AMERICAN REVOLUTION BICENTENNIAL
1776-1976
JULY 1976



FAA WORLD



EDITORIAL

The Dream of '76 Is in the Spirit Of Our Laws

The Administrator listens to William H. Koch (left), chief of NAFEC's Simulation and Analysis Division, describe the functions of the operators in the Air Traffic Simulation Lab.

This Bicentennial Year is an excellent time for us to be thankful for our heritage and to renew our hopes and dreams for a better country. It is also an excellent time for us to ask ourselves what we are personally doing to transform dreams of equality and brotherhood into everyday reality.

We cannot take comfort in the philosophy of freedom and opportunity our ancestors proclaimed unless we ourselves are living proof of the vitality and viability of that freedom and opportunity. We are known by the cumulative effect of our actions. Do our actions show a commitment toward opening opportunity to all? Do we encourage those who are doing less than they could to aspire to do more? Do we make training and knowledge available so they can achieve self-fulfillment? Do we give them the chance to demonstrate what they have learned?

The executive, legislative and judicial branches of the Federal government have done a great deal in the last 25 years to make the ideals of the Declaration of Independence and the Bill of Rights a reality for all Americans. But government action is limited. The government can order, legislate, lead and create opportunities. But it's up to people to go beyond the letter of the law to its spirit. Equal opportunity can be a nightmare for someone who has been granted all that the law requires but nothing more.

All of us, by our actions and our attitudes, must try to help create a work environment where each employee can be allowed to grow to the full extent or his or her capability with the genuine support of supervisors and colleagues, without regard to race, color, creed, national origin, sex or age.

The FAA can be proud that it has helped develop an aviation system second to none in safety and efficiency. Let us make sure that these outstanding accomplishments go hand in glove with a spirit of equality in FAA second to none.

John L. McLucas

JOHN L. McLUCAS
Administrator

FAA WORLD

JULY 1976 **VOLUME 6, NUMBER 7**

CONTENTS

The cover:
Happy birthday, America! You've come a long way . . . and so has the FAA. Along with our nation's bicentennial, FAA is celebrating the fortieth anniversary of government air traffic control this month (story on page 4), and two months ago we noted the half-century mark for government air regulation since the passage of the Air Commerce Act.

Back cover:
An airliner descends through an overcast to Runway 9 at Lindberg Field, San Diego International Airport.
Photo by Ed Hutchinson, San Diego AFS

Secretary of Transportation, William T. Coleman • **Administrator,** John L. McLucas
Assistant Administrator—Public Affairs, Joseph Laitin
Chief—Public & Employee Communications Division, John G. Leyden
Editor, Leonard Samuels • **Contributing Editor,** Theodore Maher • **Editorial Assistant,** Don Braun • **Art Director,** Eleanor M. Maginnis

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When on the BOARDS

Meant Just That

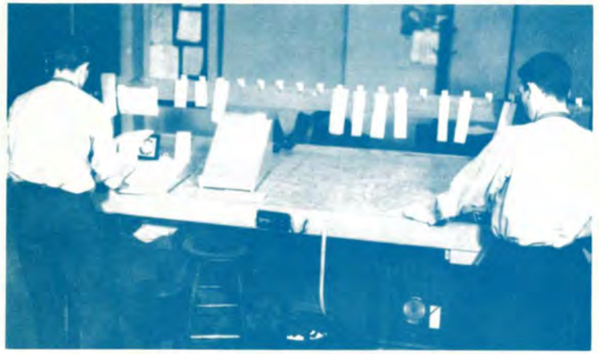
"The most serious consideration in aviation safety today is congestion of traffic . . . at Newark recently, in foggy weather, we had to land 10 airplanes in 30 minutes. That is a landing every three minutes and that is done without one plane bumping into another."

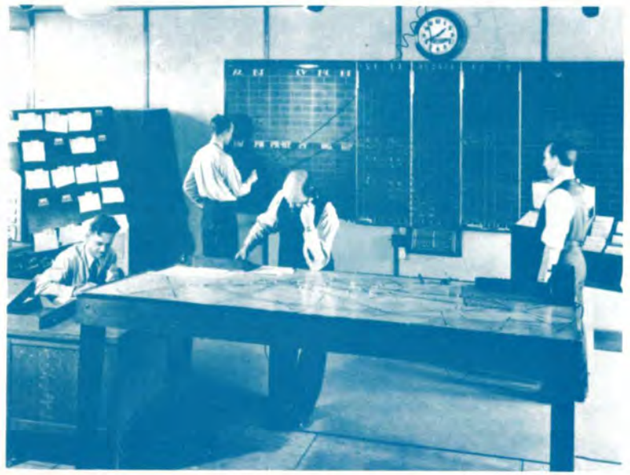
—Testimony before Congress April 30, 1936.

"An Airway Traffic Control System, to assure adequate spacing between airplanes flying along established air routes and to prevent congestion at airports, will go into operation under the direction of the Bureau of Air Commerce."

—Department of Commerce press release July 6, 1936.

The nation's—the world's—first air traffic control center was established at Newark Airport in 1935. At left and below are the four versions of the Newark Airway Traffic Control Station in 1936, 1937, 1938 and 1939. They had progressed from clocks, map table, telephones, radio receivers and scheduling board to clocks, map table, telephones, radio headsets and flight strip boards.





