coordination surveillance of reliability, standardization and contract requirements which concern several technical committees.

EETC visits of military and NASA installations to observe field usage of electronic systems included: Goddard Space Flight Center, Vandenberg Air Force Base and Aerospace Medical Division.

Presentations by NASA, military and industry specialists provided valuable background on space systems plans, electronic aspects of aerospace medicine, research in engineering sciences, legal guidelines for committees, and optimizing capital investment in professional staff.

EETC provided broad policy guidance to the Electronic Reliability Panel, Electronic Parts Committee and Electronic Equipment Specification Committee through review of written reports and discussions with the chairmen of these groups.

ELECTRONIC PARTS COMMITTEE

During 1962 the Electronic Parts Committee actively pursued more than 150 individual tasks, ranging from the upgrading of NAS700 series specifications to the investigation of deleterious effects of radiation on electronic parts.

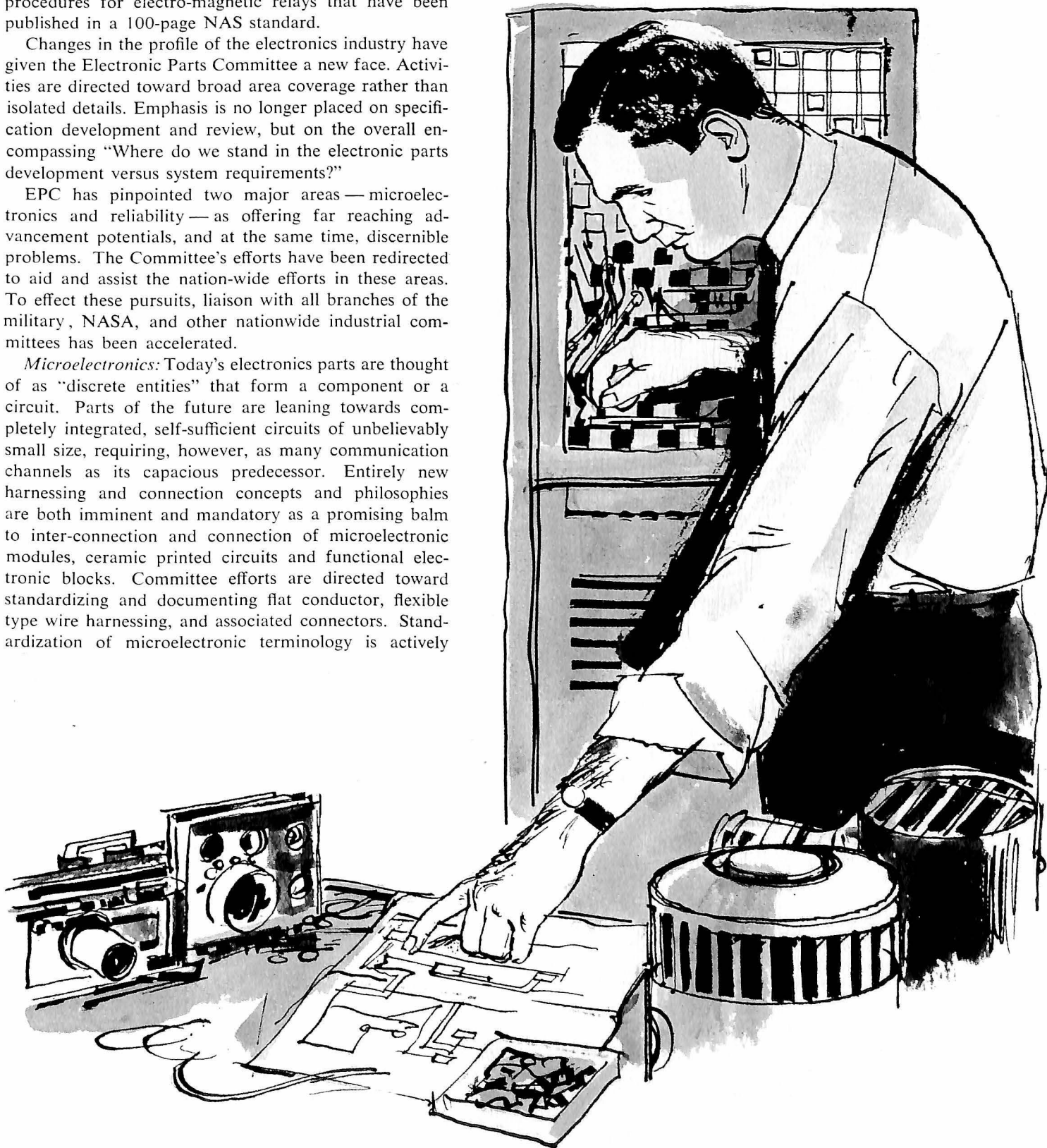
Technical accomplishments of note include the for-

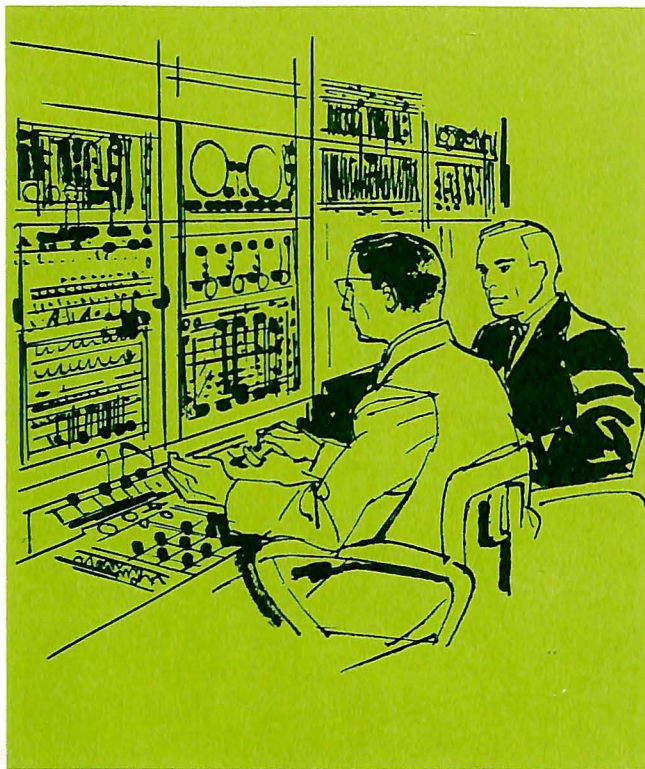
mation of test methods for six types of gyros. These have been accepted nationally and are currently available. Gyro terminology has been standardized. A comparable accomplishment is the design of uniform test procedures for electro-magnetic relays that have been published in a 100-page NAS standard.

Changes in the profile of the electronics industry have given the Electronic Parts Committee a new face. Activities are directed toward broad area coverage rather than isolated details. Emphasis is no longer placed on specification development and review, but on the overall encompassing "Where do we stand in the electronic parts development versus system requirements?"

EPC has pinpointed two major areas — microelectronics and reliability — as offering far reaching advancement potentials, and at the same time, discernible problems. The Committee's efforts have been redirected to aid and assist the nation-wide efforts in these areas. To effect these pursuits, liaison with all branches of the military, NASA, and other nationwide industrial committees has been accelerated.

Microelectronics: Today's electronics parts are thought of as "discrete entities" that form a component or a circuit. Parts of the future are leaning towards completely integrated, self-sufficient circuits of unbelievably small size, requiring, however, as many communication channels as its capacious predecessor. Entirely new harnessing and connection concepts and philosophies are both imminent and mandatory as a promising balm to inter-connection and connection of microelectronic modules, ceramic printed circuits and functional electronic blocks. Committee efforts are directed toward standardizing and documenting flat conductor, flexible type wire harnessing, and associated connectors. Standardization of microelectronic terminology is actively





Advances in the technology of electronics are directly responsible for many of the amazing gains made in space exploration and weapon systems. AIA committees work closely with government agencies to improve the reliability of this equipment.

pursued, and substantially advanced. The Committee urges the Department of Defense to recognize early the necessity of a uniform approach to the ultimate microelectronics standardization needs. EPC is pooling resources to obtain valid data on the reliability of the microelectronic parts currently available.

High-Reliability: High reliability activities of the Committee are directed toward the interchange of ideas and data on a nationwide basis through symposia, visits, and research to determine the overall effects of data exchange programs. EPC is working closely with the military to incorporate multilevel reliability requirements in procurement specifications and to establish an encompassing management program for high-reliability parts.

ELECTRONIC EQUIPMENT SPECIFICATION COMMITTEE

The Electronic Equipment Specification Committee continues to coordinate general environmental, design and data specification requirements for electronic equipment. The EESC-Government Uniformity Program is obtaining coordinated tri-service design requirements. These are added, when approved, as identifiable sections of MIL-STD-454. The scattered verbiage on the same requirements is then deleted from the thirteen single service general electronic design specifications and re-

placed by reference to applicable sections of MIL-STD-454.

Seven requirements have been approved and issued in MIL-STD-454; six more are completed by industry and in final coordination with the military. Seven additional requirements will be completed this year and ten new assignments are planned for completion next year.

Unifying the various services design requirements will simplify keeping current with the changing state-of-the-art. This will result in reduced design cost and deviation negotiation for companies supplying several military customers.

EESC provided coordinated views from the electronic system viewpoint on jointly coordinated weapon system specifications for maintainability, electronic equipment thermal design performance evaluation, disposal at failure maintenance, proposed tri-service environmental test specification and engineering changes procedure.

The EESC has, for nine years, participated in an annual EESC-Aeronautical Standards Group-Air Force-BuWeapons meeting to update general design requirements for airborne electronic systems, related test and checkout equipment, and environmental requirements. This continues to be an outstanding example of military-AIA teamwork, to keep these specifications dynamic and usable with a minimum of effort and cost.

Electronic Reliability Panel

The Electronic Reliability Panel consists of a reliability specialist from each of twenty-three AIA companies engaged in weapon or space system programs. The panel's scope of activity includes all reliability problems related to achievement of reliability goals in weapon and space system programs. Through the panel representative, individual companies sponsor projects directed toward advancing the reliability "state of art". All tentative projects are carefully screened and defined as to description, scope, specific outputs and completion schedules by the panel project planning group before seeking approval and sponsorship. Seven projects have been completed and issued in the AIA Technical Report series during 1962, in addition to nine projects which are in progress.

During the past year a presentation was made to reliability representatives of the Department of Defense, BuShips, BuWeps, Army Signal Corps, NASA and the Logistics Management Institute. The purpose of the presentation was to familiarize them with the panel activities and to urge unification of Military Services and NASA specifications for reliability management, prediction techniques, design, evaluation and test.

A similar presentation was also given to the Army Signal Corps Reliability Steering Committee during the year. ERP is encouraged with reports that an informal DOD-Military Services Reliability Group has released a tri-service reliability definitions specification, has a tri-service reliability management specification in coordination with industry, and reports progress in unifying

other tri-service reliability specifications.

FLIGHT OPERATIONS COMMITTEE

The Flight Operations Committee was established to provide a concerted effort on the part of the manufacturers to diminish the collision potential between flight test aircraft and other airspace users, and to act as a group for the industry on other matters pertaining to flight operations. It is composed of the chief test pilots or directors of operations for some thirty manufacturing companies. The Committee is further subdivided into five regional subcommittees, the areas of which coincide with the five FAA regional boundaries. The manufacturers operating problems can thus be effectively coordinated with the FAA on both a national and regional level.

During the past several years the FAA and AIA have been coordinating on a daily basis to insure that flight test operations can be continued, without undue restrictions, in the safest possible manner. This presents a somewhat complex problem in most areas, particularly where the FAA is implementing its positive control environment, and special arrangements must be worked out to provide for flight tests, since ours is a different type of flying which presents innumerable scheduling, communications and flight planning problems.

Flight testing has not been generally understood by other aviation interests. Hence, the FAA/AIA daily relationship, through the Committee's secretary, has on numerous occasions averted implementation of regulations and procedures which would have completely

halted flight testing in some instances and added considerable costs in others.

There are a number of other areas in which this Committee participates. For example, it has assisted the FAA in establishing noise abatement procedures. Through the staff it is active in the National Aircraft Noise Abatement Council's Technical Committee and the Flight Safety Foundation's Aviation Crash Injury Research Committee.

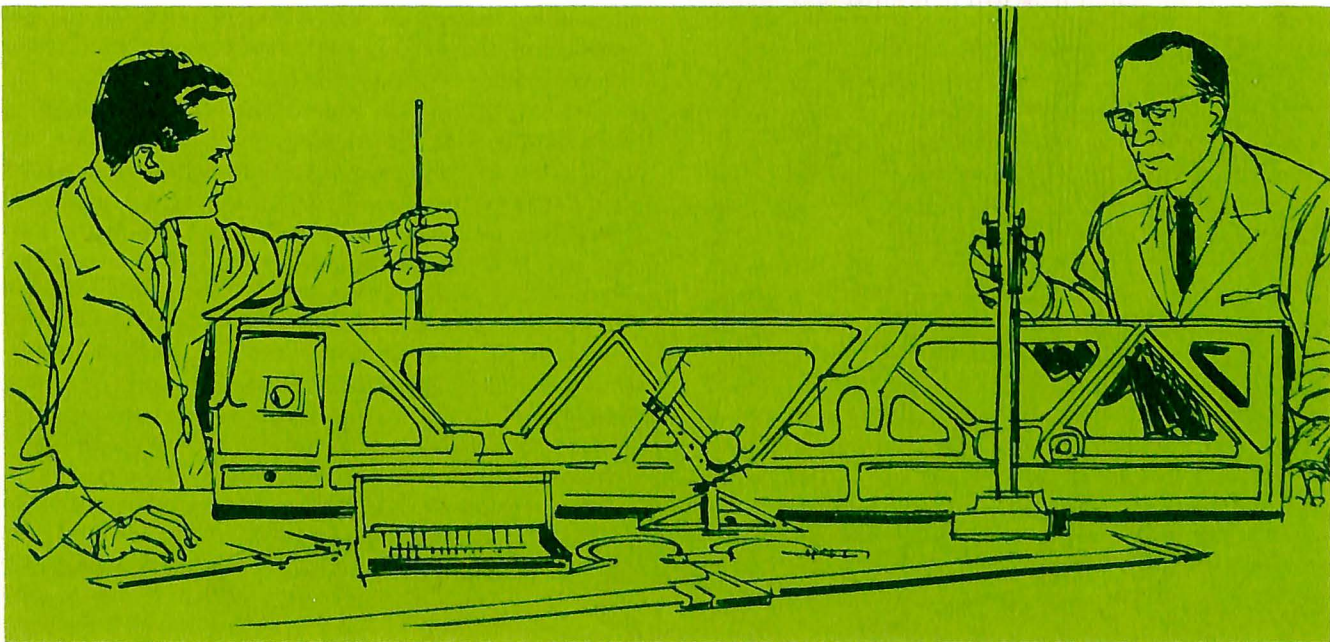
The Fight Operations Committee recently established a Safety Panel, composed of safety experts from the various manufacturers. The panel is concerned with aerospace systems safety.

