

SEPTEMBER 1964



# NATIONAL AERONAUTICS

COVERING HUMAN ACHIEVEMENT IN ALL REALMS OF FLIGHT



JACQUELINE COCHRAN



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COVER . . . A photograph of the portrait of Jacqueline Cochran, painted from life by artist Chet Engle and presented to the Smithsonian Institution by the Lockheed Aircraft Corporation. The portrait honors Miss Cochran as the first woman pilot to break the sonic barrier.



**ARLENE DAVIS**  
1899-1964

Among the many thousands associated with aviation today only a few know that the growth of our aerospace industry to its present dominant position as the greatest air power in the world, was due chiefly to the untiring effort and indefatigable determination of a loyal cadre which led aviation's struggle for survival to ultimate victory.

History records the names of great Americans who led the fight: the Wrights, Curtiss, Bellanca, Sikorsky and Piper; Victory, Mac Cracken, Lindbergh, Doolittle and Post, to name but a few. Among them were women: Law, Stinson, Earhart, Oulie, Nichols, Cochran—and Arlene Davis.

A pilot for 35 years, Arlene held single and multi engine ratings and an instrument ticket. Early in her career she participated in many air races and aviation competitions. Later she dedicated her enthusiasm and dynamic energy to assisting the feeble aviation industry in the dark years of the '30s, giving generously of her time, knowledge and money to many aviation organizations, among them the National Aeronautics Association which she served as an officer or a director for the remainder of her life.

Intensely interested in aviation education, Arlene was one of the strongest protagonists of the National Aerospace Education Council, assisting in its original organization and serving on the NAEC Board of Directors. In 1960 Arlene flew her Beech Travel Air across the Atlantic by the northern route, toured Europe in the airplane, then flew home via Dakar and South America.

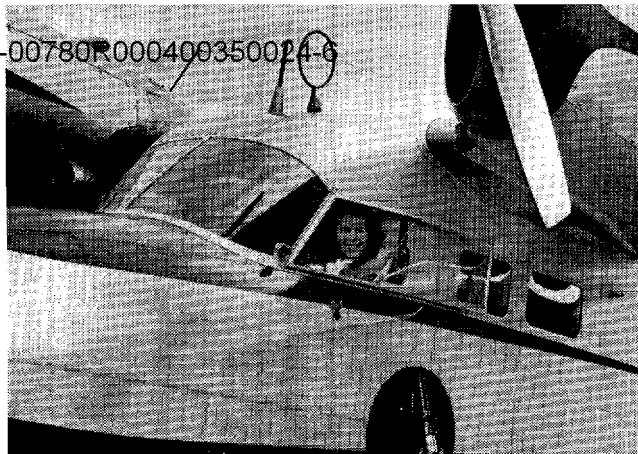
The bright flame of vibrant life burned high and clear in Arlene's small, fragile body. When the cancer appeared she fought it fiercely with her strong will and unconquerable spirit. She was still fighting when she returned to the hospital for the last time in June. She refused to grant that the flame was dimming, and her courage held an impregnable barrier against the increasing pain. Mercifully, in the gray dawn of July 5, 1964 the tiny flame expired and Arlene Davis' life had ended.

Although the many significant contributions Arlene Davis made to the progress of aviation will always be monuments to her memory, her friends need no reminder. To them Arlene was and will always be America's First Lady of Aviation. □



MARILYN C. LINK

NATIONAL AERONAUTICS



# HIGH HONOR TO MARILYN LINK

## *Aviation Education Leader Receives Brewer Trophy*

Miss Marilyn Link received the coveted Frank G. Brewer Trophy at the concluding banquet of the 1964 National Aerospace Conference at the Mayflower Hotel in Washington, June 27. The Conference elected as its president for the next year Dr. Leslie Bryan, Director of the Institute of Aviation at the University of Illinois. Dr. Bryan also served as NAEC's president in 1952. Retiring president William C. Hinkley presided at the banquet attended by many leaders in civil, military and federal aviation fields.

The Trophy was established in 1943 by the late Frank G. Brewer of Birmingham, Alabama in honor of his two sons and the young men who flew in World War II. Miss Link, the twenty-first recipient of the Trophy, was chosen from a field of nine nominees by a committee of 21 prominent aviation and education leaders headed by Joseph T. Geuting, Jr., of Aerospace Industries Association. The Brewer Trophy is an annual award and the winner is selected from a slate of nominees who have made "the most outstanding contribution to the development of Air Youth in the field of education and training."

Miss Link has been a teacher, a lecturer in aerospace education and a director of aerospace education workshops, in her early work which was done in New Jersey and Nebraska.

In 1953 she was made Executive Secretary of the Link Foundation and was assigned as Special Assistant to the Director of the National Air Museum in the Smithsonian Institution.

During a short period of time since then Miss Link was Special Assistant to the President of the General Precision Equipment Corporation, but in more recent years has extended her educational service as Executive Secretary of the Link Foundation and in committee and other assignments with such organizations as the University Aviation Association, the National Aerospace Education Council, the National Pilots Association and the Aviation/Space Writers Association.

Miss Link is now the Special Assistant, Public Relations for Mohawk Airlines as well as being the Executive Secretary of The Link Foundation.

She has written widely for youth and for teachers

in the fields of aerospace education. One of her most outstanding publications is, undoubtedly, *Masters of the Air*, which was published and distributed by the Smithsonian Institution. This book was prepared by Miss Link for the many high school youths who visit the Air Museum.

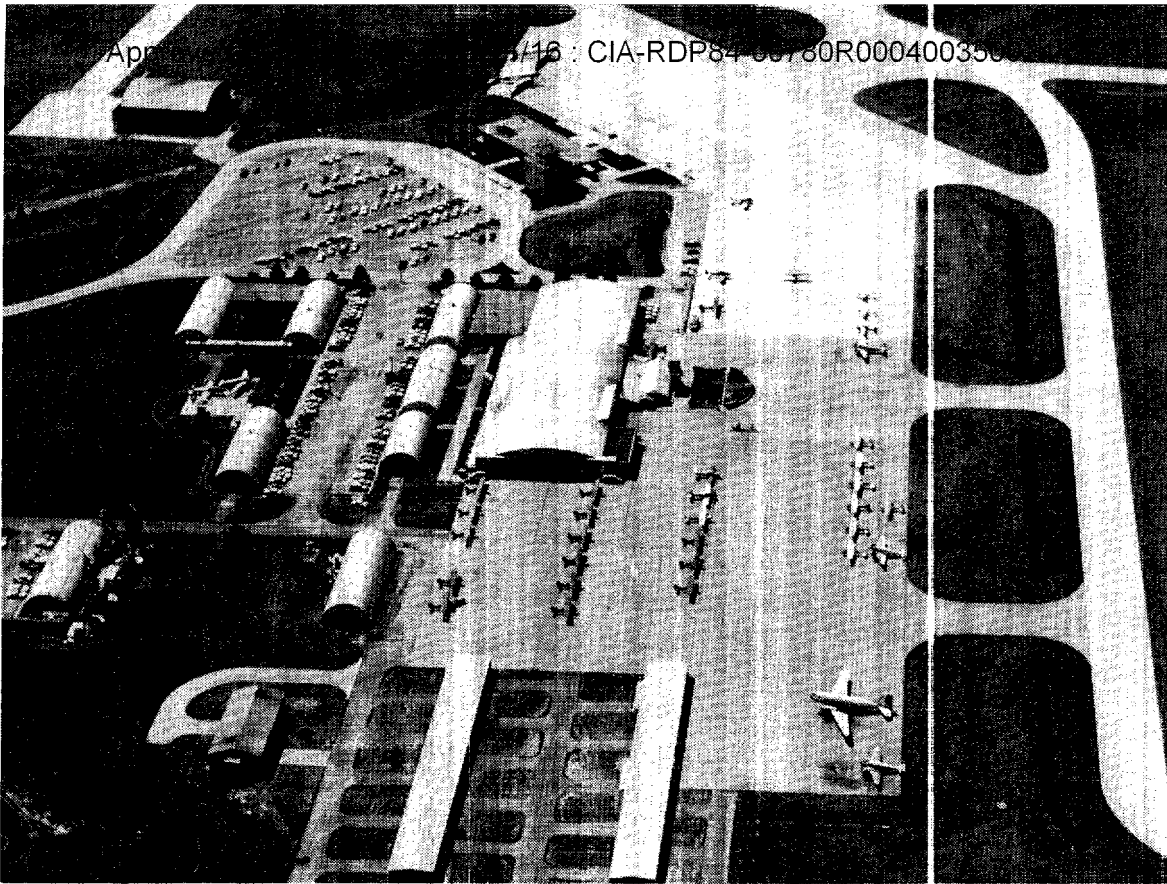
At the present time she is working with 18 colleges and universities throughout the United States which are carrying out educational research programs in the field of aerospace, with the financing of these programs being paid in part or in toto by the Link Foundation.

Miss Link is one of the founding members of the National Aerospace Education Council, has been almost continuously on its Board, and at the present time is on the Board of that Council. □

Marilyn Link receives trophy from NAEC President William Hinkley, left, and Bill Ong, NAA President.



September, 1964



The Institute of Aviation operations center at the University of Illinois-Willard Airport. The University of Illinois has operated the Airport since 1946. The \$4 million facility houses many of the research, public service, and educational activities in aviation of the Institute.

## *The Institute of Aviation*

*at the*

# UNIVERSITY OF ILLINOIS

By Dr. Leslie A. Bryan, Director  
Institute of Aviation

Ask almost anyone interested in aviation what relationship the aviation program at the University of Illinois bears to the National Aeronautic Association and you would draw a blank. The fact is, however, that the original broad concept was conceived by the then President of the University, Dr. A. C. Willard, while attending one of the early NAA Clinics at Oklahoma City where he had been invited to make a speech. Dr. Willard returned home, consulted his Trustees, received their backing, and went to work.

First, there must be an airport. With the help of the legislators from Illinois the Civil Aeronautics Administration, acting for the Army, agreed to construct the runways when suitable land was available. Governor Green, a World War I pilot, spearheaded a legislative appropriation to buy the land, and soon 770 acres of Illinois corn land six miles from the University became a trunk category airport which currently repre-

sents an investment of over \$4 million.

The close of the war stopped further development of the Airport as a military adjunct, so the problem was how to move forward. President Willard appointed a representative committee from the aviation industry and government with instructions to give him a blueprint of how the University should proceed. They did their work well, and the University is still following their recommendations. Chief among the recommendations was one for the establishment of an Institute of Aviation as the administrative agency responsible for all aviation education and research throughout the University. This recommendation was based on the fundamental concept that aviation touches, or has influence upon, all branches of educational activity, and that aviation education should be a University-wide responsibility.

The other University colleges, schools, and depart-

ments are the main vertical shafts of the educational mine and the Institute of Aviation is a horizontal channel connecting them. In its operation the Institute carries on the same general functions as the University as a whole—educational, research, and public-service activities. Most of these are carried on at the University of Illinois-Willard Airport which is operated for the University by the Institute of Aviation.

### Educational Functions

The University of Illinois-Willard Airport is, in its major use, essentially an off-campus educational laboratory. As such it is closely analogous to the science laboratories on the campus. In the case of flight courses, for instance, the class work is given on the campus and the student then goes to the Airport for the flight-laboratory instruction. Other laboratory work done at the Airport includes the activities of the State Water Survey in meteorologic research and of the aviation psychology laboratory. The Airport also functions as a laboratory for the College of Commerce and Business Administration and the College of Engineering.

At the Airport, the Institute of Aviation offers four courses of study: (1) the Aircraft Maintenance Curriculum, (2) the Professional Pilot Curriculum, (3) the Aviation Electronics Curriculum, and (4) general flight training courses. About half of the flight students are other than students who are primarily enrolled in the Institute. In addition, the Institute offers flight training to selected Army and Air Force ROTC students.

The Aircraft Maintenance Curriculum prepares the student to become a technician who can perform or supervise the maintenance of aircraft and engines. It also gives him a fundamental background of knowledge for sales, service, operations, flight engineering, and management in the aviation industry. This two-year curriculum has Federal Aviation Agency (FAA) approval under Air Agency Certificate No. 3364. Classwork is performed in well-equipped shops and laboratories at the Airport. Approximately 25 per cent of the graduates of this curriculum enroll in other colleges of the University and successfully complete the requirements for a bachelor's degree. The Institute cannot begin to supply the demand for the graduates of this curriculum.

The Professional Pilot Curriculum consists of 12 to 24 credit hours in the Institute, depending upon the number of flight courses taken, and also of integrated courses in several basic areas of knowledge in the Division of General Studies. Upon completion of this two-year course the student receives a certificate awarded by the University, plus the pilot certificates and ratings awarded by the FAA.

The Aviation Electronics Curriculum seeks to train a technician who has a thorough knowledge of both the theoretical and applied aspects of basic and advanced electronics. He is prepared to interpret and



DR. LESLIE A. BRYAN

implement the engineer's plans which are involved in the construction and testing of complex electronic devices found throughout the aerospace industry. This is also a two-year program.

General flight training is open to all students and staff members of the University. During the past year, more than 300 FAA certificates and ratings were earned by the flight students. Since the start of the flight-training program in 1946, nearly 6,000 students, including approximately 300 faculty, have been trained.