Controlling air traffic to avoid mid-air collisions is what it was all about in 1935-36, when the airlines and the Federal government got into air traffic control. Pilots knew it was necessary, but they weren't quite ready for it. There were things that disturbed them.

Sometimes while flying on instruments, they ran into turbulence in an otherwise calm sky. They knew that they were passing through another plane's prop wash, and they knew that in the misty, foggy sky, they had passed dangerously close to another plane.

Still they were of two minds about this new-fangled airway traffic control system. Pilots didn't want someone telling them how to fly their planes, and the airlines didn't want someone telling them how to run their airlines, either.

But something had to be done. Instrument flying was becoming more and more common. So, the airlines got together and organized a company called Airway Traffic Control, Inc.

Late in 1935, the embryonic company set up an "Airway Traffic Control Station" at Newark Airport. It was manned by airline dispatchers and communications operators on leave of absence from American, United, Eastern, TransWestern and Northwest airlines. These first controllers earned a bonus. When they went to work for the new company, their pay was raised from an average of $150 a month to a dazzling $200 a month.

The station was set up in a small room under the municipally owned and operated tower in the terminal building. It was at best rudimentary. Radar was not yet a gleam in its inventor's eyes. On the other hand, airlines had radios both in the air and on the ground. But there were no radios in

Another early center was at Pittsburgh, here depicted in 1937 (right) and 1941. The earlier version shows assistant manager Archie League and controller Raymond Petitte. League went on to become Assistant Administrator for Appraisal, retiring in 1974.

ATC facilities. Controllers had no direct contact with the planes they controlled. All messages went through the company dispatcher. The controllers called the company dispatchers via telephone and the dispatcher, in turn, talked to the pilot on the jealously guarded discrete company frequency.

So there were problems right from the beginning, but it was exciting, too. Controllers didn't work 18 hours a day just because they had to; they worked because they wanted to.

In this way, they learned about the new art, and in this way they made up the art as they went along. They wrote the flight number and time of departure and estimated time to the next "fix" or reporting point on a blackboard. (Working air traffic has been referred to as being "on the boards" ever since.) And they followed the progress of each flight on a large map. The planes en route along the airways were symbolized by small brass markers which held a slip of paper indicating the flight number and altitude. The brass markers, about an inch and a half long and pointed at one end like a boat were called, right from the beginning, "shrimp boats," as they are today.

To keep the picture up to date, the shrimp boats were moved every 15 minutes according to the estimates, or guesstimates, of the controllers, which were based, in turn, on the guesstimates of the pilots.

So that's how it worked in the beginning: tentative, imperfect, but effective. Because it worked at Newark, new centers were set up, and the neophyte controllers, now veterans, were appointed managers of the new facilities: Glen Gilbert, American Airlines, at Chicago and H.F. Cole, Northwest, at Cleveland. Like John L. Huber, manager at Newark, these men were making $3,600 a year.

As the system expanded, it became clear that the airline-owned-and-operated ATC system had some severe shortcomings. Although airline pilots usually abided by the dictates of the airline controllers, ATC, Inc., had no authority over military or private pilots.

Something had to be done, and it was. The Federal government stepped in at the airlines' request and took over ATC, Inc., lock, stock and barrel, July 6, 1936. Although some airline executives objected to government control, most breathed a sigh of relief when the responsibility for controlling air traffic was taken over by the Bureau of Air Commerce.

It was a smooth takeover. As a matter of fact, Hugh McFarlane, who would retire from FAA 35 years later, hardly noticed the change. "We just kept right on working," he said. "The biggest change was that we got a day off after the government took over. And we got a little raise." Salaries for a full-fledged controller—in today's lexicon, a journeyman—went up from $2,400 to $2,900 a year.

Another important change was that after the government took over, controllers at least had the authority to control all air traffic, even though they did not have direct contact with airborne pilots. Company radio was still used to talk to airline flights, while government-operated communications stations intervened between controller and private or military pilot.

Of course, this kind of put a crimp in the controllers' style. For instance, when there was a "stack" of planes holding over an airport, a plane could not descend to the next lowest altitude until given clearance by ATC. This meant the controller would tell the dispatcher to tell the pilot that he was cleared from five to four thousand feet.

Then the controller would fret while word was passed on to the pilot, and he would fret some more while word filtered back from the pilot indicating that "United Six" had, in fact, left five thousand. Not until this was confirmed, could the controller tell the next flight that it was cleared to descend.

Although effective control was exercised only within 50 miles of the ATC facilities—the range of the low-frequency radios—the system worked, and the tragic midair collisions were avoided.

As E.R. Mehrling, one of the original controllers and the first manager of the Pittsburgh Center, said, "We knew that the system left a great deal to be desired, but it was a beginning. After all, we were learning something completely new. All of us, pilot and controller alike, had a lot to learn.

"Shortly after the government took over the operation," he went on, "I was chief of the then new Pittsburgh Center. At that time, half my time was spent selling the service to pilots. We were doing it to save their necks, and we could not do it without their cooperation. Still I had to convince them that it was necessary."

It was almost like a special club in those days, McFarlane said. "We got to know the pilots; we could predict who would take 20 minutes on an approach and who would fly the same approach in five minutes. Those were the days when there was still personal contact between controller and pilot. The facility was right there at the airport, and disgruntled pilots would come storming into the office after landing. They weren't too sure of themselves, either, and they took some of it out on us, hollering because we held them in the stack too long—berating us because we held them in safe airspace."

