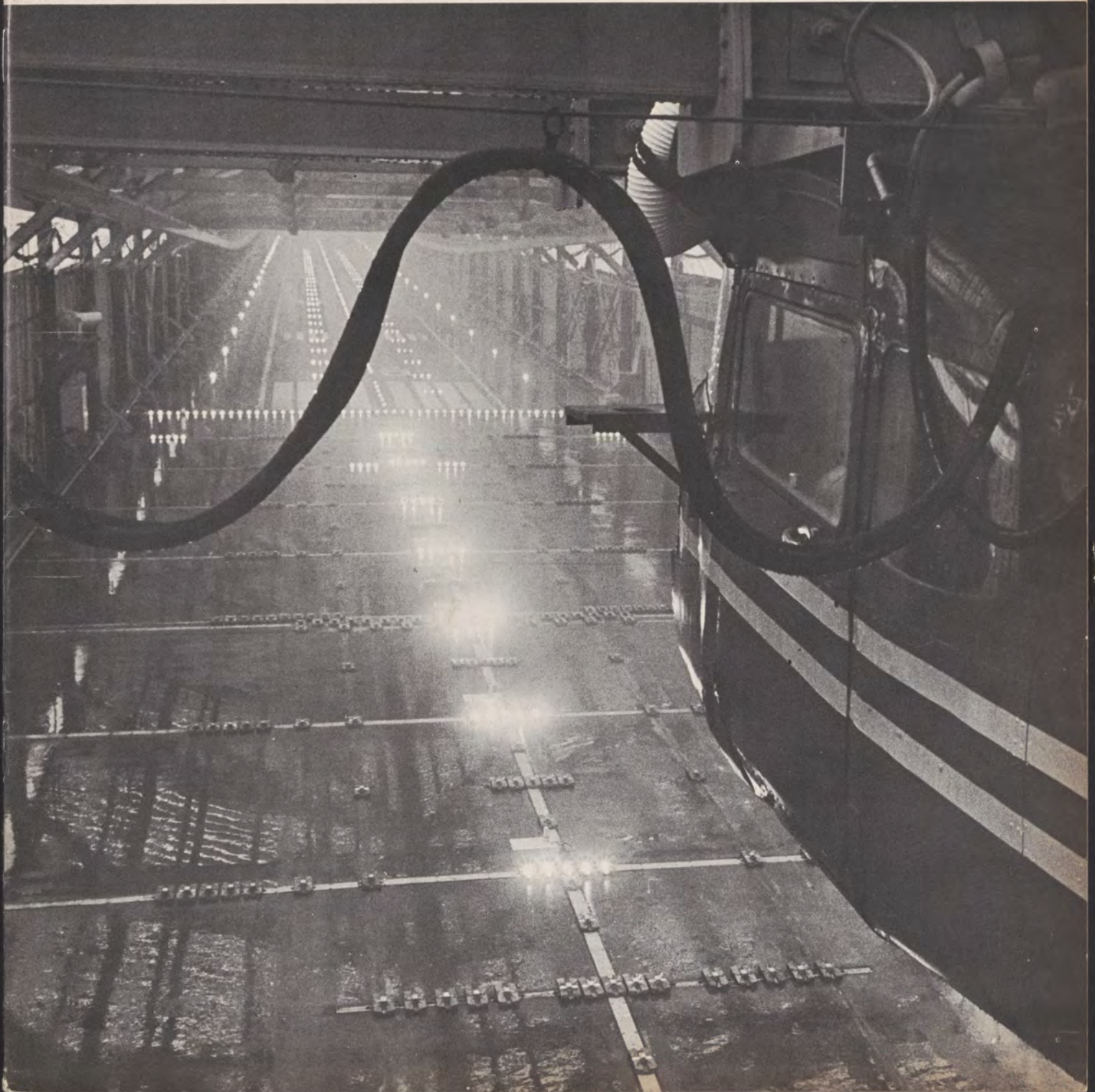


# FAA HORIZONS

MAY 1965

OFFICIAL EMPLOYEE PUBLICATION OF THE FEDERAL AVIATION AGENCY



# EDITORIAL:

## Be the Manager

No matter how we each contribute to our Government-wide cost reduction program, it remains the responsibility of the manager at all levels to fuse each individual contribution into a packaged organizational achievement.

Certainly there is no "success guaranteed" method of accomplishing more with less. The key factors of increased productivity are performance and efficiency. But who is responsible for the performance and efficiency of an organization? The manager! Therefore, it is my contention that before evaluating his organization, the manager must first evaluate himself.

There are a great number of things that can be said for the modern techniques of managerial evaluation. Where the manager himself is concerned, there is one question that, in my opinion, makes all others secondary: "Can he leave the workbench and be the manager?"

In expanding on this philosophy, don't take my reference to a workbench too literally. What I'm referring to are the innumerable details of routine operations that can make a manager the busiest, as well as the most ineffective, individual in the organization if he overlooks his primary role.

As we review our own performance and effectiveness as managers, let us keep in mind that the measure of an effective manager is not how well we satisfy the expectations of our subordinates, but how well the performance of our organization satisfies the expectations of higher management and the customers depending on our organization's output.

Very simply, a manager's primary role is to ensure that the personnel of his organization perform more as a group than they would as individuals.

I've found that planning, taking inventory of organizational strengths and weaknesses, establishing objectives and the methods of achieving them, setting priorities, making assignments, instituting standards of performance, resolving problems and making the decisions necessary to keep all of this, and more, under control, leaves little time for saturation in details.

Here is where I believe many of us, as managers, make our first mistake. We lose track of our primary role and our most limited commodity—time. Quite often we find ourselves back at the workbench; we involve ourselves with details and decisions that are well within the expectations and abilities of our subordinates, and we end up without enough time to perform the manager's role.

You may be reputed to be a most dedicated manager because you carry a briefcase and work at home every night and quite often on weekends. But as related to your efficiency as a manager, is this efficiency—or is it just making up lost time?

As managers, at all levels, we are being called upon to increase the economy and efficiency of our organization. As we undertake this challenge and task, let's give ourselves and the Agency the fullest potential of our position. Let's not perform our operation—let's manage it.

Leave the workbench and be the manager!

*William F. Harrison*



William F. Harrison, Manager  
National Aviation Facilities Experimental Center

The manager of the National Aviation Facilities Experimental Center, near Atlantic City, N. J., is responsible for the direction of administrative and supporting services for FAA's technical research and development efforts at the Center, and for services to the tenant organizations which occupy the site of this World War II naval air station which is now operated by the Agency. Mr. Harrison also serves as the local representative of the Agency in community relations matters. Prior to joining the FAA in November 1962, Mr. Harrison was a career Air Force officer from 1941 to 1961 who retired as a Colonel.

# FAA HORIZONS

MAY 1965

F E D E R A L A V I A T I O N A G E N C Y

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### COVER

Inside the fog chamber at the University of California's Richmond field station where studies on runway lights are conducted for FAA. See pages 14 and 15.



Left: Volunteer Don deSteiguer, a CARI technician, gets wired-up for a turn in the mockup. Above: Don enters light aircraft cockpit trailing electroencephalograph wires. Right: One test phase included filling the chamber with fog which simulated cloud penetration.



## FLICKER DAZE

Roman slave traders and FAA scientists have very little in common except for one test now being conducted at FAA's Civil Aeromedical Research Institute (CARI).

Slave traders painted a white mark on a potter's wheel and forced slaves to stare at the turning disc. The flickering effect made some sick but had no effect on others. Those not affected brought higher prices.

Dr. Carlton E. Melton Jr. of CARI uses the same flickering phenomenon on human subjects, but his equipment is more elaborate than a potter's wheel. Each subject sits in a salvaged light plane cockpit with eight wires attached to his head. He is surrounded by the flickering effect while wind, moisture and clouds swirl outside the cockpit. The temperature is varied from sub-freezing to intolerable heat in the environmental chamber where the cockpit is mounted.

The goal of the CARI tests is to determine whether flicker stimulus seriously compromises air safety. Melton's subjects are volunteers who, like Dr. Melton, are interested in learning more about why some pilots get sick during certain weather conditions.

Pilots and passengers who ordinarily are unaffected by air sickness sometimes report discomfort ranging from nausea to grand mal seizures after flying through clouds which reflect the rotating red anticollision light mounted above the cabin. Even sunlight chopped by rotating helicopter blades can cause the same effect.

In a study of 102 Navy helicopter pilots, one-fourth of the subjects suffered impaired alertness after being exposed to the stroboscopic effects of the helicopter blades when they were chopping through either sunlight or the reflected light of the rotating beacon. Another report indicated that a

pilot lost consciousness after landing into the sun with the propeller idling.

How severely the flickering works on the brain and what frequencies are most likely to cause illness are among the questions CARI wants answered. As the chief investigator in charge of the project, Dr. Melton turned to the electroencephalograph (EEG) as a way of analyzing what goes on in a subject's brain while he is under the influence of this flicker vertigo. Since the symptoms of the illness can simulate those of an epileptic seizure, he wired each subject for recording brainwave patterns from six areas of the brain, plus eye movements, both up and down and side to side.

In the test cockpit each volunteer stares at a small red light, the only illumination in the cockpit.

A rotating beacon above the cockpit is turned on for 10 minutes.

After the beacon is turned off, the pilot remains in the cockpit for another 10 minutes while any lingering effects of the flickering light can be recorded. Droning engine noises from a recorder can be heard throughout the tests.

The cycle is repeated twice—once without weather and again with the chamber filled with "fog" to simulate passing through clouds. Throughout the tests, the subject's brain waves are recorded on the EEG tape.

The first tests used a beacon rotation speed which produced ninety flashes per minute. The speed and intensity of the light will be increased during subsequent tests. The brain wave patterns induced by each light condition can be compared quickly by examining the EEG tapes through high speed computers. However, the final results from the current tests are months away. #

## VOICE FROM THE DEPTHS



There's nothing wet about this VORTAC's signal even though it's four miles from the shores of Lake Ponchartrain. New Orleans SMS technicians regularly ride the 38-foot launch to service its complex of electronic equipment.

VORTACs are installed in some hard-to-get-to places around the U.S.A.—on top of mountains and cliffs, in the middle of deserts and prairies—even cornfields.

For a really unusual location, though, consider the one at New Orleans standing on concrete pilings 18 feet above the mean water level of Lake Ponchartrain. To maintain the water-bound VORTAC, electronic technicians from the New Orleans Systems Maintenance Sector regularly take a four-mile boat ride. A 38-foot outboard built especially to cope with Ponchartrain's unpredictable conditions is used for the trip. Shallow Lake Ponchartrain is seldom calm and gales race out of nowhere to whip up waves that keep smaller boats shorebound. But VORTACs are situated where they can best serve pilots and this one provides excellent signals for the area which embraces three busy airports—New Orleans International, Lakefront Airport and Calender Field.

Twice the New Orleans VORTAC was moved when its former swampy sites were drained to make room for industrial developments. However, since 1958 it has stood in the lake. Since there is no present indication that the lake will be drained, the location is considered permanent.

Five days a week for the past three years, Terry J. Jacob, technician in charge of the VORTAC, has been ferried out to service its complex of black boxes by Reid A. Butler, diesel mechanic, who also is in charge of the sector's one-craft navy.

When the weather is calm, Jacobs boards the VORTAC by way of a small gangplank. But when it is rough, and that is most of the time, he is hoisted onto the main deck by an ingenious sling designed by Systems Maintenance Chief Felix N. Gros and operated electronically by Butler. The sling also serves as a safety device which protects both man and boat from damages caused when it might smash against the VORTAC's concrete base during rough weather.

While technicians in other parts of the country fight snowstorms and blizzards, the elements which give the New Orleans Systems Maintenance Sector trouble are rain, wind and fog. In extremely foggy weather the Coast Guard is sometimes called in to get the technician to the VORTAC.