As Air Examining Agency No. 1, the Institute certifies private and commercial pilots and rates multi-engine and instrument pilots by its own examinations and tests. In addition, helicopter and instructor rating courses are given.

The Institute, through its Staff Air Transportation Service (SATS), renders valuable assistance to many thousands of extension students throughout the state. Where it is difficult to bring the student to the campus, it is often easier to take the professor to the student. This the SATS does as well as providing an airplane pool for those traveling on other University business. Were it not for the saving in time by flight to and from the extension centers, many excellently qualified staff members would be unable to fulfill the extension teaching assignments they now routinely complete in locations from Rockford to East St. Louis.

The total costs by air are usually less than by other modes of transportation.

Since its inception 17 years ago, SAIS has flown more than 5 million passenger miles with a 95 per cent on-schedule record of completions and a perfect safety record.

A variety of aircraft are used in this service ranging from small two-place aircraft to the DC-3. Seven pilots devote full time to this type of activity. The Institute also provides aircraft for properly qualified pilot members of the University staff for use on University business.

### Research Functions

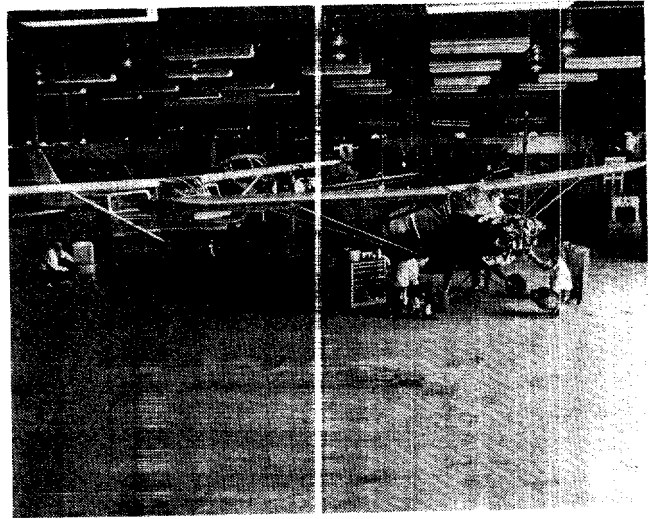
The Institute of Aviation has an outstanding record in the area of research. From experiments with easily visible fluorescent paint on wingtips to experiments with flight by periscope, a forerunner of our astronautic flights, the University has become internationally famous for its aeronautical research, much of which is done at the Airport.

One outstanding research contribution was the important "180-Degree Turn Experiment." The procedures, which were developed by Institute of Aviation staff members, enable noninstrument pilots who have inadvertently gotten into bad weather to make a 180-degree turn out of the bad weather and return safely to contact flight conditions. Many letters have been received from pilots throughout the United States who are alive today because they practiced the simple lifesaving procedures.

"Parachute Flares as an Aid in Night Forced Landings" was widely acclaimed as an additional lifesaving procedure for general aviation pilots. Again, the methods were developed by the University's aviation staff members.

Much of the aeronautical research of the University, instead of being done by the Institute itself, is channeled into other departments which have the staff, the facilities, and a closely related interest in the problem. For instance, the Institute of Aviation has assisted the College of Agriculture in planning crop dusting demonstrations. Facilities and space have been provided for the Department of Aeronautical and Astronautical Engineering for their research on jet engines. The Psychology Department has utilized not only the Institute's aircraft and pilots, but also its students in many of its research efforts. The Institute also provides space at the Airport to the Psychology staff and students for their use as offices and laboratories in research in aviation psychology.

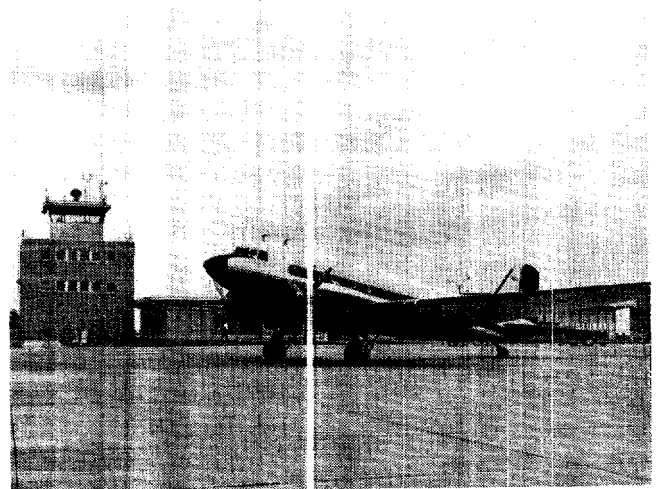
The Institute's aircraft have played a major role in flying radio-active isotopes from Oak Ridge, Tennessee, to the University's famed Betatron Laboratory. Much equipment and personnel have been flown to Great Bear Lake in Canada for employment at a cracking station which is maintained by the federal government but supervised by university scientists.



The Institute of Aviation aircraft maintenance shops are always busy. Aircraft are maintained on a "preventive maintenance" basis. All have radios and many are fully equipped for VFR flying. A machine shop, instrument shop, and propeller shop are also a part of the facilities.



Institute of Aviation students in the accessory laboratory. Since 1947 the Institute has been providing A&P mechanics for the aviation industry.



The Terminal Building and Tower at the University of Illinois-Willard Airport. In the foreground is one of the University's DC-3's. The University presently operates 53 aircraft of various types, ranging from small trainers to multi-engine research aircraft.



Extensive research on cloud formations and rainfall is presently being conducted by members of the State Water Survey at the Airport. Not only does the Institute of Aviation provide the necessary laboratory facilities, but it has also specially equipped a twin-engine Beechcraft for a flying laboratory. Because the meteorologic staff has been able to carry on its research in such a unique way, the research results have been highly gratifying.

The Institute has also worked closely with the College of Medicine in the areas of pressurization and high-altitude effects on the human body. The College of Education has planned and scheduled numerous seminars and courses in aviation education. The Institute has aided by offering orientation flights to the students.

The College of Commerce and Business Administration has made use of the Airport facilities and equipment as a laboratory for the students enrolled in the courses of air transportation and airline management. The additional opportunities made available to these commerce students tend to increase their professional knowledge and practical experience even before they are graduated from the University.

In all, more than forty different divisions of the University have benefited from the research availability of the Airport.

#### Public Service Functions

The Institute and cooperating staffs have, in addition to their primary research and educational functions, made available to the community certain of the facilities of the Airport without charge either to the taxpayers or the state or to the surrounding community. These facilities are available on the basis of the otherwise unused capacity of the runways and of the terminal building. The income thus received from Ozark Air Lines has been sufficient, when added to the legitimate charges against the University-use-for-education-and-research purposes, to cover the operating costs of the Airport.

For the citizens of Champaign-Urbana, and for those individuals who come from all over the United States to visit the University of Illinois, the Airport provides necessary facilities for commercial flights. Ozark Air Lines provides 13 flights each day in and out of the Airport. Over 2,500 passengers a month embark at the University Airport.

For the calendar year 1963, of 255 similar facilities the FAA ranked the University Airport as the 73rd busiest in the nation in total aircraft operations, and as the most active air operation in downstate Illinois.

For many years, the Airport has been used by the Illinois Wing of the Civil Air Patrol as its primary base for its annual Search and Rescue training. It is also used as an auxiliary field for the Air National Guard and the flying branch of the State National Guard.

People from all over the world have come to the University of Illinois to discuss the University's air



Institute students in airframe, engine, and electronics take a balanced course of practical and laboratory work. Some report writing and library work is also required. A corner of the library is shown here.

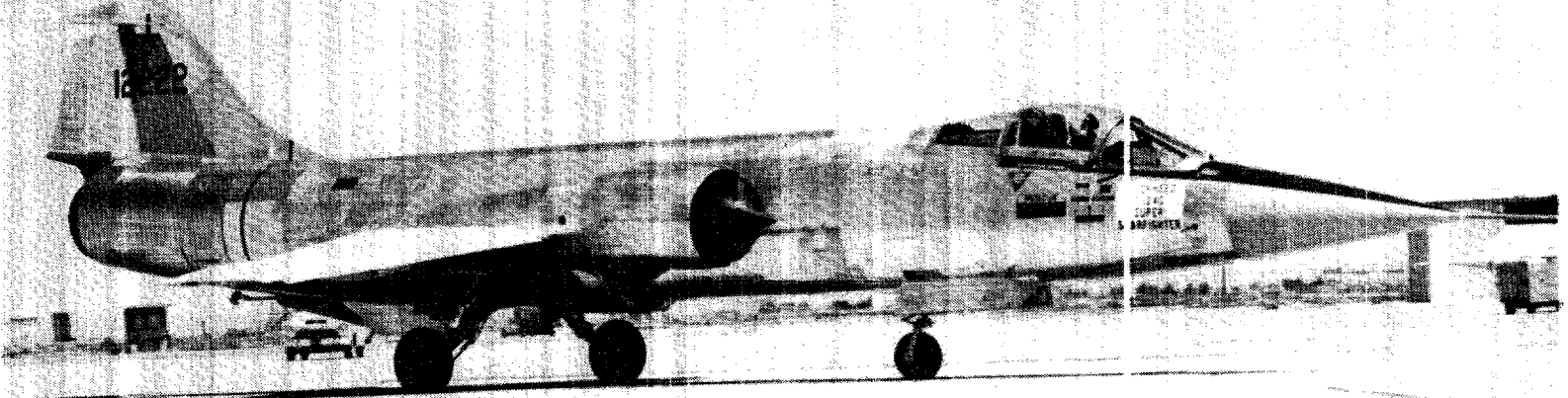
operation with Institute staff members and have taken back with them ideas and plans to improve their countries' aviation systems. The three most recent distinguished visitors have been Prince Sissouphanouvong, Director of Civil Aviation for the Kingdom of Laos, Mr. Isaac Sy, Director of Civil Aviation for the Republic of Mali, and Mr. Oscar Denis of the Republic of Argentina.

One of the major public service aspects of the University Airport is the impetus given to business and pleasure flying. At present the Airport has 32 T-hangars and one large hanger which are rented to local businessmen.

Over the years, the Institute and its staff have cooperated with the National Aerospace Education Council which has received so much aid from NAA. Had NAA done nothing else during its period of cooperation, its influence through NAEC on the teachers of the youth of this country has been beyond measure.

#### Vested Responsibility

The University of Illinois, through its Institute of Aviation and its cooperation with other divisions of the University, has tried to live up to the responsibilities which it believes it has in the four fields of general education, professional education, vocational education, and research. In general education, its responsibility lies in the enrichment of liberal arts courses, the development of a general course on the broad impact of aviation upon society, and the enrichment of guidance procedures. In professional education, the University has offered courses in engineering, business administration, and teacher training with emphasis upon aviation. In the vocational field the University has provided terminal courses in aircraft maintenance, electronics, and flight training. In research and public service, every effort has been made to serve and advance the frontiers of knowledge. □



The start of a record flight. Jacqueline Cochran takes the Lockheed F-104G Super Starfighter off the line at Edwards Air Force Base.

### *Jacqueline Cochran's Record Flights*

# HIGH HOT AND HAZARDOUS

By Robert H. Dillaway

On June 3, 1964, Jacqueline Cochran, holder of more world flying records than any other pilot, completed a series of flights in a Lockheed F-104G, which set three new world records—the fastest speed by a woman over 15/25 km, and 500 km courses. Miss Cochran already held the 15/25 and 500 km records; but in the case of the 100 km distance, she was recapturing the record after it had been taken from her by the outstanding French woman competitor, Jacqueline Auriol, flying a Mirage III French fighter plane.

Establishing world records at the high speeds and altitudes required for maximum performance today requires a great deal of planning and co-ordination by the pilot and the supporting teams of specialists. One does not merely decide to try for a record, hop in the plane and dash over a course crudely marked out on the ground. In establishing her records, Miss Cochran was supported by the well-integrated, co-operative effort of several groups.

A team of six Lockheed engineers worked on many flight plans, to find the one that provided the greatest performance potential of the airplane over each type of course. They worked on radio systems to assure good communications; because the altitudes and speeds flown make it impossible for the pilot to follow the course solely by looking at the ground, he must be in contact with the radar operators following the flight to get precise position data from the plotting boards. A team of six Lockheed mechanics kept the aircraft in peak condition. Another team of 20 skilled Civil Service technicians headed by M. W. (Woody) Phil-

lips manned the theodolite and radar tracking stations. To record the flights, 3 to 5 theodolite camera positions were used to provide precise position of the aircraft (from within a few feet out to the camera's limit of 20 miles). The radar provides slightly less precise backup information. At times on previous record attempts, atmospheric conditions or technical difficulties have prevented theodolite acquisition of the aircraft so that radar results were used for data. Sometimes the radar has not found the aircraft, and Steward stop-watch data has been used to determine record performance. Radar is used to spot the aircraft for the cameras and to provide relative information to the pilot on his precise position over the course. Many additional skilled technicians were required to develop the film, reduce the film data for machine computation, and check the results. Col. Charles (Chuck) Yeager, head of the Air Force Test Pilot School at Edwards Air Force Base and Major Keogh, the Air Force Project Engineers for this flight were vital members of the team coordinating schedules with all of the other flight activity at Edwards Air Force Base, such as the meteorological teams, and the Federal Aviation Agency for flight activity outside the base area. Finally, a team of National Aeronautics Association Contest Board Stewards was needed to monitor and authenticate the records. They witness the aircraft takeoff and landings, lie under crossed wires placed over course pylon points to observe the aircraft start, finish, and turning of pylons according to record rules. The start-finish Stewards get backup times by calibrated stop watches which check with

theodolite times within less than .05 seconds lapsed time on even the shortest courses. The Stewards monitor the radar plotting boards, or fly in chase planes to verify identity of the contest aircraft. They also monitor collection and developing of theodolite film and final data reduction to determine performance.