Other areas of concern to the Fight Operations Committee, which have been established as active projects, are (a) increased military participation in contractor development and flight test programs, (b) a contractor pilot training program, (c) the integration of industry pilot knowledge (and possibly personnel) into space programs, (d) the utilization by contractor pilots of military aircraft and related military regulations, and (e) FAA certification of civil aircraft insofar as performance is concerned.

MANUFACTURING COMMITTEE

Comprised of top level manufacturing executives representing thirty-eight member companies, this main Committee continues to administer broad policy problems relating to manufacturing research and development, manufacturing equipment, conservation, production testing, tooling and methods, processes and other

A vital forging in an aircraft fuselage undergoes 350 dimension checks as part of the quality control procedures. In addition, the forging receives dye-penetrant, ultra-violet and ultra-sonic inspections. Quality control standards in the aerospace industry are the highest in U. S. manufacturing industries.



factory type operations. During the past 14 months in addition to directing the efforts of its five working committees, the MC has provided through the APT Management Council, guidance to Armour Research Foundation in the management and technical direction of the APT Long Range Program. The Committee through the next year will continue to direct the efforts of its working groups toward modernized manufacturing capability in pace with the rapidly advancing state-of-the-art in the aerospace field. The committee will also increase support of the Association's efforts to accomplish improved communications with DOD, the military services and NASA in areas of scientific advancement which necessitate improved or unique new manufacturing and production concepts.

AEROSPACE MANUFACTURING ENGINEERING COMMITTEE

Composed of a national membership of manufacturing engineering divisional heads representing forty-eight member companies and divisions, the AMEC is charged with the responsibility of ensuring, through effective research and development and other programs, a capability pacing the manufacturing state-of-the-art in the aerospace field. This Committee represents all aspects of the industry including spacecraft, aircraft, missile, propulsion, and accessory and equipment manufacturers, and meets jointly at least three times a year.

The AMEC membership, assisted by the specialists on their staffs, is working in support of their twenty-five currently active projects. These each represent major manufacturing requirements and are initiated to solve problems affecting manufacturing methods, tools, techniques, and operating systems in use or anticipated. Seven such projects were completed during 1962, giving valuable direction to all member companies represented.

Significant activities of the AMEC during 1962 included directing the work of the AMEC/Numerical Panel, which is concerned with the application of numerical control as explained immediately following this section, assisting in accomplishing the transfer of the APT Long-Range Program to the Armour Research Foundation, and the establishment of specialist groups within the Committee to achieve a more effective and responsive resolution to the myriad manufacturing problems facing the industry.

This Committee maintains liaison or initiates contact with military agencies, NASA, the Military Advisory Board of the National Academy of Sciences, and other organizations influencing scientific or technological progress which will ultimately be reflected in aerospace manufacturing requirements. Such liaison has enhanced the industry's position in determining how best to allocate corporate manufacturing research and development funding through the collection of intelligence of other industry and Government-sponsored projects. This has materially reduced the possibility of costly duplicated effort predicated on less knowledgeable direction.

New projects initiated by the Committee during the

past year include several studies to assess current state-of-the-art and project manufacturing research and development requirements in the field of electronics manufacturing, materials joining, material removal, and material forming. Typical examples are projects on elevated temperature forming, high-energy or pressure forming applications, fusion and resistance welding, diffusion bonding, ultrasonic metallic plating, sub-zero forming, advanced mechanical fastening techniques, and resolutions of end-milling problems with Class IV numerically controlled machines. Other projects involve the Committee in coordination within AIA and with other associations on the DOD/Electronics Specifications Uniformity Program and, where necessary, in reviewing Government specifications to screen out requirements leading to excessive manufacturing costs.

The goals of the AMEC in the forthcoming year — in continuing work of their projects, searching out specifications and attempting to guide action on those offering opportunities to reduce costs or avoid duplication, aiding the accomplishment of the ultimate goals of the APT project, continuing to encourage interchange of information between members — all will be aimed at accomplishing the Committee responsibility of satisfying the anticipated manufacturing requirements of the aerospace industry.

AMEC/Numerical Panel

Operating since November 1960 under the Aerospace Manufacturing Engineering Committee, the Numerical Panel has concentrated over the past year in the broad areas of numerical control with specific emphasis on: (1) new areas of NC application, (2) promoting efficiency and reduced costs, (3) developing improved standards and operating capability through coordination with machinery and control manufacturers and other trade associations and professional societies, (4) continuing support of the technical composition and schedule of the APT Long Range Program now under the cognizance of Armour Research Foundation.

Continuing into the seventh year of AIA's program in numerical control technology for manufacturing, the application of numerical control to advanced types of manufacturing equipment and processes are under investigation, such as electrical machining, automatic lofting and drafting and automatic test and inspection. Work is continuing on a project which will establish criteria for optimum selection of parts and tooling to be machined by numerical control. A parallel investigation is dealing with the definition of tooling and fixture problems associated with continuous path and point-to-point machines. The findings are to be documented in handbook form for use throughout industry.

A substantial effort continues in the development and promulgation of standards related to the use and performance of numerical control systems, machines, methods and processes. Typical of these are the recently published revisions to NAS 938, dealing with machine

axis and motion nomenclature, and state-of-the-art changes reflected in NAS 943 — interchangeable perforated tape standards of variable block format for positioning and straight cut numerically controlled equipment. Ready for publication is a related new control media standard covering perforated tape of variable block format for contouring and contouring/positioning NC equipment. Cooperative development and use of these standards by machine tool and control manufacturers, and a large segment of using industry, has substantially improved the overall understanding of machine configurations, characteristics and performance capabilities by user and manufacturer alike.

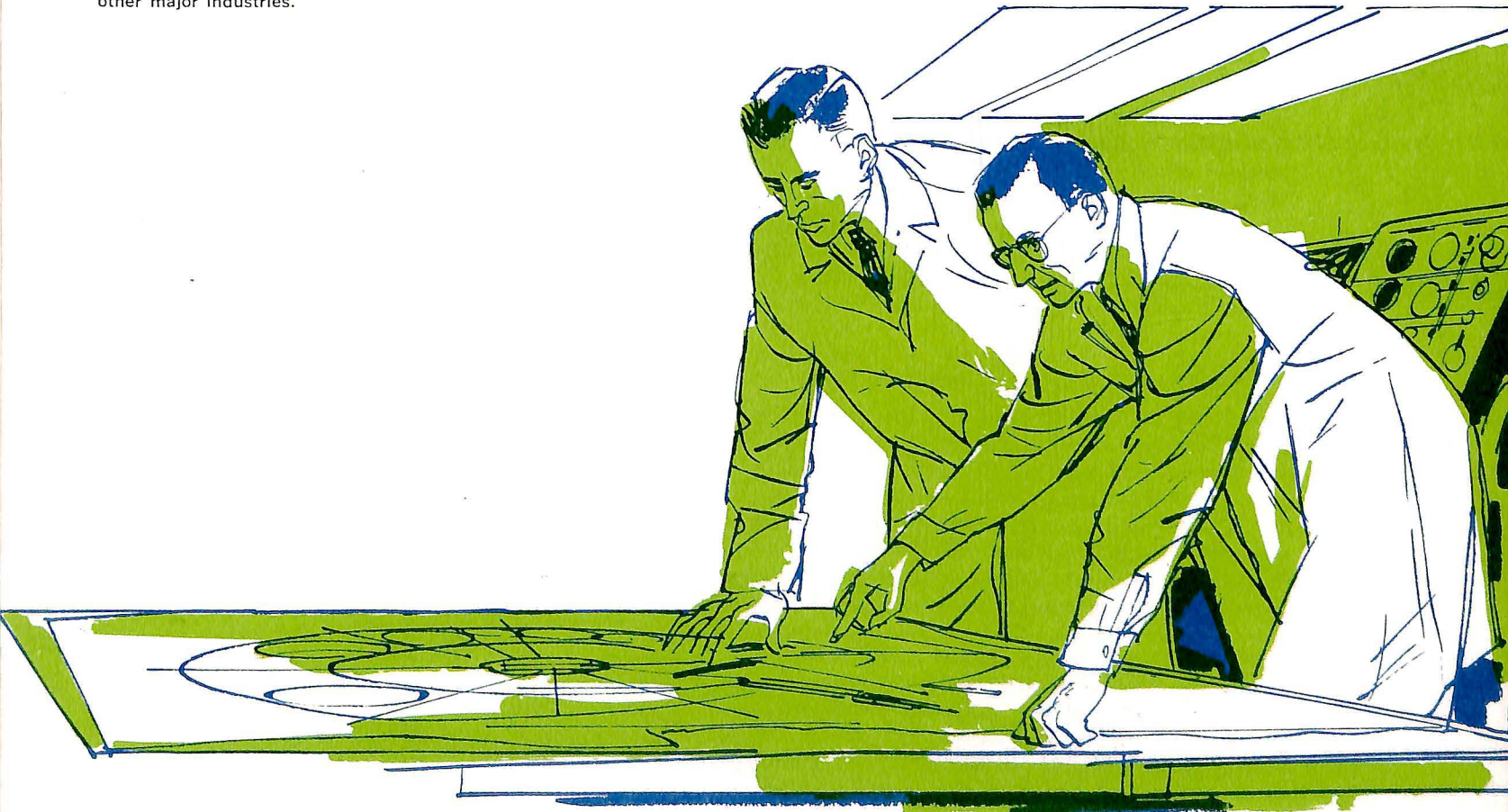
Other projects are investigating cutter problems for Class III and Class IV equipment and performance specifications for tool holders and sensing systems for numerically controlled automatic tool changing devices. The latter effort holds promise of reducing the high-cost tooling inventory now required for each NC machine of the automatic tool change type. Continued coordination with other associations has provided the

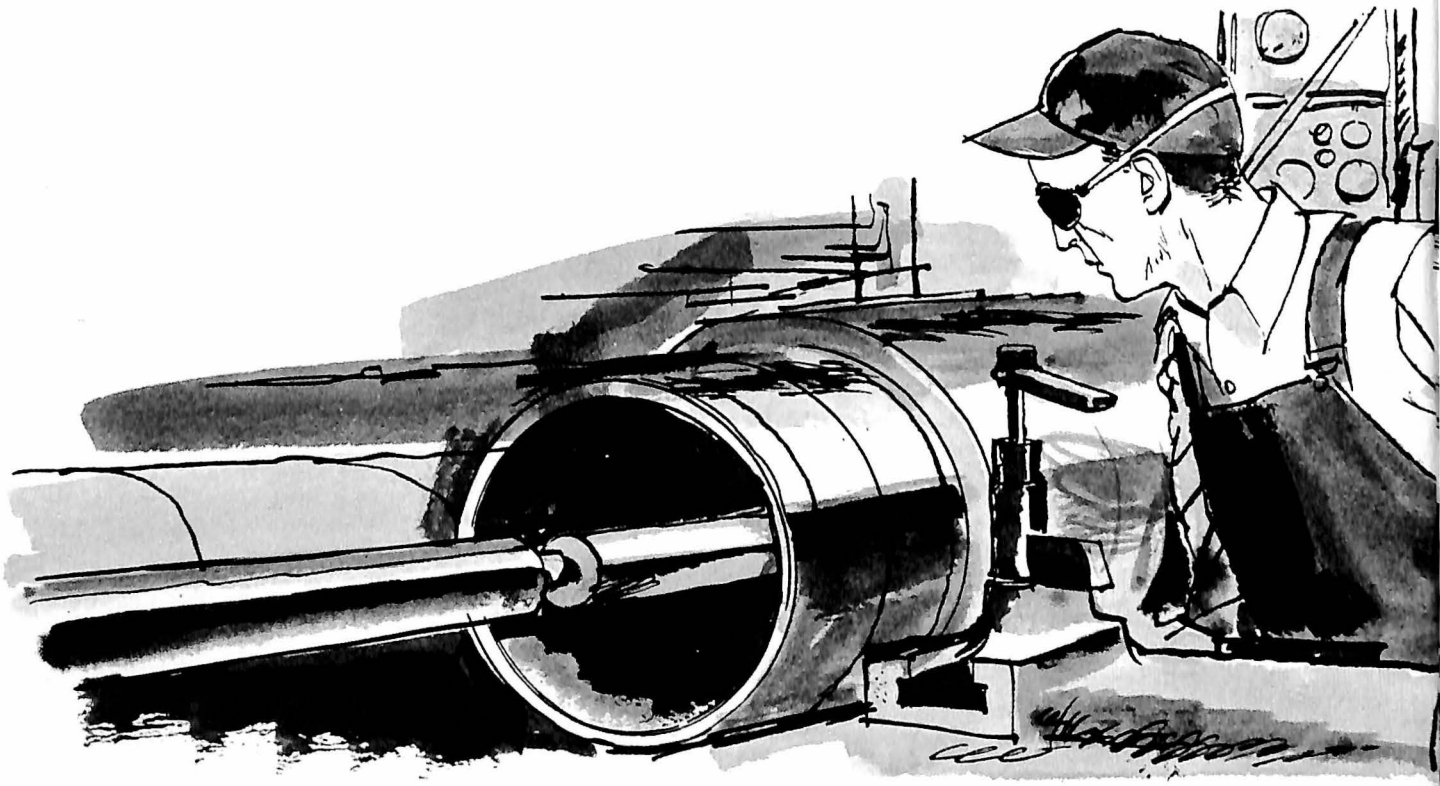
vehicle for exchange of technical viewpoints and the development of compatible standards.