One way or another, get there he does, because in Systems Maintenance the watchword is SERVICE, and service keeps those navids on the air and the aircraft safely on course. #



Above: Terry J. Jacob, EMT, is lowered to boat by "man-lift" sling. Below: Terry (left) and boat operator Reid Butler check launch after work.





## LOOK HOMEWARD,

## AMERICANS ★ ★ ★

The 961,647 tourists from overseas who visited the United States last year were divided into two broad categories—repeaters who liked what they found on previous trips and those fulfilling a lifelong dream to “see the U.S.A.”

More than a million overseas visitors are expected this year.

And up from Mexico came an additional 324,693 to take a look at *los Estados Unidos*. Canadians, more than 5 million, also kept the border turnstile whirling.

All this coming and going added up to more than a billion dollars in tourist spending—the first time in American tourist history this sum was reached and by far the largest amount spent in any country by travelers in pursuit of fun and relaxation.

And they came to the right place. What they found boggled the imagination: mountains, lakes, rivers, forests, beaches, deserts, plains, metropolises and much more were bigger, longer, swifter, deeper, taller, broader than the travel pamphlets suggested.

And all of this is available to Americans at less cost and time. We live here. No passports, language difficulty or money conversion tables for us. For us, menus, timetables, travel directions and the laws and customs of the region present no problem. No need to go about asking timorously: *¿Habla Ingles?* or *Parlez-vous Anglais?* or *Sprechen sie Englisch?* or *Parla Inglese?* Even the little children here speak English. So do waiters, hotel employees, policemen, park

guides, taxi drivers, plane and train crews and the man on the street. Everyone speaks English and the rate of exchange is just “like home.” No fooling around with shillings, francs, marks, pesos or lire.

Each year increasing numbers of Americans are taking time to see the U.S.A. Secretary of Interior Stewart L. Udall in a recent speech said that annual visits to State and Federal recreation areas have tripled in the past 10 years to a staggering 900 million annually.

They had ample space to move around in—the National Forests include 14 million acres of wilderness. In 1963, the National Park Service played host to 68 million campers in its 471 camping grounds and areas and in the 48 group camps stretching from Mt. McKinley in Alaska to the Virgin Islands National Park.

The call of the wild is being heard by more and more Americans. Mr. Udall called attention to the 25 million fishing licenses sold annually in the United States and remarked that the “outdoors” business comes to \$20 million annually. He also noted that there were only 50,000 skiers in the U. S. 30 years ago but estimates the number today as being 5 million. Mountaineering has climbed, too.

As though Nature conspired with industry to equip the American to move with effortless ease across his vast country, America is a land of 92 million drivers operating 65,648,961 passenger vehicles. If he feels like exercising the family buggy he can drive from Key West, Fla. to Anchor-

age, Alaska, over 5,345 miles of first class road, most of it in the superhighway category.

If he owns one of the 725,000 “recreation vehicles” registered in the U. S.—425,000 travel trailers, 200,000 pick-up campers, 100,000 camping trailers—he’ll be only a few feet from room and board for the trip.

But lodgings for the night, or longer, is not much of a problem in a land that has 3 million rooms in 75,000 hotels and motels. Most offer family rates and many have over-night laundry and dry cleaning service, laundromats, barber and beauty parlors.

While the country is vast—3,614,211 square miles (includes the 50 states), of which 66,237 are water—every nook and cranny of it is linked by a road net of 3,600,000 miles. About 245,000 miles of this is superhighway. In fact, there is a mile of road for every square mile of land in the U. S.

America is particularly blessed by Nature. Of the 45 lakes listed in standard atlases as being the world’s biggest, 20 are in North America. Lake Superior, 350 miles long, 1,333 feet deep and covering an area of 31,820 square miles, is far ahead of its closest runnerup, Lake Victoria in Africa. Victoria, no puddle, is 225 miles long, 265 feet deep and covers 26,828 square miles.

Mountains are an American specialty. Two mountains in Alaska—McKinley at 20,320 feet and North Mountain at 19,470—make 15,771-foot Mt. Blanc, highest in the Alps,



The ramp which spirals around six stories of the Guggenheim Museum of Art in New York give visitors an uninterrupted view of the displayed art treasures.



Above: High-rise apartments in the Colorado Rockies. These prehistoric dwellings in Mesa Verde National Park give an insight into family life 2,000 years ago. Below: The fabulous New York World’s Fair re-opened April 21 and closes forever Oct. 17, 1965. It is one of the most spectacular shows of all time.

Washington, Jefferson, Roosevelt, Lincoln immortalized on Mt. Rushmore, South Dakota.

The ancient ways of the Orient blend gracefully with the hurry tempo of modern times in San Francisco’s famed Chinatown.

Filigreed ironwork and fine foods prepared with delicate French finesse are New Orleans’ world known symbols.

Newest sightseeing attraction in Chicago is Marine City, a circular twin tower apartment complex of 896 wedge-shaped apartments, shops, restaurants, rink, gym and recreation areas.





Gettysburg Battlefield, where the tide of the Civil War changed after the battle, July 1-3, 1863, draws thousands annually.

look like an interesting steep hill. Famed Matterhorn, also in the Alps, is a relatively modest 14,690 feet. In all of Free Europe only 11 mountains rise above 14,000 feet but there are 80 such in the U. S. Mountains are just the thing for climbing, skiing, and just plain looking at.

One of the nice things about traveling in the U. S. is the ease in which it can be done, singly or in large groups. Aside from the family car, Americans enjoy an incomparable rail, bus and air transportation system. Bus and train travel is a buy-your-ticket-and-climb-aboard business. Booking a flight many days, even weeks in advance, as is the custom in most countries, is a thing of the past.

The airline network is vast, with frequent service. Some 50 daily non-stop jet flights leave New York for California; 24 for Miami. In 1964 U. S. airlines carried more than 70 million passengers—more than the population of most countries in the world. And the price is right—the air fare from New York to Washington, a distance of 213 miles, is exactly half the cost of a plane ticket from London to Paris, 208 miles apart. Infants in arms travel free; children under 12 at half fare and under various family plans the wife and children under 21 travel at reduced rates.

Secretary Udall, speaking with the assurance of a man who knows his product and is eager to stack it up in competition with what the other side has to offer, asked: "How many amateur connoisseurs of art are aware that there are more Rembrandts in New York than in Amsterdam? More French impressionist paintings in America than in France? Or realize that the National Gallery in Washington has a more representative collection of Italian Art than any Italian city, a better collection of English art than any English city?"

"When it comes to the search for history, we have our own castles, kingly places, and even ancient cathedrals, in the Southwest, in the Virgin Islands, and in Puerto Rico. We also have Mt. Vernon, Monticello, and the great old houses and churches of the American past. Our Spanish missions and Indian villages also have an antiquity transcending Europe's. Valley Forge, and the "rude bridge that arched the flood," the Lincoln Memorial, Independence Hall, the grave of John Fitzgerald Kennedy—attract Europeans. Dare we admit we have not ourselves seen them?"

"As for festivals, Pablo Casals' Puerto Rican festival takes no back seat to Salzburg or Beyreuth, nor does Tyrone Guthrie's festival in Minneapolis.

"Those who have a special attachment to the American out-of-doors know the majesty and variety of the American continent: its masterpieces range from the Grand Canyon to the Everglades to the active volcanoes of Hawaii. The Alps have a splendor of their own, but what can one say of those Americans who have never looked in wonder at the Tetons of Wyoming, the High Sierras, or the glacial peaks of Alaska?"

"Before any American is carried away by word pictures of Scandinavian fiords, why not explore the inside passage from Seattle to Alaska and see the finest shore and seascapes of North America against a backdrop of magnificent mountains. Or if you worry about the vanishing wilderness, stay awhile in our newest State and look on a glorious expanse of untrammeled nature.

"Whether one prefers to ski, to swim, to hike, to ride horseback, or to travel seated in an auto or a boat, there is more superb scenery in America than in all of Western Europe. And those who relish alien climates and exotic touches can also have their wants fulfilled at home in those largely unspoiled outposts of Hawaii, Samoa, Puerto Rico, and the Virgin Islands.

"My advice, then, in 1965 is look homeward, Americans." #



On the alert in the Mid-Continent Control Tower are (from left) Todd W. Reimer, controller; Emerson Capps, chief, and Thomas D. McKeel, controller. Right: The unique 150-foot cantilevered tower stands impressively framed against the Missouri sky.

## 'Show Me' State Does Just That

A sizable piece of the flat, pleasant face of Kansas City's (Mo.) Mid-Continent Airport is going to be woefully abused later this year. But all to good purpose. The airport is embarking on a long-range, large-scale program of expansion and improvement.

Passage last February of municipal airport bonds and a \$1,961,280 Federal-aid Airport grant will add a new 8,000 by 150-foot east-west runway, with appropriate lighting and connecting taxiways and holding aprons. As part of the immediate construction package, holding aprons at both ends of runway 18/36 and lighting of the north-south taxiway turnoffs are planned.

The new construction will fit in with the unique cantilevered control tower. The tower, which is the tallest in the Central Region, is presided over by Emerson S. Capps who became its first chief in December 1962. He and his original crew of six controllers will have a bird's-eye view of the construction from the soaring tower.

As much as anything on the sprawling airport, the tower is an eyestopper. Built at a cost of \$634,000, the tower rises 150 feet above the ramp and contains nine floors with 9,126 square feet of usable space. Part of the gross space is unusable because of the central control column which houses the elevator, stairs, nine rest rooms, corridors and a utility



shaft for plumbing, heating, wiring and control tower phone and radio lines. The central column also contains a dumbwaiter for moving heavy equipment from the tower to the maintenance room.

Operations at Mid-Continent, which has international airport ambitions, reached 108,196 in 1964, up from 74,040 logged in 1963. Of the 1964 operations, 86,546 were local flights and 20,805 were general aviation. Military and scheduled air carrier counts were low since the Municipal Airport, closer to downtown Kansas City, is still the one used by scheduled air carriers. However, regularly scheduled flights come into Mid-Continent when Municipal is below safe ceiling and visibility minimums. Minimums at Mid-Continent are the lowest permissible, 200-foot ceiling and one-half mile visibility.

The runway is a comfortable 9,000 feet long and is equipped with a complete approach lighting system and instrument landing system. A considerable part of Mid-Continent traffic is Trans World Airlines training flights. TWA also maintains a major aircraft maintenance base at the airport.

Plans call for the eventual transfer of the bulk of air carrier operations from the downtown Municipal Airport out to Mid-Continent. #



Above: These stocks in historic Williamsburg, Va., were no laughing matter in Colonial days. Below: An Indian family views the spectacular riot of color and weird shapes that make Grand Canyon National Park a mecca for thousands of tourists year-round. The formation is unique in the world.





## A NEW ROAD HOME

Hacking an access road through two miles of giant snow-laden spruce and fir trees after having already chopped out a 2,400 foot runway is a man-sized job no matter how you slice it.

"Not only was it rough but it was one of the most unusual jobs we've ever taken on," said Gerald O. Kempton, Airports Division chief of the Alaskan Region. "It was especially satisfying to see how everyone pitched in and worked together to help the homeless Aleuts."

Kempton was referring to a new village—Port Lions—built for the 50 Aleut Indian families whose homes on nearby Afognak Island were destroyed by a tidal wave following the earthquake last year. A landing strip and access road were built under Agency sponsorship and supervision at the new site on the northern tip of Kodiak Island in south-central Alaska. Today, new houses and a community building stand in clearings in the woods near the water's edge of Settlers Bay.

Federal, state, civic and fraternal organizations joined forces in a team effort that aided many stricken native communities—Afognak was one of them.