So, that's the way it was 40 years ago when en route ATC began and the government entered the picture, when controllers were first learning to expedite traffic, and "congestion of air traffic" was the most serious consideration in aviation safety.

—By Theodore Maher

The modern Air Route Traffic Control Center evolved from the telephone-bound backroom to the huge discrete building with computerized radar and microwave link air/ground communications.

CHRONICLING FAA'S HISTORY

The Drama and the Drudgery

FAA's historical crew gets together for a monthly parley about the progress of their manuscripts. John Wilson (foreground) was first to complete his book-length portion which he titled, "Wars and Rumors of Wars: The CAA, 1938-1953." On the desk by Wilson are five boxes of 3x5 note cards which he accumulated during his research and is donating to the agency's historical files. At rear, from left, are FAA Historian Nick Komons (1926-38), Stuart Rochester (1953-61 and epilogue), Richard Kent (1961-1972) and former FAA Historian Ed Champie.

the books will be invaluable to students of aviation history

the agency has an official historian

What does it take to write the history of FAA? The answer is four professional historians, working in Washington and the field over a period of two years. And what better time to publish it than the year in which America celebrates its bicentennial and FAA marks its 50th anniversary?

Produced under the direction of FAA Historian Nick Komons, this will be no ordinary dry government report, nor will it be a work of government flackery. The four-volume work sparkles with lively writing that calls a spade a spade, set among intriguing chapter headings like "The Search for Safety," "Austerity, Discord and Scandal," "No Greater Evil" and "Coping With Air Piracy." The four volumes will be published separately, with the 1953-1961 period scheduled for early this fall and the others to follow in the months afterward: 1926-1938, 1938-1953, 1961-1972 and a planned epilogue. When the entire project is finished, the books will be invaluable to students of aviation history. Copies will be available in DOT libraries.

And where does one go to research the agency's life story? The answer this time is to Charles Stanton, Delos Rentzel (Lance's father), James Pyle, Elwood Quesada, Najeeb Halaby, John Shaffer, James Dow; and Independence, Mo.; Austin, Tex.; Hyde Park, N.Y.; Abilene, Kan.; Boston, Mass.; and West Branch, Iowa. The people? All are former CAA and FAA Administrators and Deputies. The places? At each is located a Presidential library, a rich source of official papers on top-level policymaking.

And of course, the National Archives, Library of Congress, DOT Library and the Washington Federal Records Center, a stadium-sized warehouse in Suitland, Md., which contains a vast 30-year-long collection of official memoranda, directives and other paperwork nestled in cardboard boxes on endless shelves.

It may be something of a surprise to FAA employees to learn that the agency actually has an official historian. FAA's chronicler, Nick Komons, works in the Office of Public Affairs. In addition to the current four-volume opus, Komons and his predecessors have turned out FAA historical factbooks, annual reports and short books about important events in aviation history.

To write a definitive FAA history, Komons hired three research historians: John Wilson, Stuart Rochester and Richard Kent. Each was assigned a period of years to cover, while Komons reserved for himself the earliest era, which he had previously studied—1926-1938. Each historian is writing a whole book of roughly 250 pages.

At first glance, it might appear that a lot of clever sleuthing would be necessary to track down 50 years of details from the tangled relationships among the agency, Congress, industry and the public. "In reality," Komons said, "it can be sheer drudgery—going through reams of documents and publications." "It's mostly hard work," echoed Stu Rochester; "nothing very glamorous or exciting about it."

But in a sense, the authors do feel the privilege of touching history, as when Stu turned up Dwight Eisenhower's pilot's certificate—Ike being the only President to have held a pilot's license.

Undoubtedly, the most interesting part of the job was interviewing former CAA and FAA Administrators. The erstwhile brass said they would talk a short while, but once they got going, most sessions lasted a whole day.

These interviews will leave enduring memories with the writers. John Wilson recalled his audience with Charles Stanton, "father of the airways" and CAA Administrator in 1942-1944, now aged 82. "We sat in his backyard in Arlington, Va., sipping tea," Wilson said, "while he told me about wartime pressures and how he resisted attempts by the U.S. military to grab the operation of CAA."

Stu Rochester interviewed Elwood Quesada, FAA's first Administrator who served from 1958 to 1961. "I found him very dynamic, charming, bright, forceful, articulate and engaging"—enough perhaps, to overwhelm the most objective researcher—"and I found I liked him very much," Stu said. "In fact, this may possibly color my writing about him."

Chief historian Komons set up a system of checks and balances to guard against just such a possibility, as well as to resolve factual discrepancies and smoothly dovetail the four historical volumes authored by four different people. Monthly meetings and an exchange of manuscripts by mail achieved these ends. And former FAA Historian Ed Champie served as a consultant, reading each chapter for "sense and sensibility."

In the writing, dramatic moments in the agency's life unfold vividly. Recounting the 1931 crash of a tri-motor Fokker F-10A, which killed famed football coach Knute Rockne and seven others, Volume 1 goes on to describe the debate over the plane's airworthiness and its subsequent grounding by the Aeronautics Branch. "Thirty-five aircraft in all were affected. . . . Nothing like it had ever hit the American aviation industry. And nothing has since. There would be other bans, but none would strike an aircraft, an aircraft designer [Anthony Fokker] and an airframe manufacturer with so devastating a force."

the authors do feel the privilege of touching history

Komons set up a system of checks and balances

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In Volume 3, readers will find: "The months following the Grand Canyon collison [in 1956] on balance, were eventful, exhilarating ones for the CAA. The agency had acquired a momentum and a purposefulness that had been lacking through much of the fifties and for much of the forties as well. . . . How much of this transformation can be attributed to the Grand Canyon tragedy is an interesting subject for speculation. Surely the accident . . . had a momentous impact. . . . Despite the sledgehammer impact, however, Grand Canyon's significance in the longer perspective was more symbolic than real. . . . Unfortunately, there was so much ground to make up that the agency would be hard pressed to sustain its newfound momentum and to stay a step ahead of future disasters. In this sense, the Grand Canyon episode would be a haunting reminder of the price of neglect and a spur to yet more thoroughgoing reform."