Miss Cochran used FAI recognized courses at Edwards Air Force Base, California. The 15/25 km course is a straight line between coast and geodetic markers in the southern part of the reservation. The 100 km course is a 12-sided polygon with 12 pylons to the north on the reservation. The start-finish pylon is near the Edwards Air Field. The same start-finish is used for the 500 km triangular course whose pylons are at Beatty, Nevada, and Lone Pine, California, to the north of the course. All of the National Aeronautic Association personnel took time from their own work to participate in stewarding the record flights.

After Miss Cochran decided to try for the speed records, Lockheed Aircraft on April 10, 1964, applied to the National Aeronautic Association for a sanction for her to attempt these records in their aircraft within the next 90-day period. Previously, on March 19, Lockheed Project Engineers, Mr. E. J. (Jim) Marsh and Mr. J. G. (Joe) Carrillo, together with certain other Lockheed engineers had met with the Directors of the Contest Board of the National Aeronautics Association to discuss their plans for this record attempt and check for conformity with the record requirements set by the FAI. Early establishment of the procedures to be followed was necessary so that the plans for stewarding the attempts could be made with NAA personnel and the specialists at the Edwards Air Force Base who operate the theodolite and radar equipment used to follow the flights. Mr. Earl Hansen was designated as the NAA Directing Official. Mr. Hansen and Mr. Carrillo had numerous conversations in the next few weeks coordinating final details. On April 23 there was a meeting at Palmdale, the designated takeoff point for Miss Cochran's flights, between Mr. Hansen, Mr. Carrillo, Mr. Phillips, and Major Keogh, Air Force Project Coordinator, and final plans and details agreed upon.

On April 20, Miss Cochran started preparing for the 15/25 km record attempt. She made seven practice runs through the speed course to familiarize herself with its course location and to perfect her techniques of flying this very difficult record which requires holding the altitude within  $\pm 300$  feet throughout the course. Small control movements in supersonic flight make holding this altitude very difficult even for the most experienced pilot.

The first attempt at the 15/25 km record was to start on Monday, May 4. All of the various coordinating groups convened for final briefing and clarification of plans on Sunday evening May 3, at Edwards Air Force Base. All gave up their Sunday to attend the meeting. However, when Monday morning arrived, there was a complete cloud cover over the valley so that the first flight was postponed 24 hours.

September, 1964

On May 5 high turbulence and cloud cover made it impossible to hold the altitude tolerances, so no record attempt was completed. On the third day rain ruled out attempts for that day, nor were conditions satisfactory on the fourth day. Throughout this 4-day period Miss Cochran, the Contest Stewards and all the backup people in the program were on hand every morning in the hope that the record could be run. The Directing Official had to secure new crews every day as most of the Stewards could not be away from their jobs for extended periods. Finally, on May 8 the weather changed, and the first attempt at the record was made. However, due to unforeseen technical problems and lack of contrail from the plane, no askania record of the flight was obtained; that is, the cameras did not lock on the airplane and the ground observers did not actually time and see the aircraft pass through the traps. Although radar data showed that Miss Cochran had bettered her previous mark sufficiently to file a claim with the FAI, calculations by the Lockheed engineers indicated that it was possible to considerably improve her speed. Therefore, a second attempt at this record was made on May 11 that was completely successful on all counts; askania, radar, and watch times agreed very closely. After the theodolite film and computations had been checked by Edwards technicians and NAA Stewards to assure that a new record had been achieved, a provisional record claim was filed for Miss Cochran claiming a speed of 1429.297 mi/hr for 15/25 km in the Lockheed F-104 G. This was about 150 mi/hr faster than her record a year previous.

As soon as this record was completed, she vigorously-

*Continued on page 18*

Col. Chuck Yeager, Miss Cochran and Lockheed engineers in preflight conference.



# The FAI Bureau and Council

## INTERNATIONAL BODY MEETS IN PARIS

By Col. Mitchell E. Giblo

On June 15th and 16th I attended the Annual FAI Bureau Meeting and the FAI Council meetings in Paris.

The meeting is limited to eight elected FAI Vice-Presidents, acting as a Board of Directors, except that Bureau members have no vote as such and no issue is voted on. The Bureau members sit as advisors to the FAI President and engage in discussions. Usually, after the Bureau meeting, matters are presented on the following day to the FAI Council composed of all the FAI Vice-Presidents, one for each member nation.

On the 15th of June, six countries were in attendance at the Bureau meeting. On the subject of FAI General Aviation, FAI's First Vice-President Mauricio Obregon reported that in Washington, D. C. he contacted the Directors of AOPA. Mr. Obregon reported that the AOPA was not interested at that time in any agreement with FAI. On the subject of General Aviation, Mr. Obregon reported that "Working papers for ICAO will be executed by a college of experts designated by NAA from among NPA specialists (within eventual participation by Canada) and by specialists from interested European National Aero Clubs.

The Bureau then discussed the 1964 FAI General Conference at Tel Aviv, Israel, in October.

Next on the agenda was a discussion on the awards for the FAI Gold Medal and the FAI Gold Space Medal. The U. S. for the fourth year submitted the name of Dr. Theodore Von Karman. France submitted the name of Jacqueline Auriol for the FAI Gold Medal.

For the FAI Gold Space Medal, the U. S. submitted the name of "Cosmonaut" Gordon Cooper. The Soviets submitted the name of Mme. Valentina Nikolaeva-Tereshkova.

The Aeronautical Film Festival for 1965 will be held at Deauville, France. The dates have not been decided. The National Aero Clubs will be given three dates and be required to vote which date is the most suitable.

The FAI Council meeting was held on the 16th of June in the French Aero Club building, 6 Rue Galilee, Paris, France.

The FAI Treasurer General reported that because of steps taken by the Council in December of 1963, it appeared that FAI will finish the year of 1964 with a balanced budget.

The discussion on General Aviation was the same as reported for the Bureau meeting.

The vote on the FAI Gold Medal award resulted in the award being made to Mme. Jacqueline Auriol of France.



COL. MITCHELL E. GIBLO EXECUTIVE DIRECTOR NAA

The vote on the FAI Gold Space medal resulted in a close (10.8) victory for Mme. Valentina Nikolaeva-Tereshkova of the Soviet Union.

*Bronze Medal*—awarded to Dr. J. Gaisbacher of Austria for his splendid organizational ability and for his devotion to aeronautics and the FAI.

*Lilienthal Medal*—awarded to Mr. Heinz Huth (West Germany) twice World Champion, six times National Champion, and a great Gliding enthusiast.

*De La Vautix Medal*—awarded to Colonel V. F. Bikovski (USSR) for beating the World Records of Duration and Distance in orbital flight (118 hr. 56 min. 41 sec. & 3,325,957 km.—81 revolutions around the Earth).

*Louis Bleriot Medal*—awarded to Mr. Raymond Davy (France) for beating the International Record for speed in a 100 km closed circuit for aircraft weighing less than 500 kg (334,308 km/hr.).

*FAI Diplomas*—All the candidates proposed are accepted unanimously by the Council; they are as follows:

- Australia—Edwin Robert Russell
- Austria—Dr. Erna Prockl & Herbert Vyskocil
- Belgium—Robert Save & Maurice Boel
- Canada—G. W. Grant McConachie and Charles Douglas Taylor, M.B.E.
- Chile—Marcel Marchant Binder
- Czechoslovakia—Vaclav Polak, Karel Tikovsky and Prof. Jaroslav Manak
- Denmark—Verner Jakslad
- Finland—Lennart Poppius
- France—Gerard D'Audecau, Vincent Balesi & Pierre Labadie
- Great Britain—J. O. H. Lobley, F. E. Buckell and Group Captain W. S. Easter, M.C.

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NATIONAL AERONAUTICS

# 1964 Tissandier Diploma Nominees

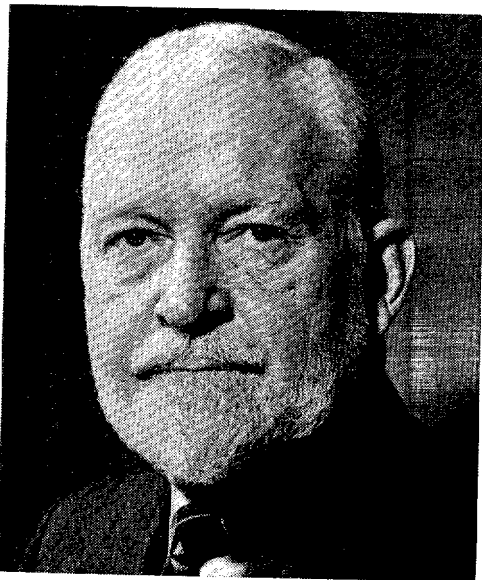
Each of the member nations of Federation Aeronautique Internationale is privileged to nominate annually as many as three individuals to receive the honorary FAI Paul Tissandier Diploma, awarded to those persons rendering outstanding service to the aeronautical progress of their respective countries.

These three distinguished persons will be honored at the FAI Conference at Tel Aviv in October, 1964:

HARRY F. GUGGENHEIM has a long record of service to aeronautics, beginning with his duty in World War I as a Naval Aviator. In 1925 he established the Guggenheim School of Aeronautics at New York University, and became president of the Daniel Guggenheim Fund for the Promotion of Aeronautics in 1926. This organization sponsored Jimmie Doolittle's instrument flying and blind landing research. From 1929 until 1938 he served on the National Advisory Committee for Aeronautics, and in 1948 established the Guggenheim Jet Propulsion Center at California Institute of Technology and the Guggenheim Laboratories for the Aerospace Propulsion Sciences at Princeton University. Other grants by Mr. Guggenheim include the Institute of Flight Structures at Columbia University in 1954, the Aviation Safety Center at Cornell University in 1950, the Center for Aviation Health and Safety at Harvard in 1957 and the Aerospace Health and Safety Center, again at Harvard, in 1962.



HARRY F. GUGGENHEIM



VICE ADMIRAL ROBERT S. PIRIE (Retired)

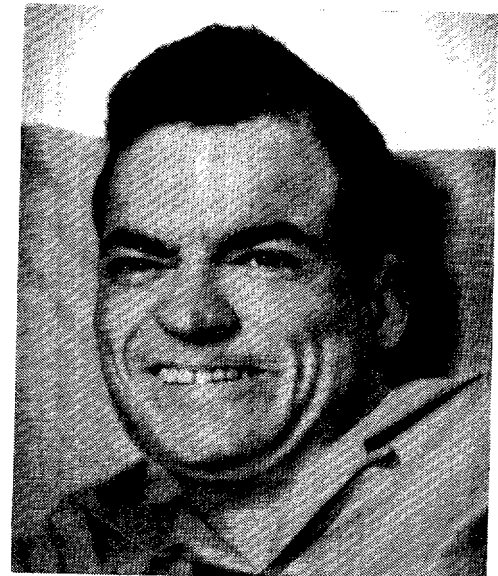
ROBERT S. PIRIE graduated from the Naval Academy in 1926 and became a Naval Aviator in 1929. Throughout his career he has been intensely interested in civil aviation and has been an important figure in NAA's international negotiations, representing NAA in many world conferences. He headed the United States delegation in 1963 at Mexico City. For the last eight years he has served NAA as a director, as head of the Contest Policy Committee and as Chairman of the Board in 1963.

Admiral Pirie was appointed Deputy Chief of Naval Operations in 1958 and held that post until his retirement November 1, 1962. His distinguished career included a tour as the first head of the Department of Naval Aviation at the Naval Academy for two years, then as Commandant of Midshipmen in 1949, when he was promoted to the rank of Rear Admiral. Later he served as Chief of Staff for Admiral Jerauld Wright and as Deputy and Chief of Staff for the U. S. Atlantic Command and Atlantic Fleet. In 1957 he was promoted to Vice Admiral and given Command of the Second Fleet in the Atlantic. He retired with the rank of Vice Admiral in 1958 and joined Aerojet-General Corporation as Executive Assistant to the President.

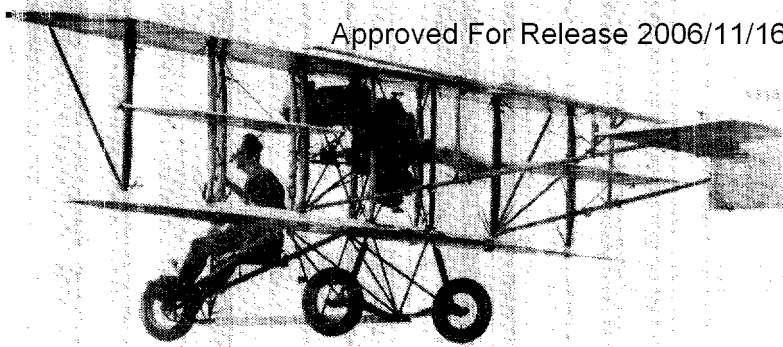
JOHN G. LOWE, JR., of Denver, Colorado prefers to be called Jack Lowe, and by that name he is known by aviation people in the United States.

