

AIRCRAFT & MISSILES

A Chilton Publication

APPLIED ENGINEERING FOR THE AEROSPACE INDUSTRIES

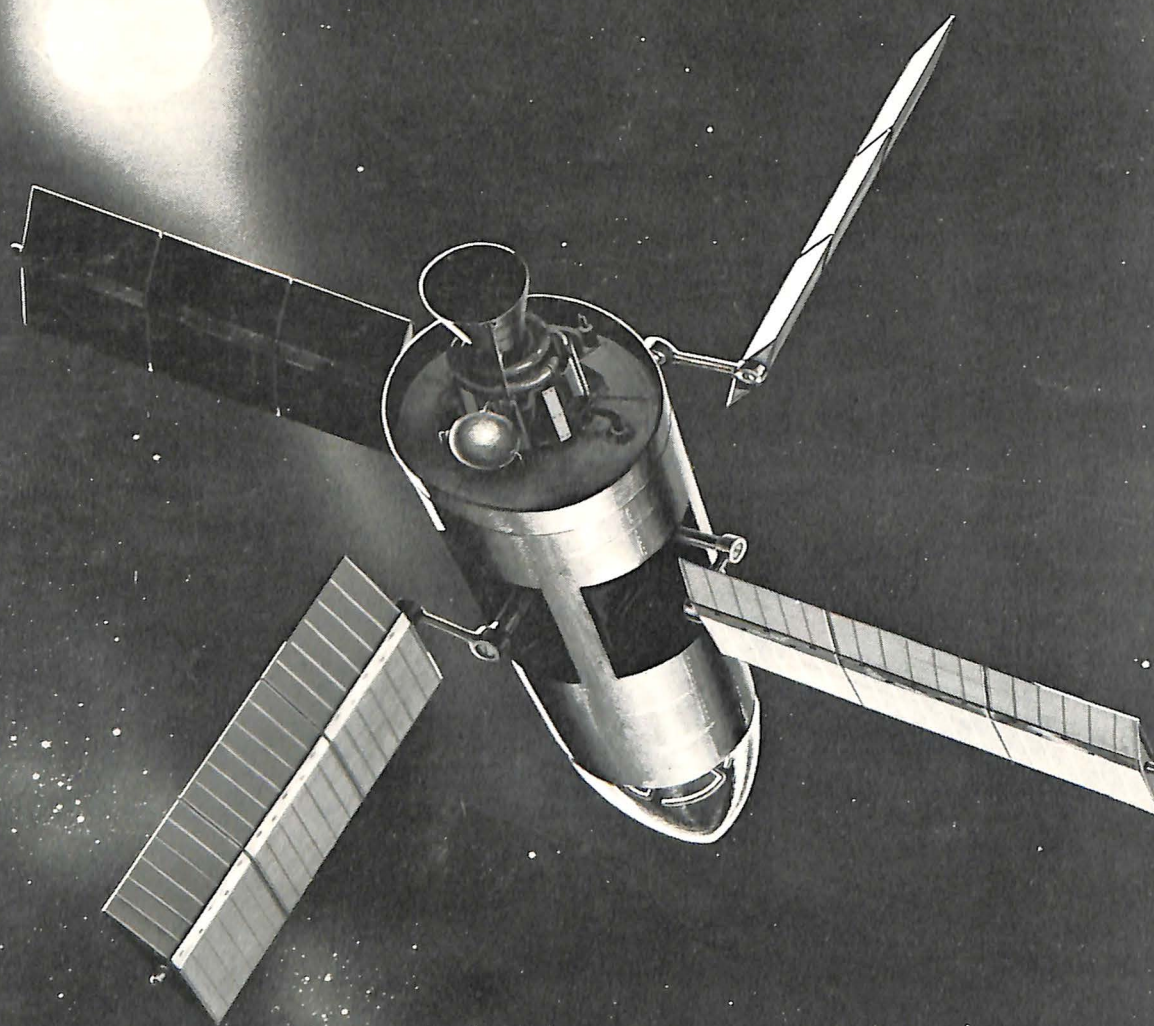
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Inside the A. I. A.

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AEROSPACE INDUSTRIES ASSOCIATION

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Inside the AIA

This long-range, industry-wide planning group saves engineer's time and taxpayer's money; How is this done? Who does the work? What can AIA do for you? Here are the answers

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Most everyone within the aerospace industry knows the Aerospace Industries Association, AIA, by name. What most don't know are its purposes and functions. Here are the facts on this dynamic organization.