Publication of the history will be a noteworthy event, and the story of the agency will make fascinating reading.

—By Don Braun

FEDERAL NOTEBOOK

JOB GRADES CRACKDOWN
The President has asked all agencies to review their job classification systems to make certain that jobs are not overgraded and to cut grade creep. The President said that much of the grade creep was caused by "a marked increase in the proportion of technical, professional and managerial employees." John Cole, director of the Civil Service Commission's Bureau of Personnel Management and Evaluation, attributed it to an inadequate compensation system that was not corrected until the principle of pay comparability came in. Cole said the commission was planning major evaluations of 11 agencies beginning in FY 1977, which doesn't include FAA, and that CSC would be looking at other agencies during the next 12 months.

PAY IN FLUX
A CSC study has proposed a restructuring of the General Schedule pay system into clerical, professional-administrative and executive-managerial categories, as did the Rockefeller pay panel. ■ The Defense Manpower Commission has recommended the creation of an independent Federal Compensation Board to set pay for civilian and military personnel. ■ The Federal Pay Council, which is composed of representatives of five Federal employee unions, has appealed to the U.S. Appeals Court a decision of a District Court that dismissed a suit to block CSC and the Office of Management and Budget from reducing raises by redefining the duties of secretaries and computer operators.

FLEXITIME MOVES ON
As the House approved the Administration-backed H.R. 9043 for testing flexible working hours in government agencies on a voluntary basis, 28,000 Federal employees were already testing the system. CSC has already found some 30 agencies are interested in the experiment, which involves varying hours around a core period or within a 12-hour frame, 4-day week of 10-hour days, varying-length days or varying-length weeks. ■ CSC Commissioner Georgiana Sheldon reports that existing tests have shown increased productivity, large decreases in sick leave use, decreased tardiness and increased carpooling.

HEALTH INSURANCE SCENE
The bill introduced by Rep. Richard White (Tex) to increase the government's share of health insurance premiums died in this session for lack of a quorum in committee hearings. ■ 39% of the Blue Cross plans across the country are trying out "prospective payments" to hospitals for subscriber care to promote greater efficiency. Under the system, a set rate for care is negotiated in advance. If the actual costs come in under, the hospital benefits; if over, the hospital must absorb some of the losses.

SICK LEAVE FOR THE SICK
Based on a ruling of the Federal Labor Relations Council and the General Accounting Office, CSC has defined sick leave rules: If you are sick, you may take sick leave. If someone in your family is ill, you must take annual leave to care for him/her or to recuperate from any loss of sleep.

INCOME TAX BREAK ON HORIZON
The Senate Finance Committee is considering S-2870, which would give Civil Service annuities the same tax exemption that is allowed on Social Security pensions.

This news is based on information from non-FAA publications and does not reflect FAA policy or opinions.

A Fine Figure of a Man... of a Man... of a Man...

Cancy "Casey" Colao (below), Chicago FSS assistant chief poses as he did 38 years ago for all three of the figures above him. He also modeled the statue of Artemas Ward (left), which stands in northwest Washington, D.C.

While neither aviation nor FAA were words in the lexicon of 1776, one FAAer does have a roundabout connection with the great figures of that era. Cancy "Casey" Colao was the model for the Washington, D.C., statue of Revolutionary War general Artemas Ward and the three figures of a Chicago sculpture group comprised of George Washington and Revolution financiers Robert Morris and Haym Salomon.

The Chicago sculptor wanted an "Adonis type" for his model and, after a search through art studios and the Art Institute of Chicago, picked Colao, who is now assistant chief of the Chicago FSS at DuPage County Airport. Colao still has the long-muscled figure that attracted sculptor Leonard Crunelle, although he has not been a model since joining the CAA in 1946.

He works out frequently in his basement gym, keeping up the regimen begun during his childhood in Chicago. "I would really get sick if I didn't work out," he says.

"We were all physical fitness nuts," Colao says of himself and his brothers. "I was a gymnastics champ in high school, as well as a diver, football player, pole vaulter and wrestler. I was offered several college scholarships, but we were so poor, I couldn't afford transportation to the schools." Instead of college, he went to night school and was an artist's model during the day. For several years, he was the "Jantzen Kid," flexing his muscles in a bathing suit for magazine and billboard advertisements displayed all over the world. Then, for a time, he worked for George Petty, best known for his "Petty Girl," although Colao never posed with Petty's daughter, model for the girl.

But, after nearly 40 years, Colao is proudest of his work for Crunelle, even though he accepted the job because it paid 75 cents an hour, while the Art Institute was paying him only 70 cents.