Born in 1924 with cerebral palsy, he has devoted his entire life and much of his wealth to American aeronautics, concentrating particularly on activities furthering the work of aviation education. The National Aeronautic Association and its affiliates, the Academy of Model Aeronautics, National Aerospace Education Council, and the Antique Airplane Association are organizations in which he has taken an active interest.

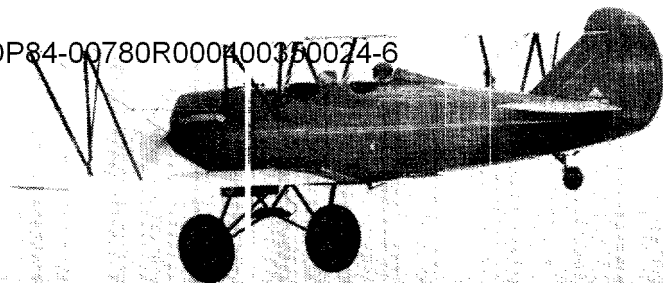
Jack Lowe is the founder and Honorary President of the Denver Aero Club and is a Regional Vice-President of NAA. His unselfish devotion to the science of aeronautics has earned the respect of the entire industry and the close and intimate friendship of America's most famous aviation personalities.



JACK LOWE



A Curtiss-Beachey replica



A beloved antique—the famous Travel Air 2000

IN EXPERT EXPLAINS—

## When Is an Antique Airplane Antique?

By Robert Taylor, President, Antique Airplane Association

The rather vague title of antique airplane means different things to pilots of different ages. Many lump all old airplanes into the antique classification. The Antique Airplane Association has for some years set aside certain categories to better the state of the art for all who take part in such activities.

In past years members of the AAA have held meetings on this subject and after much discussion have set out certain standards which in turn have put old aircraft into certain categories for purposes of judging and making awards at Fly-Ins around the country. In view of the growing interest in old aircraft and the increasing numbers of them being restored these standards will be refined or changed as circumstances demand.

At present these are the main categories now prevailing. First is the Pioneer Category for airplanes built from 1903 up to the onset of World War One in 1914. This period has few active airplanes other than those that are used for flying except for special exhibitions or movie work. However, a number of AAA members are building replicas of Curtiss and Wright Pushers and some are already flying around the country. Also a few Bleriot Monoplanes are kept in flying condition. There is no special problem in this area as

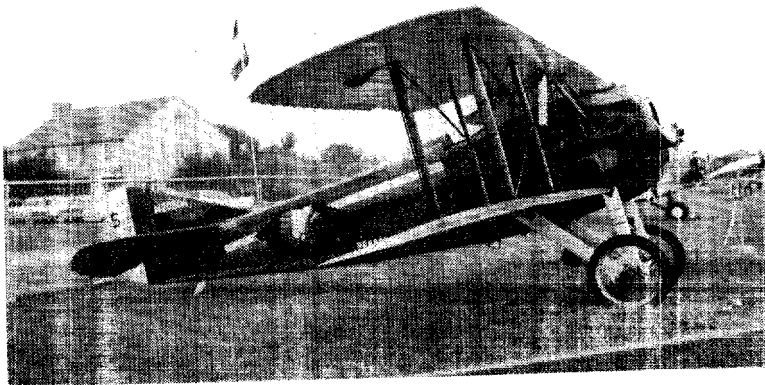
such designs are easily recognized and the number of members with such types are few. The total of Pioneer types in this country and abroad would number less than a hundred.

The next era or category is perhaps one of the most popular and widely publicized. This is the World War One Era which has enjoyed much devotion since the early thirties to the present. Probably more words have been written about this age of cavalier aviation than any other. A surprising number of airplanes of this period have survived. In addition the building of replicas of World War One has been widespread. World War One engines can be found in good condition and with a set of plans; the rest is mostly wood, wire, and fabric, money and labor. Many enthusiasts find to their dismay and disillusionment that such a project is not easily or quickly accomplished. There is a growing number of such projects reaching completion and both replicas and restored originals will be showing up at Fly-Ins in some strength. This category will tax the skill and knowledge of Fly-In judges when replicas and original World War One types meet at a competitive event.

The next and largest category starts as World War One ended and continues to 1935. This is the ANTIQUE era although some will question a thirty year old airplane as being an antique. Others with airplanes built after 1935 question such a cut off date. This particular matter was hotly debated at the AAA "Standards Meeting" some years ago, but agreement was made that a definite change did take place in aircraft construction and design about this time.

In general, most of the aircraft built from 1927 on had an Approved Type Certificate and these aircraft now comprise the bulk of the types restored and flying today. Very few aircraft built from the end of World War One to 1927 are in existence or in flying condition. Naturally after Lindbergh's flight in 1927 and the sudden growth of aviation we find many types of antique aircraft built in some numbers which still exist. This period has been called the "Golden Age of Flight," the "Lindbergh Era" and other descriptive names. Aircraft built in this period can in the main be licensed today as Standard type airplanes with no

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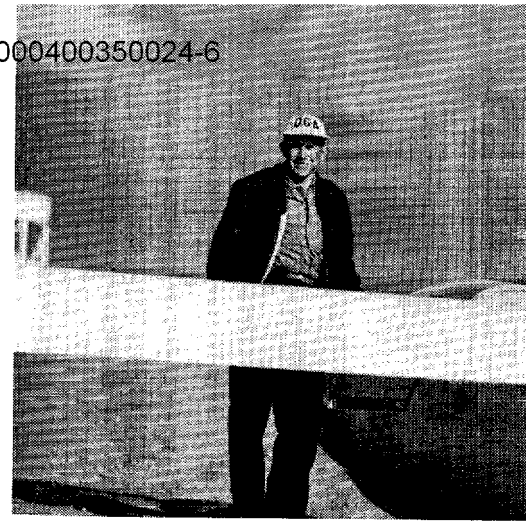


This Spade of WWI still is flying

Summer always brings an abundance of upcurrents, and another U. S. National Soaring Championships. The soaring pilots who compete for the National Championship have a rich heritage, the first such event having taken place in 1930 at Elmira, New York. This year's Nationals is the 31st Annual (there were none in the WW II years of 1942-1946) and was held at McCook, Nebraska, from June 30 through July 9. All the pre-War Nationals were held at Elmira but after that other soaring sites have been used; Texas has been host five times, California three times, Kan-

viding towplanes (one for each six sailplanes), towropes and other aspects of field operations. SSA personnel supervise the technical aspects of the competition, such as task-setting, timing, scoring, etc. The arrangement works very well and accomplishes the purpose of the event.

The contest is based on relative performance while flying set tasks, selected each day by a competitions committee. The tasks are either speed over a prescribed course (usually closed) or distance (along a set course, or free). The standings are determined by point scores, the



Richard H. Johnson with his Skylark 4 sailplane on Harris Hill at Elmira, N. Y., during the 1963 National Soaring Championships, which he won. Photo by Sandor "Alex" Aldott.

### *Prelude to the*

# NATIONAL SOARING CHAMPIONSHIPS

By Lloyd Licher

Executive Secretary, Soaring Society of America

sas once and Elmira the rest.

The Nationals is by far the largest and most significant soaring event held in the United States each year. The number of entrants has been increasing each year and 50 of the nation's best vied for the honors at McCook. They fly the finest array of high-performance sailplanes ever gathered at one place in this country, most having maximum glide ratios (in still air) of over 30-to-1, with the better ones near 40-to-1. Entry requirements have been raised as sailplanes and pilot talent have developed, until now one must have earned the FAI Silver soaring badge and the distance leg of the Gold badge (a 300-kilometer or 186-mile flight).

The directors of the Soaring Society of America select the location of each Nationals from competitive bids submitted by soaring and civic organizations desiring to sponsor the event. SSA sanctions the contest under its soaring franchise from the National Aeronautic Association. There is a division of responsibility between SSA and the sponsor in conducting the contest. The sponsor is in charge of financing, pro-

viding towplanes (one for each six sailplanes), towropes and other aspects of field operations. SSA personnel supervise the technical aspects of the competition, such as task-setting, timing, scoring, etc. The arrangement works very well and accomplishes the purpose of the event.

best performance on each contest day earning 1000 points. On distance tasks, lesser performances are scored in direct ratio to the miles flown, whereas speed scoring is from a special table, according to the speed ratio and number who finished the task. Distances per flight often exceed 200 miles and occasionally 300 or even 400. The total number of cross-country miles soared in a number of past Nationals has been over 40,000.

The U. S. National Soaring Champion is the U. S. citizen earning the highest final score in the contest. He is awarded the perpetual Richard C. duPont Memorial Trophy. A Standard Class Champion is selected, also, the highest-scoring pilot flying a sailplane meeting the requirements of the FAI/OSTIV Standard Class (wing span limited to 15 meters or 49.2 feet, fixed wheel, and dive brakes). The Standard Class is quite popular at the bi-annual World Championships and in Europe.

Defending the title of National Soaring Champion this year was six-time winner Richard H. Johnson of Dallas, Texas. An aeronautical engi-

neer, "Dick" Johnson's name is well-known throughout the soaring world, primarily for his phenomenal 535-mile thermal-soaring flight of 1951 in the RJ-5 sailplane, which stood as a world class distance record for almost 12 years. In addition, he has held the U. S. national multi-place distance record of 310 miles since 1946, and represented the U. S. at the World Championships three times. In recent years he has designed and built the Adastr, an all-wood, two-place, high-performance sailplane which he is still perfecting. He won last year with a Slingsby Skylark 4 sailplane, imported from England, which he flew at McCook in this year's contest.

Johnson's title defense was not easy with so much talent and good equipment giving no quarter. Also at stake were positions on the U. S. team for the 1965 World Soaring Championships, to be held in England. Selection of pilots for the team (by seeding) depends a good deal on performances at McCook. It promised to be a hard-fought test of real pilot skill. Look for a report on the outcome in the next issue of *National Aeronautics*. □

# AMA'S PILOTS WILL GO FOR MORE INTERNATIONAL RECORDS

By George Wells, Academy of Model Aeronautics

The United States captured the FAI world altitude record for radio controlled model aircraft from Russia last July. Maynard Hill, current president of the Academy of Model Aeronautics, almost doubled the Russian mark by flying his own design to 13,328 ft. The Russians are not expected to take this lying down. They hold 14 international model records, compared to five for the U. S.

Hill's altitude record achieved considerable publicity in this country and abroad, thanks to wire service dissemination. This partly can be attributed to the novelty of the story. Few persons in this country knew that world records existed for model aircraft. Fewer persons knew that the Federation Aeronautique Internationale in Paris registers model records in the same manner as documents international records for full scale aircraft.

What is the purpose in establishing international records for model aircraft? The explanation is quite straightforward in terms of the objectives of NAA and its modeling division, the Academy of Model Aeronautics. Both organizations are interested in developing aviation mindedness in young Americans. An international record program for modelers similar to that for full scale aircraft gives prestige, interest, and excitement to the sport and hobby. It makes modeling more attractive in its battle with other activities competing for the attention of young Americans.

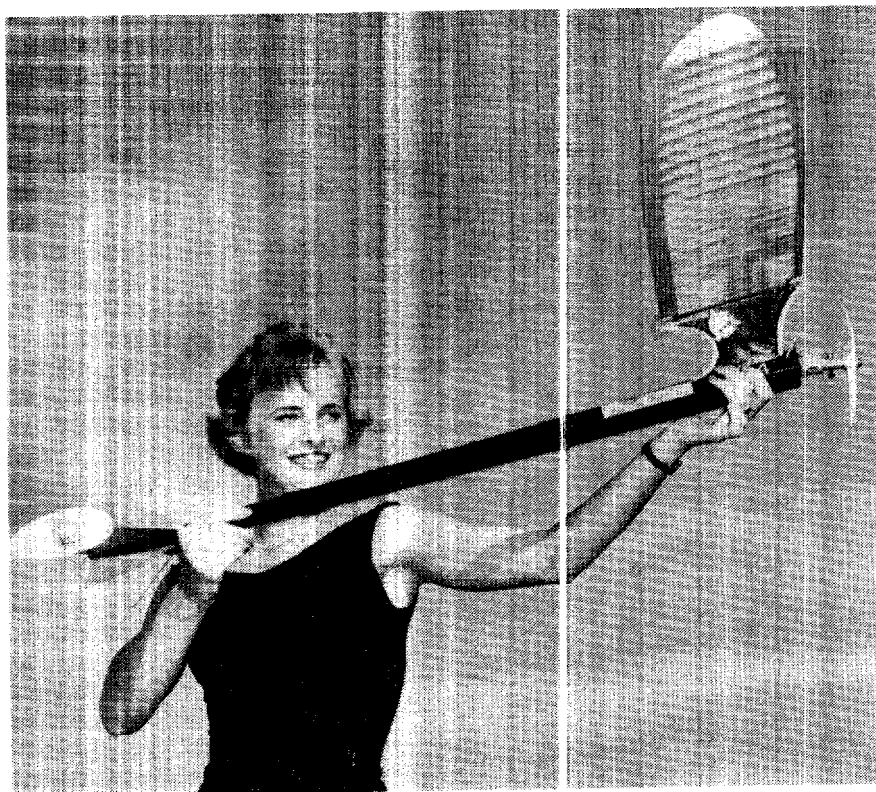
Similarly, it is the best avenue for promotion of aeronautic competition among the maximum number of people. Model fliers compose the largest sporting event group in the FAI. Other advantages include the "people to people" aspect of the program in terms of benefit to the United States, as well as to the model competitors themselves. As in the Olympics, our model fliers transport the image of this country abroad in our best tradi-

tion. American model magazines are read widely in Europe, and Europeans are impressed by the appearances of our leading designers and fliers at international competitions.