The Numerical Panel has continued to function as a vehicle of communication with cognizant military agencies in all facets of the numerical control field. Forecasts of requirements for research and development in numerical manufacturing have resulted in continued funding by the Air Force of numerical control hardware and research in advanced software systems for NC data processing.

Perhaps the most important activity of the NP over the past year has been the technical support of Armour Research Foundation's APT Long Range Program (ALRP) both in validation of the APT III system developed by AIA during 1961 and definition of the further development work required to advance the system capability consistent with state-of-the-art changes in machining technology. Through its Technical Advisory Project (TAP) and the APT Management Council, an effective communication link is maintained between the more than 35 AIA and non-AIA com-

The aerospace industry has the largest percentage of its scientists and engineers engaged in research and development of any major industry. The National Science Foundation states that 63 per cent of the engineers and scientists in the aerospace industry are assigned to R & D. This compares with substantially lower percentages in other major industries.





panies participating in ALRP and the working level technicians engaged in application, testing and refinement of the APT III system. A significant effort will continue during 1963 as the number of users of APT III increases in the aerospace and allied industries. During 1963, the NP will also study the feasibility of integrating software systems to execute basic functions from design inception through manufacturing and functional test.

MANUFACTURING CONSERVATION COMMITTEE

This activity, believed to have no counterpart outside of the aerospace industry, concerns itself with the most effective and economical utilization and handling of the materiel elements of production and production support. In addition, it is responsible to the Manufacturing Committee for keeping abreast of contract requirements affecting its area of activity and making appropriate recommendations concerning such requirements. Conservation coordinators of forty member companies constitute the membership of the Committee.

There were no significant changes in contract requirements or reports required on conservation during the year. However, the Military Services were active in soliciting comprehensive informal reports on cost reductions accomplished in the overall operations of member

companies. The Committee, accordingly, kept its parent committee informed of the impact of such actions on conservation operations.

The MCC divided its basic exchange of information operations into two broad categories for proper emphasis: (1) continuing activities and (2) active projects. The Committee concentrated on measurement of results obtained from its continuing activities — exchange of “handouts” at semi-annual committee meetings and distribution of compilations of answers to requests for information. In measuring their effectiveness, specific savings such as \$18,000 and \$8,000 were reported by individual companies. Active projects were screened carefully and a series of new active projects were originated. An example of the type of projects contemplated is the conservation of used magnetic tapes which normally cost about \$200 a roll. Through collective action, the Committee believes it can find an economical means of rehabilitating such tapes for re-use. Other new active projects authorized for the coming year are as follows:

- Waste Control and Reclamation of Paint and Other Finishes
- Reclamation and Waste Disposal of Liquid Chemical Waste
- Conservation of Elements of Plastic Materials



MANUFACTURING EQUIPMENT COMMITTEE

The determination of manufacturing equipment requirements necessary to translate engineering designs into finished aerospace products, and their interpretation into definitive NAS equipment specifications, is the primary function of this Committee. Its thirty-nine members, representing the major manufacturers of aircraft, missiles, spacecraft, accessories and equipment, and powerplants, during 1962 have cooperatively engaged in the execution of fifteen projects to define performance requirements for advanced fabricating, processing, and allied machinery and systems. This difficult and essential task is undertaken by the heads of each plant's equipment engineering department who meet three times each year to determine collectively and act on manufacturing equipment problems facing the industry in producing today's and tomorrow's aerospace products.

This has been a period of intense activity for the MEC in attempting to fulfill this responsibility. Two major activities are particularly worthy of mention: (1) the establishment of a Welding Equipment Panel, and (2) agreement to furnish the Air Force with Industry (NAS) specifications for several different types of numerically controlled equipment to be utilized by USAF in their Industrial Facilities Modernization Program.

The Welding Equipment Panel was established as it became increasingly apparent that welding requirements and welding equipment did not completely mesh. Consequently, a panel of welding equipment experts was formed with ten projects assigned to develop specifications for mechanized and manual resistance, fusion and electron beam equipment. This group is expected to make great strides toward providing performance requirements, standardization, and interchangeability of welding equipment used by our industry.

A maximum effort to provide specifications in support of the USAF Modernization Program was initiated in May at the specific request of the Air Force. Following a review of the request against member companies' requirements, agreement by the Committee, and approval for support of this task from the Manufacturing Committee, a target span of six months was established for the completion of this series of specifications, the equivalent of two years of normal Committee effort. Such a program was deemed justifiable in light of significant savings attributable to numerically controlled equipment, the urgent need for modernization of aging USAF-owned production facilities, and the increasing complexity and tolerance limitations required of today's products. This series of specifications are in various degrees of completion at this time and include numerically controlled thin wall tube benders, inspection equipment, drafting line plotters, vertical turret lathes, turret lathes, engine lathes, jig borers, drilling machines, and combination milling, boring, and drilling machines.

Other projects under development by the MEC include: specifications for printed circuit manufacturing and assembly equipment, shear forming equipment, hot forming presses, milling cutter grinders, and ceramic processing equipment. Additionally, a joint effort with the machine tool builders is under way to explore the feasibility of defining machine tool accuracy requirements — an area where lack of a common interpretation has been costly.

Among the twelve projects completed during 1962 were five NAS specifications, NAS 951 "Numerically Controlled Electrical Wire Processing Machine"; NAS 952 "Numerically Controlled Filament Winding Machine"; NAS 953 "Numerical Control System"; NAS 954 "Numerically Controlled Boring Mills"; and a complete revision of NAS 910 "Horizontal Boring, Drilling, and Milling Machine." To ensure that all such NAS specifications reflect a coalescence of aerospace industry requirements with equipment producer capabilities, they are coordinated prior to national publication with affected equipment builders, military agencies, and interested trade associations. Close coordination is also maintained with several other AIA committees and outside agencies, including the military and NASA, to ensure a composite reflection of scientific and technological advances of importance to the industry in the resultant equipment specification.

The forthcoming year will be one of continuing this effort to provide realistic equipment requirements for the industry.

MANUFACTURING TEST EQUIPMENT COMMITTEE

Definition of the elements of the factory testing dollar is the theme of a major effort on the part of forty-five members of the Manufacturing Test Equipment Committee who represent the aircraft, missile and space vehicle manufacturers of AIA. Product testing and check-out comprise as much as one-fourth of the total manufacturing cost of an end item.

MTEC has reoriented its effort in order to strike a proper balance between test equipment, documentation and personnel skill to produce the most economical approach to product testing. Should test equipment be automatic or manual? Should documented procedures be lengthy and detailed step-by-step for an unskilled operator, or can they be simple, addressed to a skilled technician with a background in the necessary techniques? These questions form the basis on which MTEC will evaluate projects. In further support of obtaining an adequate test system commensurate with low cost, a panel on value analysis has been formed with the objective of applying value analysis principles to MTEC projects, as well as test equipment and procedures.

MTEC recently completed a study of filter requirements for hydraulic system applications. Difficulty has been experienced by suppliers and users in verifying ratings of filter elements, and steps have been taken to develop more accurate verification procedures. Another study completed during the past year determined the extent of the use of automatic test equipment and the need for further standardization and reduction of equipment cost to meet economic goals. As a result of this study, a current project is investigating standardization

of tapes and codes for programming automatic test equipment. Experience gained in this field by AIA in the APT program is expected to be utilized.

Another current MTEC project is investigating the impact which the current miniaturization trend in electronic components will have on test equipment both on design of test equipment itself and the new techniques necessary to test products utilizing microminiaturization and modular design. Other current projects are developing procedures for high potential test (with EESC) and wire harness testing. Documentation of in-plant test equipment and procedures, and the use of ground support equipment for factory check-out are also receiving the full attention of this Committee.

In support of other AIA committee activity, MTEC maintains liaison in areas of common interest, such as calibration and measurement, hydraulic fluid and parts contamination, and printed circuit boards. The Committee also contributed a substantial portion of the section on "Testing" in the 1962 issue of the "Aerospace Technical Forecast."

PRESERVATION AND PACKAGING COMMITTEE

The Preservation and Packaging Committee gathers from member companies and coordinates into unified recommendations the industry's opinion on specifications and related documents which set forth the requirements for preservation, packaging, and marking of defense equipment. Such actions normally are responsive to requests from the Department of Defense and the military services. Further, the Committee serves to facilitate cooperative effort among member companies on common packaging problems. The PPC is comprised of sixty-one members representing thirty-four companies.

During the year 1962 the Committee performed major efforts in the following areas:

Advanced packaging techniques for an important assembly yielded savings of \$35,000 in the first year, and estimated savings of \$50,000 for subsequent years. The aerospace industry seeks new, less costly methods in every phase of its operation.



- Reviewed and coordinated many new and revised military documents wherein packaging requirements were included;
- Participated in coordination meetings with various military agencies in an effort to establish a standard packaging data system compatible to both the military and industry;
- Coordinated and met with various military agencies in an effort to resolve the long-standing problem of realistic package vibration test requirements;
- Carried out in conjunction with the Air Force Packaging Laboratory an effort to identify significant, future problems relating to packaging as they might result from space exploration;
- Developed a program for standardization of packaging of incoming materials to reduce costs and at the same time reduce damage in transit and later in-plant handling.

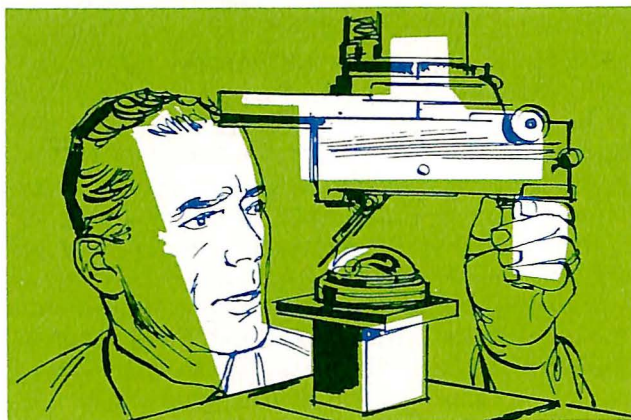
MATERIALS PROCUREMENT COMMITTEE

Most of the activity of the Materials Procurement Committee during the year stemmed from the growing interest of Congress and the Government buying agencies in the management of the subcontract function. Over half of the prime contract dollars in the aerospace field are administered by the material directors of the AIA member companies who comprise the MPC.

As a result of the passage of the Proxmire Bill, the small business program originally conducted by the Department of Defense on a voluntary basis became a statutory requirement. Some of the new requirements imposed upon industry as a result of this action were incompatible with industry practices. The MPC, working with the cognizant Government agencies, succeeded in obtaining postponement of the implementation of the definitions and regulations involved. Since that time, negotiations have been held with the Small Business Administration and the Department of Defense to develop regulations still meeting the statutory requirements but which can be administered by industry without undue difficulty and unnecessary cost.

MPC was also able to forestall the adoption of the burdensome reporting system under NASA contracts which involved collection and submission of statistics on the geographical distribution of all procurements. Through meetings with the Bureau of the Budget and NASA, a report from a few selected companies on a probationary eighteen-month basis was substituted.

The MPC worked closely with the President's Committee on Equal Employment Opportunity, the Bureau of the Budget, and other associations in a successful effort to streamline the Compliance Report Program. As a result of these efforts, the minimum dollar limits for compliance reporting were raised from \$10,000 to \$50,000, contractors and subcontractors with fewer than fifty employees were excluded from the reporting requirements, and the "combination of subcontracts" provision which would have created an intolerable burden



The aerospace industry, which designs, develops and produces huge weapon systems, must accomplish its assignments with precision. For example, if temperature measurements have a one per cent error at 3,500 degrees Fahrenheit, the weight of the missile will increase by 12,500 pounds due to the increased weight of the heat shield and additional fuel. In addition, the use now of a new standard of length, the wave length of krypton 86, can give measurements accurate to one part in 100 million.

for prime contractors was eliminated.

Considerable effort was expended toward developing an industry policy with respect to sole source procurement. While further work is yet to be done, the activity to date has brought the members of the association and key agencies of the Government closer together on this controversial subject.

The significance to the materiel function of the project form of organization was studied by MPC and the work will be continued during the coming year.

In keeping with the Committee's efforts to promote mutual understanding between industry and the Government in their problems areas, a number of key government and military personnel were invited and attended the MPC meetings to discuss the issues at hand.

The Committee initiated a program in conjunction with the cognizant office of the Department of Defense to assist in assuring that all available and qualified sources in the labor surplus areas are given the opportunity of participating in defense work. The program will be finalized and put into effect on a voluntary basis during the last quarter of this year.

MPC, in conjunction with the Manufacturing Committee and the Procurement and Finance Committee, has worked with the DOD and military agencies in trying to arrive at a uniform interpretation of "Make-or-Buy" regulations. Our efforts in this regard have helped bring about a complete review by the Air Force during the fourth quarter of this year.

Members of the MPC have worked with other AIA committees and the Air Force in bringing about a better understanding and a workable program on competitive procurement of spares.