Crunelle, an associate of Lorado Taft, took on the Washington-Morris-Salomon group in 1938 after the famed sculptor died without beginning it. "I started out in a G-string so he could shape all the anatomy," Colao recalled. "He made plaster casts of my face with straws stuck in my nose so he could work on the heads when I wasn't there. Then he had Washington's original cape and hat brought from the Philadelphia Historical Society. Because Washington wore a wig, the hat was too big, so he pinned a towel around my head. Because Washington stood about six feet-four—five inches taller than me—Crunelle put me on blocks so the cape would hang gracefully."

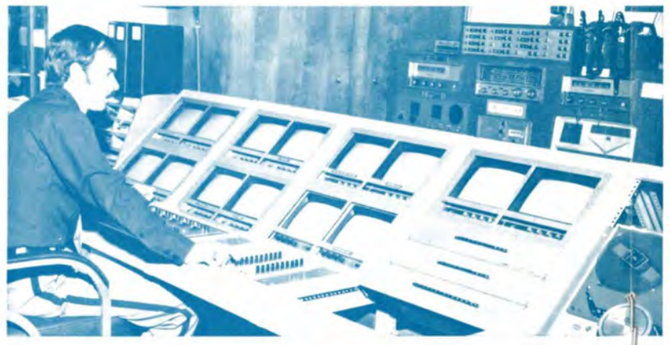
Colao continued night school and modeling until World War II, when he became a radio operator, intelligence investigator, cryptographer and physical-fitness instructor in the Army Signal Corps. He participated in six campaigns and won three letters of commendation for his work.

After the war, Colao became an aircraft communicator, handling military and airline flight plans at the old Interstate Airway Communications Station at Chicago's Midway Airport. Except for short periods in Kansas City and Cleveland, he has worked continuously in the Chicago area. —*By Marjorie Kriz*

FACES and PLACES

MODERN COLONIAL FLAG—*Donald E. Saunders (right), chief of the Lebanon, N.H., FSS, hoisted the colors briefly for students at the Oak Ridge High School in Orlando, Fla., as airport manager Elizabeth Vail and Air New England manager Fred Martin looked on. The students asked that the flag be flown over each of the original 13 colonies and Washington, D.C., for their bicentennial program. National Airlines cooperated in transporting it. The flag is now flying over the school for the rest of the year.*

HANDS ACROSS—*Jim Becker (left), chief of the Palomar, Calif., Tower, accepts a Certificate of Achievement in behalf of his personnel from Western Region Deputy Director Lynn Hink. It was a surprise luncheon ceremony recognizing the Palomar people's collective and individual assistance to the San Diego FSDO, especially in General Aviation accident prevention.*



14 EYES PLUS 2—*An Aeronautical Center security officer checks the monitors at the Security Control Center, part of a system of closed-circuit TV spotted around the Oklahoma facility. It includes two-way communications for identification of off-hours visitors and unlocking of entrance doors by the officer via an electric switch.*

EXECS HONOR TEACHER—*At an Executive School follow-on class at Charlottesville, Va., Vic Onachilla (right), school director, raises a Jefferson loving cup presented to him by Class 4 on the 16th anniversary of executive training. Staff members John Slover and Tina Mallory also received gifts.*

INTERN MAKES GOOD—*C.O. Reasoner (left), Fort Worth ARTCC chief, presented an ATCS certificate to Air Force controller Richard Robertson (right) after his becoming the first Air Force controller to complete a cooperative FAA/USAF training program. Robertson's team supervisor, Phil Pelton, looks on.*

THAT'S THE TICKET—*Gene Miller, Seattle FSDO inspector, signed off on a private pilot's certificate for Martin Brazier, Northwest Region assistant civil rights officer, after Brazier earned it without attending formal ground school. Brazier ended up recruiting his flight instructor, now an FSS specialist in training.*

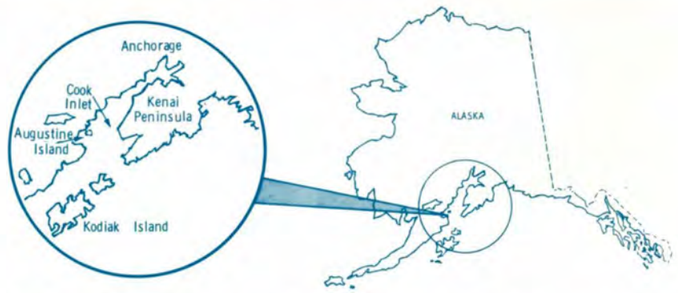
PLANE BUILDERS, TOO—*A pair of Goodland, Kan., FSS specialists have built their own aircraft. The "Stardust Too" biplane, built by Edward Middleton and his father, sports a 150-hp Lycoming with full inverted fuel and oil systems. The all-metal "Davis DA2A", built by facility chief James Waddell and his friend Phay Hussey, has a Continental A-65 but is slated to get a C-85 engine eventually.*

ARTS-TO-ARTS AWARD—*Special Achievement Awards were presented by Western Region Air Traffic chief Frank Happy (third from right) to seven data systems specialists for setting up a program that allows adjacent terminals to handoff planes directly to each other through the Los Angeles Center computer: (left to right) Fred Kern, LA Center; Robert Geschke, Miramar RATCF; Doug LePage, LA TRACON; Dave Cohen, Burbank Tower; Robert Farquhar, Ontario TRACON; Charles Aalfs, LA TRACON; and Walter Flood (not shown), then of the Coast TRACON.*

LIFESAVER—*New England accident prevention coordinator Eugene Morris displays an award he received from the Alaska Civil Air Patrol for saving the life of a downed pilot while on a CAP search team. Present for the ceremony were (from left) Region Director Quentin Taylor; Col. Russell Anderson, Alaska CAP commander; and Jack Sain, chief of New England's Flight Standards Div.*

LISTENERS ALL—*Airports District Office chief Larry Walsh answers a question at a Harrisburg, Pa., listening session attended by 100 people. It was one of a series held in local communities to improve FAA services and the aviation system. Other panelists are (from left) Harrisburg GADO chief Robert Lyon, then Eastern Region Director Duane Freer and tower chief Bert Coval.*

A SIGHT TO BEHOLD



It was a rare moment for a very few people, who might have felt for a moment that they had been in at the creation, when remote St. Augustine volcano blew up in Alaska. Among them were five FAAers.