Primarily concerned with the industry-wide aspects of aeronautical and astronautical research, development, production and logistic support, AIA acts as the communication link between Government and the industry. By joining together the highly competitive aerospace companies, AIA has saved countless dollars for Mr. Taxpayer. How? Simply by efficient programming to foster safety, air travel, good employee relations, the dissemination of engineering knowledge, and host of other items.

Let's take a quote from Charles McCarthy, AIA's ex-chairman of the board of governors. "It is more important than ever that our defense research and production programs be efficiently managed and conducted at minimal cost to the taxpayer. Among the many groups working toward defense betterment are the trade associations . . . whose behind-the-scenes efforts . . . have gone largely unnoticed. Such efforts have, in a great many cases,

brought about large-scale savings, an important factor in an era when it is imperative that we obtain maximum defense for every dollar spent."

Birth and Growth—To better understand the workings of AIA, we have to go into a brief historical sketch.

Back in '17, aircraft production patent problems, there were many, were solved by the companies within the industry joining forces as the Manufacturers Aircraft Association. In 1919 the Aeronautical Chamber of Commerce was formed to represent the aircraft manufacturers.

During WWII, the government set up Aircraft War Production Councils (AWPC) to achieve efficiency in turning out the mass number of aircraft needed. At the end of hostilities, the Aeronautical Chamber of Commerce took over many of the Functions of the AWPC's. Thus, a new name came into being—Aircraft Industries Association. Another aim was added. This time it was to gather, consolidate, and pass on to the industry engineering knowledge.

Last year, because of the growing stake in missiles and space for the aircraft firms, the name was

changed to Aerospace Industries Association. Although, the name has varied over the years, the purposes are still the same. Also, the organization can function on a moment's notice in the role of the AWPC in the event of national emergency.

Who are the members? Just whom you might expect. Primarily, members of the Aerospace Industries Association of American, Inc., (that's its official handle) are makers of aircraft, missiles, engines, parts, components, materials, and accessories.

AIA is run by a board of governors composed of the chief executives of member companies. However, all of the members take an active part in establishing the policy. There are 42 committees and councils consisting of 1900 specialists with high-level company positions. These people have done much to bring about new methods and procedures so that we might have better aircraft and missiles at less cost.

Help For Engineers—Perhaps the major interest area to engineers is AIA's technical service group. This is where AIA can help you. For example, projects in which



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How committee work has been translated directly into dollar savings



AIA SPONSORS EDUCATION through the National Aviation Education Council, a non-profit organization. Primary aim is to advance aerospace curriculums in the schools. Illustrated are some of the materials published by the Council.



WIDELY QUOTED AIA publication "Aerospace" is circulated to industry, government officials, and over 10,000 libraries. Formerly called "Planes," the new name reflects changing manufacturing emphasis of the industry.

AIA's technical groups made major contributions include:

1. Preparations of an annual five to 10 year forecast of engineering and manufacturing trends and requirements. This document represents the thinking of industry's top people in design, production, and materials.

2. The development of a new system for machining complex aircraft and missile parts which offers savings in skilled man-hours of 80 to 95 per cent. The system, called APT for Automatically Programmed Tool (see A&M May 1959) was developed as joint effort of the USAF Air Material Command, Massachusetts Institute of Technology and technical representatives of 19 AIA member companies. Now, refinements are being made for greater productive efficiency under the management of the APT Project Coordinating Group of AIA's Numerical Control Panel.

3. Preparation of another document entitled "The MILDDU Proposal," which, despite its unwieldy title, is an important contribution to the increasingly complex problem of logistic support. MILDDU is a program which would provide a universal standard for military-industry support data interchange, increase the accuracy of spare parts accounting, reduce over-purchase of spares and improve the speed and efficiency of providing needed spares at the right time.

These are just a few examples of how AIA's work promotes more efficient defense programming and production. Daily, the 1900 members of the 42 AIA committees are studying present and anticipated problems in hundreds of areas. The data assembled by these committees is available to the Department of Defense, the Army, Navy and Air Force, the National Aeronautics and Space Administration, the Federal Aviation Agency and other interested governmental agencies. Collectively, the results of this unheralded "pick-and-shovel" work produces a fount of knowledge of

inestimable value to the nation's aerospace programs.

Committees At Work—The activities of the 42 AIA committees are so broad that it is difficult to explain in general terms how important a contribution they make. Some indication of the type of work in which they engage may be gathered from the titles of a selected few of the committees.