Oscar Ellison, village chief, rubbed his eyes in disbelief

when he first saw the new location. "We thought we were finished when that tidal wave washed away our Afognak homes," said Ellison. "The land had sunk and we were afraid that more waves would hit. To make matters worse, our springs were contaminated by salt water. Things sure looked black for us until the Lions Club offered to help."

District 49 of Lions International in Alaska came into the picture when they heard that there were restrictions on using earthquake disaster funds for moving entire villages to new sites. Ross Wood, District Governor for Lions International in Alaska, announced that the Lions would take on the project of finding new homes for Chief Ellison and his people.

The Lions received a green light from the Bureau of Indian Affairs for their plan. The new location for a village and an airstrip was picked by the U. S. Geological Survey Group in Settlers Bay, on state-owned land 20 miles away. FAA was asked to construct a 2,400 foot strip and a two-mile access road with funds from the President's Office of Emergency Planning.

Robert Matsen, chief of Airports Engineering Branch, was



Robert P. Mensing, Airports Division (left) and area manager Darrell Charfin are briefed by chief pilot Alfred Cratty before flight to Port Lions.



Above: New homes built by volunteer Mennonites nestle in the woods near Settlers Bay. Below: Some of the principal team members of the Port Lions project gather as Frank W. Valle, Bureau of Indian Affairs, points to Port Lions. From left: Robert Matsen, FAA airport engineer; Melvin V. Marcher, U. S. Geological Survey Team; Franz J. Froelicher, District 49, Lions International and Capt. Kenneth C. Lauster, U. S. Public Health Service. Right: Robert Mensing, Luther A. Brice, Brice Construction Company and Jay F. Harmon, Airports Division (from left) discuss road construction.



assigned the project by Kempton. The job, along with similar ones at Old Harbor and English Bay, was taken in stride by Airports Division.

"This was quite a switch from our normal routine," said Robert P. Mensing, of the Airports Division, Alaskan Region, who also assisted with the rehabilitation. Normally, the Airports Division provides airport engineering advisory services, gives financial assistance under the Federal-aid Airport Program and plans airport systems tailored to the needs of the flying public. Also it maintains information on existing airport facilities in Alaska.

Airport Division engineers designed the airstrip, drew up plans and specifications, let the contract and supervised construction. Brice Construction Company of Fairbanks was awarded the contract. Airports Division assigned Jay E. Harmon to supervise construction of both the strip and road at Port Lions.

The village building program began a year ago. Mennonite Disaster Service volunteer carpenters, electricians and plumbers came to Port Lions from Canada and the United States and worked without salary. Lions clubs paid

their transportation, housing and subsistence while they were on the job. The Lions figured these donated services would have cost them as much as \$380,000.

Much of the lumber was donated by lumber companies in the Pacific Northwest. Other firms contributed wiring and plumbing fixtures and many other items necessary to make the homes comfortable. Whatever else that was required to complete the houses was arranged and paid for by the Lions clubs. In gratitude the natives renamed their village Port Lions.

Aircraft are now using the strip and the access road has been completed. The Agency figures the cost close to \$187,000.

Life has resumed its normal rhythm for the Aleuts. Village men sell their catch of fish to commercial canneries at Kodiak and, this summer, many will serve as guides for hunters of the huge Kodiak bears. Their future looks bright, thanks to the efforts of all those who took part.

"It was quite a job," reflects Bob Mensing. "The days were long and the weekends were short but the work was interesting and satisfying." #



## No Siesta for Our Man in Argentina

**D**iplomat, persuader, aviation expert—that's Frank Monaco, Southern Region's chief advisor for the FAA International Field Office in Buenos Aires, Argentina. He's frequently hard put to decide which *sombrero* he will wear each day because he has so many important roles to play.

Although the Agency has no direct operating responsibilities in Latin America, our man in Argentina is energetically active in encouraging, advising and assisting these countries to increase their aviation potential. This is Frank Monaco's job in Argentina and he couldn't be more enthusiastic about it.

Hard work? Not for Monaco, because he finds his life deep in South America exciting, varied and challenging. And when you see him in action, he seems to enjoy his work to the point where, as he says, "I am a peculiar kinda guy—my work is not only a job, it's my hobby, too."

With this philosophy, he can have a great time in Argentina, Uruguay, Paraguay and Chile. Aviation has brought the promise of better living, an economic "cure," for many Latin American countries. The future holds even greater promise in the current economic-cultural explosion. Inaccessible moun-

tain areas, isolated expanses of desert, forests and sub-arctic frigid zones have been opened for economic and social development by the airplane.

Large aircraft operations to principal cities, coupled with those of small feeder lines to various locations in isolated areas, have significantly stimulated cultural, industrial and agricultural growth.

In recognition of this, the government has adopted a new civil aviation policy of wide magnitude. The new policy, which encourages private enterprise, should stimulate even greater development.

And just how does Frank Monaco, "our FAA man in Buenos Aires," fit into the aviation picture?

Uppermost in his mind as chief advisor is helping assure the safe operation of the three American flag air carriers serving his area—Pan American, Panagra and Braniff. Using both jets and propeller aircraft, these carriers are enjoying a booming business serving this bursting economy.

To insure that these carriers operate with maximum safety, Monaco is charged with evaluating the routes these carriers fly, checking their operations, facilities and practices, and determining the adequacy of airports, air navigation aids and

communication facilities they use. To do this requires a great deal of initiative, diplomacy and ingenuity in devising and promoting ways of meeting adequate air safety standards through working closely with the carriers and with officials of foreign countries.

But his responsibilities do not stop here. Monaco, as do other chief advisors in FAA International Field Offices, working closely with Civil Aviation Advisory Groups, gives a wealth of technical advice and assistance to officials of foreign governments in the development of many of their own internal aviation systems. He helps them plan their aviation programs to insure that their services, facilities, and systems are best suited to their international needs, and advises them on the advantages of implementing the standards and regional plans of the International Civil Aviation Organization.

Other areas of aviation activity in which Monaco is involved include his work with aerial applicators who use the airplane to reduce the scourge of insects. He encourages flying clubs and serves as a communications, navigation, airport and aircraft advisor.

One of the happiest days in his Latin American assignment occurred last January when he saw the results of many

years work culminated with the issuance of a coveted FAA repair station certificate to the Taller Aeronautico Wolkopf at Moran Airport in Buenos Aires.

Taller was the first Federal Aviation Agency-approved foreign general aviation aircraft repair station in South America. FAA Southern Region Deputy Director Paul H. Boatman formally presented the certificate during an inspection trip.

Currently, Monaco is working closely with government of Argentina aviation officials in regard to a bilateral airworthiness agreement with the United States. DINFIA, the Argentine state-owned aircraft manufacturer, has indicated, if an agreement is reached, they plan to make application for FAA type certification of its 10-place, twin turbo-prop aircraft being built in Cordoba. When that time comes it will be another happy day for the chief advisor of FAA Southern Region's International Field Office.

In addition to Monaco, the other Southern Region chief advisors providing American aviation know-how in South America are Richard S. Beckley in Rio de Janeiro, Brazil and Harry Tabor in Lima, Peru. The three FAA ambassadors of aviation are helping all the countries of Latin America establish closer aviation ties with the United States. #



Left: Frank Monaco (left), aviation "ambassador extraordinary" for the FAA in Argentina, is as sure-footed at social functions as he is on the technical front. Below: International Field Office Advisor Monaco examines a section of a jet engine being overhauled in a South American repair shop. Right: "9th of July Avenue" in the center of Buenos Aires is called the widest avenue in the world. Lower right: On an aircraft maintenance facility inspection trip, Monaco is accompanied by the Sub-Director of the Argentine Direccion Technica (the FAA of Argentina) and the Director of Maintenance of Aerolineas Argentinas. On duty in Buenos Aires with Monaco is Leonard Davis, air carrier maintenance advisor. The Agency also maintains IFOs at Rio de Janeiro, Lima, Manila, Tokyo, Beirut, Rome, Frankfurt and Paris. A new location for the IFO in Africa is being negotiated. In underdeveloped regions of the world the airplane is a magic carpet to previously remote areas.



The Buenos Aires air traffic control center, operated by Argentina, uses many FAA techniques.





Inside "cockpit" preparing for a simulated approach in the fog chamber where scientists are studying the configuration and intensity of airport lights.



Above left: Alphonso T. Barr, inside "cockpit," chats with David D. Thomas, Associate Administrator for Programs, Barr, Airports Service, is a former summer trainee with the FAA who graduated from Howard University with a B.S. in electrical engineering and is now a leading lighting engineer. Above: Chamber is filled with "fog" before tests start. Below: Checking results at the fog chamber are: from left, Barr, Thomas, Deputy Director of Airports Service Chester G. Bowers, an Air Force observer and university official. Left: Administrator Halaby emerges from "cockpit" during tour of fog chamber recently.

## WHERE THE FOG IS TAILOR - MADE

At the University of California's Richmond field station, there's a runway on which an airplane has never landed and never will: it's actually indoors, is only 1,000 feet long, and is usually hidden by a dense blanket of fog.

The experimental runway, constructed at the base of the University of California "fog chamber," is equipped with various types and intensities of lights.

The entire structure was built under FAA sponsorship as part of a never-ceasing effort to achieve greater flying safety under adverse conditions of weather and visibility. Engineers at the UC's Institute of Transportation and Traffic Engineering are using the runway and fog chamber to conduct a series of experiments to determine the best color, intensity and pattern of airport runway lighting. The scientists hope that from these experiments will come better utilization of aircraft, with greater safety in fog and poor weather.

### Administrator Inspects Fog Chamber

Recently, while on a visit to the San Francisco Bay area, Administrator N. E. Halaby rode the length of the fog-filled structure in a simulated cockpit during an experiment combining features of the United States standard pattern for lights and the British system. The cockpit rolls down two steel I-beams which have been installed on both sides along the entire length of the fog chamber.

On the first "trip," runway centerline lights were fixed at an intensity of 300 candlepower, the standard power now in

use at major airports. On the second run, the intensity of the lights was increased seven times, providing an impressive difference in visibility through the heavy blanket of fog.

UC experimenters are seeking to determine the combination of powerful, effective lights which can be installed and maintained at a reasonable cost.

### Different Fog Conditions Provided

The fog used in the experiments is produced by piping compressed air and steam into the long, tunnel-like chamber. Air pressure and water tanks provide different fog densities for testing different kinds of intensities of landing lights.

The test facility is built on a 10-to-1 scale, representing a 10,000-foot runway, which is ample for landing large jet aircraft.

The work of the University of California supplements and complements similar studies currently being carried out at the National Aviation Facilities Experimental Center.

"After 50 years of talking about the problem of landing in fog, we are making progress rapidly," Mr. Halaby said, following his participation in the California experiment. He sees the work now being carried out in this field as an important step toward the goal of all-weather flying.

He told newspapermen that the University of California fog chamber experiments are designed to provide an additional margin of safety once any of the automated landing systems now being investigated win approval. #





Pilots merely monitor instruments during a "hands off" jetliner landing.

## UNDER THE WEATHER



The automatic landing system gently lands a Caravelle jetliner without the need for pilots to touch any controls.

Dulles Airport was only seconds away for the big jet. Neither the flight captain nor the co-pilot had their hands on the controls. Calmly, they watched as the throttles were eased back without their help and the control yoke moved slowly but firmly, maintaining a steady descent along the ILS glide slope. The plane continued its descent until it was only 10 feet above the runway, then the nose came up slowly and the throttles moved back to the closed position.

There was an almost imperceptible touch down and the plane settled to the runway. Only then did the pilot move. He reached for the thrust reversers, slowing the airplane's roll on the runway.

For the second time within a two-week period, automatic equipment such as this had been demonstrated at Dulles. The new equipment would assist flight crews during instrument approaches and landings. Manufacturers of the equipment and the airline companies which were using two different systems hoped that the demonstrations would be a step toward eventual true zero-zero operations.