As in the struggle for Olympic honors, Communist and satellite governments directly subsidize their team representatives. Their best model fliers actually earn their

subsidy, our system of government allows our young people sufficient leisure time to gain proficiency equal to the "professional" modeler.

"If we are not winning our share of the international model competition honors, it is because this phase of modeling has not been emphasized as much here as in Europe," John Worth, AMA executive di-



Twenty-three year old Seid Astberg, a member of a Swedish International Championship team, is typical of the many feminine model airplane enthusiasts competing in European events. Feminine interest in model flying is increasing in the U. S.

liveliness designing models, and becoming practiced flying them. Despite foreign government subsidies, however, there are few international competitions in which the United States' model teams do not have an even chance or better of winning. U. S. contestants have a wider range of up to date equipment to choose from, particularly in radio control. Much of the R. C. equipment used by foreign teams is American made. Even without

rektor says. He believes the picture is changing rapidly, however, due to two factors. First, the United States' teams have been scoring better in recent years, and second, this country has been represented at recent international model organization meetings where great strides have been made in improving competition.

Primary international competition from the early 30's until after World War II was centered in a



class known as Wakefield; large, rubber band powered, free flight models. During this period American model entries were proxy flown by Europeans. Following the war, international travel became more practical and less expensive, and American modelers began to accompany their aircraft and compete in person. Subsequently, the Wakefield event was combined with other free flight categories including engine powered models and gliders. Consistent and effective participation in international competition, however, did not come about until the National Aeronautic Association was able to provide regular overseas transportation in recent years.

Radio controlled aircraft were flown as a world championship event for the first time in Zurich in 1960. Control line was initiated as a regular event the same year in Hungary. Indoor model fliers had their first world championship competition in 1961 in England.

Our teams have scored best in radio control with three individual championships and one team championship in the three meets held. The poorest U. S. performance to date has been in control line team racing, a category we invented, and one in which we never have been

victorious. This year team racing will be flown again in Hungary, and our three pilots and three mechanics hope to break the jinx.

Except for team racing, all world championship teams consist of three competitors. Each team may have a manager. Contestants are permitted to enter two aircraft to allow for substitution in case of crash or malfunction. Although world championship events are staggered, with radio control and free flight being flown on odd years, and control line and indoor on even years, there has been no crossover of U.S. contestants between model categories. Specialization at the world championship level so far has prevented this.

Our international team members are selected every other year under a plan proposed by the International Competition Committees of AMA, each model category having its own chairman. The Academy has used various elimination schemes on a nationwide basis to select team members. These have been both national and regional. In either, team members have proved to be representative of the entire nation. One specific category, the radio control team, consists of the top three finishers at the National Model Airplane Championships

conducted by AMA the year before the world championship. These selection methods have developed a tremendous depth in proficient fliers for the United States. The AMA estimates that the top 20 U.S. Nationals contestants in each category would make a good showing in the world championships. Many of the European countries are hard pressed to come up with a proficient three-man team in some classes, according to past showings, although their best fliers are equal to ours.

The entire international model competition program is handled for FAI by its modeling division, the Committee for International Aero Modeling. The CIAM is headquartered in the FAI offices in Paris, and utilizes the same staff personnel and facilities. CIAM administration is handled by its own delegate committees representing member nations. All 45 FAI member nations are eligible for membership in the CIAM. The current President is Henry J. Nicholls, a robust 53 year old hobby shop proprietor of London, England.

The organization meets each fall in Paris to review rules and to attend to administrative details. Usually, about 20 nations are repre-

*Continued on page 17*

## GOLD CROWN LINE BOWS

### KING RADIO INTRODUCES NEW TSO EQUIPMENT

In February, 1963, Edward J. King, president of King Radio Corp., shook hands with Angus Macdonald and handed him the keys to the newly-formed King Advanced Avionics Division. Today, as general manager, Angus is proudly showing production models of the first developments from his research and development efforts—two audio systems that are TSO'd to Airline standards.

The new high-performance equipment produced by the Advanced Avionics Division of King Radio Corp. in Wichita, will be called the "Gold Crown" line. All will be TSO'd and conform to ATR configuration and, as a result, will be compatible with other modern avionics equipment.

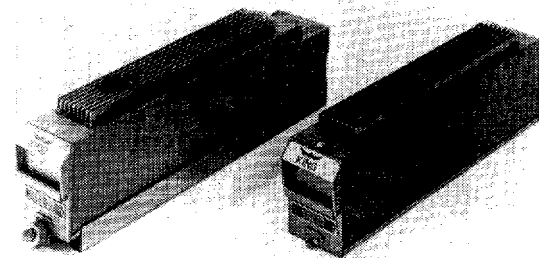
Take the new audio systems, for example . . .

The Model 401, 30 watt audio system and the Model 441, 18 watt dual system are each of such modular design that they are fully adaptable to fit almost any requirement for high-fidelity sound in a communications systems or for passenger entertainment. Both are ¼ Short Dwarf ATR size and plug into hard mounted racks. Both meet TSO C50a, Category A for piston, turbo and jet aircraft.

The KING "Gold Crown" audio systems are being installed in the famous Beechcraft Super 18 now, and installations are anticipated in several other top executive aircraft soon.

1964 will see the introduction

of other new "Gold Crown" units of equipment now being readied for production at King Advanced Avionics in Wichita. All will be airline quality. All will be TSO'd. All will be superior in performance and reliability.



Model 401 and 441  
TSO'd Audio System

# PCA Trains United States Team

By B. T. Galloway, Assistant Director

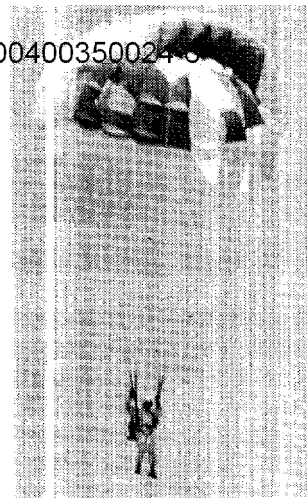
High in the hot summer skies over Fresno, California, the distinctive red, white and blue parachutes of the United States Parachute Team are opened with increasing regularity. Since June 1, the United States Team went through an intensive training program and preparation for the Seventh World Parachuting Championships held August 2 through August 7 in Leutkirch, Germany.

The selection of the 1964 Team was made as a result of the overall standings at the end of the 1963 Parachuting Championships in Seattle, Washington in September of last year. The top eight overall men and top seven overall women were chosen to comprise the 1964 United States Training Team which was to meet again in June of 1964 to begin its final training.

During the year that followed the 1963 Nationals each individual member of the prospective United States Team for 1964 spent hour after hour of exhaustive practice to improve his or her personal techniques both in style and in accuracy. For parachuting is in essence an individual challenge in which

the parachutist performs alone in the sky without any reference to the performance of others. As United States National Champion Dick Fortenberry has put it, "I can never be complacent about competitions since I am always competing against myself." This spirit of self-improvement marks the period between the National and the beginning of Team Training as each individual strives to better his own proficiency before the long training period.

World Parachuting Competition, and the events that are involved, are little understood but the parachutist has far more to do than merely exit the aircraft and return haphazardly to the ground in his canopy. There are two main categories of parachuting proficiency which are emphasized in competition: the first is referred to as accuracy. This is the one most commonly apparent while watching parachuting since the accuracy portion of competition is that contest in which the parachutist attempts to guide his steerable canopy as close to the center of the white target "X" as possible. He is striving



U. S. Team Captain and three time National Champion, Dick Fortenberry descends in the distinctive red, white and blue U. S. Team Paracommander Canopy.

to hit a dead center disk approximately six inches in diameter. Accuracy jumping is based then on the ability of the parachutist to exit the aircraft in the proper location so that he might drift correctly to the target. It is based primarily on the jumper's ability to manipulate the canopy as close to the target as possible. In World Competition there are two accuracy events: one is an individual event in which each parachutist makes individual jumps from 1,000 meters. In this event each jumper makes three scored jumps of which one can be thrown away and the other two scored for overall points. The second accuracy event is also an individual event from 1,500 meters scored in the same way with three jumps, one being a throw away. The third accuracy event is a team accuracy event in which a team of four men, in the men's division, or three women, in the women's division, exit the aircraft together and their total team average is scored for overall and event points. Again, two out of three of the team jumps are scored for overall.

The last event which is more complicated and involves proficiency in free fall is one which is very hard for the spectator to view unless he is knowledgeable in the sport itself. In this event the jumper exits the aircraft at 2,000 meters and upon receiving a signal from the ground performs which is referred to as an International Series. Much like springboard diving, this series consists of figure eights and back loops performed on heading

*Continued on page 21*



Boarding the aircraft, left to right, Gladys Inman, Redmont, Washington, Anne Batterson, Bloomfield, Connecticut — seated in plane. T. Taylor, Dallas, Texas.

# The Aero Club of Western Connecticut

The Aero Club of Western Connecticut was formally launched on May 21 when a group of over 75 aviation enthusiasts gathered for dinner at the New Englander Hotel in Danbury, Connecticut, and saw Ann Wood, representing the National Aeronautic Association, present the new organization's official NAA Charter.

On hand for the occasion were a number of prominent aviation people including Henri Coanda of Paris, France, who has FAI pilot's license No. 11 and holds a 1914 patent on the jet engine. He and Mrs. Coanda were guests of G. Harry Stine, President of the National Association of Rocketry of Stamford, Connecticut. Lee Johnson, President of Sikorsky Helicopters and Webster Crum, Vice-President of Avco/Lycoming, who holds FAI pilot's license No. 244 and is also a balloon test pilot, were also in attendance. Henry Wetherill, Director of the Connecticut Department of Aeronautics, was also present.

Following the Charter presentation, Robert Parke, Editor of *Flying Magazine*, gave the principal talk. Mr. Parke outlined the contributions of NAA in fostering aviation down through the years, congratulated the group for their wisdom in joining together as an effective force to promote aviation interests in the western Connecticut area and stressed the importance of developing and nurturing proper understanding among local newspaper editors of the vital role of "grass roots" aviation to their community.

Since the date, May 21 marked the 37th anniversary of Lindbergh's historic New York to Paris flight, a motion picture "Coast to Coast in 48 Hours" was shown through the courtesy of TWA. The film depicted the role of Col. Lindbergh (a resident of Darien, Connecticut) in setting up the combined air-rail coast-to-coast service in the late 20's. The group was highly entertained by good flight sequences of the Ford Tri-Motor and got many a laugh at radio terminology, as practiced then, and other procedures which are somewhat outdated by today's standards.

Results of a mail ballot to elect the Aero Club's first permanent slate of Directors were announced at



Arthur T. Beck, President of the new Aero Club of Western Connecticut, accepts the Club's Charter as a Chapter of The National Aeronautical Association from Ann Wood, of the Aero Club of New England, representing NAA, at the new Club's Charter Banquet on May 21 at the New Englander Hotel in Danbury. Robert Parke, Editor of *Flying Magazine*, keynote speaker of the evening, looks on.

the meeting. The eleven directors are: Paul Altpeter, Danbury; Arthur T. Beck, Danbury; Carl S. Dunham, New Milford; John Hula, Bethel; John P. Kizarr, New Fairfield; Vincent J. Rossignol, New Milford; Ronald R. Rumbaugh, Danbury; Clifford Sadler, Danbury; William D. Strohmeier, Darien; William C. Turner, Westport and Walter Wilson, Danbury.

Officers then elected by the Board for the ensuing year included: William D. Strohmeier, Chairman; Arthur T. Beck, President; Ronald R. Rumbaugh, Secretary and John P. Kizarr, Treasurer.

These officers plus John Hula, William C. Turner, and Walter Wilson will serve as the Executive Committee.

Among the first projects to be undertaken by the Aero Club will be the encouragement of air youth education programs in the schools. Eugene McNamara, a member of the faculty at the Ridgefield, Connecticut high school is heading up this activity.

## AMA Goes for Records

*Contd. from page 15*

sented at this U.N.-like gathering, and the number is increasing. French and English are the official languages for discussion and publications. The United States has been represented at CIAM meetings since 1958 by Dr. Walter A. Good, former AMA president, now CIAM vice president. It has been during this period of U. S. participa-

tion that international modeling activities have increased in scope and popularity.

In performing its function of providing uniform international regulations for model flying, CIAM has three major responsibilities. These are: supervising world championships, providing rules for international model contests, and homologating world records. World championship locations and dates are ap-

proved by CIAM, but any member country may host an international contest to which other nations are invited. World records are submitted to CIAM by National Aero Clubs in member nations. Record attempts are conducted under uniform rules established by CIAM.