- **Quality Control Committee**, which develops policies, procedures and recommendations to insure continuing improvement in product performance and reliability.

- **Manufacturing Committee**, which seeks to obtain more efficient manufacturing methods equipment, processes and techniques.

- **Spare Parts Committee**, which is concerned with reducing spare parts requirements and streamlining logistic support.

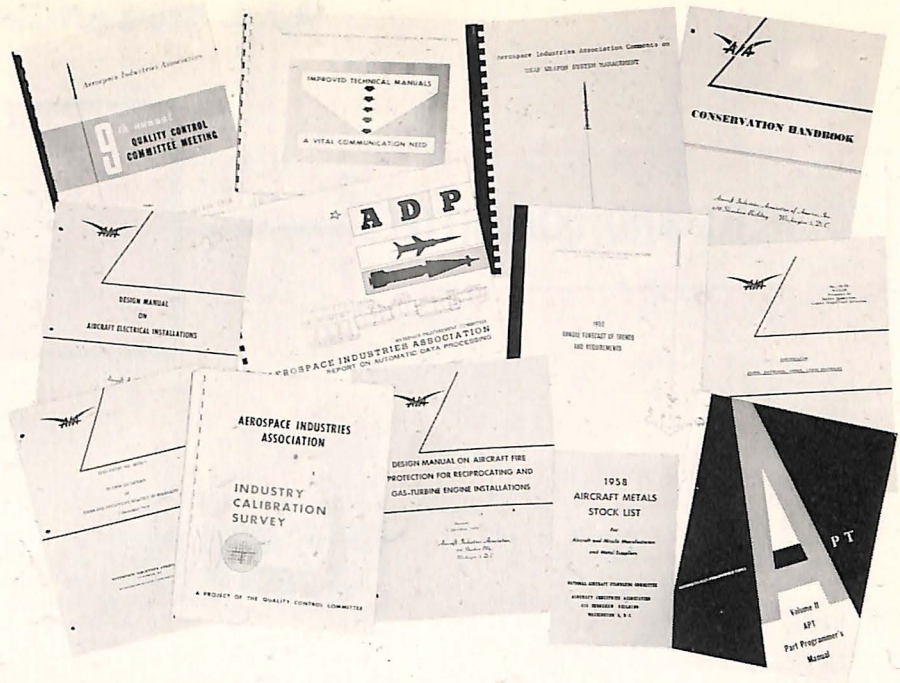
- **Aircraft Research and Testing Committee**, which deals with applied research and testing of new structures, materials and processes and exchange of information in these areas.

Turning to the specific will give a better indication of how these committees contribute to defense efficiency and cost reduction. The Spare Parts Committee has a membership of 125 managers and assistant managers of spare parts departments representing all segments of the industry.

For the past 15 years, the committee has worked closely with the military services, coordinating and making recommendations in the development of procedures for provisioning spare parts, special tools, test and ground handling equipment and training aids.

Recently, the Air Force reported that weapon system support has been reduced in spares from 43 per cent of the aircraft program in 1952 to 23.5 per cent in 1959. The committee was commended for its contributions to this result.

- **The Guided Missile Council** is concerned with research, design, development and construction of missiles—primarily in the field of management problems relative thereto.



TECHNICAL COMMUNICATION between industry and government is one of AIA's primary purposes. Each year manuals on design, development and production methods, techniques and procedures are published by the Association.



AERONAUTIC AND ASTRONAUTIC charts and booklets are published for teachers in elementary schools. Explaining various subjects, AIA hopes to interest the young in aerospace careers.

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What the technical service group has done for engineers

Department of Defense has been urged by the Guided Missile Council to establish policies for the debriefing of contractors following loss—by that contractor—of any major contract award. This was based on the experience of firms, who had been debriefed, and found it most advantageous. Actually, many companies with prime missile contracts are already holding debriefing sessions with subcontractors who have lost a subcontract award.

Also, the Guided Missile Council requested that DOD set up an industry plan for the voluntary exchange of information on testing of unclassified missile components that have proved to be satisfactory. A congressional report stated that such an exchange would be most desirable. DOD tabled the industry recommendation.

Another area in which the Guided Missile Council has been working is on reliability of our missile systems. The Council has advised DOD of industry's view on the effectiveness of the Defense Reliability Monitoring Program.

The view is this: although DOD's document was welcomed as a policy guide, it cannot assure reliability prediction to the statistical, defensible accuracy implied in the document.