FAA recently published new criteria for instrument approaches in turbo-jet aircraft which cover airborne equipment as well as crew proficiency and available ground equipment.

Both systems demonstrated last December align the plane with the runway, "lock-on" to the airport's ILS beam, and follow it automatically. Throughout the approach, electronic signals from airborne computers control the plane's heading, altitude, rate of descent and speed. One of the systems demonstrated last December automatically "flares" the plane, raising the nose, closing the throttles, and allowing it to settle to the runway as gently as a manual landing. The system even "de-crabs" before touchdown after compensating for cross winds on the approach. The pilot also receives help from the system during "go-around."

These systems are designed for several steps beyond the present minimum of 200 feet. This is only 800 feet below the minimum set 30 years ago when U. S. Army Air Corps Captain Albert F. Hegenberger first demonstrated blind flying. Plans have been made, however, which could clear the

way for true zero-zero landing in the not too distant future.

New criteria, developed by Flight Standards Service, are keyed to runway visual range (RVR) rather than to ceiling height and visibility, the basis for present minimums. For example, current United States minimums are a 200 foot ceiling with one-half mile visibility, but under FAA's new program, minimums as low as 1,200 feet RVR would apply in place of a ceiling. Under the new criteria, which is referred to as Category II, altitude is a factor only in that the pilot may descend to as low as 100 feet above the ground to check visibility before he makes his decision to land or go around.

For airline passengers, the lower minimums could mean a substantial reduction in lost time and inconvenience of airport delays and diversions. Airlines will save millions of dollars since weather will disrupt fewer schedules.

Why then has so little apparent progress been made toward perfecting a system which was proven feasible 30 years ago?

Part of the answer lies in the evolution of aircraft. There is quite a difference between the small plane flown by Hegenberger and today's modern, heavy jet.

Approach speeds have more than doubled and weights have increased 20 to 50-fold, and there have been major changes in aerodynamics, power and handling characteristics. These factors make the guidance problems much more difficult, and they make the new lower minimums for jet aircraft a serious move which FAA is making with caution.

A complete blueprint of future landing minimums is under study by Flight Standards Service. Starting with Category I with its present 200-foot ceiling, the study embraces landing conditions down to zero-zero.

Although standards beyond Category II (with minimums as low as 1,200 feet RVR and 100 feet decision height) have not been developed, others are in the planning stage. Category III A would permit operations to 700 feet RVR or enough visibility for manual roll out after landing. "Blind" operations through touch down and roll out would be III B. Category III C would include a zero-zero or blind landing capability plus instrument controlled taxiing to the terminal.

The feasibility of ever developing III C operations is questioned by FAA project officers because the expected expense of automation and support equipment far outweigh the benefits of type III C operations in the United States.

Of more immediate concern is Category II. Criteria for approval of Category II landing weather minimums were published in October 1964, and already several airline companies have submitted programs for FAA approval.

United has announced plans to equip part of its jet fleet with the necessary aids and to train its pilots to operate at Category II minimums by the end of 1965. Trans World Airlines, the first to apply, has equipped a few Boeing 707s and Convair 440s with special navigation and control equipment and is instituting an FAA evaluation and test program to obtain the necessary approval for its crews and equipment. American and Pan American have taken similar steps.

Agency certification in March of the Boeing 720-B with the Bendix "Automatic Approach and Landing System" aboard was a first for United States aircraft, but it in no way implies approval of Category II operations for users of the equipment.

FAA's consideration extends to evaluation of the airborne equipment, company training and proficiency programs, maintenance programs and to ground equipment at proposed airports.

Airports, too, must meet FAA criteria, and programs are under way for concurrent installation of compatible ground and airborne equipment. Only Dulles and Oakland, Calif., International airports have the necessary lighting and ILS equipment at the present time. Through the Federal-aid Airport Program, 12 United States airports are seeking the necessary facilities for Category II operations by the end of 1965.

The extensive airport equipment is only a fraction of the cost of lower minimums when the airborne equipment and training costs are totalled. But these costs are small in the face of the estimated 84 billion revenue airline passenger miles which will be flown by air carriers by 1970. This 60 per cent increase, plus the projected growth of general aviation to 105,000 aircraft, explains the willingness on the part of both the Federal Government and aircraft owners to make the investment. #



Top: First "blind" flyer Capt. Albert F. Hegenberger, U. S. Army Air Corps, receives Collier Trophy from President Roosevelt, July 22, 1935. Center: A far cry from today's jetliner instrument panels, this pilot's view inside a Douglas BT-2A included just enough instruments to get him in and out of the "soup" provided he had adequate ceiling for a safe take-off and landing. Bottom: Pioneer "blind" flyers trained under the hood in BT-2s. Their early efforts contributed much to today's instrument flying and to tomorrow's zero-zero landing system.

## NEW ANCHORAGE TOWER DEDICATED; 1964 EARTHQUAKE VICTIM HONORED



Anchorage International Airport's new FAA tower rises 60 feet into the air commanding a view of all the runways. It replaces tower demolished during the 1964 earthquake.



Dedication ceremonies for the new air traffic control tower at Anchorage International Airport were held March 27, one year to the day after the original tower was destroyed by the Good Friday, 1964, earthquake.

The \$700,000 tower was dedicated by Alaskan Region Director James G. Rogers to the memory of William G. Taylor, an air traffic control specialist who was killed while he was on duty in the tower destroyed by the quake.

The new structure, a slender, pentagon-shaped metal-sheathed white shaft, rises 60 feet above the field and is topped by a 300 square foot air-conditioned cab. Configuration of the tower follows the standard design for FAA towers, except for an 11-foot-high concrete pedestal on

which the basic 49-foot design is mounted. The substructure houses a 75-kilowatt generator for standby power during emergencies.

The tower was the major item in FAA's estimated \$900,000 reconstruction costs. Other damaged Agency facilities included the radio range at Hinchinbrook Island, underground sewage and water equipment at Cordova, a dock at Woody Island and telephone and telegraphic carrier equipment. All repairs are now completed. The total cost was \$868,500.

Regional Director James G. Rogers, who officiated at the ceremonies and later cut the ribbon opening the tower, read messages of congratulations from both Governor Egan and Administrator

Halaby, who could not attend ceremonies.

Governor Egan said: "This tower . . . stands as an expression of confidence on the part of the Federal Government in the economic future of Alaska, and a recognition of the role aviation will play in that future."

The Administrator told Alaskans: "Performance above and beyond the call of duty were routine in the Alaskan Region last March 27 and the hectic weeks that followed. In less than 24 hours, all of you working together put the region back in the line-up with 99 per cent of the facilities functioning. You improvised, patched up, fixed up, propped up and performed technical feats that a less well-organized group would call impossible."

Robert L. Daymude who survived 'quake damaged tower was one of the first to work in the new FAA facility.



Director James G. Rogers and Reverend Sylvester Grant unveil plaque honoring controller William G. Taylor.



Cutting the ribbon, Alaskan Region Director James G. Rogers officially opens Anchorage's new control tower.



## BANK TO CONTAIN MANPOWER INFORMATION DATA

Four Government agencies have joined forces to establish a national data bank for interagency exchange of information on civil aviation manpower resources. The data bank was announced recently by Administrator N. E. Halaby.

The four agencies and their representatives are William J. Milligan, Department of Labor; Dr. Walter M. Arnold, Department of Health, Education and Welfare; John B. Russell, Civil Aeronautics Board, and Donald Rock, FAA, who will serve as chairman of the group.

Formation of the task group results from agreement by Secretary Wirtz, Secretary Celebrezze, and Chairman Boyd to Mr. Halaby's suggestion that representatives of the various agencies meet as a task group.

The availability of such a data bank would make it possible to obtain more

information on the status of aviation manpower than the FAA now maintains.

"My concern," Halaby said, "is that the data be collected and correlated with the minimum of expense to the Government, and there be no duplication of effort on the part of either the agencies requesting and tabulating the information or for those who submit it."

Halaby said his proposal was prompted by the report of the Aviation Human Resources Study Board on manpower requirements of the civil aviation industry (Project Long Look). The board report urged that FAA's system of collecting manpower data be expanded.

Project Long Look was launched by Halaby in February 1964, under the chairmanship of former Secretary of the Navy Dan A. Kimball, to forecast civil aviation manpower needs through 1980.

## William F. McKee Nominated by President as New Administrator



William F. McKee

Air Force General William F. McKee was nominated by President Johnson on April 27 to succeed Najeab E. Halaby as Administrator of the FAA.

Administrator Halaby had stated in September 1964 that he hoped to be relieved of his duties with the Agency on completion of four years. He assumed office March 3, 1961.

General McKee, who retired as Vice Chief of Staff of the Air Force on Aug. 1, 1964 after two years in that post, comes to the Agency from the National Aeronautics and Space Administration where he was Assistant Administrator for Management Development. He joined NASA on Sept. 1, 1964.

McKee, 58, a 1929 West Point graduate, began his 35-year military career as a lieutenant in the Coast Artillery Corps at Ft. Barancas, Fla. He remained in artillery assignments until November 1943 when he became Deputy Assistant Chief of Air Staff for Operations, Commitments and Requirements. This corresponds roughly to the present office of the Deputy Chief of Staff, Operations.

Immediately prior to becoming Vice Chief of Staff of the Air Force, he was commander of the Air Force's multi-billion dollar world-wide logistics operation, the Air Force Logistics Command. It was while in this post that he earned his fourth star, in 1961, with date of rank from Aug. 30, 1957.

In 1957, General McKee was presented the first annual Distinguished Management Award for outstanding contributions in Air Force logistics assignments. He was awarded three Distinguished Service Medals among other decorations during his lengthy service.

## FAA/AOPA Clinics Boost General Aviation Safety

George C. Boswell is back controlling traffic at the Washington Air Route Traffic Control Center after a lengthy stint devoted to aviation safety and education.

For nine months last year Boswell worked out of the Washington General Aviation District Office as an operations inspector in a joint FAA/Aircraft Owners and Pilots Association (AOPA) program designed to stimulate interest in improved flight training and pilot efficiency.

Earlier, Boswell had taken part as an instructor in several AOPA clinics and recognized in them a means of furthering one of the Agency's major goals—greater safety consciousness among general aviation pilots.

During his association with the AOPA Foundation and its project director,

Ralph Nelson, Boswell helped plan and stage more than 25 clinics in 22 states.

While working directly with scores of airmen Boswell tried to discover those safety factors regarded of primary importance by pilots and whether those same pilots understood the Agency's safety program. As a result, he provided Chris Walk, Eastern Region's Flight Standards chief, with a wealth of information from the user's point of view.

The program proved mutually beneficial to FAA and AOPA. For FAA it provided an opportunity to cooperate directly in the safety education of hundreds of private pilots who might not have been reached in any other way. For AOPA, as one of the country's active promoters of general aviation safety, it meant being able to stage more effective flight training clinics.

## 'As It Fell upon a Day in the Merry Month of May'

Because it is a month of generally good weather, May has been an ideal month for many aviation firsts. Some of these historic firsts include: Lindbergh's first solo crossing of the Atlantic—1927; Amelia Earhart's and Fred Noonan's attempt at a west to east round-the-world flight—1937; and Capt. Albert F. Hegenberger's first solo instrument flight—1932.

Do you know the dates and principals for these other aviation "firsts" in May?

1. Passenger flight.
2. Advertisement soliciting orders for airplanes.
3. Flight from Key West to Havana.
4. Flight to the North Pole.
5. Non-stop transcontinental flight.
6. Scheduled transatlantic passenger and air mail service.
7. Legislation regulating civil aeronautics.
8. Parachute jump in a free-back-type parachute.
9. Successful landing at the North Pole.
10. Two pilots graduated from Wright School.

For answers see page 25.