When Capt. James Cook sailed up what was later to be called Cook Inlet on St. Augustine Day, 1778, he saw an island topped by a beautiful, high, slender cone, looking pretty much like an upside-down funnel. The island sits about 140 miles southwest of Anchorage and 50 miles east of Iliamna. In the last week of January this year, St. Augustine blew off the top 200 feet of its cone.

The photos were taken by Tim Murphy, an electronics technician on N-98 flying to Iliamna. Aboard were pilot Ken Wilkins, co-pilot Dick Pastro and flight engineer Tim Jackson.

The story was told by FSS specialist Mike Smith of Iliamna:

"On Thursday, January 22, while on duty at the FSS, I heard a Reeve pilot talking to the Homer FSS. The pilot said it looked like the whole top of the mountain had blown.

"Skies were overcast that day, and we couldn't see much of anything. There were no other reports that day.

"On Friday, as the sun began to come up at 5:45 a.m., I could see a single cloud—looking like a thundercloud—in the area of St. Augustine. It appeared to be moving northward.

"At about 7:45, I noticed that to the south of this cloud there was another with a diameter of about 25 miles. It looked like a smokestack going straight up for about 15,000 feet and mushrooming as it rose. A lot of lightning was flashing inside, and the white puffy steam looked like brain wrinkles. It got bigger and bigger and by 9:15 seemed to be about 40,000 feet high. It was so clear that I could see to the base of the mountain.

"At 10:00 a.m., the volcano erupted again, but I couldn't see much because of the clouds. Around 4:00, the most violent eruption occurred, no longer appearing as white and fluffy as the others. Lightning flickered throughout the night, and the sky was bright from it.

"On Saturday morning around 8:45, the biggest explosion went off. Saturday's cloud appeared to be around 50 miles in diameter, and one pilot flying in the area reported it was higher than 40,000 feet. At about 11:00, a brown wall of ash appeared—clouds of volcanic dust blowing directly toward Iliamna obscured the entire sky and created a fog so thick you couldn't see more than 20 yards. For about an hour and a half, the fine ash fell around us, covering the countryside to a depth of a quarter-inch.

"The last eruption occurred about 5:00 Sunday morning, with lightning continuing to flash through overcast skies. Sunday afternoon, a pilot from Homer flew over St. Augustine and reported it was beginning to clear. Except for steam rising from the peak, it was quiet, except that half the peak was gone."

It was a memorable weekend.

WORD SEARCH By the Great Lakes Public Affairs Staff

Puzzle fans! Try your hand at finding the hidden names of makes and models of airplanes. The words read forward, backward, up, down and diagonally but are always in a straight line and never skip letters. The words overlap, and letters are used more than once.

Use the word list if you must, but try covering it first. All 55 names can be found. Circle those you do find and cross them off the list. The name "Avro" has been circled to get you started. When you give up, the answers may be found on page 22.

If you enjoy solving these puzzles, perhaps you might also enjoy creating one. Send us a word list of a category of words or names in the FAA or aviation lexicon, a grid of letters and another copy of the grid showing the circled answers, together with your name, functional title and facility. Limit the grid to aproximately 20 characters in each direction.

AERO
APACHE
AVRO
AZTEC
BARON
BEECH
BELL
BELLANCA
BONANZA
CARDINAL
CESSNA
CHAMP
CHEETAH
CHEROKEE
COBRA
COLT
CUB
DC-TEN
DC-THREE
FIAT
FLYER
FRIENDSHIP
GEE BEE
GNAT
GULF STREAM
HAWK
HILLER
JENNY
JET STAR
LAKE
LEAR
MIG
MOTH
MU-TWO
MUSTANG
OTTER
PIPER
RYAN
SABRELINER
SEABEE
SENECA
SKYLANE
SPAD
SPITFIRE
STAGGERWING
STITS
SWIFT
TAUBE
TIN-GOOSE
TITAN
TRI-JET
VEGA
YAK
YANKEE
ZERO

T L O C K S Y O E E E B A E S L
R E I L Y S N O R T U P K T E
O A R B O C N A N V C A A A A
P I H S D N E I R F A C L G R
L L E B T E J I R T Z H P G A
A A E B A R O N L G N E A E T
V E G A O R E A O E A S N R S
E N A T I T A V B E N S S W T
H Y E A C E N E S B O W S I E
C A R D I N A L P E B I E N J
E K S A C N A L L E B F C G S
E E K N A Y K W A H Y T T I K
B T I N G O O S E R S I C M M
S P I T F I R E E S H H O A A
T C O W T U M N R T A B A V E
E F L R E P I P O M O T T E R
N L I O N L U M P M I L B E T
A Y H A E A C H E R O K E E S
L E Y R T E S C H E E T A H F
Y R B S T I T S R E L L I H L
K A Y Z E R O G N A T S U M U
S P A D C T H R E E L P O A G