PROPULSION TECHNICAL COMMITTEE

The Propulsion Technical Committee is a main committee composed of executives generally at the Vice President or Director of Engineering level of companies engaged in research, development and production of engines or rockets of their own design for the propulsion of aircraft, spacecraft and guided missiles.

The trend of PTC activities in the past year has continued toward the delegation of more responsibilities to its working level committees insofar as detailed engineering matters are concerned. The PTC has continued to collaborate with other main committees of AIA on subjects of an engineering management nature. The Committee maintains contact with officials of DOD, NASA and other Government activities where propulsion items receive major consideration.

Engine Committee

The Engine Committee is composed of members generally at the Chief Engineer level from companies engaged in the design, development and production of air-breathing engines for military or civil use. Aside from activities of its panels which have dealt with specialized projects, the Engine Committee has, for the past year, met only in collaboration with members from the Propeller and Rocket Committees which are also working committees of the PTC. Major items of importance acted upon by these combined groups include a new proposed ANA Bulletin for the preparation and submittal of engineering change procedures. Also reviewed were the Air Force and Navy documents MCP 71-77 and WR-12 respectively, which cover engineering data to be furnished on contracts. The subjects of reliability, maintainability and safety have all received detailed attention.

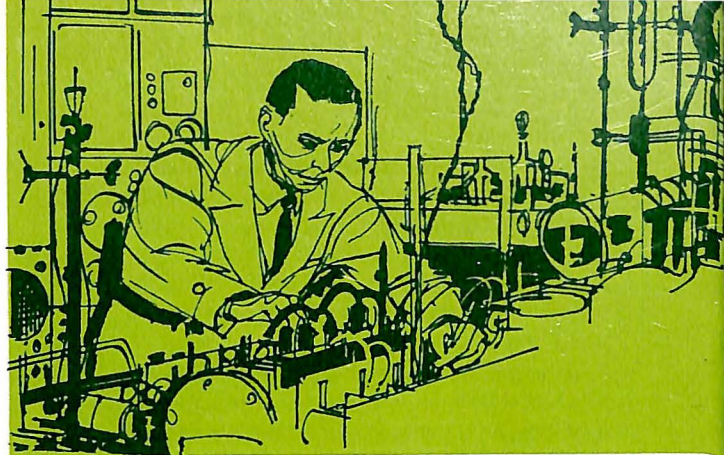
The primary activity of air-breathing engine manufacturers during the past year has been the preparation of a revision to the MIL-E-8593 series turboprop engine specifications, which have been proposed to include requirements for turboshaft applications also. The Turbine and Jet Engine Requirements Panel of the Engine Committee has met on several occasions to review the specifications, and has also met with representatives from the Powerplant Installation Committee for a consolidation of recommendations.

Recommended revisions to the MIL-E-5007 series turbojet engine specifications forwarded to the government in 1960, are still pending.

The Engine Committee, in collaboration with the Propeller and Rocket Committees, has continued to provide direction for standardization of propulsion utility parts, materials and design standards produced by the Society of Automotive Engineers.

Propeller Committee

Representatives of the propeller manufacturers have met with government representatives to review proposed, updated specifications on propellers, which are expected



The increasing amount of research and development necessary for aerospace firms to remain competitive is evident in statistics compiled by Government agencies. In 1953, the aerospace industry accounted for 5 per cent of all industry-financed research and development; in 1956, it amounted to 8 per cent. In 1960, the aerospace industry paid for 10 per cent of all research and development done by all industries, and the trend is up for later years.

to be released by 1963.

Rocket Committee

Rocket Committee membership in both the Liquid and Solid Propellant Divisions, is at the Chief Engineer level. As in the past, members of these committees have met with those of the Engine and Propeller Committees where their interests coincide. The productive results are best exemplified by activities of panels and project groups assigned to deal with specific subjects.

Early in the year, a project group was established by the Liquid Propellant Division, to meet with an Air Force group from the Rocket Research Laboratory, Edwards Air Force Base, to study the need for revising the MIL-E-5149 series liquid propellant rocket engine specifications. As a result of this meeting, and a request by Air Force representatives that the Rocket Committee prepare the draft of a revision to the rocket engine specifications, the project group has been authorized to proceed in this direction. Work accomplished by the project group is to be coordinated with NASA and the Army as well as with the Air Force, and is expected to consume approximately one year.

The Accessory Components Panel of the Liquid Propellant Division is currently making a study of environmental effects on rocket engine components used in space applications, at the same time continuing its preparation and issuance of general specifications for specific components. Several of the earlier specifications have been updated and revisions issued. As new proposals become available, forums are held with vendor's representatives for discussion prior to issuance. Copies of these general component specifications have been furnished to the Rocket Research Laboratory at Edwards for information in connection with a specification being prepared for similar components for use in missile and space systems applications.

The Propellants Panel has renewed its activities and has proposed to the Liquid Propellant Information Agency that the panel be used by LPIA as a contact point through which the opinions of users of propellants

can be expressed with respect to propellant properties and characteristics.

A new Solid Propellant Safety Panel was established for a review and assessment of safety measures to be taken in the manufacture and handling of solid propellants. This group will make available to all participants, the reports of hazardous incidents, steps taken to prevent their recurrence, and will further speak for the solid propellant industry in all matters pertaining to safety as related to solid propellants.

The draft of a specification for Liquid Propulsion Systems Installations, as prepared by the Rocket Committee in 1958 has been furnished to the Air Force as a guide for a similar specification which is currently under preparation. The new specification, when completed, will be submitted to both the rocket and missile manufacturers for comments.

QUALITY CONTROL COMMITTEE

The growing number and soaring costs of quality requirements for aerospace products have made the activities of the Quality Control Committee an economic necessity. This group of quality/reliability directors, drawn from the forty-five member companies most involved in this country's space conquest program, provides through exchange of noncompetitive information, vigilance, guidance, and eleventh-hour information to member companies entering into contracts which specify any of the many new sophisticated quality provisions. The Committee maintains liaison panels to the DOD, Military Services, FAA and NASA. These serve not only the national interest by reviewing and offering informal constructive criticism on quality/reliability specifications prior to their official release, but also, these panels provide the Quality Control Committee's in-progress projects with latest Government thinking and trends.

The project activities of the Quality Control Committee fall into four main categories:

1. Formulating unified industry recommendations on Government quality and reliability policy directive and specifications;
2. Locating and evaluating new and improved quality control methods and techniques, publishing definitive findings.
3. Aiding advancement of state-of-the-art in those areas which affect the quality and reliability of our product;
4. Joint participation with other AIA technical committees where quality control viewpoint or involvement is important.

Examples of some current projects of the Quality Control Committee are (1) the in-depth analysis of government specifications dealing with quality control systems and maintainability and reliability of aerospace equipment to recommend procedures that all contribute to reducing costs of logistics, spares, improvement of low availability, and lessening malfunctions; (2) the development of recommendations for up-dating the

quality assurance provisions of MIL-T-9046C "Titanium and Titanium Alloys"; (3) review of a proposed military specification governing selection, provision, and maintenance of inspection equipment; (4) investigating new quality control techniques to determine internal flaws in aluminum alloys for space vehicles so that greater forces can be withstood, weight reduced and fuel conserved; (5) holding measurement research conferences which bring together measurement engineers with experts from the National Bureau of Standards to attack space age measurement problems; and (6) the Quality Control Reference Systems Study, a project done every two years and results distributed to QCC members with copies made available to military services who find this unique publication a valuable reference.

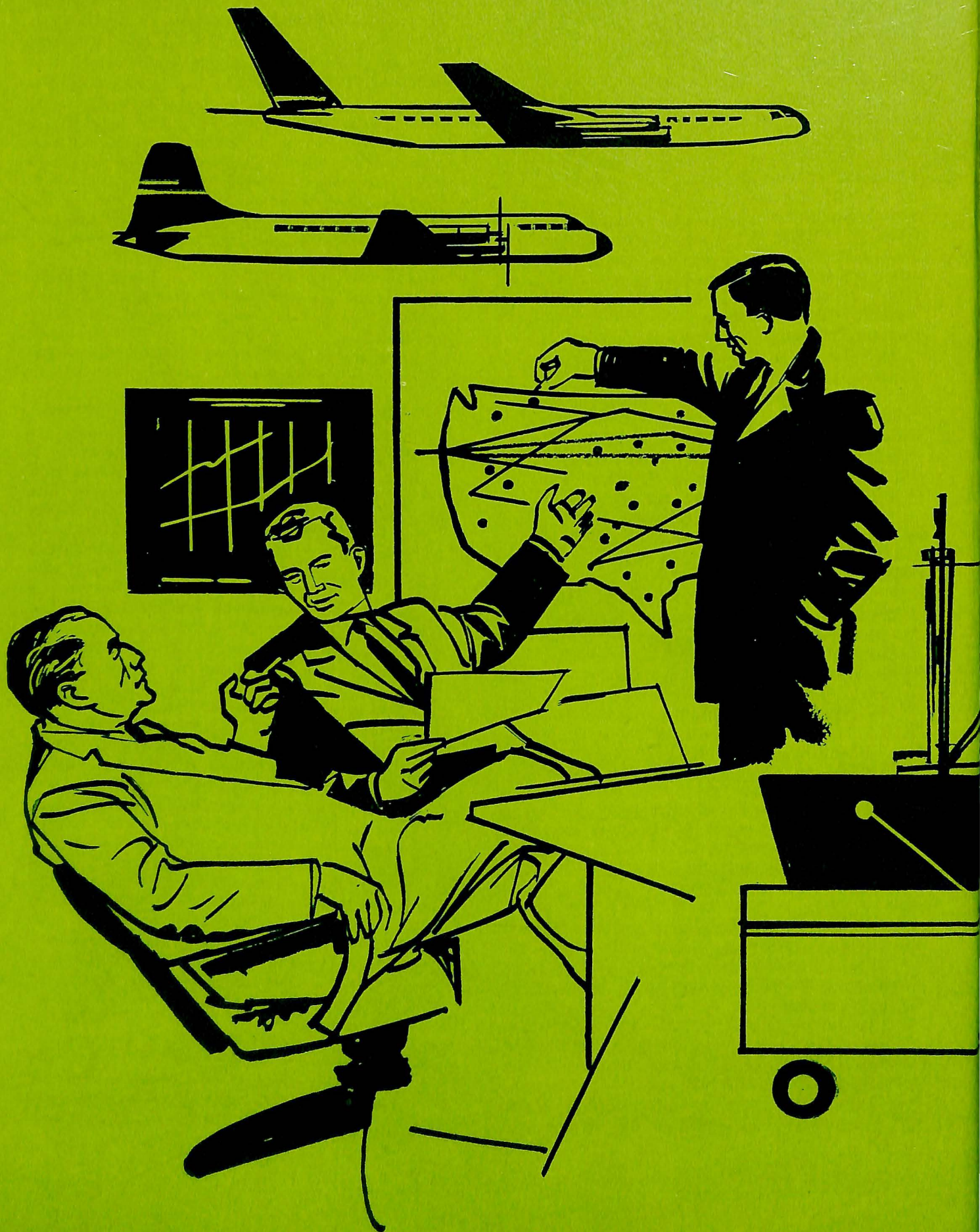
An annually successful activity of this Committee is the Joint Industry-Government session held at annual meetings. This event has proven to be most productive in gaining mutual understanding of common problems and indicating avenues for their solution.

JOINT DRAFTING PRACTICES PANEL

The four Drafting Practices Panels (airframe, propulsion, accessory and electronics) have continued to review new or proposed revisions to documents covering the various aspects of drawings, microfilm, data lists, and related subjects. Creation of the Defense Supply Agency by the Secretary of Defense, and the necessary realignment of standardization activities formerly handled by the Armed Forces Supply Support Center, have somewhat de-emphasized the attention given to these subjects, although the military services' individual requirements for drawings and data have not reflected a similar de-emphasis. Pending a reactivation of interest in the form of a proposed revision to the MIL-D-70327 drafting specification, a study is being conducted of various kinds of engineering data currently being furnished by aerospace manufacturers in the performance of their contracts. The purpose of this survey is to ascertain, if possible, whether there are areas in which reductions in the amount of data can be made, which would show significant savings to the Government without impairing the Government's needs. One yardstick which may be used in this connection, will be a comparison of data furnished to the military versus that furnished to civil operators of similar equipment; the amount and kind of data furnished, versus the type of operation and logistics.

The drafting panels have made specific recommendations to the Government with respect to a number of microfilm documents, and government agencies involved are understood to have accepted the majority of the AIA recommendations.

AIA recommendations with respect to sizes and formats of drawings, if adopted by the Government, will effect a substantial savings (approximately two million dollars) by avoiding the necessity of printing new drawings forms.