## THE NEW LOOK IN MODERN AIR TRAFFIC CONTROL



Joseph D. Blatt (center), Director, Systems Research and Development Service, and Southern Region Director Arvin O. Basnight (right) watch radarscope as Administrator Halaby positions an "alpha-numeric" block on scope in Advanced Radar Traffic Control Service program.

The Administrator's Technical Advisory Board, which met with N. E. Halaby in Atlanta in March, strongly endorsed the ARTS concept as being essential to safety and efficiency in the control of air traffic. The Board had convened to review the status of the various Agency research and development efforts and to take a first-hand look at the new Advanced Radar Traffic Control System (ARTS) scheduled for operational appraisal at the FAA Atlanta control tower which began in April.

The Board, which is composed of leading executives from the aviation industry and also includes representatives from the academic world and from other Government agencies, is headed by Richard B. Hough, vice president for engineering, American Telephone and Telegraph Company.

Halaby called ARTS "a significant step forward in the science of air traffic control." He said the results of the year-long ARTS evaluation will have "a profound impact on the future of the air traffic control system."

The new radar and flight data test

system at Atlanta operates in conjunction with airborne equipment and is capable of displaying automatically the altitude and identity of all participating aircraft. Conventional radar systems provide only the bearing and distance of aircraft targets. Altitude and identity must be obtained by radio or other means.

Hough said that members of the Board "were impressed with the general progress being made in modernizing the air traffic control system."

Other subjects discussed at the two-day meeting at the FAA Southern Region Headquarters included the development of an advanced air transport system for safe and swift travel between city centers, the status of the nation's supersonic transport program, and the progress being made in all-weather landing systems.

The Technical Advisory Board was organized by Administrator Halaby in April 1962 to help keep the Agency abreast of the advances in science and technology and to assist in planning a modern air-space utilization system. It meets approximately every two months.

In addition to Mr. Hough, other members of the Board are: Captain Robert N. Buck, Trans World Airlines; Captain James L. Fleming, Pan American World Airways; Dr. Eugene G. Fubini, Assistant Secretary of Defense; J. J. George, Eastern Air Lines; Robert E. Hage, McDonnell Aircraft Corp.; Dr. N. I. Hall, Hughes Aircraft Company; Dr. Robert Horonjeff, University of California; William Littlewood, formerly with American Airlines, now retired; Dr. Ross McFarland, Harvard School of Public Health; C. McKim Norton, Regional Plan Association; Dr. Carl F. J. Overhage, Massachusetts Institute of Technology; David Beach Smith, University of Pennsylvania; Hartley Soule, formerly with NASA, now retired; Dr. Courtland Perkins, Princeton University; and Rene H. Miller, Massachusetts Institute of Technology.

## Salt Lake City FAA Wives Club Welcome Newcomers

Newcomers to FAA facilities in the Salt Lake City area find that Mrs. Dean O. Vanwey is one of the first people their families meet. Mrs. Vanwey, whose husband is an engineer in the Installation and Materiel District Office in Salt Lake City, is president of the FAA wives club. She and the club's other officers, Mesdames Melvin L. Wimber and Glenn

M. Allen, help newcomers get acquainted quickly by inviting them to the club's monthly luncheons.

The club dates back to 1946, when a few Airway Traffic Control wives began having lunch together once a month. All FAA wives in the area now participate in the get-togethers. The club also holds a picnic and a Christmas dinner dance.

## San Francisco Tower Operators Use Police Cars To Stay On Air

When a tower's radio transmitter fails, is service halted? Not if the controllers are as resourceful as those at San Francisco.

Recently, the San Francisco Tower kept air traffic moving normally despite an almost complete transmitter failure caused by breakdown of a transformer.

During the three hours the transmitter was out, San Francisco controllers kept delays to a minimum, using an alternate communications plan.

Donald J. Haugen, San Francisco Tower chief, and his crew kept the tower in operation by using the facilities of the Oakland Tower, two San Francisco Airport police cars and a portable radio operated by a field security officer.

Haugen described it this way:

"One controller was stationed on the field in a police car equipped with the ground control frequency. He received instructions from a second police car which was in contact with the tower through an airport security officer using a portable radio.

"Aircraft departing San Francisco were advised to obtain their ATC clearances through Oakland Tower. After takeoff from San Francisco, aircraft were transferred to Oakland departure control, which provided radar service and handling.

"Only two standby transmitters were available, one for local control and one for approach control. The only other transmitting frequencies available to the tower were on the VOR and the localizer. Later, the localizer was utilized to control ground traffic while the VOR was used for departure control."

## NEW D/F AT BILLINGS



Central Region Director Edward C. Marsh inspects the new UHF/VHF D/F at Billings, Mont., Flight Service Station. With him at the left is Billings Area Coordinator George E. Corning.

## FEDERAL AVIATION AGENCY JOINS IN THE PRESIDENT'S 'WAR ON WASTE'

A systematic and long-range Government-wide cost reduction program began on Oct. 31, 1964, when President Johnson formally declared war on waste.

"When I became your President . . . I pledged that we would root out waste and inefficiency wherever we found it. . . . Controlling waste is somewhat like bailing a boat; you have to keep at it. I have no intention of easing up on my insistence on getting a dollar of value for each dollar we spend."

In keeping with the President's desires to reduce Government costs and expenditures, the Bureau of the Budget published a 90-page, illustrated booklet, "War on Waste," that gives examples of savings gained from the handling of mail to the development and manufacturing of a missile.

The booklet, available from the Government Printing Office, tells an impressive story. It doesn't present a picture of perfection, but it does show what can be done with ingenuity and hard work. It points out what happens when cost reduction is the personal goal of each

worker—that the small items are no less important than the large—that there is no area of activity that cannot be tapped.

Many agencies, including the FAA, are cited in the contents for having already contributed to the cost reduction program. One of a number of examples mentioning the FAA is how the Agency started a major reorganization designed to decentralize authority from Washington headquarters to the field. As a result, 610 positions were eliminated in Washington at an estimated annual saving of \$5 million.

Increased savings by FAA also were made in passenger travel by stressing more economical travel means and by management's emphasis on questioning the need for travel. In other words, is the trip necessary? The Agency figures a savings of \$689,000 on travel during fiscal year (FY) 1964.

Still another Agency savings is reflected in FAA's difficult goal of improving safety, yet reducing costs. A new scheduling technique was developed for the analysis of air traffic and for the de-

termination of manpower needs related directly to the variations in traffic volume. The Agency estimates that the more efficient scheduling of manpower made possible by the newly developed technique will permit handling of a 5 per cent increase in traffic with no increase in employment, thus avoiding a potential \$2 million personnel cost.

Mention, too, was made of the Agency's air traffic control responsibility. Through special attention to management, FAA was able in FY 1964 to report progress in areas of safety improvement and reduction of operating costs.

The President has called upon Federal employees at every level to make cost reduction a personal goal and to redouble efforts to identify and gain savings through more efficient conduct of Government activities.

In a statement to a Cabinet meeting last month, President Johnson said, in part, "I want each of you, personally, to read this booklet and to have your employees read it. I hope the examples it cites will spur us on to greater efforts."

## AIRPLANE ASSISTED BY TAXICAB RADIO CONTACT



Story with a happy landing. From left: John Resso, Oscar Bakke, Eastern Region Director, Michael Mazzuca and Mayor John J. Schwenk of Kingston, N. Y. Resso and Mazzuca received awards for their part in aircraft "save."

Two cab drivers from Kingston, N. Y., were awarded the Eastern Region's "We Point With Pride" plaques recently for their ingenuity in setting up emergency air/ground communications to aid a troubled pilot.

The two, John Resso and Michael Mazzuca, who work for the Economy Cab Company, resolved a ticklish air traffic problem when an aircraft overflying the area developed radio trouble and the pilot's call for assistance came in on the cab company radio frequency. Quickly, they made contact with both

the pilot and the nearby Poughkeepsie Flight Service Station and relayed instructions from one to the other. So effective was the unusual communication link that the pilot made a safe landing at Albany despite his radio problems and difficult weather conditions.

Resso and Mazzuca received their awards from Eastern Region Director Oscar Bakke during ceremonies held at the Kingston Airport attended by many of their colleagues and local civic officials, among them Airport Manager Bryan Carroll and Mayor John J. Schwenk.

## Analysis of ILS Approach Data Will Determine New Standards

More than 400 instrument landing system (ILS) approaches are being examined in detail by the FAA to develop obstruction clearance requirements for Category II ILS operations.

Category II will allow instrument minimums as low as 100 feet decision altitude with 1,200 feet runway visibility range (RVR).

The data is being examined by Dr. Donald Westerfield, a statistical consultant with the Franklin Institute in Philadelphia, with the help of two FAA employees from the Aeronautical Center, Ted O. McCarley, Statistical Services mathematician, and James L. Sharpley of the Flight Standards, Development Branch. The project is under the overall management of Gerald E. Gibson of Flight Standards.

Rated pilots from FAA and the airlines flew the approaches being studied, using flight simulators. Obstruction clearance standards for the new ILS minimums will be drawn up from the results of detailed analysis of all the data.

This project is one of many underway in the Agency which are intended to pave the way for zero-zero landings.

Another story on zero-zero landings appears on pages 16 and 17.

## AIR-GROUND COOPERATION SAVES 'MUTE' AIRLINER WITH 45 ON BOARD

Memphis, Tenn., ARTCC and the Jackson, Miss., Tower personnel were commended by Administrator N. E. Halaby for assistance given on March 24, 1965 to a scheduled airline flight which lost all communications and navigation capability due to a complete electrical failure while operating under instrumental flight conditions.

The Memphis Center radar-vectored a Mississippi Air National Guard plane to intercept and lead the airliner with 45 passengers aboard to a safe landing at the Jackson Airport.

Halaby said the incident "reflected credit not only on FAA air traffic control but also on the crews of the two aircraft involved.

"By working together," he added,

"they were able to avert what otherwise might have been a disaster."

The airliner departed Adams Field at Little Rock, Ark., bound for Memphis. Radio contact was lost 10 minutes after takeoff, but the plane was still on radar.

Repeated efforts to reestablish radio communications were futile. Later, the flight was observed on radar departing its assigned course and proceeding in a southeasterly direction.

The Memphis Center immediately asked an Air National Guard C-121, which was en route from Memphis to Jackson, to intercept the airliner and lead it to safety. The military plane was given a radar vector by the center, and the intercept was made about 35 miles northwest of Greenwood, Miss. The

C-121 attracted the attention of the airliner by flying alongside and raising and lowering the landing gear and flaps.

Both aircraft then proceeded to Jackson, where the C-121 led the airliner safely down through a hole in the clouds to an approach for landing.

Receiving the Administrator's plaudits were: In the Memphis ARTCC—Billy L. Coleman, supervisor; Roland C. Mullins, Charles D. Richardson, Clarence J. Sentenn Jr., and Robert L. Bond; Jackson Tower—Jack B. Reid, supervisor; George W. Durant, crew chief; Huey M. Napier, James J. Gould, James M. Alexander, and Charles Farmer. The ANG aircraft which led the airliner to safety was flown by Capt. John E. Tabor and Capt. B. G. James, 127th Air Transport Group.

## CLEVELAND GADO QUITS SCHOOL FOR NEW OFFICE

After 35 years at one location, Eastern Region's Cleveland GADO moved from old Brookpark School at Hopkins International Airport to new, spacious quarters on the west side of the airport.

The new quarters were designed to meet the demand for increased FAA services to the general aviation public in an area covering 33 counties in northern Ohio.

The Cleveland GADO is responsible for certification of the air taxi operators,

flying schools, repair stations and aircraft for the area's 150 airports. The 11-man complement of the office serves 25,000 airmen and 2,500 aircraft. When it was founded in 1929, the office consisted of one inspector.

Supervising Inspector Ivan P. Hilliard estimates that his staff will issue approximately 1,000 airmen certificates this year. In addition, GADO inspectors assist in the important investigative work required by the Federal Aviation Regulations.