In effect, the AMA has the same relationship to CIAM as NAA has to FAI in the area of international

*Continued on page 23*

## High Hot and Hazardous

*Contd. from page 9*

land with great competitive flair went after the 100 km record held by Jacqueline Auriol. This 100 km course is essentially a circular course flown around a polygon of 12 equal sides. Miss Cochran started practicing on this run on June 12. This is a very difficult course to fly at high speeds. For best performance, a very tight continuous turn is required in order to stay as close to the course boundaries as possible and yet not cut a pylon which would disqualify the contestant. In a successful run, the airplane and pilot experience forces approaching 3g's. In practicing, Miss Cochran encountered such compounding hardships as high cross winds which tended to drift her off the course and required modification of the turn, in some cases further extending the g loads on the aircraft and making precise control extremely difficult. Good radio contact with the radar center is required to fly the course properly, because it is impossible to see the ground pylons from the plane. The steep banks often block out good radio contact adding to the pilot's problems.

After four practice runs, she started record attempts May 21, making two flights each day. The first five flights were unsuccessful. However, on June 1, on her sixth attempt and under perfect conditions, she surpassed the previous record by 3 per cent (1 per cent is required for a new record). All of the recording equipment was working perfectly, and all of the pylon Stewards saw the aircraft pass outside of the pylons as they sighted up through the surveyed pairs of crossed wires. A provisional record claim was filed for her in the amount of 1303.241 mi/hr, subject to submission of the complete record file within 60 days. The requirements for this run are that the contestant must complete the course by crossing the start-finish line in such a way that a complete closure is made of the course and that the altitude at finish is at least as high or higher than the start. It is also required that no pylon or turning point be cut.

The next record which Miss Cochran attempted was over the 500 km speed course, the requirements for which are in general the same as those for the 100 km. This course becomes more of a teardrop shape, with two long and one short side to the triangle of the actual course. Getting ready took more time on the part of the Stewards and the supporting technicians, as the turning points were at greater distances from Edwards Air Force Base. Also, because of remote distance, a more complex radio communications network was necessary.

However, all of these requirements were fulfilled without incident, and on June 3 Miss Cochran, under perfect conditions, bettered her own previous 500 km speed record. The provisional claim was filed in the amount of 1127.394 mthr. 450 MPH faster than the existing record. The record was made on the actual second try at this distance.

Earl Hansen and several other Stewards, including Mr. M. C. Landon, Manager of Fox Field, near Palm Dale, and Mr. Richard Kessler, Manager of Hawthorne



Airport, were able to be on hand as Stewards for most of the record flight attempts; but the majority of the Stewards were available for only one or two days at a time. It was necessary for Earl Hansen and Operations Chief Art Johnson, Manager of Fullerton Airport, to work continuously with the roster of Stewards maintained for the Contest Board by the Timers Aero Club to assure that the required number of Stewards would be on hand at each time that a record run was planned.

In retrospect, this was one of the smoothest operations that the NAA Contest Board has had the privilege of working. Miss Cochran, the Lockheed people, the Air Force personnel, and everybody involved did a tremendous job of working together in close cooperation. □

## The FAI and Council

*Contd. from page 10*

U.S.A.—Harry F. Guggenheim, Vice Admiral Robert B. Pirie and Jack G. Love

U.S.S.R.—Anatoly L. Speishes, Yuri N. Sokolov and Mrs. Valentina M. Selivertova

*Montgolfier Diploma*—awarded to Madame Nini Bosenan (Netherlands) for all her performances and in particular for being the only woman pilot to have twice crossed the Alps in a balloon.

The final item introduced in the Council meeting was a telegram from the Aero Club of the Democratic German Republic renewing its request to change from Associate to Active Member of the FAI. This question had been discussed at length in Mexico in 1963. It was put on the Agenda of the next General Conference to be held in Tel Aviv in October.

Much has been written in the past on Federation Aeronautique Internationale and the International Conference Table. The importance of the various FAI committee meetings that U. S. delegates have attended representing NAA affiliate cannot be overemphasized. Meeting with our counterparts from the numerous European, Communist-bloc, Middle Eastern, Far Eastern, and South American country representatives is an experience and a revelation that no American will forget. Beside sitting down at the conference table and helping to develop rules and regulations to amend and write new statutes for FAI, these meetings help to promote and cement better understanding and closer relationships among the people of the world.

There are now 54 countries in FAI, and at the conference table one can hear a large number of languages. For the most part however, English, French, Spanish, and Russian are spoken at the meetings. The officers of FAI or the delegates to committees do the translating. Because of the language barrier, the representatives chosen to attend these meetings are, for

*Continued on page 20*

## 1964 Cabot Award To G.E.'s Gerhard Neumann

The Godfrey L. Cabot award for distinguished service to aviation was awarded to Gerhard Neumann, a General Electric Company vice-president, at a luncheon meeting of the Aero Club of New England June 30. The award was presented by club president Thomas G. Brown, Jr.

A native of Frankfurt, Germany, Neumann is currently in charge of GE's flight propulsion division which manufactures jet engines. He was selected for his lifetime of contribution to aviation in industry and in science which have been of great benefit to the United States. Neumann, a former Flying Tiger, was made a citizen of the United States following World War II by a special act of Congress. In 1959 he won the Collier Trophy for his work on the development of the J79 engine which powered the record-breaking F-104 Starfighter.

The Aero Club of New England is the oldest aviation club in the western hemisphere. Previous winners of the club's Cabot Award include Igor Sikorsky, Admiral Richard E. Byrd, General Curtis LeMay, Alan Shepard, and Najeeb Halaby. □



Gerhard Neumann, GE vice-president, is shown receiving the Godfrey L. Cabot Award for outstanding contributions to aviation from Thomas Brown, (right), president of the Aero Club of New England.

## CESSNA AIRCRAFT IS CITED

Cessna Aircraft Company of Wichita, Kansas was one of 10 companies honored recently in a special ceremony at the White House. Cessna was presented with



the President's "E" award for "excellence in exporting and its contribution to the increase of U. S. trade abroad." In addition to a large certificate of citation, the company also received a special "E" award flag to fly at its Wichita headquarters. President Lyndon B. Johnson (right) made the special presentation to Dwane L. Wallace, Cessna president, in the White House rose garden. □

### The FAI and Council

*Contd. from page 18*

the most part, individuals who are sophisticated, mature, understanding, and patient. These meetings of necessity are somewhat long because of the language difficulty and the time consumed in translating, but each and every one is given the opportunity to be heard and to be understood.

FAI has been in existence since October 14, 1905; and over the years, the FAI has acquired much experience. In addition to FAI committee meetings, which deal with all fields and categories of aeronautical and astronautical matters, the FAI holds an annual General Conference. These General Conferences are rotated or held in different countries each year. As an example:

- 1959—Moscow, Russia
- 1960—Barcelona, Spain
- 1961—Monaco
- 1962—Athens, Greece
- 1963—Mexico City, Mexico

*Continued on page 20*

## The FAI and Council

*Contd. from page 19*

Various member countries compete with one another to invite the FAI to hold the General Conference in their respective countries. It is an honor for the host country to be awarded the privilege of inviting an international organization of such prestige as FAI.

Another function of FAI is to aid private pilots to "fly" through the snarls of government red tape when piloting aircraft into foreign countries. Through member Aero Clubs, pilots may obtain a "carnet" or memorandum. This allows a private pilot to fly his plane into any country that accepts the carnet system. It exempts him from paying customs duties, and makes his official entry easier. About 25 countries participate in this arrangement. The National Aeronautic Association—the official U. S. member of FAI—issues approximately 100 carnets a year.

The FAI is the only organization that is engaged in the certification of world records in the aeronautical and astronautical fields. It is important to note that in 1960 the U.S.A. held 98 aeronautical world records and the USSR held 108. In 1962, the U.S.A. reversed the trend and the score stood: U.S.A. 230 world records and USSR 118. Needless to say, this turn of events improved the image of U.S.A. in the aeronautical world. As of November 21, 1963, the world record score showed U.S.A.—275 and USSR—124.

Equally important to FAI committee meetings and the General Conferences are the World Championships and competitions in various aeronautical events. Competitions for the Gliding Championship of the world was held in 1958 at Leszno, Poland; in 1960 at Cologne, Germany; in 1963 at Junin, Argentina. The 1960 Parachuting Championship of the world took place at Sofia, Bulgaria; at Orange, Massachusetts in 1962, and at Leutkirch, Germany in 1964. The Aerobatics World Championship in 1961 was held at Bratislava, Czechoslovakia, and last year in Budapest, Hungary. The Academy of Model Aeronautics is very often engaged in these FAI world championships, recently competing at Kiev, USSR.

In the field of FAI World Championship events, the U.S.A. has not done too well. There is, however, a reason for this lack of success that should be explained. For example, at World Gliding Championships, the U.S. gliders are as good if not better than those built in Europe. The U.S.A. glider pilots are as good if not better than the pilots produced in any other country, but the best we could do at Junin, Argentina was third and fourth place. Why?

It must be pointed out that in the Communist-bloc countries the National Aero Clubs are a part of the military establishment, are supported financially 100 per cent by their respective governments. The entire Aero Club personnel works for their government, and the participants in the sport are either in the Air Force, Navy, or Army service. Their ages range from 20 to 30 years. After various national competitive eliminations, the glider pilots who will represent the differ-

ent communist countries have nothing else to do but practice. The pilot's sole occupation from year to year is to fly the glider planes. The government's aeronautical resources in research and development are directed toward the production of the best glider possible so that they win the FAI Championship.

Contrast this program with the situation as it is found in the U.S.A. First, gliding in the U.S.A. is 100 per cent an amateur sport. The U.S.A. pilot has to buy or make his own glider and usually this is quite an expensive item. The U.S.A. pilot is usually employed in some other activity in order to make a living for himself and his family. He can seldom take up gliding seriously until he has raised and educated his children and as a result, he usually is forty-five to fifty-five years of age. He is fortunate indeed if, after he is selected, he can accumulate 40 or 50 hours flying time in preparation for the FAI World Championship. In order to attend the championship, our pilots are compelled to take leave from their jobs and participate at their own expense. In some cases, the individual pilots have developed and constructed their own gliders that compare with and surpass the quality of the gliders that are developed and constructed under communist government control. Our pilots deserve the highest praise for having the audacity to compete under such insurmountable odds.

In the case of the other FAI World championship sports, the same situation prevails. It must be remembered that the other European countries give government support to their National Aero Clubs. The NAA is the only National Aero Club in the FAI that does *not* enjoy the support of its government in the various world championship events. This fact has some disadvantages as it has been pointed out above. On the other hand, many independent thinking citizens would prefer that the United States government keep out of the NAA and its affiliates' affairs. The NAA has over the years enjoyed success in the aeronautical field and has been of important help to various affiliates. We feel that NAA has a great future and that it will not take second place to any FAI National Aero Club. □

## When Is an Antique Airplane Antique?

*Contd. from page 12*

restrictions of their use for either pleasure or business. This puts the owner of such an antique in a favorable position in such matters as utilization, insurance, license problems, and safety. Yet a pilot or antique buff looking for a rare or unusual type of airplane can still find many examples of this period left to restore and enjoy.

In 1929 before the big stock market crash, over eighty aircraft companies were in production to some extent. Not all were good airplanes but many were and still are providing faithful service to their owners.

The date of 1935 was voted as being the year that emphasis changed from the open cockpit types to what is known as the "Classic Period," when the sleek

and comfortable cabin planes started to come into vogue when such types as Waco Cabins, Stinson Reliants, Fairchild's and Howards went into production. There is a certain amount of overlap into the Classic Period with some open cockpit types staying in production up to and through part of World War Two. Yet in general, a change was apparent and thus the change in periods so designated. The Classic Period runs to World War Two and here again can be found many types that provide excellent utilization for their proud owners but are quite different from the mass production types built since the end of World War Two.

The last period we have is that of World War Two. We have noted a growing interest in saving and flying aircraft of this era of aviation and many who were involved in this event now seek to save and keep flying the examples built by all the countries that took part. This interest extends from the trainers right up to the fighters and bombers. The Confederate Air

Force is doing a fine job in this era. Other AAA members own such varied and exotic types of Spitfires, Swordfish, Westland Lysander, F-51, P-40, B-25, UC-78, T-6, BT-13, and so on through the many types of aircraft designed and built for this war.

The main purpose and desire of most AAA members is to restore and FLY these varied aircraft. No problem is too big, no restoration too difficult to these people. Most feel that an airplane must fly to show aviation history as it truly was. In all eras from the Pioneer to World War Two, AAA members are busy finding, restoring, and flying airplanes. This will permit future generations to know how these airplanes sounded and looked as they "Keep the Antiques Flying!"

If interested in membership write to Antique Airplane Association, Route 5, Airport, Ottumwa, Iowa, 52501 for membership details. Send \$1.00 for two recent issues of the official AAA *News* for more information on antique and classic airplanes. □

## PCA Trains U. S. Team

*Contd. from page 16*

with an arrow preset on the ground. The jumpers are timed for the precision of their maneuvers and the time in which the complete series is finished.

Although the United States is relatively new to competitive sport parachuting and has only been competing in International Competition since 1956, the United States has scored impressive victories. In 1961 at the off-year competition in Europe, in 1962 at the Sixth World Sport Parachuting Championship held in Orange, Massachusetts, and in 1963 at the Adriatic Cup Meet held in Portoroz, Yugoslavia. All indications now point to a battle royal between the United States, the Czechoslovakians, the French, and the Russians for the World Championship honors in 1964. The United States Team has, in the past two months, shown remarkable improvement over their championship performances in the past years. Not only the accuracy scores, but the style scores are extremely impressive.