TRAFFIC SERVICE



CARLTON P. ROSCOE
*Pratt & Whitney
Aircraft Division
United Aircraft
Corporation
Chairman, Eastern
Traffic Committee*



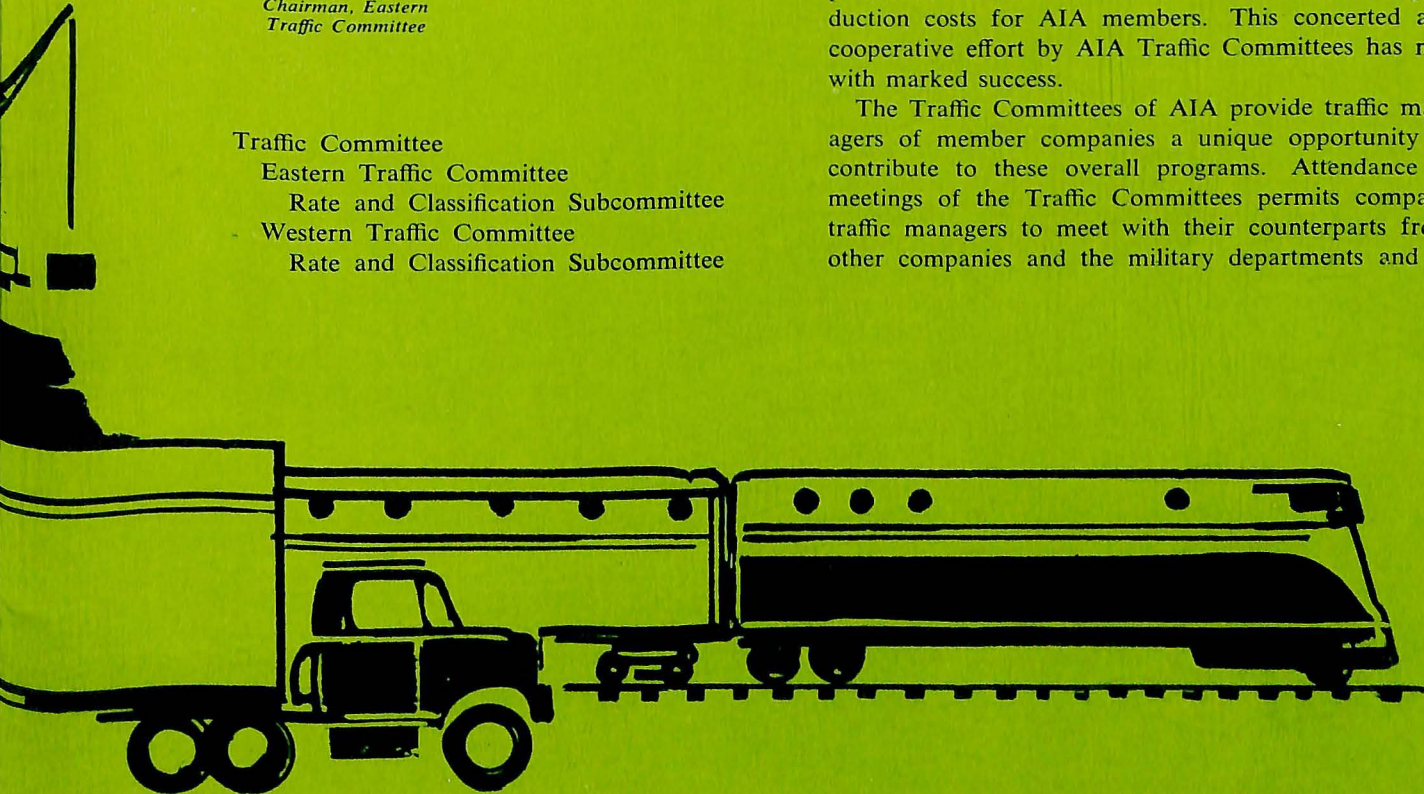
MAURICE H. SAVARD
*Hughes Aircraft
Company
Chairman, Western
Traffic Committee*

The logistical management of aerospace materials, equipment and products flowing in and out of plant facilities has assumed significant proportions in corporate planning. Traffic Departments of our member companies, with increasing frequency, are participating throughout all stage of company programs from research and development, through design, engineering and production to final delivery. Traffic managers are contributing to a great extent in the accomplishment of overall reductions in total production costs.

Primary emphasis by Traffic Service during 1962 was placed on the establishment of policies, programs and procedures which will result in reductions in total production costs for AIA members. This concerted and cooperative effort by AIA Traffic Committees has met with marked success.

The Traffic Committees of AIA provide traffic managers of member companies a unique opportunity to contribute to these overall programs. Attendance at meetings of the Traffic Committees permits company traffic managers to meet with their counterparts from other companies and the military departments and to

Traffic Committee
Eastern Traffic Committee
Rate and Classification Subcommittee
Western Traffic Committee
Rate and Classification Subcommittee



obtain the benefit of a broad base of experience of others engaged in the same field of endeavor. A considerable amount of trial and error is thus avoided. This is especially important in this period of new and improved products with accompanying problems and challenges which are being met for the first time in this or any other industry.

Membership on the AIA Eastern and Western Traffic Committees is determined by the geographical location of plants of members. Each committee meets twice yearly. An annual joint meeting of the two committees is also scheduled. Additionally, special meetings of the committees and working groups thereof are convened as required. By invitation, representatives of the Defense Traffic Management Service and traffic representatives of the military departments attend all meetings of the Traffic Committees. Contact between members throughout the year is maintained by issuance of Traffic Bulletins which emanate from AIA Traffic Service at Washington. Through these bulletins, members are kept apprised of all developments in the traffic, transportation, regulatory and congressional fields. Two hundred such bulletins were issued in 1962.

Marking as it did the fifth anniversary year of the advent of the Space Age, 1962 afforded Traffic Committees an opportunity to review progress to date, to benefit from the accumulated experience of its members and to formulate programs for the future benefit of the aerospace industry and the customers for its products, primarily the federal government.

Industry-Military Traffic Control

Throughout the past several years no single activity of Traffic Service has received more emphasis than that which concerns the respective and sometimes conflicting responsibility of aerospace traffic managers and the traffic organizations of the military departments. Aerospace traffic management begins at the earliest stage of research and development. In many cases it begins at the time a company prepares a proposal in response to an invitation to bid on a particular contract. The elapsed time from the preparation of an initial bid proposal for a particular weapon system to actual production of some of the components for that system may be several years. Industrial traffic departments are team participants throughout that entire period. They provide not only transportation capability data in the early stages of design and development but also coordinate their activity with carriers so as to develop actual movement plans and the costs thereof. These same data must be worked up for a multitude of potential subcontractors numbering in the thousands. Transportation plans, then, are based on costs, service, facilities, and routings which the industrial traffic manager has developed far in advance of the actual award of basic contracts. The final bid to the customer and the ultimate cost of a system reflects all of the traffic and transportation pre-planning which has been undertaken and accomplished prior to that

time.

Following the award of contracts, certain responsibilities for providing managerial guidance and procedural policy is vested in the traffic management organizations of the military departments. The measure of success in meeting target goals of cost and production are dependent upon the extent to which the two areas of traffic management responsibility, industrial and military, are properly integrated and exercised. Accordingly, the activities of those concerned with traffic, both government and industry, cannot be compartmentalized. The result would be costly and be overlapping and duplicative. The efforts and activities of all parties must be closely coordinated. Cost estimates developed by industrial traffic managers in pre-planning contracts can be made worthless if the plans upon which they are based are not followed through. A breakdown in service and production lines can also result.

There has, in the past, been a decided diffusion of control in the military traffic management area, both policy and operational, because of the existence of a multitude of splinter military procurement traffic management offices, each apparently autonomous and seldom accountable to either one or a limited number of headquarters policy offices. This has subjected industrial traffic managers to a maze of costly, duplicative and unnecessary controls. Target goals for both cost and production have been disrupted. The Government has been denied the benefits which could otherwise be obtained by taking full advantage of the time and effort which aerospace traffic managers devote to pre-planning the traffic and transportation phases of contracts.

Recognizing the detrimental effect of this situation, this past year, the Air Force in close cooperation with AIA Traffic Committees inaugurated a traffic management control program. The program is designed to take full advantage of the capabilities of industrial traffic managers. It is a continuing program and is being reviewed periodically by Government and aerospace traffic managers at regular meetings of AIA Traffic Committees. Although numerous problems in this area are still unresolved, the coordinated program thus inaugurated this past year provides a means of isolating trouble spots and working out solutions. It will reduce the overall cost of aerospace products.

Transportability Programs

Transportation has become one of the major limiting factors in the design and construction of space vehicles. The capability of the national transportation system cannot in and of itself be relied upon to provide solutions to the various transportability problems which arise in connection with the movement of aerospace products. This is true with respect to all of the products of the industry — aircraft, missiles, rockets, space vehicles, and the various components of each. Traffic departments, with their specialized know-how, are making real contributions not only during the design stage





of products but also in connection with the development of equipment which is required to transport final products from point of manufacture to point of use or assembly. In some cases the transportation limitations require entire plants to be relocated on the basis of transportation capabilities. The success of many programs, therefore, is dependent to a large extent on the expertise of traffic managers.

Traffic Service through its Traffic Committees contributed in this area by inauguration of a program among members to interchange ideas and experiences. During the past year, at meetings of the Traffic Committees, individual members and military representatives have presented reviews of various transportability problems they have encountered and programs which have been designed to overcome them. This eliminates much trial and error for those members who are presented with similar problems for the first time. This is a mutually cooperative effort and has accomplished material savings in time and money for both industry and the federal government.

Transportation Litigation

Several court and Interstate Commerce Commission proceedings in which the interest of AIA were represented by Traffic Service were either decided this past year or were pending at the time of this report. In an action by motor and rail carriers to limit their liability for loss or damage to property to a maximum of \$3.00 per pound, the ICC held in favor of AIA and denied carriers the authority sought. In another proceeding the ICC held in favor of AIA and ruled favorably on a tariff rule which will require van carriers to maintain lower levels of rates for consolidated shipments of household goods. In another proceeding, the ICC ruled against AIA and curtailed transportation of missiles and spacecraft by two specialized motor carriers whose operating authority is restricted to the transportation of aircraft. Consideration is being given to appealing this

decision to the Federal courts. During the past year the Traffic Service also intervened in a proceeding before the ICC to establish more reasonable rules and practices applicable to motor van carriers of household goods. Final decision is pending in this case.

On December 4, 1961 the U. S. Supreme Court upheld the position advocated by Traffic Service before the ICC and on appeal to the Federal District court. At issue in the proceeding was the right of shippers to have available the services of motor contract carriers notwithstanding the existing availability of motor common carriers. Traffic Service argued for this right because of the requirement of AIA members on numerous occasions for the specialized type of transportation service available only from motor contract carriers.

In addition, throughout the past year, Traffic Service processed numerous informal matters before the ICC and CAB with respect to rates, services and practices of regulated carriers.

Air Cargo Studies

In a program initiated this past year, the AIA Traffic Committees undertook to determine the extent to which traffic charges and total production costs could be decreased by adoption of a cooperative aerospace program to consolidate shipments of thousands of vendors from common areas of origin for movement by air. This program is a two-pronged effort to increase the use of air transportation and, at the same time, reduce transportation costs. A pilot study was made of shipments originating from numerous vendors on the east coast consigned to a limited number of aerospace plant facilities on the west coast. The pilot study indicated that savings could be accomplished by diverting shipments from surface to air, by consolidating shipments from multiple origins to common destinations for movement by air, and by negotiating lower levels of air carrier rates. This program will be continued in the year ahead.

Household Goods By Air

AIA members annually spend in the neighborhood of \$15 million for the transportation of employees' household goods. The Department of Defense bill for this same service is upwards of \$100 million, its largest single item of transportation expense. The great majority of this traffic moves by highway motor van carriers. 1962 saw a breakthrough in the continuing efforts of the AIA Traffic Committees to develop an effective air service for this type of traffic. Several meetings were held with air carriers and programs were developed which were designed to reduce costs and simplify arrangements for air movement. Use of air enables companies to get personnel transferred and at work on a new assignment with a minimum of disruption and delay. The cost of extended per diem allowances for meals and lodging while families await their household goods is shortened by as much as a month, representing an important savings to companies. Air freight rates for specific movements of household goods have been reduced to the point where they are at least competitive with or lower than those of surface carriers. During the past year one AIA member, for example, transferred 3½ million pounds of employees' household goods by air service. The AIA Traffic Committees will continue their efforts to develop this service throughout the coming year.

Traffic Educational Program

During this past year the AIA Traffic Committees instituted a program to determine measures which could be taken to motivate, encourage, and possibly provide financial assistance to college students majoring in transportation. With the aerospace industry placing greater dependence on traffic managerial competence plus the technological advances of industry and the need for trained personnel to cope with them, there is an increasing demand for professionally-trained traffic personnel. At the same time there is a decline in the number of transportation and traffic management courses offered at colleges and universities and fewer numbers of students are pursuing such courses. The success of many aerospace programs is dependent on how well traffic managers perform. The requirements of this dynamic industry do not allow sufficient time to devote years of on-the-job training to develop a future generation of aerospace traffic managers. Action on this program will be emphasized and accelerated during the coming year.

Emergency Transportation Planning

In cooperation with the Office of Emergency Transportation, Department of Commerce, a program for action was established by Traffic Service in 1962 to develop emergency transportation requirements for the aerospace industry under the provisions of Executive Order No. 10999. Four members of the AIA Traffic Committees, together with the AIA Director of Traffic Service, were designated as a liaison team to coordinate with the Commerce Department on this program.

Additional Activities of Traffic Service

On matters of broad industry interest and concern, Traffic Service, following a determination by the Traffic Committees, represents the interest of AIA members before the numerous nationwide carriers tariff bureaus, associations and committees. In this area of activity, Traffic Service acts as an adjunct to the separate traffic departments of members on those occasions where an industry-wide approach can accomplish results not obtainable from the independent action of individual members.

During this past year Traffic Service processed a proposal through the rail classification committees to secure reductions in freight rates applicable to solid fuel missile and rocket propellants. This adjustment in rates, still pending as at the time of this report, will reduce freight charges in amounts up to 50%.

In an action before the motor classification committees, Traffic Service joined with the Defense Traffic Management Service in seeking new schedules of rates which will materially reduce shipping costs for missiles, rockets and components. Final action on this proposal is pending.

A concerted drive by AIA Traffic Committee members working through the facilities of Traffic Service, during 1962, defeated an attempt by transcontinental motor carriers to raise rates on missiles, rockets and related parts. Had the carriers' efforts been successful, shipping costs for those commodities would have been increased in some cases as much as 666%.

Following the filing of strong protests by Traffic Service the nation's railroads in 1962, abandoned their attempt to increase by 25% the freight rates on less carload shipments on miscellaneous aluminum articles.

Traffic Service during this reporting period also secured a modification in the tariffs of motor van carriers which reduced the charges on diverted shipment by \$1.50 per hundred pounds.