For five years the Quality Control Committee worked on a tedious review of quality control systems requirements, serving as an assistant group to the Department of Defense. This work contributed to the publication, earlier this year, of a new Department of Defense standard quality control system specification, an important advance in DOD's Standardization Program.

The committee was cited for its "generosity, wise counsel and long experience" by Assistant Secretary of Defense (Supply and Logistics) Perkins McGuire. He commented, "You can be sure that your work has strengthened substantially the industry-defense production team."

AIA's Traffic Committee has been able to save the government considerable sums in the shipment of aircraft and missile parts and

components. For instance, builders of guided weapons have been shipping parts in large quantities to missile sites by truck. This large-volume shipping is expensive, but recently a "watchdog" group of the Traffic Committee decided that trucking costs for the missile shipments were disproportionately high. At a conference with trucking officials, a protest backed by strong arguments was made. The truckers conceded that a lower rate was in order.

Due to the size of such shipments, even a small reduction in the truckload rate brings large savings. One company estimated that the rate drop in this case brought savings of over \$100,000 for parts shipments to seven missile sites over a six-month period. Future shipments will increase the savings figure, and, of course, there are a great number of other missiles and other sites, compounding the cost reduction.

In another instance, the Traffic Committee reduced costs by having manufacturers consolidate small shipments. Aircraft plants on the West Coast were able to effect substantial savings by pooling their less-than-carload shipments to take advantage of carload rates. This simple operation saved a single company \$100,000 annually. The savings are reflected in the overall cost of the equipment to the government.

Another illustration of the type of service provided by the AIA committees lies in the work of the Aircraft Research and Testing Committee on Project 4-58, a cooperative investigation of the properties and engineering characteristics of a promising new alloy. This material had received widespread recognition as presenting a number of advantages in higher temperature aluminum structures.

ARTC sponsored a specialists meeting, during which it was estimated that the investigation and the compilation of the necessary engineering data would require approximately 7000 man-hours of testing, data reduction and report



TASK GROUP on procurement legislation of the 15-man Procurement and Finance Committee is typical of the many ad hoc working committees of AIA. Chairman of the group is John Roscia, North American Aviation. AIA representative, Robert McMillan, sits at upper left facing front. Such groups are meeting almost daily in an effort to solve problems.

writing, conservatively estimated at \$10 per hour. ARTC brought about a cooperative program whereby 16 AIA member companies are contributing about 450 man-hours each for the task.

The committees make another important contribution in the matter of forecasting specific industry requirements. The pace of product development and the rapid change

in engineering characteristics make it imperative that the changing needs of the industry be promptly communicated to these groups serving the aerospace industry—suppliers, vendors, subcontractors, etc.—who can then channel their own development programs into appropriate lines. For instance, Report ARTC-14 stated distinct new needs in 4340 steels. At the time the re-

port was published, the requirements could not be met by any of the steel mills. Six months later, as a result of wide dissemination of the report to the steel industry, at least a half-dozen warehouses were stocking 4340 products meeting the new requirements.

A series of performance and basic design standards for a complete family of metal removal machinery, tailored specifically to the requirements of the aircraft and missile industry were started by the Equipment Committee. This continuing program embraces a plan of close coordination with all affected elements of industry as well as government agencies responsible for lot purchases. Substantial reduction of delivered-product costs have accrued to the government through the availability of machinery and equipment designed to accomplish a specific fabricating task as opposed to modifying standard equipment initially designed for automotive and heavy industry.

The foregoing represent just a view of the hundreds of examples of how the AIA staff, which serves as a secretariat for the committees, and the membership of the various committees, are contributing to a more efficient defense program