SMALL WORLD

A FRIEND IN NEED . . . Picture, if you will, a guy locked out of his motel room at the Dallas/Ft. Worth Airport at one o'clock in the morning, wearing only his Fruit-of-the-Looms and a bath towel. It's not only embarrassing; it's downright chilly. Now and then a car passes below the balcony where he stands and he rushes to the railing, waving the bath towel, hoping someone will recognize his predicament and send help. But nobody does. Or maybe it's just that nobody wants to get involved with a half-naked man waving a bath towel from a motel balcony at one o'clock in the morning. But even as the man despairs, help is on the way. Not far away, FAA controller Gary Hockensmith, standing the midwatch in the Dallas/Ft. Worth tower, has spotted the strange tribal dance on the motel balcony and correctly assessed the situation. He notifies the airport police and then watches with satisfaction as the man is let in from the cold a short time later. Just another dull midwatch—right, Gary?

DOING THEIR LEVEL BEST . . . If they had their "druthers," most pilots would takeoff and land upwind almost all of the time. But at the Grand Canyon Airport, pilots generally are more interested in the slope of the runway than the direction of the wind. FAA tower chief Jack Cunningham notes that the northern end of the lone 9,000-foot runway is 84 feet higher than the southern end. For this reason and because the airport is 7,000 feet above sea level, pilots prefer to land uphill to cut the rollout distance and take off downhill to give themselves a running start. The tower opened for the summer season on May 1, and Cunningham says it handled 164 aircraft and six coyotes on the first day. Most of the aircraft were logged as itinerant operations; the coyotes were all local.

THE LONG AND THE SHORT OF IT . . . FAA's Civil Aeromedical Institute publishes an annual statistical handbook that tells you more than you probably want to know about the physical makeup of the U.S. airman population. For example, it shows that there are 2,887 active airmen and airwomen who stand less than five feet tall in their stocking feet and 37,846 who are potential NBA draft picks at 6'3" and over. Similarly, there are 434 persons who weigh in at less than 90 pounds soaking wet and 6,812 who might make an NFL expansion team at 249 pounds and over. This is only a sampling of the contents, mind you. There are enough facts and figures in the book to make you a crashing bore at any cocktail party.

Sowing the Seed of the Future

As a result of FAA's charge to promote civil aviation, the agency has been fostering aviation education as the seed for the future health of the industry.

The Great Lakes Region has been approaching this endeavor from both the student and the instructor sides. The region's first aviation education specialist, Gene Little, has been busy promoting the need for quality aviation curricula. A recent meeting with the Chicago Board of Education prompted the consideration of a career education school on Chicago's Midway Airport. This not only would benefit students in search of a career and the industry in search of trained individuals but also would fit very nicely into the city's revitalization plans for what was once the world's busiest airport.

Gene Little, Great Lakes aviation education specialist, leads the way for his troupe of educators at O'Hare, who are getting an intimate view of the diversity of airport aviation jobs.

Students at the Aero Mechanics Vocational High School spend part of their time rehabilitating aircraft in the school's hangar located on the apron at the Detroit City Airport.

Little often attends career seminars and aerospace education conventions and has organized at least one tour of O'Hare International Airport for counselors and teachers—all designed to maintain channels of communication on aviation as a career choice.

"Our first step must be to educate the educators," says Little. "So few in this area realize that O'Hare is the second-largest employer in the Chicago metropolitan area." He points out that cooperation by the FAA, the city and the airlines helps to dispell the misconception that the only careers in aviation are for pilots and flight attendants. As Sherman Roth, director of guidance at a Des Plaines, Ill., high school, commented after touring the food service facility, "I never realized so many people are involved in a ham sandwich at 30,000 feet."

The other aspect of the program is in evidence at the Detroit City Airport, where potential high school dropouts are finding success in a tough school, not an easy one. It's a school without easy electives, no sports program, no extracurricular activities, not even a lunch room, and they spend a month longer in school than other public school students trying to garner enough credit hours to graduate.

The attraction is aviation and a career as an aviation mechanic.

The emphasis at the FAA-approved Aero Mechanics Vocational High School is on perfection, but it seems no deterrent to otherwise unmotivated students, for every year there are half-a-hundred teenagers unable to find space there.

FAA works closely with Aero Mechanics, its 265 undergraduates and 75 post-graduate students. Detroit FSDO inspectors review student expertise in restoring old aircraft and overhauling engines. Airway Facilities people, such as Jozef Lisy, Detroit Sector Field Office chief, watch over the students' progress. Detroit tower controllers monitor the students when they taxi rehabilitated aircraft in tests around the airport. Daniel Reid, AF Sector chief, has provided unused space in a radar equipment building for an additional classroom for the overcrowded school.

Budding aviation mechanics practice welding technique in one of the shops.

H. Benney Rowland (left), general aviation operations inspector from Detroit's Willow Run Airport FSDO, and school principal Nicholas Birta watch students install an engine on a Piper Cub.

Machine shop instructor Lucas Farmer first came to Aero Mechanics to enroll his son. He was so impressed with it that he stayed on to teach. He's a Wayne State University graduate and a 20-year veteran of the Michigan Air National Guard.