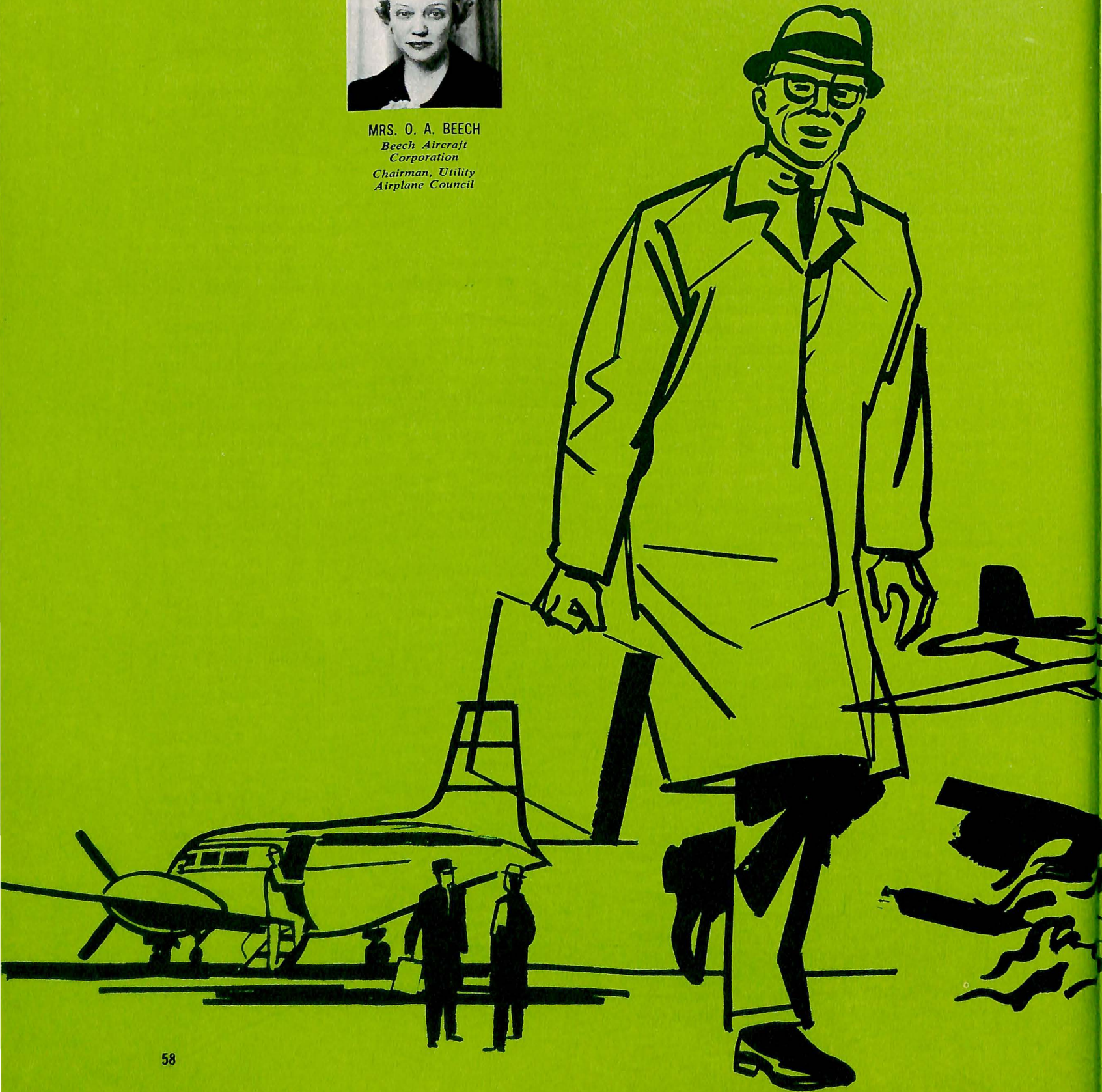
Traffic Service coordinated the efforts of AIA members in opposing an attempt by motor carriers during 1962 to increase freight rates on extreme dimension articles by 50%. These increases would have severely penalized out-sized articles being moved in connection with the nation's missile and space programs. The increase was defeated.

Motor carriers also attempted to increase freight rates on airplane seats upwards of \$100 each. For a modern transport, this increase would raised production costs by approximately \$13,000 per aircraft. Action by Traffic Service and committee members during the past year defeated the proposal.

Action by Traffic Service in 1962, similarly forestalled a motor carrier proposal to assess charges on bulky aerospace products on the basis of a fully loaded truck notwithstanding the fact that smaller consignments of other shippers could also be loaded on the same vehicles. In the case of aircraft, rocket and missile engines this proposal, if successful, would have inflated charges by as much as 50%.



MRS. O. A. BEECH
*Beech Aircraft
Corporation
Chairman, Utility
Airplane Council*



UTILITY AIRPLANE COUNCIL

The United States leads the world in general aviation — which is all civil flying excepting the airlines. It has more airplanes, more pilots, and utilizes more airports than any other country in the world. The active fleet now exceeds 80,000 aircraft, about forty times more aircraft than are operated by the nation's airlines, and this number will rise steadily over the next ten to twenty years.

The members of the Association's Utility Airplane Council (UAC) are the nation's principal makers of utility and executive aircraft and engines as are used in the many fields of general aviation, and currently account for more than 90 per cent of the national production. Moreover, aircraft and engines of their manufacture compose and power the great bulk of the existing active fleet of 80,000 general aircraft.

Sales Volume

During the year 1962, the industry will have delivered a total of about 6,700 aircraft having a retail value approximating \$180,000,000. The dollar value of the industry's sales has increased more than 5 times in the past ten years, during which same period its unit sales have more than doubled. The disparity between dollar value and unit sales is because today's aircraft are heavier, more powerful, and more fully instrumented as compared to the average light aircraft of a decade ago.

Export Sales Efforts

Nor is the industry's sales effort confined to domestic markets. Substantial and ever-growing attention is being

directed to export markets. Though there is growing competition from European aircraft makers, particularly the British and French and also from the Soviet Bloc, American-made general aircraft are the standard of comparison and comprise by far the largest percentage of the active general aircraft fleet throughout the Free World. The Aerospace Industries Association's Export Service activities are reported in detail elsewhere in this report, but it is appropriate to record here the basic and essential facts of the Utility Airplane Council members' export activities. During 1961, about 1600 aircraft valued at \$30 million (figured at manufacturers' net billing price) were exported by members of the Council. 1962 exports will number about 1500 aircraft (slightly less than 1961) but valued in excess of \$29,000,000.

New Models Introduced

During 1962, members of the Utility Airplane Council continued to expand the number and versatility of models of aircraft offered to the public, and which models cover the entire gamut from single-place aircraft designed especially for agricultural purposes to new and improved single- and twin-engined aircraft useful for every variety of personal, executive, and industrial transportation.

Along with new aircraft models have come substantial powerplant improvements — turbo-supercharging, increased use of fuel injection, higher horsepower at lighter weight, and longer time between overhauls, being just some of these improvements. Active development is also underway on new high performance turbine pow-



ered executive aircraft for which deliveries will begin late in 1963.

Radio and navigation equipments are also increasingly versatile, and Utility Airplane Council members have sparked such development both directly and by working closely with specialty manufacturers. The typical small aircraft now leaves the factory with quite extensive nav-com equipment already installed as a integral part of its structure. These equipments greatly simplify piloting and bring substantial improvement to the utility, reliability, and safety of modern light aircraft for business and personal use.

General Aviation Growth

Federal Aviation Agency statistics dramatically illustrate the relationship of general to other forms of aviation. During 1961 — 18,400,000 movements of an itinerant nature (aircraft arrivals and departures in a pattern of cross-country travel) were recorded at airports with FAA air traffic control service. Of these, general aviation accounted for 9,100,000, air carrier operations 7,000,000, with the balance being military movements. Moreover, itinerant movements were recorded at only about 250 airports where the FAA operates traffic control towers. General aviation flies to and from more than six thousand airports while the airlines provide service to less than six hundred. FAA estimates such general aircraft itinerant movements will increase to 12 million by 1967 while those of the air carriers will increase only slightly to 7,900,000.

Annual flying hours are another measure of activity and FAA estimates general aviation's hours will have reached 13,300,000 by the end of this year (1962). Current airline annual hours are placed at 4,400,000, about a third of the general aviation total. However, FAA projects general aviation's annual flying will have grown to sixteen and one-half million hours by 1967 while those of the airlines will remain essentially static. Similarly, the active general aircraft fleet, now placed at about 80,000 as compared to an airline fleet of about 2,100, is expected to grow to 96,000 in the next five years, during which same period airline fleet projections estimate a static figure or a slight decline.

Industry Capital Expenditures and Self-Sufficiency

As the volume of business has increased, members of the Utility Airplane Council have been able to invest ever increasing amounts of their earnings in developmental and research activities to insure continuing progress and have lead the way in pioneering the exploration of new areas of use. A substantial portion of industry dollars invested in the future has been devoted to strengthening and expanding sales organizations and in developing new marketing techniques to further entrench and prepare itself for the great growth yet to be attained, and for capital improvements to expand plant capacity and to modernize machinery and equipment. In these accomplishments, the industry has demonstrated its ability to progress without benefit of Government

sponsored research or direct assistance, and to obtain the private financing necessary to meet its needs and demands.

General Aviation Fleet Emergency Value

The general aviation fleet is widely dispersed throughout the nation. In times of emergency, such as would result from a nuclear attack, because of this wide dispersion thousands of general aircraft would be unaffected by such a crisis and promptly available for essential transport service. With few exceptions, these aircraft are well equipped with radio communication equipment and, under emergency conditions, could operate from streets, roads, and small open areas regardless of the availability of normal airport runways. Thus, they could fly over barriers which would have disrupted much of the nation's surface transportation and large portions of its airline fleet, which latter equipment would likely be concentrated at major airports in cities which would be the logical target areas for enemy action.

National Aviation Goals Task Force

During 1961, Federal Aviation Administrator Najeeb Halaby at the request of the President, appointed a Task Force on National Aviation goals, divided into three principal areas of study. Project HORIZON was concerned with U. S. Aviation policy objectives and goals for the period 1961-1970; Project BEACON with problems of air traffic management and recommendations to insure the safe and efficient utilization of the nation's airspace; and, Project TIGHTROPE with FAA rulemaking and regulatory policy. As was reported last year, the UAC staff and its members responded to numerous informal inquiries from these Task Force groups for data and views; and the UAC made formal presentations to the task group. The UAC was also a prime mover and a participant in the preparation of recommendations advanced to these task forces by the General Aviation Council, a group of general aviation related associations of which the UAC is an active member.

Results of UAC Recommendations

A year has passed since these Task Force groups received the industry's suggestions and recommendations and subsequently published their report. Some of the results of our industry's advisory and consultative efforts with the Task Force groups are beginning to become apparent.

Airports

Emphasis was placed on the need for many more small airports close to concentrations of population and industry. An extensive system of flight strips alongside of highways was also proposed so that no place in the nation need be more than a very few miles from a landing facility which could be readily used by the typical general aircraft. The need to improve general aviation accessibility to large terminal type airports by providing



The U. S. general aviation fleet of 80,000 active aircraft provides the principal air link between grass roots towns and major cities. Scheduled U. S. airlines operate from about 600 airports in the U. S. while all 6,000 airports are served by general aviation, including many air taxis. A survey shows that half of general aviation's multi-engine planes and three-fourths of all single-engine types are located in communities with populations of less than 75,000 people.

separate runways and traffic patterns to increase the capacity for general airline aircraft was also a part of these recommendations. Major airline terminal accessibility for general aviation was stressed because of the growing feeder and air-taxi function of general aviation in the general-airline partnership.

The Task Forces gave careful heed to airport recommendations made by the Utility Airplane Council both independently and in partnership with the General Aviation Council. The FAA's 1962 National Airport Plan has placed the major emphasis of its objectives on improving and expanding the national airport requirements for general aviation. The FAA has published new proposed criteria which, when adopted, will relax prior unwieldy requirements which the general aviation community has long felt to be unrealistic and unnecessary. Addressing the National Association of State Aviation Officials during its 1962 Fall Meeting, the Federal Aviation Administrator stated:

"When these proposed new criteria go into effect, they will at least double and possibly raise to 8,000 or more the number of airports that could conceivably be developed for the same amount of money. And this would give us a whole family of general aviation airports tailored to the specific community."

The Administrator also described efforts which have been undertaken between the FAA and the Bureau of Public Roads to bring about better planning in the use of both Federal Airport and Highway funds, insofar as they relate to airport location and the necessary highway access roads. Included in this cooperative effort are plans to encourage the establishment of highway flight strips by working more closely with the Bureau of Public Roads, and also with State Highway and Aeronautic Commissions and Departments.

Still to be revealed are the plans which the FAA might have to improve general aviation accessibility at major terminal airports. However, an increase in the number of small airports throughout the nation will not

relieve terminal congestion. Rather, it will tend to intensify it as increasing numbers of small aircraft expand the airline-general aviation air transportation partnership. It would seem, therefore, that these general aviation industry recommendations to improve the major air terminals must also ultimately result in some sort of positive action program on the part of the Federal Aviation Agency.

Though actual accomplishments of new airport development, as projected in the FAA's announced plans, are still to be experienced, nevertheless, it is most gratifying to the members of the Utility Airplane Council and to the general aviation community to have their recommendations so accepted and implemented.

The Utility Airplane Council members, as they have for many years, will assist in proper airport development and in helping to educate the non-aviation community to the essential importance of airports to their local prosperity and well-being.

Upgrading General Aviation Within the FAA

Suggestions were made by the general aviation community and independently by the UAC, both to the National Aviation Goals Task Force and to the FAA Administrator Halaby, which would establish proper recognition of general aviation within the FAA. The Project HORIZON Report included this language: "In view of the increasing importance of general aviation in the total U. S. aviation picture, the FAA should consider recognizing this importance by establishing an organization highly placed in the FAA hierarchy to concern itself solely with the problems of general aviation."