As a result of the rugged elimination period held in Fresno early in June, the following men and women will be competing in the Seventh World Championships this summer. On the men's team: Dick Fortenberry, Riverside, California, three time United States National Champion; Coy McDonald, Antlers,

Oklahoma, first overall in the Adriatic Cup in 1963; Loy Brydon, Seattle, Washington, an outstanding member of the United States Team since 1958; Gerry Bourquin, Porterville, California, an outstanding competitor from both the 1962 and the 1963 United States Team; Ron Sewell, Seattle, Washington, a newcomer to the United States Team who shows great promise and is a potential medal winner for the United States Team; Bill Berg of Snohomish, Washington, a past member of the 1962 United States Team.

The women's team consists of: Anne Batterson, Bloomfield, Connecticut, United States women's National Champion and first overall in the Adriatic Cup Meet in 1963 in the women's division; T. Taylor, Dallas, Texas, a newcomer to the United States women's team and an outstanding competitor; Gladys Inman, Redmond, Washington, a past member of the 1962 United States Team; Maxine Hartman, New York City, another new member to the United States Team; Carol Penrod, Los Angeles, California, a new face to the United States Team, also an excellent style jumper.

The PCA was fortunate indeed in securing the services of Captain Charles Mullins of the U.S. Army Parachute Team as the Team Trainer in addition to veteran Army team personnel Brydon, Bourquin, Fortenberry and McDonald.

Head of Delegation is Chairman Joe Crane of Mineola, New York, Team Leader is PCA President and veteran International competitor Deke Sonnichsen of Menlo Park, California. The International Judge is Jim Arender of New York City current Overall World's Champion and past World's Style Champion. U.S. Team Para-Commander canopies were provided by Pioneer Parachute Company of Manchester, Connecticut and Crossbow packs, harness and reserve parachutes were provided by Security Parachute Company of San Leandro, California.

The Parachute Club of America is confident that this year's 1964 United States Parachute Team is going to make one of the best demonstrations of United States athletic skill seen in the last decade. This important International Event taking place in Germany this summer will receive added significance in this Olympic year. A victory in Germany will be as impressive as any victory in Japan.

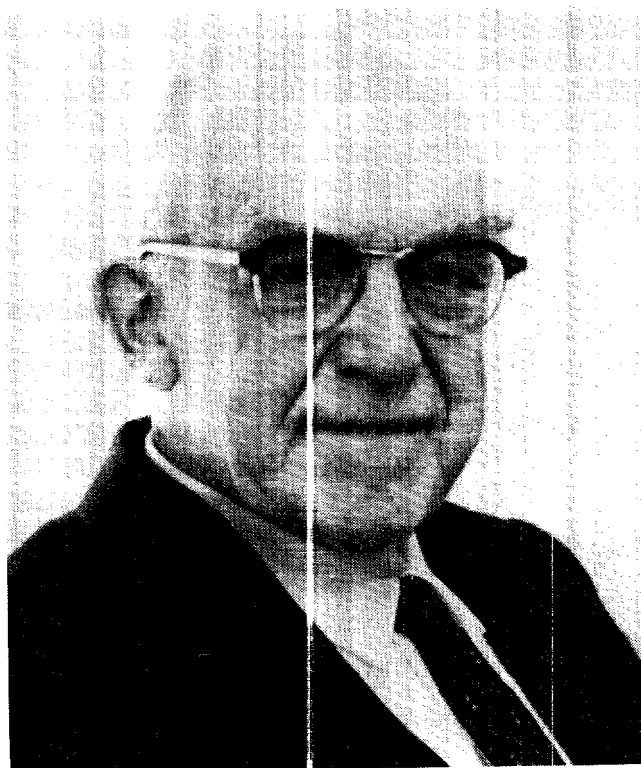
The PCA urges that all members of the NAA and all divisions of the NAA help this United States Team in its effort to promote United States athletic prestige abroad, and to further success of our United States, NAA competitors. Donations to the United States Parachute Team Fund will be gratefully welcomed. Send contribution to: U.S. Team Fund, Box 409, Monterey, California.

# The Men Behind NAA...

The Hon. William P. MacCracken, Jr., or plain Bill MacCracken as the industry knows him, personally wrote much of the original Charter under which NAA was organized in 1922. He has been NAA's legal counsel all of NAA's life—about 43 years.

MacCracken was a flight instructor at Waco Field during World War I and at the termination of hostilities was discharged at Ellington Field. A firm believer in the future of aviation, he worked unceasingly to impress upon U. S. lawmakers the imperative need of a single federal aviation law with which every state would comply. The result was the first Air Commerce Act of 1926, much of it the work of Bill MacCracken, who administered the new law as the first Under Secretary for Air in the Department of Commerce.

MacCracken is the senior member of a prominent Washington law firm that handles a heavy volume of legal work. As NAA has grown and its activities increased, so has its demands upon Bill MacCracken's time multiplied. Yet never, in 43 years, has he neglected NAA's legal problems or delayed a decision. He has given these years of loyal service to NAA without compensation of any kind, sacrificing his own interests to those of National Aeronautic Association. Of many fine and unselfish Americans, none have equalled Bill MacCracken's contributions to America's oldest aviation organization.



WILLIAM P. MacCRACKEN, JR.



EDWARD C. SWEENEY

Since 1932 NAA's Treasurer has been Washington attorney Edward C. Sweeney, a member of the U. S. Subversive Activities Control Board and former Chief Counsel of the General Services Administration.

Sweeney's extensive business interests, coupled with his long association with the Explorers Club, require much world-wide travel. NAA's rather involved accounting is handled by Sweeney's Washington business management office under the Treasurer's supervision.

Sweeney is a past president of the Washington Chapter of the Explorers Club and now is Vice-President and Treasurer of the national organization. He has journeyed twice to the South Pole, once as a member of the Byrd Expedition. Again in 1963 he visited the Arctic regions to obtain white Polar bear cubs for the Smithsonian Institution and the Detroit Zoo. The summer of 1964 saw him engaged in a trek through Alaska's wilderness.

Edward Sweeney is a former member of the faculty of Northwestern University where he instructed in the new field of international space law. He holds an active pilot certificate and owns a fixed base operation, Exec Air, at Richmond, Virginia.



# PIPER'S NEW AZTEC C

## SIX PLACE TWIN HAS HIGH PERFORMANCE

Introduction of the Piper Aztec C, new six-passenger, 218 mile an hour twin-engine airplane, is announced by Piper Aircraft Corporation, Lock Haven, Pa. Major modifications throughout distinguish this new flagship of the Piper line from its predecessor, the Aztec B, best selling six-passenger twin on the market since its introduction in 1962. Suggested retail price of the Aztec C is \$54,990.

Two Lycoming six-cylinder, 250 horsepower engines with Bendix fuel injection and dual 75 amp Delco Remy alternators power the Aztec C. These power plants, with Lord engine mounts redesigned for smooth operation and new lightweight constant speed controllable Hartzell propellers mounted on extended shafts, drive the Aztec C to a 218 mile an hour top speed, with a realistic cruising speed of 208 mph at 7500' altitude.

Slim drag-reducing Tiger Shark nacelles, first introduced by Piper on the popular Twin Comanche, and a streamlined aircoop under the nacelles give the Aztec C a new and distinctive silhouette. New hydraulically operated landing gear doors, made of fiberglass, completely enclose the retracted main and nose gears, and flush wing flaps further contribute to the speed-enhancing clean-up of the basic Aztec design. Cowl flaps are provided but engine cooling is so efficient they seldom need to be used.

Take-off run of the Aztec C is 750 feet, rate of climb 160 feet per minute, and stalling speed 62 mph, permitting this new twin to operate safely from short fields and at high altitudes. Service ceiling is 21,000', absolute ceiling 22,500', with 7400' single engine service ceiling at maximum gross of 4800 lbs.

### Generous Baggage Compartment

Useful load of the Aztec C is 1867 lbs. In addition to standard six-place seating, one large baggage compartment in the nose and an-

other aft accommodate 300 pounds of baggage or cargo.

Very effective new soundproofing is the result of generous fiberglass insulation and double windows, which also eliminate fogging.

Interior of the Aztec C is all-new, including rich new upholstery fabrics and carpeting, new-design contoured headrests, a completely new overhead ventilation system that incorporates individually controlled fresh air vents, individual seat lamps for each passenger and new overhead map lights for each front seat.

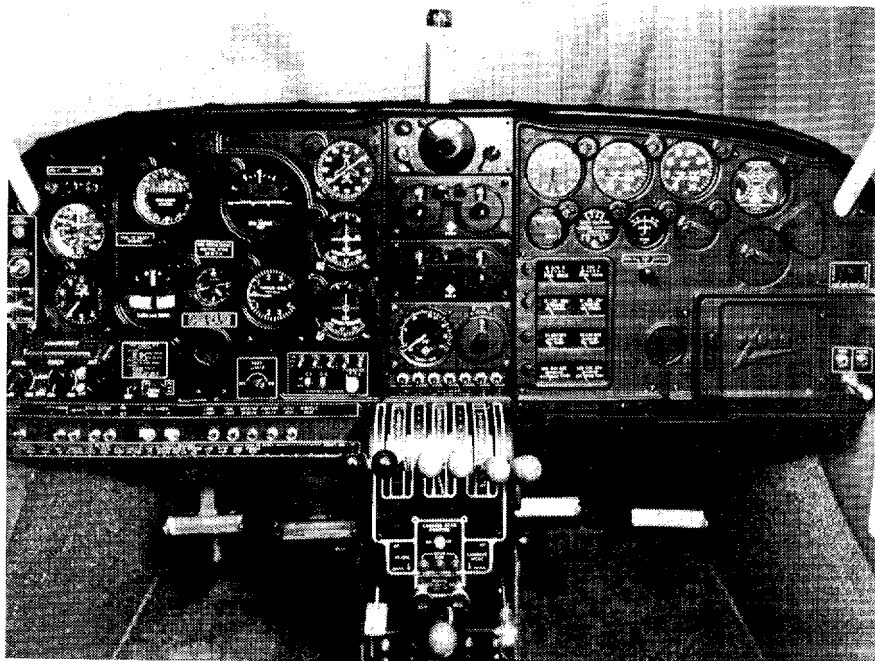
Between the two front seats a new console controls the fuel selection and operation of the cowl flaps. Standard 144 gallons of fuel, carried in four integral wing tanks, provide the Aztec C with nearly eight hour range—over 1300 miles non-stop at economy cruise.

New switch and circuit breaker panels, new gear limit switches and a convenient map pocket at the pilot's knee are among the many new features of the Aztec C. The instrument panel layout has been revised to accommodate the new fuel flow gauge used in conjunction with the Lycoming IO-540 engine.

In all, 12 different operational packages, including a great variety of radio and navigational equipment, are offered to tailor the Aztec C to diverse operating conditions anywhere in the world.

The Executive package, in three versions, adds dual Omni, marker beacon, automatic direction finder, and automatic flight, plus glare ban instrument lighting and Piper True-Speed Indicator to basic Aztec C equipment.

Professional packages, in three



Complete instrumentation and radio for every level of flight operation can be easily accommodated in the wide, roomy panel of the new twin-engine Piper Aztec C. Panel above group engine instruments, including cylinder head temperature and fuel gauges, at right, with ample space remaining for additional equipment. Gyro flight instruments, plus marker beacon receiver, Piper AltiiMatic three-directional automatic flight system, and glare ban light control are at left. Double bank of navigation/communications equipment in center includes ADF, complete "2x4" VH system with two transmitters, four receivers, dual VOR/ILS converter-indicators and glide slope indicator, and Distance Measuring Equipment. Operational packages offered for the Aztec C include de-icing equipment and very sophisticated radio systems to provide all-weather capability and meet requirements for operations around the world.

versions, further add glide slope, DME (distance measuring equipment) and related ground speed indication, plus Piper PEP external power. Three Corporate packages provide the Aztec C with all-weather operational capability by the addition of prop and wing de-icers and all-weather antennas. Three international versions offer a very sophisticated radio package to satisfy special conditions found in some parts of the world.

Five three-tone exterior paint designs are offered, with a choice of harmonizing interiors.

The Aztec C is the newest Piper to carry on a name introduced into the Piper line of business and pleasure aircraft in 1960, with the original Aztec. That five-passenger twin, with two 250 hp Lycoming engines, was flown by Max Conrad to establish the existing speed record around the world. The six-place B model was introduced in 1962 and more than 500 of these planes are now in operation around the world. The Aztec C is manufactured by Piper at its main plant in Lock Haven, Pennsylvania.

### AMA Goes for Records

*Contd. from page 17*

records. Of course, AMA being a chartered representative of NAA, and CIAM being a chartered division of FAI, technically the two parent organizations are the final authorities on modeling activities and, in fact, AMA works through NAA in all FAI/CIAM matters. The same relationship exists in many other countries, between their aero club model divisions and the CIAM.