## Ground School Role in Training Is Stressed at Alaska Meetings



Alfred K. Young, flight standards operations specialist indulges in plane talk with Mrs. Richard R. Ardaiz.

The Flight Standards Division of the Alaskan Region and Anchorage-based flight training schools and flying clubs co-hosted a series of meetings to emphasize the ground school aspects of flight training. The first meeting was held in March at the Regional Headquarters in Anchorage and was attended by 75 persons.

Alfred K. Young, general aviation operations specialist, said the safety meetings were held to foster a professional attitude among general aviation pilots in their approach to flying.

Mrs. Richard R. Ardaiz, who represents a flying school in Anchorage, spearheaded the series of meetings. She commented that airplanes cost too much money to rent to just anyone who came along. "In our business we have to make sure that pilots are qualified before we turn them loose in our airplanes," said Mrs. Ardaiz.



The Air Traffic Controllers' Procedures Committee meeting brought controllers from all the regions to Washington. From left: Lawrence Greniner, Albuquerque ARTCC, William Czervinski, St. Louis Tower and James M. Hommel, Seattle Tower, discuss methods of improving and standardizing ATC procedures.

## AIRLINE CAPTAIN LAUDS AIR TRAFFIC SYSTEM

Controllers at the Chicago ARTCC and the O'Hare Tower were lauded recently by a United Air Lines captain who wrote Administrator N. E. Halaby commending FAA for its efforts during a blizzard.

While "holding" in the Chicago area for about four hours awaiting his turn to land, United Air Lines Captain Samuel B. Wiper noted that he had ample time to hear the FAAers at work and was able to get "a good picture of the entire operation."

### Crowded Sky

During the February blizzard, O'Hare International Airport was restricted to the use of one runway for both incoming and outgoing traffic. Normally, its two parallel runways are in operation. Traffic build-up at this world's busiest airport was about what could be expected under the circumstances.

UAL Captain Wiper's letter said: "Those of us flying for the commercial carriers are more than cognizant of the demanding responsibilities placed upon your operations personnel during periods

such as the blizzard. These responsibilities increase in direct proportion to the flow of traffic.

"It is my sincere hope that your administration recognizes this fact in such a fashion as to attract and keep the best qualified and most experienced personnel in these key positions of responsibility and to share with us, the flight personnel, the job of keeping our airways and terminal areas safe.

"I'm sure my fellow pilots would join me in saying thanks to these men for a good job well done."

### Administrator's Reply

Responding to the airline captain's letter Administrator Halaby wrote: "Praise from the pros who use the air traffic control system is the highest accolade that can be given a group of controllers, and I am delighted to relay your remarks to them.

"I assure you that we do recognize the need to attract and retain top-notch controllers, not only at O'Hare and Chicago Center but also at less busy posts throughout the ATC system."

## Ladzinske of Southwest Region Awarded Presidential Citation



Richard W. Ladzinske adjusts the electronic theodolite which he invented and which won him recognition.

A Presidential citation has been awarded to Richard W. Ladzinske, an electronic engineer of the Federal Aviation Agency's Southern Region Headquarters, in special recognition of his "outstanding contribution to greater economy and improvements in Federal Government operations."

Ladzinske received the honor, signed by both President Johnson and Administrator N. E. Halaby, for his development of an electronic device which accurately determines the reliability of Instrument Landing Systems (ILS) used at airports by aircraft in adverse weather conditions.

It is estimated his development will save the Government more than \$1 million annually, as well as improve safety.

Ladzinske's development, an "Electronic Theodolite Recording System," will be used by the FAA, U. S. Air Force, and possibly by several foreign countries.

This will permit the Federal Aviation Agency to certify the accuracy of instrument landing systems at lower altitudes, which were not possible before he invented the electronic theodolite.

## ZERO MEANS PERFECTION

The Western Region Airports Division has chalked up a "zero" automobile accident rate during fiscal 1964.

The Division's drivers logged nearly 200,000 miles while achieving this noteworthy record. Occupational Safety Officer George M. McCord believes that the outstanding Airports Divisions record is not the result of mere chance, but is due to "defensive driving."

## Air-Space Institute Will Be Built Near NAFEC

An Air-Space Institute, one of the first educational institutions of its kind in the world, will be established in the next few years near Atlantic City, N. J., in the vicinity of the National Aviation Facilities Experimental Center.

Authority to go ahead with this college came early this year when New Jersey Governor Richard J. Hughes signed into State law a bill enabling the New Jersey Department of Education to begin to offer the courses and programs for the new school.

### For Air-Space Science

The Air-Space Institute, still a tentative name, will be one of the first schools of higher learning dedicated primarily to the advancement of knowledge in air-space science. Students may earn degrees, both undergraduate and graduate, in air-space science, or in the related fields of physical sciences or engineering.

Courses of study will include communications, avionics, computer applications to air-space management, human factors and meteorology, to name a few.

Concept for this new-type school originated with William F. Harrison, NAFEC manager. Recognizing a need for a school of higher learning dedicated to

air-space science and management, Harrison had his educational advisor on the Personnel and Training Staff develop a formal concept.

This was submitted to the State Department of Education, which made up a working plan for the formation of a senior college-graduate school program in air-space science.

### Bill Passed by Legislature

When State plans were completed, Harrison submitted the idea to interested local organizations early last year. It gathered support and momentum, was introduced as a bill into the State Legislature, and was passed unanimously in February 1965.

In order to get the new school's program underway without delay pending the construction of buildings, development of a curriculum, and formation of a staff, first offerings will be contracted with a fully accredited university.

Establishing the Air-Space Institute in the vicinity of NAFEC marks a significant point in the history of the Center. Actually, it is the culmination of a series of efforts in employee education which first began in 1959, less than a year after the Center was established.

## MEXICAN FIRST



Senor Ing. R. Perez Morquecho, Mexico's Civil Aeronautics Director, confers with Administrator Halahy at first International Hangar Session, Tucson.

## SARGENT IS TOP SALESMAN

Courtney R. Sargent, Boston ARTCC Data Systems Coordinator, received a special award from the Greater Nashua (N. H.) Chamber of Commerce for being the top salesman in their week-long membership drive.

Sargent sold 16 of the 56 new memberships and led the 12 salesmen competing in the drive. Sargent received a plaque last year for winning a two-week membership drive and captained a winning team in the one-day drive last June.

## REPORTER AT NAFEC



Simulator pilot Barbara L. McDuffie operates a radar target generator at NAFEC. From left: Robert H. Willey, Assistant Administrator for PT; Joseph Young, Washington Star; Joseph T. Hornsby, PT and John C. Mercer, NAFEC Technical Services.

## UNITED STATES AIRPORT OPERATIONS INCREASE

Aircraft operations in the U. S. increased 10 per cent for the second consecutive year in 1964, setting a new record, according to FAA figures released recently.

Ten per cent gains for 1964 were made in each of three major categories: Total aircraft operations (takeoffs and landings at 278 airports with FAA airport traffic control towers)—34.2 million; instrument approaches at Air Route Traffic Control Center (ARTCC) areas reached 1.005 million; and IFR (Instrument Flight Rule) aircraft handled at ARTCCs—11.7 million. Services provided by Flight Service Stations and Combined Station/Towers also showed an increase over 1963.

### O'Hare Leads

The five busiest airports in terms of total operations were all repeaters from 1963. Counting every landing and take-off, Chicago O'Hare led with 460,227 operations, followed by Long Beach, Calif., 422,620; Van Nuys, Calif., 386,063; John F. Kennedy International, N. Y., 367,139, and the Los Angeles Inter-

national Airport, Calif., 365,536.

Counting only itinerant operations, which exclude purely local flights, O'Hare led again with 459,764 takeoffs and landings, followed by John F. Kennedy International, 363,222; Los Angeles International, 340,834; Washington National, 289,884, and Dallas Love Field, 251,204.

### Also Leads in Airline Operations

O'Hare also led in the air carrier operational category with 389,640 airline takeoffs and landings, followed by John F. Kennedy International, 328,396; Los Angeles, 289,774; Washington National (D. C.), 210,718, and San Francisco International, 187,783.

The five busiest airports in terms of general aviation itinerant flights were Long Beach, 194,615; Van Nuys, 167,775; Phoenix, Ariz., 151,980; Santa Monica, Calif., 134,237, and Fort Lauderdale, Fla., 133,199.

Terminal and en route aircraft activity statistics are reported in the publication, *FAA Air Traffic Activity*, Calendar Year 1964.

## Order Spells Out High Standards of Official Conduct

Official conduct standards which apply to all employees and representatives of the FAA are clearly outlined in Agency order OA 1000.7, dated May 9, 1963.

The order bars Agency personnel from accepting fees, gifts, or any other thing of monetary value. Also it prevents employees from becoming involved in outside activities that are not compatible with the proper discharge of the responsibilities of their office or position.

In addition, the order assures the in-

tegrity of Agency operations, promotes compliance with applicable laws, policies and regulations and safeguards public confidence in the Agency.

A detailed handbook, "Conduct and Discipline," (PT P 3750.1A, May 14, 1964) which thoroughly covers the subject, is available to all employees.

The Administrator has directed that all violations of the policy be promptly reported to the Director, Office of Compliance and Security.

## Sky Soon To Be Strewn With Balloons and Tetroons

Weather balloons will be tracked by radar at certain Western Region Air Route Traffic Control Centers under a research project being carried out by the Atomic Energy Commission in cooperation with FAA and the Weather Bureau.

The project involves releasing targets, known as TETROONS, which consist of a radar reflector either supported under a balloon or contained within a balloon. Their pattern of movement will help AEC determine radioactive fallout patterns.

The Western Region is supporting the

project by permitting Weather Bureau personnel to follow the targets on maintenance radar. The TETROONS will be tracked for approximately 48 hours under current plans. The maintenance consoles are adequate for this type of tracking because no communications equipment is required.

Only the centers at Los Angeles, Salt Lake City and Denver are involved at the present time, but later releases of the TETROONS may involve other centers.

Salt Lake City Center participated in a similar activity approximately a year ago.

## PIONEER LAKEFRONT AIRPORT CONTROLLER RETIRES



Hugh B. Erminger was Lakefront's first controller.

Hugh B. (Hug) Erminger, senior air traffic control specialist, who helped build New Orleans' Lakefront Airport and then never left it, retired from FAA on March 13.

When Lakefront was completed in 1933, Hug stayed on as superintendent and in 1937 was given the responsibility of handling air traffic. Then, in 1942, the Federal government took over and

for the next 23 years Hug worked in the tower. He said that at the time of the transfer, controllers at Lakefront were handling an unusually large number of operations each day. The airport was then the center for Air Corps, Navy and civilian flight training.

### Other Retirements

● James F. Campbell, chief of the Grand Junction, Colo. Flight Service Station, after a Federal career that began more than 40 years ago with the Bureau of Lighthouses in Amarillo, Tex. ● Electrician-lineman Felix A. Huber, also a Lighthouse veteran, from New Orleans Systems Maintenance Sector, after 34 years service. ● Vivian J. Gilbert, maintenance liaison officer at the Albuquerque ARTCC after 34 years. ● Harry Joseph Breighner, utilities equipment mechanic, Fairbanks, Alaska, after 15 years. ● Richard W. Yates, clerk, Aircraft Services Facility, NAFEC, after 22 years. ● Lt. Col. William H. Graham, for the past two and one-half years chief of administrative services at NAFEC, retired in March from the U.S. Air Force.

## Alaskan Electronics Engineer Patents New Antenna Reflector



Jack H. Jensen, electronics engineer, Installation and Materiel Division Alaskan Region, has been granted a patent for a dish-shaped antenna reflector. Sharing the honor is Bernard I. Small of the U. S. Navy Electronics Laboratory, San Diego, Calif., where Jensen worked prior to joining the FAA in 1961.