This UAC and General Aviation Council recommendation, echoed by the National Aviation Goals Task Force, has been acted upon by the FAA Administrator. Early in the Fall of 1962 he established at the Administrator's level an Assistant Administrator for General Aviation Affairs, together with related supporting staff. The UAC looks forward to establishing mutually productive working relationships with this new Assistant Administrator.

FAA Regulatory Procedures

Proposals of the Utility Airplane Council, which were also forwarded by the General Aviation Council, to Project TIGHTROPE were again reaffirmed directly to the FAA Administrator early this year.

The first of these proposed the establishment of a rule-making bureau under an assistant administrator for rule-making, and that the rulemaking authority be taken from the FAA Services. The purpose of this recommendation was to bring about more objectivity to rule-making by taking it away from those directly concerned with the day-to-day administration and enforcement of the various Civil Air Regulations (CAR). Instead, these service agencies would have to prosecute their claim for a new rule or rule change with an impartial department of the FAA. This UAC proposal, also advanced by the

General Aviation Council, was adopted largely as submitted as one of the Project TIGHTROPE recommendations.

Although recommendations proposed by TIGHTROPE and the general aviation industry were not accepted in their entirety, a substantial improvement has been brought about. An Agency Regulatory Council has been established under the supervision of an Executive Director. Though the actual preparation of rulemaking proposals has not been taken from the Service Directors, they can no longer issue rulemaking proposals independently. Such proposals must first be forwarded to the Agency Regulatory Council where they are carefully checked, coordinated with the other FAA Services, and tested for reasons of policy.

Other Council Activities

Apart from this review of recommendations made to the National Aviation Goals Task Force and the results of these recommendations, the UAC has continuously been engaged in consultation with FAA on other areas of Council interest. Some of these, even though they may have also been incorporated in comments or suggestions made to the National Aviation Goals Task Force, are subjects of current activity.

Revision of FAA Rulemaking Draft Release Procedures

Early this year the UAC was party to a General Aviation Council recommendation that FAA rulemaking proposals have a set life and automatically die if not acted upon within that lifetime. This recommendation, made to the FAA Administrator and to the Executive Director of the Agency Regulatory Council, has been essentially accepted and implemented by the FAA. A new policy has been established which sets a reasonable period of time for FAA consideration of draft release proposals, after time for industry comments. Usually, this will be six months. However, it can be extended if good reason to do so exists. Otherwise the release must be withdrawn or reinstated. In this manner, it is felt industry comments will always be current and timely. Prior to the institution of this new policy, draft releases have often dragged on for one or more years with no FAA action during which period it is not unlikely that changes in the aviation practice of concern will have obsoleted or outdated a still pending FAA rulemaking proposal.

Annual Review of Airworthiness Requirements

Prior to the creation of the FAA, its predecessor organization CAA/CAB conducted an annual review of the airworthiness requirement sections of the Civil Air Regulations. The UAC members strongly feel these reviews served a most useful purpose. They kept the rules timely and realistic in the face of the fact that the science of aeronautics is far from static and new methods of construction, new materials, and new aeronautical discoveries keep it in a constant state of flux. Airworthiness requirements, unless realistic and up to

date, can be inhibitive of industry progress and increase engineering and manufacturing costs. The UAC considers the reinstatement of an Annual Review of Aircraft Airworthiness Requirements to be a matter of great importance. FAA Administrator Halaby's predecessor was urged to re-establish such an annual review and he did arrange one such review on an "experimental" basis. However, the announced timetable for accomplishment was allowed to lapse and the agenda was quite arbitrarily prepared with little consideration given to the industry's suggestions. The "experiment" was then ostensibly abandoned.

The UAC presented its reasons for an annual review to Administrator Halaby in 1961 and also to the HORIZON and TIGHTROPE Task Forces. This year it has been informally discussed with the Agency Regulatory Council and has again been presented, in the strongest terms, to the Administrator.

Quite apart from the annual review of just the Airworthiness Sections of the Civil Air Regulations, the UAC members feel much mutual progress would result if all sections of the Civil Air Regulations were reviewed on a regular and orderly basis. They feel most of the present draft release rulemaking procedures could be eliminated while, at the same time, the CAR would always be up to date. In this regard, it is pointed out that the Federal Aviation Agency Act provides the Administrator with all the authority he requires to make immediate emergency changes in the CAR if such is really necessary.

Safety Regulation of the Manufacturer

The members of the Utility Airplane Council believe the Government should adhere to a philosophy of minimum surveillance and control of the manufacturers and a maximum delegation of responsibility. The Council has again enunciated its philosophy to the FAA, as it did last year to the National Aviation Goals Task Force. Project HORIZON included two recommendations which recognize these industry views:

". . . the FAA should expand the designee system under which many activities formerly performed by FAA personnel can be done by qualified and certified nongovernmental agencies . . . [The FAA should] pursue legislative and regulatory philosophies and processes which maintain a fair and equitable balance between legitimate private interest and the public welfare . . ."

Though some progress has been achieved, the industry is concerned because of the increasing attention the FAA is directing toward areas of type certification-airworthiness, which it believes to be wholly unnecessary and which only results in increasing the complexity of aircraft type certification, and which, hence, also increases consumer cost and the manufacturer's ability to exercise research and development initiative to improve his products. The members of the Utility Airplane Council have certainly demonstrated their ability to pro-

duce outstanding aircraft, continuously improved in performance, utility, and safety. Factual evidence is the widespread acceptance of our industry's product by business, industry, agriculture, and private owners, and the American dominance of world-wide general aircraft markets.

Related to this problem is a current FAA tendency to intermix requirements designed for transport-type aircraft (Part 4b of the CAR) with those established for the smaller general aircraft types (Part 3 of the CAR), and also to confuse and intermix regulations relating to aircraft operation with those which are concerned with the integrity of the aircraft structure and its related equipments.

The UAC members are also concerned with a growing FAA tendency to break down an aircraft structure and its integral equipments into many separate TSO's (Technical Standard Orders) rather than to concern itself with the total aircraft. The Council is of the strong belief that, when an aircraft meets the airworthiness requirements of the FAA, and has been type certificated, then every component part is airworthy as all parts must work together as a unit to achieve a totally airworthy product with integrity of the structure and related equipment.

The Utility Airplane Council has called for the Administrator to give this his personal attention. It will be a continuing matter for review between the UAC and the FAA. The Council members are also directing the attention of the new Assistant Administrator for General Aviation Affairs to this area of serious industry concern.

Performance of Maintenance

The UAC members believe it is only logical that a manufacturer be permitted to repair, maintain, overhaul or alter products of its own manufacture without having to set up special procedures. The FAA has contended a manufacturer should be required to obtain a Repair Station Certificate and separate such work in his plant. This has been at sharp issue between the industry and FAA for more than two years. In July, the FAA proposed a procedure which has been accepted by the Utility Airplane Council, conditional on the contention that the ultimate solution will require amendment of the FAA Act and with the understanding that the FAA intends to seek such an amendment.

Air Traffic Management

Project BEACON made extensive recommendations to bring about improvement in the national system of air traffic management. Early in 1962 the FAA Administrator appointed a team of agency experts to translate the guidelines of the Project BEACON Report into a detailed comprehensive plan. Utility Airplane Council members and the Council's Manager have conferred frequently with members of this Systems Design Team and other FAA officials. During March 1962 the Council Manager participated in a week-long symposium with

these FAA experts. The results of their study have been presented in a report which will be carefully reviewed by the UAC.

As the FAA proceeds to implement plans for air traffic management improvements, the Council will constantly monitor these efforts. It is prepared to provide suggestions and advice to assure that General Aviation will be adequately considered and so the planned improvements will, in fact, increase the ease and facility of air traffic for all forms of aviation including the thousands of general aircraft. Improvement of the air traffic management systems of FAA are of great importance to general aviation and, depending on how accomplished, can be very encouraging of industry growth or could, to the contrary, cause it great problems.

Aviation Education

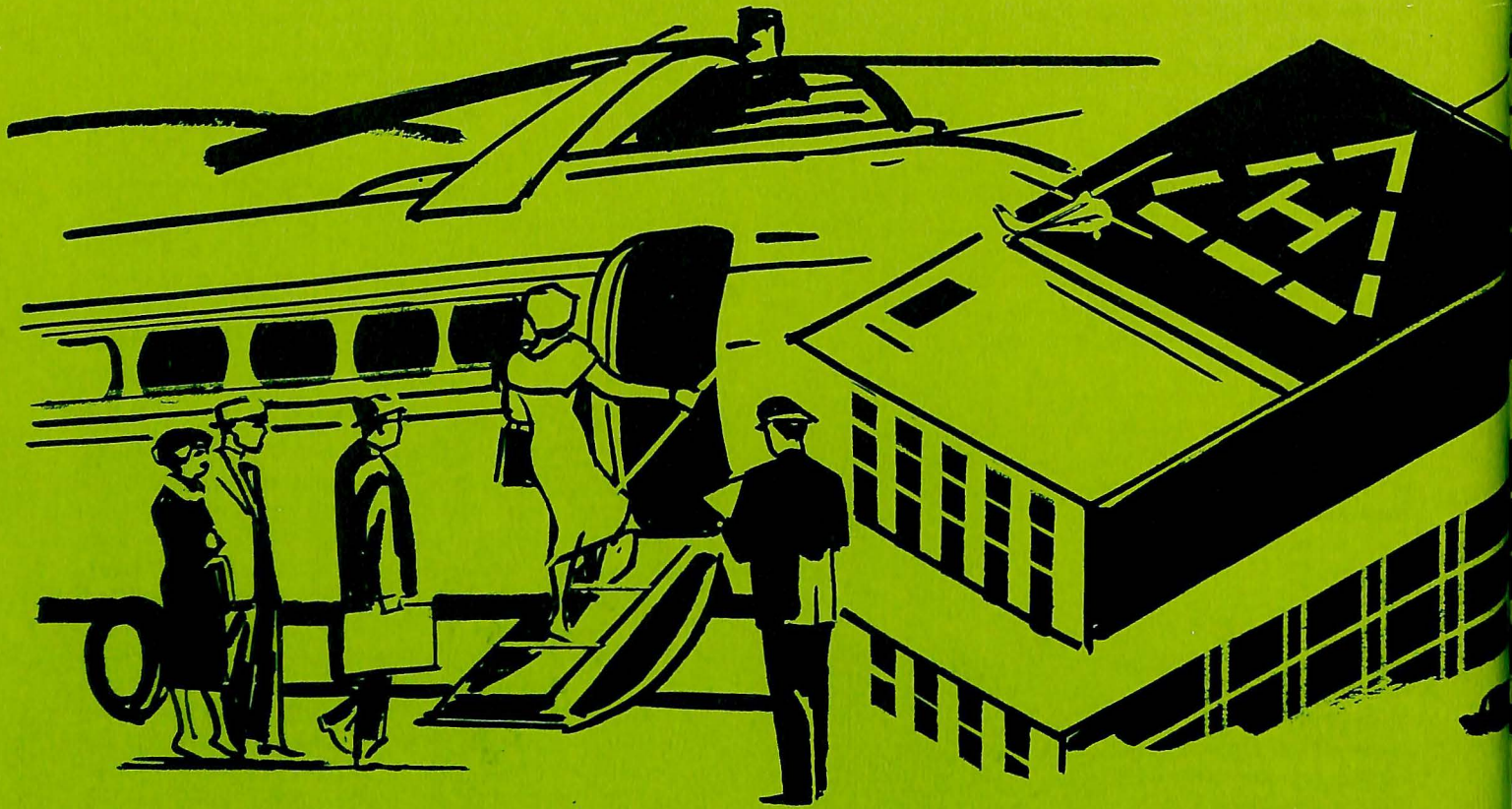
One of the functions of the new FAA Assistant Administrator for General Aviation Affairs will be supervision of the Office of Aviation Education. The members of the UAC, individually and as a Council, have always interested themselves in proper aviation education and will look forward to working closely with the FAA in its announced plans to broaden its educational efforts in general aviation areas.

International General Aviation

In most foreign countries, particularly in Europe, general aviation has been considered in the category of sports flying. The end result is airports, air traffic management, and navigation aids are heavily controlled by the respective governments and geared primarily to airline-military type activities. At the most recent International Conference of the Federation Aeronautique Internationale (FAI), it was proposed that an experimental start be made to determine if, through some reasonable central FAI monitoring, information could be disseminated which would result in improving the atmosphere for general aviation growth. United States experience and example would be drawn on heavily because of the progress and success of general aviation here. The Utility Airplane Council is assisting the FAI and the National Aeronautic Association as the American representative of this international aviation body in the establishment of this experimental central monitoring bureau.

Liaison Activities of UAC Staff

The Council staff performs continuous liaison activities for the Council and its members with the various Government departments, particularly the FAA, and with the other members of the aviation community. The UAC participates actively in the work of the General Aviation Council of which it is a founder member. The Council Manager is a frequent spokesman and participates in industry and public gatherings and in fields of education. The Council is a recognized source of authoritative general aviation information and its office is constantly solicited for industry views and data.