This parallel organizational structure between full scale aircraft activities and model activities is functioning better each year. International modeling activities are gaining more prominence, and modelers in the U. S. are receiving more encouragement from AMA to concentrate on winning our share of the honors. NAA was successful in a similar campaign in 1960 when Russia held 108 full scale aircraft international records, compared to our 98. Now we hold 289 records to Russia's 122. Modeling is hopeful of a similar accomplishment. □

### PIPER AZTEC C PERFORMANCE AND SPECIFICATIONS

#### SPECIFICATIONS

Engine	Two (2) Lycoming IO-540-C4B5
HP and RPM	250 @ 2575
Gross Weight (lbs.)	4800
Empty Weight (standard, lbs.)	2933
Useful Load (standard, lbs.)	1867
Wing Span (ft.)	37
Wing Area (sq. ft.)	207
Length (ft.)	30.1
Height (ft.)	10.5
Prop. Diameter (in.)	77
Power Loading (lbs./hp)	9.6
Wing Loading (lbs./sq. ft.)	23.5
Baggage Capacity (lbs.)	300
Baggage Compt. Space (cu. ft.)	38
Fuel Capacity (gals.)	144
<b>PERFORMANCE</b>	
Top Speed (mph)	218
Optimum Cruise Speed (75% power at 7500'—mph)	208
Cruise Speed (65% power at 10,000'—mph)	203
Stalling Speed (mph)	62
Take-off Run (ft.)	750

Take-off Run over 50' Barrier (ft.)	1100
Landing Roll (ft.)	900
Landing over 50' Barrier (ft.)	1260
Rate of Climb (ft./min.)	1650
Best Rate of Climb Speed (mph)	112
Single Engine Rate of Climb (ft./min.)	350
Best Single Engine Climb Speed (mph)	110
Absolute Ceiling (ft.)	22,500
Service Ceiling (ft.)	21,000
Single Engine Absolute Ceiling (ft.)	8800
Single Engine Service Ceiling (ft.)	7400
Fuel Consumption (gph at 75% power)	27.4
Fuel Consumption (gph at 65% power)	23.8
Cruising Range (max. at 75% power at 7700', miles)	1065
Cruising Range (max. at 65% power at 10,000', miles)	1195
Cruising Range (max. at 55% power at 14,000', miles)	1265
Cruising Range (max. at 45% power at 16,000', miles)	1320

## CALENDAR

### SEPT. 12

1964 International Helicopter Competition, Sherwood Island State Park, Westport, Connecticut.

Pottstown Aircraft Owners and Pilots, Inc., 12th Annual Fly-In Breakfast, Pottstown Airport, Limerick, Pennsylvania. Sunday, September 13, 1964 (Rain Date Sept. 20th) Breakfast served from 9:00 a.m. to 1:00 p.m. Antique and new aircraft will be on display. All Pilots are welcome. Contact Alvin E. Renninger, President, P. O. Box 451, Pottstown, Pennsylvania.

### SEPT. 12-20

Reno Championship Air Races, Reno, Nevada.

### OCT. 4-10

AOPA Air Fair and Plantation Party, Diplomat Hotel, Hollywood-by-the-Sea, Florida. Six flight training courses will be offered: AOPA 360' Rating Course, AOPA Instrument Nav Com Course, AOPA Instrument En Route Procedures Course, AOPA Instrument Pilot Refresher Course, AOPA Light-Twin Refresher Course, and the AOPA Pinch-Hitter Course. Contact: A. H. Frisch, AOPA, Washington, D. C. 20014. Phone: 301-654-0500.

### OCT. 5

Third Annual USAF Contract Aerospace Services Symposium, Dayton Billmore, Dayton, Ohio. Sponsor: National Aerospace Services Association.

### OCT. 12-13

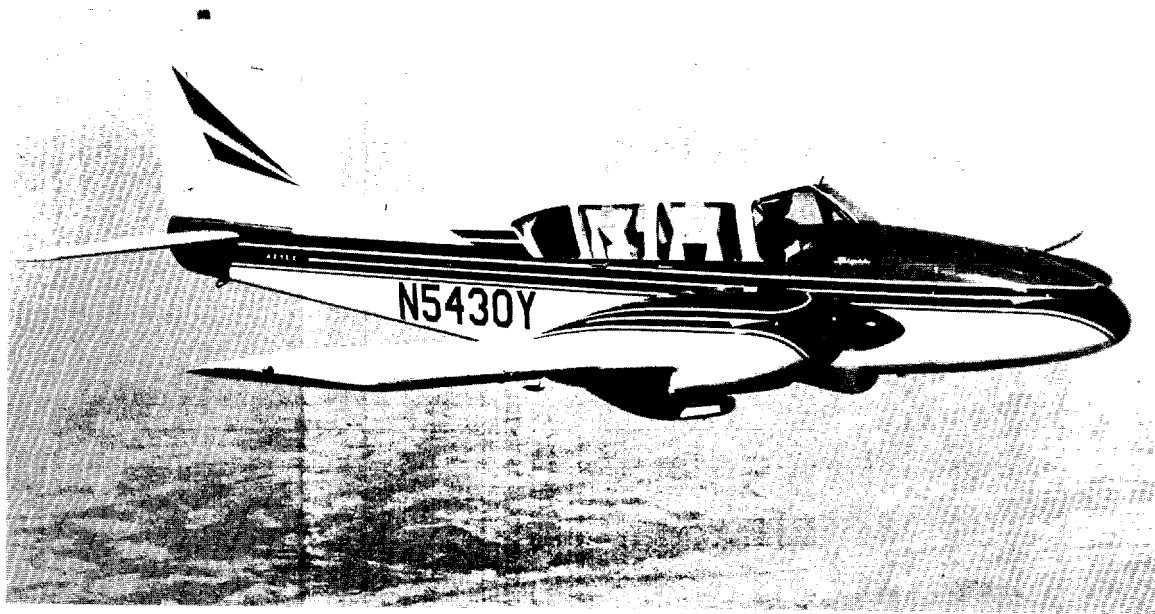
NAA Annual Meeting, Mayflower Hotel, Washington, D. C.

### OCT. 15-24

FAI World Conference, Tel Aviv, Israel.

### DEC. 17

Annual Wright Day Dinner, Aero Club of Washington, Washington, D. C.



NEW PIPER AZTEC C, latest model of Piper's six-passenger executive twin, is distinguished from its predecessor Aztec B by major modifications which increase performance, enhance travel comfort with smoother, more quiet flight, and provide a distinctive new silhouette. Aztec C is powered by two 250 hp Lycoming engines with Bendix fuel injection. Top speed is 218 miles-per-hour, cruise is 208 mph and range, with standard 144-gallon fuel supply, is over 1300 miles. New streamlined air scoops located beneath slim Tiger Shark nacelles give the Aztec C its striking new appearance. Flush wing flaps and

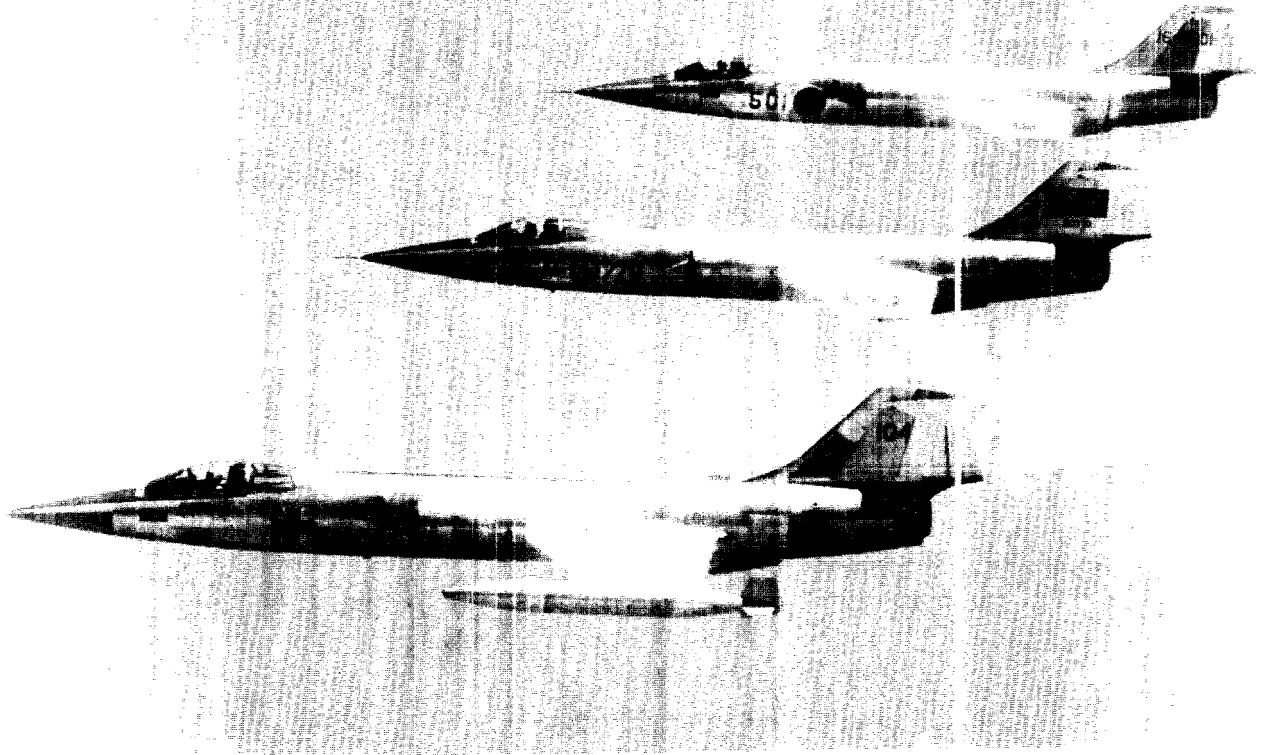
fiberglass doors that completely house retracted landing gear contribute further to the Aztec's clean new design. Major improvements have also been made within the cabin. Luxurious new styling, improved new ventilation system and advance soundproofing techniques have been incorporated along with new lighting and other improvements for pilot convenience.

Piper Aztec C is offered with choice of 12 operational packages that provide a complete range of radio, instrumentation and equipment for every level of operation, anywhere in world. Suggested retail price of the Aztec C is \$54,990.



BEAUTIFUL NEW INTERIOR of the Piper Aztec C executive transport combines rich upholstery fabrics and carpeting in a wide selection of decorator colors with the deep comfort of artfully styled, adjustable seats and newly designed contoured headrests. Travel enjoyment is further enhanced by exceptionally quiet flight that results from new double-soundproofing techniques, and a completely new ventilation system that incorporates individually controlled fresh air vents at each seat. For added convenience, an individual seat lamp for each

passenger has been provided, in addition to overhead map lights for each front seat. To complete cabin comfort, an array of convenience items, including assist straps, arm rests, coat hooks, lighter and ash trays, and panel compartment, has been provided. The spacious Aztec C interior allows ample stretch-out room for each passenger with six aboard, and, when desired, seats can be quickly removed. Two separate compartments, fore and aft of the cabin, are provided for luggage and carry a total of 300 pounds.



The J79 TURBOJET ENGINE powers these West German, Canadian and Japanese F-104 Starfighters. The General Electric designed J79 also powers defense aircraft of nine other nations; is produced in Japan, West Germany, Italy, Canada, Belgium and the U.S.

## TENTH BIRTHDAY ANNIVERSARY FOR G.E.'s FAMOUS J79

A much-decorated figure in the aviation world celebrates his 10th birthday in June, 1964.

Known world-wide for his seemingly boundless drive and thrust, he helped pioneer man's excursion into the strange, new world of travel at twice the speed of sound. And in the cold war, his deterrent power remains undeniable.

He is called J79 . . . the world's first Mach 2 turbojet engine. He currently powers a number of the Free World's fastest military aircraft.

Testing of the first J79 began just 10 years ago, but today also marks another milestone. Computers figure that some pilot, somewhere in the world will complete the J79's one-millionth flight-hour.

By the usual reckoning, a jet engine in its 10th year would already be well into its "phase-out" period with production sharply cut or even stopped.

But not this one.

General Electric, which designed and developed the engine will pro-

duce more J79s this year than in any year in its history.

What's more, the outlook is for continued production for several years to come to meet Free World defense needs.

U. S. Air Force pilots know the J79 well for it has powered their Convair B-58 bombers, their Lockheed F-104 Starfighters and their McDonnell F-4C Phantom II fighter-interceptors.

No less familiar with the mighty J79 are pilots who fly the U. S. Navy version of the Phantom II, the F-4B, and the North American A-5A Vigilante all-weather attack aircraft.

And around the Free World, in the defense forces of Japan, West Germany, Canada, Italy, The Netherlands, Belgium, Norway, Greece, Turkey, Nationalist China and Pakistan, pilots are flying J79-powered F-104 Super Starfighters.

Not only do Allied pilots all over the world fly aircraft powered by the J79, but the engines themselves are manufactured across the globe—

in Canada, Japan, Italy, West Germany and Belgium.

But defensive airpower is not the J79's only role. Its civilian version, the CJ805 powers the Convair 880, Convair 990 and the French Caravelle Super A jet liners.

Besides these many aircraft applications another J79 derivative—the LM 100—also powers hydrofoil ships that skim along the surface of the water at high speed. It also generates electrical power for emergency and peak load situations. And it is being used in an unusual plan to catapult jet aircraft into flight from forward positions in counter insurgency operations.

The J79's decorations include six major trophies and a raft of world speed, altitude and climbing records in both military and commercial aircraft.

Thus, a 10-year-old owns a significant place in the past, present and future of aviation. But remember, please, the jet age itself is only 21.