Both men have given the Navy and all other Federal agencies permission to use the invention without charge. Jensen is currently associated with the radar complex at the new Elmendorf Tower/RAPCON.

## BUILDS STEREO CIRCUIT BOARD

Oliver D. Carlson, an electronics technician at NAFEC, recently designed and built a printed circuit board which can be connected to a monaural FM tuner in a hi-fi set to give stereo sound automatically, without switching, when stereo stations are broadcasting.

It also features an indicator that shows when the stereo stations are tuned in properly. Carlson's invention was written up in the February issue of *Popular Electronics* magazine.

## Answers—Merry Month of May

1. Wilbur Wright and Charles Furnas—1908. 2. Glenn H. Curtiss—1908, price of aircraft, \$5,000, with delivery in six weeks. 3. Domingo Rosillo—1913, in 2 hours and 30 minutes. 4. Floyd Bennett with Richard Byrd—1926. 5. Lts. Oakley G. Kelley and John S. Maccready in 26 hours and 50 minutes—1923. 6. Pan American—1939. 7. Air Commerce Act—1926. 8. M/Sgt. Ralph W. Botti—1919. 9. By ski-wheel C-47—1952. 10. Lts. Henry H. Arnold and Thomas D. Milling—1911.

## Boston ARTCC, Wives Raise Money for Heart Fund

Boston ARTCC personnel and their wives took an active part in the successful 1965 Heart Fund Campaign held in Nashua, N.H., where the facility is located. Their combined efforts resulted in the Center's going well over its goal of \$8,000.

The wives shouldered extra duty on Heart Sunday when they joined some 500 volunteers and helped raise \$5,700 for the Heart Fund—\$1,700 more than was targeted for the day.

The ladies who took part in this city-wide blitzkreig were: Mrs. Pearl Arsenneau, Mrs. Evelyn Batinski, Mrs. Mary Bednarz, Mrs. Barbara Cormier, Mrs. Virginia Daley, Mrs. Nina Crilley, Mrs. Betty DePaolo, Mrs. Florence Boudreau, Mrs. Claire Ferrie, Mrs. Judy Gauvin,

Mrs. Marilyn Fisher, Mrs. Ethel Fisher, Mrs. Margaret Hill, Mrs. Kay Hayes, Mrs. Lynn McGee, Mrs. Jean Moore, Mrs. Julie Colman, Mrs. Dorothy Olsen, Mrs. Dorothy Tormey, Mrs. Barbara Butler, Mrs. Mary Young, Mrs. Mary Scabilia, Mrs. Patricia Murphy, Mrs. Peggy Schwendeman and Mrs. Judy Catland. Mrs. Catland also served as telephone coordinator for Heart Sunday.

Controllers Paul Nugent, Al White, and Leo Nangle were on the campaign's committee for special and corporate gifts and Courtney R. Sargent, data systems coordinator, was campaign co-chairman. During the ceremonies Sargent crowned a six-year old boy, who had undergone open heart surgery at the age of three and a half, "Prince of Hearts."

## Cheyenne FAAers Commended by Wyoming Governor

Citing the Cheyenne, Wyo. Combined Station/Tower for exceptional services rendered to the Wyoming Air National Guard during 1964, Wyoming Governor Clifford P. Hansen recently presented the facility a certificate of appreciation. The

certificate stated that the Wyoming Air National Guard, which is attached to the USAF's Military Air Transport Service, "... would be limited in its world-wide mission without the help of the Cheyenne CS/T and FAA facilities.

## ON THE SCOPE



**SAFE FUN:** Administrator Halaby presents FAA's flight safety certificate to Major James R. Kiser, who administers the USAF Aero Clubs program.



**TOP SAVERS:** Presidential awards went to Eastern Region's New York ARTCC and SMD for effecting greater economy in operations. Present at the ceremony were (from left) Mark Hammond, N. Y. Area Office; James Boyle, Center chief; Oscar Bakke, Regional Director; Ernest Gayle, SMD chief and Robert Martin, ATD chief.



**SHARP EYE:** George S. Fox (left), gets Presidential Citation from W. Lloyd Lane, Aeronautical Center Manager, for his part in Operation Pre-Flight.



**SMART ART:** Montague E. Davis, Graphics Branch, received the Horace Hart Meritorious Certificate from Central's Director Edward C. Marsh (left).



**FILM STAR:** Central Region Ozalid worker Kenneth I. Law accepts \$85 award from D. F. Randolph, for idea that saves film when making master copies.

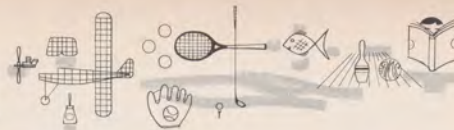


**HONORS:** Balboa ARTCC named SO's Facility of the Year. Deputy Director Paul H. Boatman (left) gave plaque to J. W. Cofer and R. W. Barrentine.



**SOME FUNDS:** Five from Eastern Region's SMD received Presidential citations for savings in Government operations. From left: Executive Officer Irving Mark gave awards to Ernest Gayle; John Hanlon, Cleveland and Gerard Pannek, D. C. Not present: Norman Heckman, Williamsport and Richard Behrens, N. Y.

## AFTER HOURS



**HOCKEY CHAMPS:** From left: Ronald Peters, John Hicks and Paul Fisher of the Boston ARTCC, help keep Nashua team at top of Granite State League.



**WHITEY:** Wayland E. Marders of the National Flight Data Center, a commercial pilot with instrument rating, is also a "scuba" diver and treasure hunter.



**FLYS SUPERSONIC:** Glenn E. Goudie, Deputy Director, Systems Maintenance Service climbs aboard a VOO000 and flies in 1000-mph intercept mission.



**UPWARD:** Lewis B. Harmon of Big Delta, former controller, bought himself a Piper Cherokee and flew into a new job. He is now a flight operations inspector at the Anchorage, Alaska Flight Service Station office.



**ORGANIZER:** While a controller at Yakutat, Jan E. Helfrich organized a flying club. Now he flies regularly as a general operations inspector, Juneau.



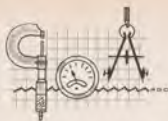
**WINNER:** Clarence Rutter of New Orleans ARTCC with one of his prize-winning miniature dachshunds. One-year old Phoebie weighs in under six pounds.



**PERFECT GAME:** A dream came true for Richard C. Aydelette of the Fort Myers, Fla., FSS when he bowled a 300 game. "Rick" also bowled a 759 series.



**BOWLER:** John R. Carson (left) of IM Depot, Oklahoma City received trophy and \$350 from Dean Cox for placing second in a local bowling tournament.



**COOLING IT.** If communications engineers and designers have one trait in common it's an obsession to make things smaller, easier to maintain, more reliable—and operating as cool as possible. Keeping it cool is very important.

Aside from the comfort of personnel operating the equipment, high operating temperatures demand greater spacing between units and, in some cases, imposes a requirement for additional, expensive refrigeration.

In a coordinated Systems Research and Development Service/Installation and Materiel Service venture, the FAA recently made another significant step toward these goals in the development of a new solid state modular four channel regulated amplifier and the six channel audio amplifiers.

Project engineer on the job was James N. Cancro of the Installation and Materiel Service.

The transistorized amplifiers were installed in the new Houston Air Route Traffic Control Center in mid-April and a similar installation will be made in the San Juan, Puerto Rico ARTCC this summer.

The amplifiers were developed and are being made up by Orbiteronics, Inc., Denver, Colo.; installation will be made by regional Installation and Materiel teams.

Use of the transistorized amplifiers in the Houston ARTCC resulted in a saving of 87 square feet of floor space—enough to accommodate 26 of the standard 83-inch equipment racks. Also, transistorizing reduces by 2,360 watts the power need to operate the equipment—and it's cool.

**JUST HOW HIGH ARE YOU?** Problems lead to solutions—and solutions generally give rise to new problems, which in turn require solution. This is the never-ending story of research and development.

With the introduction of automatic beacon transponder data displayed alpha-numerically on controllers' radar scopes—a feature which soon will become operational—new procedural techniques will have to be developed.

How will altitude displayed on the pilot's instrument panel correlate with that reported by the airborne transponder to the controller on the ground? Do differences occur? If so, to what degree? Why? What should be done?

To find the answers, the Systems Research and Development Service established a test program with United Air Lines to monitor scheduled airline flights. Aircraft included 25 Boeing 727s and 17 Douglas DC-8Fs on 186 flights arriving and departing at Newark, LaGuardia and Philadelphia airports.

The planes were equipped with two different types of altitude reporting configurations, responding to two different types of ground decoding and display systems at NAFEC. This provided not only data on the relative correspondence of the two altitudes reported, but also an opportunity to evaluate different methods of generating data.

All the flights were made under instrument flight rules and were under the control jurisdiction of the New York Air Route Traffic Control Center. NAFEC personnel did not participate in control of the planes.

Large numbers of altitude position data points were plotted for each flight, acquired by radar beacon scanning and pilot reports. NAFEC's air traffic control radar beacon equipment (ATCBI-2), effective up to 200 nautical miles,

interrogated airborne transponders installed differently in the two aircraft types. The Boeing 727s cockpit altimeter and the beacon transponder derive altitude information from separate sources; in the Douglas DC-8Fs the information originated from a common source, and any altitude corrections that are computed are inserted into the cockpit altimeter.

Two methods of decoding and display are used. One employs special-purpose Beacon Video Processing Equipment (BVPE) displaying identity and altitude data in numeric form on an indicator panel, the other provides a single-target tracking with altitude and identity readout on scan converted radar bright display equipment (RBDE-5), commonly used in the present air traffic control environment.

Test results are encouraging. Although some relatively high (up to 600 feet) correspondence differences were noted on some of the Boeings early in the test, the error-causing conditions were largely corrected later in the tests. Of the Douglas aircraft observations, results showed essentially zero correspondence difference.

In the opinion of the nine controllers who participated in the test program, altitude reports received from the ATC radar beacon system were beneficial. However, some procedural questions were introduced, particularly on the degree of error which can be accommodated and what techniques to employ when significant errors occur.

**BELLING THE CAT.** The FAA, in cooperation with the Air Transport Association, has enlisted the aid of five major air carriers in a concentrated effort to trap the CAT—clear air turbulence.

It has long been recognized that there is a relationship between sudden temperature changes and clear air turbulence that cannot be detected by airborne radar, clouds or other visible signs. Detailed temperature/turbulence relationship studies have been underway since 1961.

The joint study, referred to popularly in aviation circles as TRAPCAT—temperature rate alarm for predicting clear air turbulence—revolves around a simple electromechanical computer to detect the rate of temperature and pressure changes. Advance warning with this equipment is still quite limited, being about one-half to one-and-a-half minutes but this short span does provide about a 10-mile "look ahead" of the aircraft.

Using more sophisticated equipment, it has been determined that temperature changes of as little as one degree centigrade over a period of two minutes indicates turbulence ahead.

The equipment consists of an electronic package, a direct writing recorder, and accelerometer and an indicator in the cockpit.

The temperature is continuously recorded along with temperature gradient and vertical acceleration (G-forces) of the aircraft. An alert light glows when a preset temperature gradient is reached; an alarm lamp lights up when the preset range of limits is encountered.

The signal is processed in simple electronic computing circuits to give the rate-of-change of temperature with time. The rate-of-change signal is recorded and it also activates the alert light if the present rate is reached or exceeded.

The participating airlines, Delta, Eastern, American, TWA and United, make weekly submissions of recordings to the FAA for analysis. Also, the airlines have been requested to forward certain data from flight logs to assist in interpretation of the data.

With science on the trail of clear air turbulence it won't be long before they "bell the cat" for good.



**SUMMER COLDS.** There's an old-time saying about coughs and sneezes that's just as sound today as ever: "If they're yours, cover them up; if they're the other fellow's—duck."