PETER J. PAPADAKOS
Gyrodyne Company
Chairman, Vertical
Lift Aircraft Council



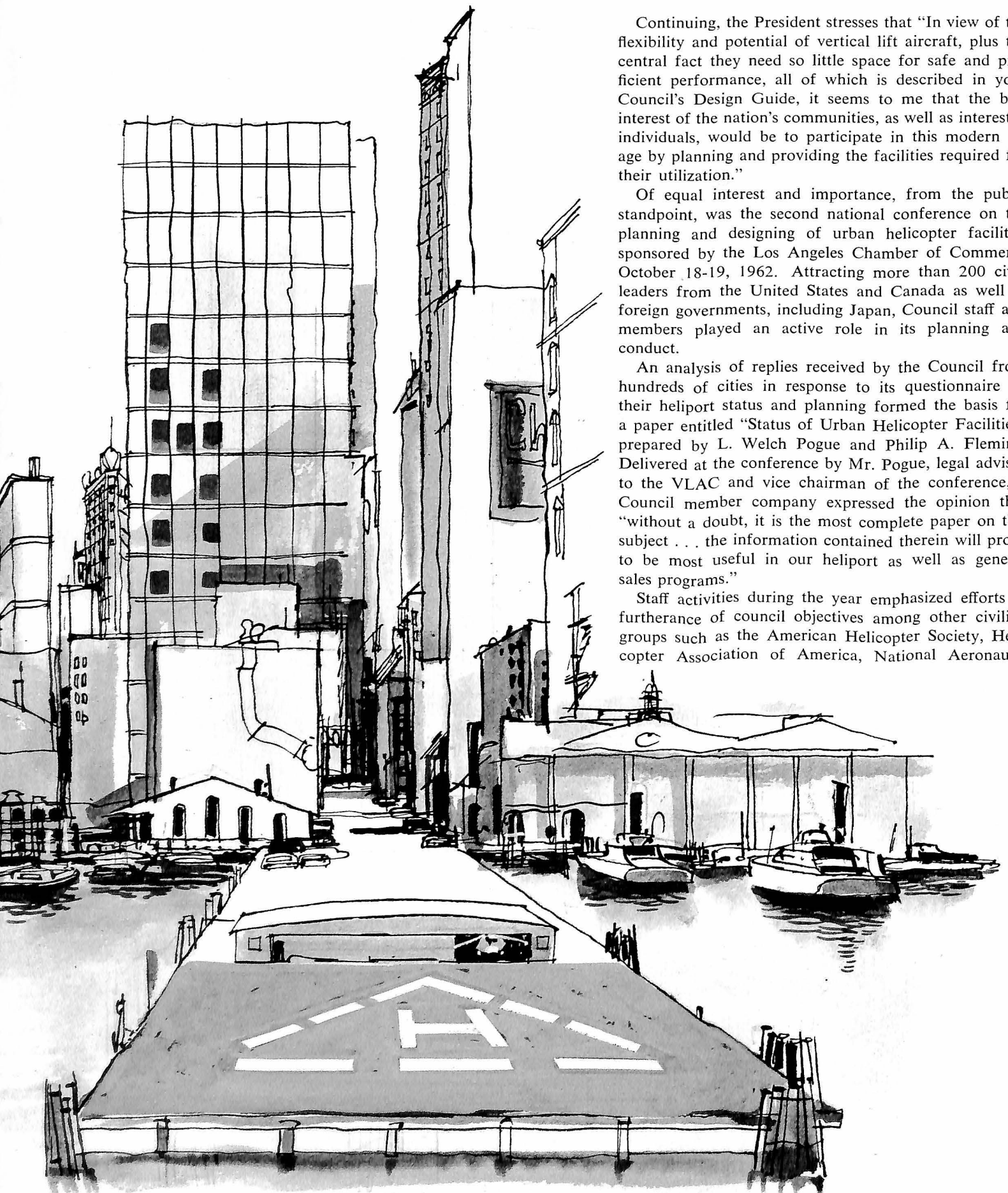
VERTICAL LIFT AIRCRAFT COUNCIL

Recognition of the widening interest and rapid strides being made in the field of vertical lift aircraft resulted in the emergence of the Vertical Lift Aircraft Council, succeeding the 14-year old Helicopter Council of AIA, and the addition of four new major company memberships during 1962 for a total of 14 at years-end.

Under the chairmanship of Peter J. Papadakos, president of the Gyrodyne Company of America, Inc., with A. W. Bayer, vice president of the Hughes Tool Company, Aircraft Division, serving as vice chairman, the promotion of landing facilities for this type of aircraft continued a major Council activity. Featuring the year's campaign was distribution of 10,000 copies of the Coun-

cil's second Heliport Design Guide. The 12-page booklet was published in August, 1962, as the result of a cooperative effort with members sharing the printing cost on a pro rata basis.

Reflecting the practical use being made of helicopter transportation by the occupants of the White House, President Kennedy contributes an enthusiastic endorsement of the Council's heliport program in a letter to former Chairman Stanley Hiller, Jr., in which he says "I am pleased to participate in this effort to inform our people and our community leaders of the importance of helicopters today and the promise of even greater usefulness for vertical lift aircraft tomorrow."



Continuing, the President stresses that "In view of the flexibility and potential of vertical lift aircraft, plus the central fact they need so little space for safe and proficient performance, all of which is described in your Council's Design Guide, it seems to me that the best interest of the nation's communities, as well as interested individuals, would be to participate in this modern air age by planning and providing the facilities required for their utilization."

Of equal interest and importance, from the public standpoint, was the second national conference on the planning and designing of urban helicopter facilities sponsored by the Los Angeles Chamber of Commerce October 18-19, 1962. Attracting more than 200 civic leaders from the United States and Canada as well as foreign governments, including Japan, Council staff and members played an active role in its planning and conduct.

An analysis of replies received by the Council from hundreds of cities in response to its questionnaire on their heliport status and planning formed the basis for a paper entitled "Status of Urban Helicopter Facilities" prepared by L. Welch Pogue and Philip A. Fleming. Delivered at the conference by Mr. Pogue, legal advisor to the VLAC and vice chairman of the conference, a Council member company expressed the opinion that "without a doubt, it is the most complete paper on this subject . . . the information contained therein will prove to be most useful in our heliport as well as general sales programs."

Staff activities during the year emphasized efforts in furtherance of council objectives among other civilian groups such as the American Helicopter Society, Helicopter Association of America, National Aeronautic

Production of commercial helicopters has increased steadily during the past decade. The versatile helicopter has numerous uses in private industry, ranging from power line inspections to transporting cargo and passengers to otherwise inaccessible locations.



Association, National Association of State Aviation Officials, Airport Operators Council, as well as a number of military organizations.

In February, Council staff issued a revised Directory of Helicopter Operators — commercial — executive — government and helicopter flight schools in the United States and Canada. This Directory revealed a consistent increase in the number of operators and helicopters. For example, in 1961 there were 265 commercial operators with 882 helicopters; in 1962 a total of 322 operators with 994 helicopters. There was also a substantial increase in the number of corporations owning and operating their own helicopters — 106 such companies in 1961 and 145 in 1962. And the number of helicopter flight schools expanded from 55 in 1961 to 85 in 1962.

The latest revision of the Council's Vertical Lift Aircraft Designation Guide listed 21 models in production, ranging in size from drones and 1-place to 33-place transports. The Guide also lists 11 research and development projects.

The Council participated in the 31st annual meeting of the National Association of State Aviation Officials held in Vermont. Mr. Pogue was the first speaker on the 4-day program, his subject being "Public Interest Benefits of Uniform Standards and Regulations." Member companies provided helicopters for demonstration flights for the NASAO members, government officials and others in attendance.

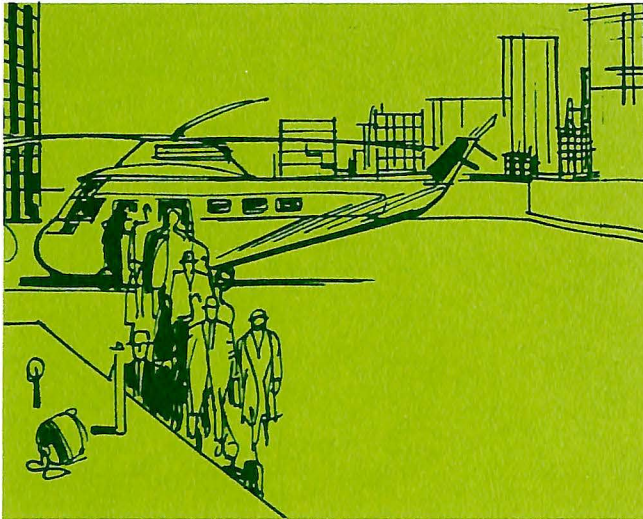
The NASAO in convention adopted a Resolution urging the Congress, Civil Aeronautics Board, Federal

Aviation Agency and other Federal Agencies having to do with helicopters to:

"take cognizance of the rapidly developing technology in this field, so as to accelerate the expansion of helicopter services and to establish the proper regulatory climate which will encourage, rather than inhibit, the establishment of the heliports so necessary to any expansion of helicopter services, including the expansion of scheduled helicopter passenger services to other metropolitan areas wherever such expansion is reasonably possible."

In addition to Council publications, reprints of other appropriate articles have been distributed during the year, such as: "Forest Service Air Operations — Helicopter Use, Present and Future"; "Postal Progress and the Helicopter"; "Lawmen on the Wing" and "Helicopters are Big Business."

With the cooperation of the Federal Aviation Agency, the state aviation directors, helicopter operators and manufacturers, the Council published a 1962 Directory of Heliports-Helistops in the United States and Canada. This new directory lists 720 established heliports and 39 proposed facilities. Of the 720 heliports, 660 are ground level and 60 are elevated. This represents almost a 50% increase in the number of heliports as reported in the 1961 Directory. In addition, there are approximately 100 oil rigs in the Gulf of Mexico equipped with helistops. The U. S. Forest Service has more than 225 heliports and approximately 2,500 unimproved helistops,



The rapid growth of helicopter operations may be seen from the increase in heliports in recent years. There are more than 720 heliports-helistops in the United States, Canada, Puerto Rico and the District of Columbia. This is a 48 per cent increase over the 1961 total of 487 heliports and a 120 per cent increase over 1960, when 327 heliports were listed.

used primarily for fire-fighting operations in the national forests.

Council staff continued to serve as the clearing house in providing background information on the helicopter industry. Feature articles on helicopters and heliports appeared in such varied publications as "Forum" — the magazine of building; "The Timberman" — Forest Industries Yearbook and "The American City". A book for young adults, "Women In Aeronautics", published in the Fall, presents a comprehensive and up-to-date account of women's role in aviation and includes a chapter on the careers and achievements of The Whirly-Girls.

Typical of the cooperative efforts of Council members was the preparation of the report "Contributions of Certificated Helicopter Operators to the National Defense." Prepared as background information for the Civil Aeronautics Board, based on the operating experience of the scheduled helicopter airlines, the report cited specific examples of reductions in operating costs and times between overhauls that proved of inestimable benefit to the military. Serving as laboratory and proving ground for the armed services, the certificated helicopter operators have made valuable contributions to the national defense by enabling the military to realize substantial dollar savings through the experience gained in commercial operations.

President Kennedy arrived by helicopter for the dedication ceremonies of Dulles International Airport on November 17, 1962. Helicopters of Council member companies provided transportation to government and city officials attending the ceremony and were on Static Display for the thousands who visited the two-day open house of the nation's most modern airport.

Hearings on the D. C. Helicopter Service Case were held in the Fall. The eight applicants for the proposed helicopter service between Dulles International, Friendship International and Washington National Airports testified and the findings will be announced early in 1963 by the Civil Aeronautics Board.

Recognizing the need for nationwide heliport planning, The American Helicopter Society with the cooperation of the Greater Hartford (Conn.) Chamber of Commerce scheduled a Heliport Planning Conference in November. Mr. Pogue, one of the four speakers on the program, discussed the legal aspects of heliport planning. Copies of his paper "Status of Urban Helicopter Facilities," together with copies of the Council's publications "Your Heliport Design Guide" and the "Directory of Heliports-Helistops in the U.S., Canada and Puerto Rico" were distributed to the city planners and municipal officials from 26 Connecticut cities and towns, as well as representatives from six other states. As an immediate result of the Conference, Hartford announced the selection of a heliport site and two other cities initiated site surveys. The Society plans to hold similar regional planning sessions around the country.

International recognition was given U. S. helicopters in 1962 by the establishment of 6 new world records in the categories of speed, time to climb and distance in a straight line by Council member companies (Bell, Kaman, Sikorsky). Four of these records were formerly held by the U. S. S. R.

In cooperation with the Federal Aviation Agency, Council staff is compiling background information in justification of the need for municipal heliports in the Washington Metropolitan area.

In December, the Federal Aviation Agency requested the Council to send a representative to the 7th Session on Airdrome and Ground Aids of the International Civil Aviation Organization in Montreal, Canada. The Council spokesman served as the U. S. Delegate in reference to the helicopter industry and heliport planning.

The role of the helicopter in Civil Defense was outlined to President Kennedy by the Helicopter Association of America in pledging the support of its members, the commercial helicopter operators, for nation crises and proposing an emergency readiness plan similar to the present Civil Reserve Air Fleet.

In this connection, at the request of the HAA president and the Governor of Washington, Chairman of the Governors Civil Defense Committee, the Council distributed copies of the Directory of Helicopter Operators — commercial — executive — government — In the U.S. and Canada to each Governor.

Of great importance to the industry was the formation of the Howze Board by the Secretary of Defense to plan for the Army's aviation requirements through 1970. The findings of the Board are currently being reviewed by Secretary McNamara and a declassified version is expected to be released in the near future.

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Aeronutronic, Division of Ford Motor Company
Aluminum Company of America
American Brake Shoe Company
Avco Corporation
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The Bendix Corporation
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 Kaiser Industries Corporation
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Kollsman Instrument Corporation
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Ling-Temco-Vought, Inc.
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The Marquardt Corporation
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McDonnell Aircraft Corporation
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Rohr Corporation
The Ryan Aeronautical Company
Solar Aircraft Company

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 Sperry Phoenix Company Division
Vickers, Inc.
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 Sundstrand Corporation
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 Aerospace Electrical Department
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DeSeversky, A. P.
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Fales, Herbert G.
Hanks, Col. Stedman Shumway
Hotchkiss, Henry G.
McCarthy, J. F.
MacCracken, Wm. P., Jr.
Scholle, Howard A.
Sikorsky, I. I.
Sullivan, John Dwight

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Loening, Grover

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1725 De Sales Street, N.W., Washington 6, D. C.