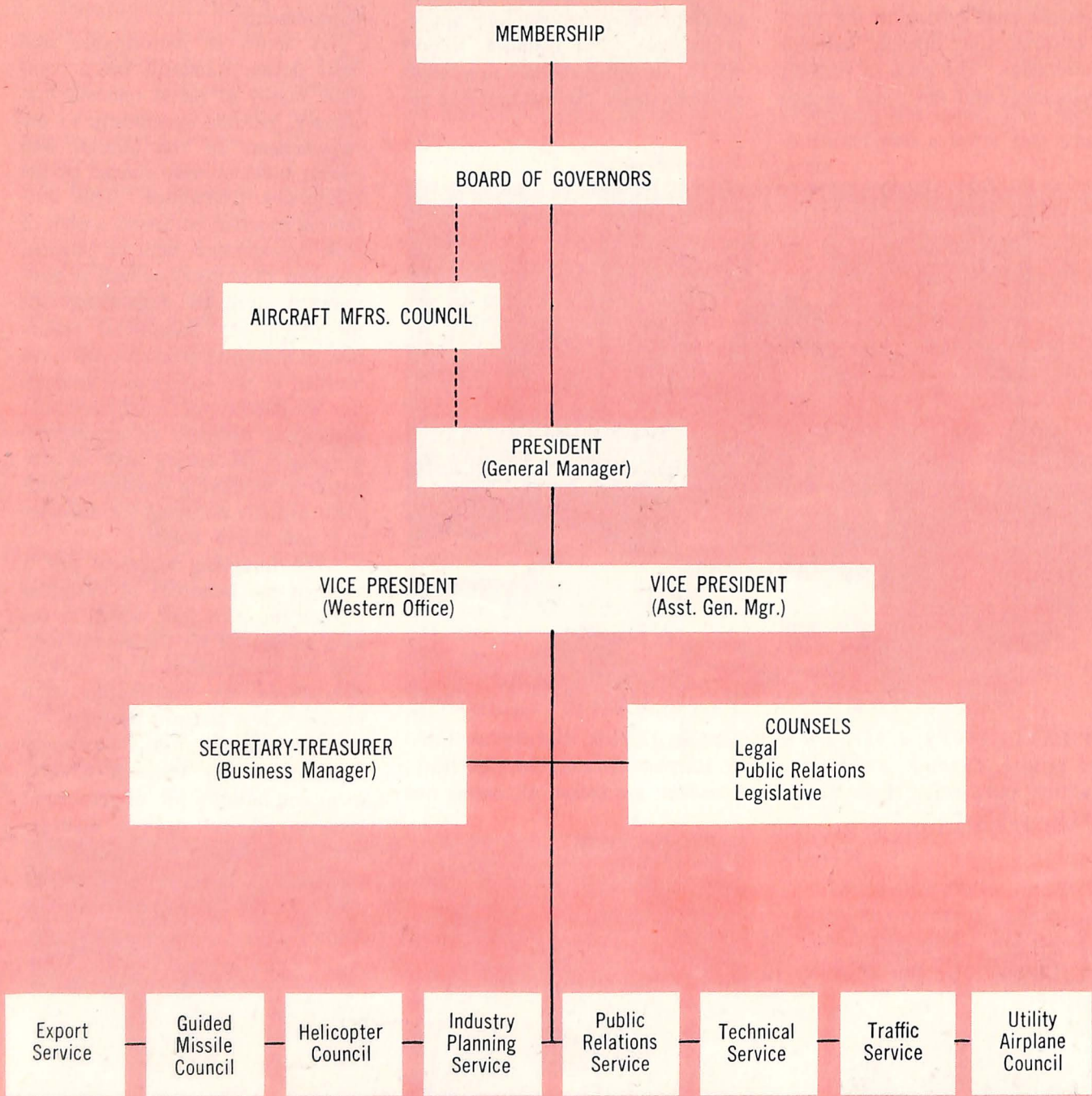
The function of AIA as a communications link between government and industry fills an important need in efficient defense management, and, as a defense official once stated, "If such an organization did not exist, it would have to be created."

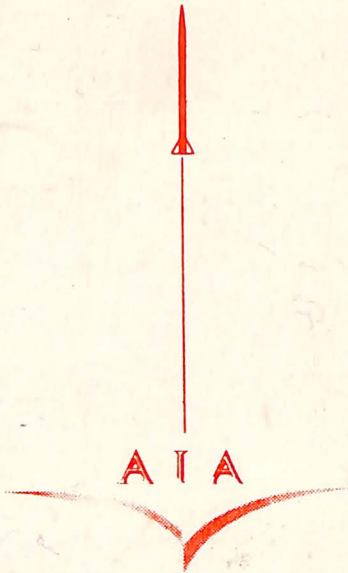


TOP EXECUTIVES of AIA, left to right, Sam Daniels, Director of Technical Service, Orval R. Cook, President, Harrison Brand, Jr., Secretary-Treasurer, and George Hannaum, Vice President, are shown discussing one of AIA's publications.



A PRIMARY PURPOSE of AIA is to devise more efficient and economical methods of manufacture. The complexity of products involves, what some might think, splitting hairs. Here is a project meeting of the Electronic Parts Committee concerned solely with wire specifications.





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