Research shows that a cough or sneeze shoots out germs—laden droplets at a rate of 150 feet a second, some of which will float in the air for hours.

Summer colds, like others, can have serious consequences. The dimmest view of the matter was expressed by a medical commentator who said: "Many diseases that end in death begin with a common cold."

A classic theory is that a chill, or wet feet, or a dose of fatigue will make it easier for anybody to catch cold. Of course a virus is involved; but the upsetting of proper heat balance in the body makes it easier for the nasty little fellow to get in his licks.

The old medically approved remedies still hold too—as far as they go. There is no specific drug treatment for the common cold.

It is the most contagious in its initial stage; that's the time to stay in bed for a day or two, thus helping yourself and protecting your susceptible neighbors. Keep warm and drink plenty of liquids.

If you catch a cold, don't pester your doctor for an antibiotic. It won't do any good. You can keep comfortable with nose drops, aspirin and cough syrup. But if fever lasts more than three days, or you are short of breath or have a persistent cough, see your doctor at once.



**MISSION 'SAFETY-70.'** "There is a great opportunity to make a significant reduction in that most senseless kind of waste—the loss of human lives through accident—and at the same time save many millions of dollars." So spoke President Johnson recently as he outlined Mission "Safety-70," part of the Administration's war on waste.

Citing the safety record of civilian Federal employees, the President noted that it is no better today than it was 10 years ago and the direct costs to the Government have risen nearly 50 per cent. The injuries in 1963 were 3.4 per cent higher than in 1962, fatalities up 40 per cent and severity up 13 per cent. There has been no real safety progress among the Federal work force since 1948.

In the last seven years records indicate that:

- More than 1,200 Federal workers died from job injuries.
- Nearly 300,000 had disabling injuries.
- Over 18.5-million man-days of potential production were lost.
- Costs to the Federal Government amounted to \$1½ billion.

In a memorandum to the FAA and other agencies, the President outlined Mission "Safety-70"—a new practical safety effort designed to reduce Federal work injuries and costs, year by year, until a 30 per cent reduction is achieved

Until medical science learns to prevent the common cold, do your part to prevent its spread by muffling that sneeze and by staying home for a few days.

**NOTHING BUT THE TOOTH . . .** When a shark loses a tooth he never gives it a second thought. In fact, he doesn't even miss it. He has plenty of spares since his teeth are set in several rows. If a tooth in the front row is lost, another moves up to replace it. A smiling shark shows no unsightly gaps in his choppers.

Nature was less generous with human beings. You get only two sets of teeth per lifetime—the primary and the permanent teeth. When a permanent tooth is lost, it never will be replaced by another natural one as were the primaries.

A lost permanent tooth can and should be replaced with an artificial one. Fortunately, artificial teeth have been developed that are natural looking and efficient. But they just are not as good.

So, unlike the shark, you should think about care of your teeth while you still have them. Follow these simple rules for good dental health:

- Cut down on sweets, especially between meals.
- Brush immediately after eating.
- Have periodic dental checkups.

With good regular home and professional care the permanent teeth should be sufficient—they were meant to last a lifetime.

by 1970. This will mean cutting the overall frequency rate from the current 7.9 rate to 5.5 by 1970.

President Johnson asked that the heads of all departments and agencies review carefully and critically their safety policies and programs.

In the FAA, from 1958 through 1963, there were 30 fatalities and 2,012 disabling injuries, adding up to 268,038 days of production lost at a cost of over \$4½ million.

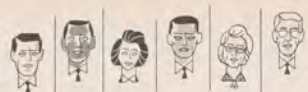
Reaching the President's goal of a 30 per cent reduction would prevent about 45,000 injuries throughout Federal Government and save the United States almost a quarter of a billion dollars in direct and indirect costs.

"There remain wide disparities," President Johnson said further, "in safety performance among agencies. This disparity can be eliminated if each agency will administer its safety program in accordance with the needs to be met and the hazards that are encountered. Often the most dangerous occupations have the best safety records."

Executive and supervisory leadership must be provided. The cooperation and support of employee organizations is essential. Each FAAer must likewise seek constantly to avoid accidents to himself and others.

The Office of Personnel and Training is preparing guidelines to assure Agency-wide cooperation in carrying out Mission "Safety-70."

## PERSONNEL PIPELINE



### FEDERAL CREDIT UNIONS . . . A CREDIT TO YOURSELF

In FAA, credit unions are Big Business. Ten of them—one in each region, the two centers, and headquarters—have a total membership of 41,695 and combined assets of well over \$29 million. All are non-profit organizations, chartered under the Bureau of Federal Credit Unions of the Department of Health, Education and Welfare, or a comparable state organization. They are sponsored by the Agency, which provides only office space and housekeeping services, but they are owned and operated solely by the members who may take an active part in credit union management. Credit unions offer a variety of services—they cash checks and U. S. Savings Bonds, notarize documents, accept payment of utility bills, issue travelers checks, provide financial counsel when requested and provide a variety of other services. However, their biggest operation is lending money—for automobiles, home furnishings, doctor bills, boats, farm machinery, trailers, investments. Name it, the credit union probably will finance it. Loans are of two types—secured and unsecured. A study of the 10 credit unions shows that on the average, secured loans range from \$500 upwards with interest charges ranging from one-half to one per cent per month. Unsecured loans may reach a \$750 maximum and carry interest from three-fourths to one per cent per month. In both instances the loan period may extend to 60 months. Loans are fully covered by life insurance at no additional cost to the borrower. Deposits are also insured and pay dividends of from three to 5.65 per cent, compounded semi-annually. The three per cent figure represents dividends paid by a newly formed credit union; the long established ones pay more. Credit union assets are well safeguarded. All loan applications are carefully screened and a supervisory committee of members periodically goes over the books. In addition, the accounts are inspected annually by government examiners. Usually, loans can be processed within two or three days, but in an emergency can be speeded up. As an example: A newly transferred FAAer was confronted with unexpected expenses and needed the cash as quickly as possible without having to establish new credit. The employee called his credit union long distance and they came to his aid.

### MORE ABOUT GRADES, RATINGS, PAY AND AWARDS

An Outstanding Performance Rating does not automatically guarantee a Sustained Superior Performance Award (SSP) or a Quality Pay Increase (QPI). Ratings are given under the Performance Rating Program while SSPs and QPIs are part of the Recognition and Awards Program. An outstanding rating is acknowledgement of superior on-the-job performance. It carries with it a certificate and additional retention points that come in handy in the event of a reduction in force during the ensuing year. If a supervisor feels an employee has performed so exceptionally well that he deserves something more tangible—hard cash to be specific—he may recommend it, but before doing so he takes several factors into consideration: nature of the employee's accomplishment, recency of past awards and promotions, whether he is already at the top of his grade, whether another promotion is in the offing, whether the award can be legally given, etc. If the decision is favorable and the supervisor recommends an SSP, the award (if approved) will be a lump sum payment ranging from \$100 to \$350, depending upon the employee's base salary. If a QPI is deemed more appropriate, the employee will receive the next step in his current grade. In the long run, the QPI amounts to more than the SSP because it turns up in every pay check until retirement. Moreover, it could mean higher retired pay and could provide higher life insurance coverage. Consequently, there is no new one-to-three year wait for a regular increase, except where the QPI places the employee in a step requiring a longer waiting period than the step he held. When a supervisor makes a recommendation for a Quality Pay Increase instead of an SSP, he stakes his good judgment on the employee. He must certify that the person has demonstrated high-level performance for at least six months and that he expects this high-level performance to continue. This certification is not required for an SSP. (Handbook PT 3450.2A describes these two awards, their requirements and benefits.)

### DOES YOUR PD FIT?

Scene: Cafeteria. Cast: Joe, Flight Standards; Jim, Personnel and Training.

Joe: I heard Schmoltz got a raise.

Jim: Yes, he got a new PD.

Joe: You mean that step increase deal?

Jim: No, position description—a PD.

The thing that spells out your job.

Joe: Mine was spelled out by the PIP

—Performance Improvement Program.

Jim: This is different.

Joe: How different?

Jim: The PIP lists performance requirements; it's used for measuring job performance. The PD lists duties and responsibilities; it's the voucher that determines your grade and pay.

Joe: Thought I got my grade and pay on how well I did my work.

Jim: Not entirely.

Joe: What do you mean, not entirely—tell me more.

Jim: I'll give you the whole PD picture. Say a supervisor in MS needs to set up a certain position. First thing he does is talk to Personnel. Then he sits down and writes the position description—the PD, listing the duties and responsibilities the job will carry with it. After that, he recommends a grade for it and takes it back to Personnel for classification—title, occupational code and grade. The grade fixes the salary scale or rate of pay per hour.

Joe: How's that done?

Jim: They have standards. Personnel evaluates each job in relation to the standards that apply to it. Once this is done they decide—on the basis of the PD—the qualifications necessary for it. They have standards for that too. Finally, they look around for the right man. He may be located through the Merit Promotion Plan; it could even be a case of re-writing the job description of someone already on the job.

Joe: That's interesting. I've recently taken on some new work and I'm sure it's not written down anywhere. At least I haven't been able to find it.

Jim: Well, speak to your supervisor. He's responsible for keeping the PDs up-to-date. Remind him that under the Classification Act any job not properly classified is illegal.

Joe: How'd we get into this? Oh, yes, Schmoltz got a raise because he got a new PD. Thanks for the information. And excuse me for running, but I've got to see my supervisor about a new job description.



### IT'S WIRED FOR WORDS

This communications beehive, the FAA Telecommunications Center (top left), located on the street floor of the Washington Headquarters building, opens onto the world. It is the core of one of the largest teletype communications networks in existence where our widely decentralized Agency is welded together. All messages, classified and unclassified, administrative and operational originating at or addressed to Headquarters, are processed over three communications systems—commercial, Department of Defense and FAA's own. It takes more than 500 hours to train highly qualified operators who must be familiar with some 50 different communication procedure manuals. The Center is manned around the clock and is under tight security at all times. From top right and clockwise: ● The outer door resembles a bank vault; everyone must show proper identification and sign a register before entering. ● Messages are punched on tape in 5-letter code groups and printed by high-speed teletypewriters at the receiving end. Most messages go out in a matter of minutes. Others may take up to three hours—such as those consisting of 350 lines of text and sent to 300 addressees. ● Maintenance is performed on the spot; a technician is always on hand to keep the equipment in tip-top shape. ● This message is going to Frankfurt. The 24-hour clock is indispensable in a global operation. ● Lt. Gen. Harold W. Grant, the Deputy Administrator, displays part of the miles of tape fed into the machines each day.



# FAAers ON THE JOB



**Everett E. Dunkin**

"There is nothing like woodworking and decorating cakes to help me unwind after poking around airplanes all day at the hanger," says Everett E. Dunkin, a maintenance inspector at the Fargo, N. D., General Aviation District Office. Dunkin likes to dabble in building and refinishing furniture, but layer cake decorating is his real forte. In fact, it is unusual enough to have earned him a spot on a local television station variety show and also to be featured in a newspaper article. Dunkin learned how to decorate cakes at a cake decorating class offered under the Fargo adult education program. He says he gets plenty of help from his family with his hobby—the cake decorating one, that is. They like his cake and eat it too!

**William M. Bigelow**

How old is old? Several years ago the Agency launched a project aimed at fathoming the body's aging processes—specifically the effect of passing years on pilots and air traffic controllers. William M. Bigelow is on the research team in the Pharmacology and Biochemistry Laboratory at FAA's Georgetown Clinical Research Institute, studying blood, cholesterol and endocrine substances, searching for clues that might lead to greater knowledge of physiological age. He and his colleagues are trying to throw light on why some people are physiologically old at 35 and others young at 65. A graduate of Howard University, Bigelow is a confirmed "do-it-yourselfer," as deft with carpenter's tools as with laboratory equipment.