"We take liabilities and turn them into taxpayers," says principal Nicholas Birta. The goal for these students is a high school diploma and an A&P mechanic's certificate. While only about 12 percent qualify for a certificate upon graduation, Birta doesn't consider the others failures, as alternate weeks of the long school year are spent on academic subjects in which they can qualify for the diplomas.

About 30 percent of the student body goes on for a year or two of post-graduate study to obtain their certificates. A quarter enter college, usually in engineering. Those who opt for work after graduation usually have no difficulty in industry, because they are prepared with saleable skills in 40 different trades.

"I want to give others the same opportunities I had to develop a career in aviation," says Birta, who earned two college degrees and FAA single-engine, multi-engine, instrument, flight instructor and helicopter ratings while teaching at the school. "Aviation has been good to me, and it will be for these students. I started as a mechanic, then began to teach and then went to college."

Among the school's graduates are Ruth O'Buck, operations inspector at the Anchorage GADO, Richard Belue of Detroit's AFS and a pair of B-747 pilots. (Flying is no longer a part of the curriculum.)

The school's location on the airport is considered ideal because engine testing can be done in aircraft parked on the apron in front of the school hangar and because it encourages continued interest in aviation technical trades through observation and exposure to actual work by the many former students now employed on the airport as skilled mechanics.

The students recently restored the Tommy Morse Scout of World War I that is now in the Air Force Museum at Wright-Patterson AFB, and their next project is restoring a Sopwith Camel. But the students also work on modern aircraft, rehabilitating about six a year for recertification by FAA inspectors. Their owners pay 10 percent above the cost of parts, with the profits going into new tools.

The school owns six fixed-wing aircraft and a helicopter on which the students work, which do not fly but are used as engine test stands.

So it is that cooperation between the school and the agency is serving to promote aviation as a career, increase skills, instill an appreciation for safety and encourage youths to complete their schooling through meaningful study of academic and shop subjects.

—By Marjorie Kriz and W.E. Holtsberg, Jr.

DIRECT LINE

Q Is it correct for a person to sign government correspondence as CPS (Certified Professional Secretary)? May other civil-service employees sign as DC (chiropractor), PE (Professional Engineer) or CPA (Certified Public Accountant)? I also find disconcerting that many people carry on the business of their clubs, churches and other organizations during government working hours, using government phones, copying machines and typewriters. Why is this permitted to go on?

A The Civil Service Classification Standards state, "Agencies may use organizational or other operating titles to meet the requirement of some special status or to satisfy internal operating needs." Within FAA, correspondence is prepared for an individual's organizational title only as outlined in the U.S. Government Correspondence Manual (Order 1360.6). When such titles as you list serve a necessary explanatory function, they should be spelled out in the text of the correspondence. An employee of the FAA may use or permit other employees to use Federal equipment, property or personnel only for the conduct of official business or approved activities. However, certain actions, which appear at first glance to be unofficial or improper—and we can't tell from your letter if that's the case—may upon closer examination prove to be otherwise. When approved by the appropriate authority, for example, employees may solicit contributions for charitable or similar organizations. Further, it is necessary and desirable, on occasion, for certain FAA employees to serve as public contacts for many local community activities, which might include fund drives, blood banks and visits to our facilities.

Q After five years in grade as a teletypewriter supervisor and flight data monitor, GS 385/301-7, I took a downgrade to computer operator, GS-332-6. I did this because the computer operator has promotion potential. On completing Academy and OJT training, I was assigned to the job and was promoted back to GS-7 last summer after nine months, because of credit given for the training. Last fall, as a result of a desk audit of the computer operator position, the journeyman level was changed to GS-9. All the operators were promoted except me. It was decided that I must wait the full 12 months in grade before I can be promoted to GS-8. I feel that because I am assigned the same duties as a watchstander GS-9 and have been performing these duties, I should have been promoted after doing so for more than 120 days, or when the other operators were promoted.

A Under Paragraph 30 of the Merit Promotion Plan (3330.1A), "a. An employee will, except as provided in b or c below, be promoted without regard to the competitive provisions of the promotion program when (1) a change in a classification standard causes his position to be classified upward without a significant change in job duties, provided he meets the legal requirements and qualification standards for promotion; or (2) His position is classified upward to correct an error in the original classification and there is no significant change in job duties, provided he meets the legal requirements and qualification standards for promotion," "b. Either of the following procedures may be followed when an employee does not meet legal requirements or qualification standards for promotion as described in paragraphs a (1) and (2) above: (1) He may be retained in the lower grade level position until requirements or standards are met; or . . ." You apparently meet the legal requirement imposed by the Whitten Amendment for time-in-grade; however, you do not appear to meet the qualification standards for GS 332-8, which, in pertinent part, read: "For grade GS-6 and above, at least one year of the required specialized experience must have been comparable in difficulty and responsibility to the next lower grade in the Federal Service or two years comparable to the second lower grade in the Federal Service." It appears that the region is acting appropriately by retaining you in the lower grade until the qualification standards are satisfied.

Q The Eastern Region is using a new form for regional bids. Instead of the SF-171, they use the MPP Employee Qualifications Statement, EA Form 3330-35-1, on which one of the ranking criteria is "mobility." Does the FAA encourage mobility at the journeyman level? My supervisor discourages and has actually refused an in-grade move because he feels it is not beneficial to the agency. If it is encouraged, are funds available for such moves? If not, should mobility be a ranking factor when bidding on a first-level supervisory position?

A The assignment of a journeyman from a lower level facility to a higher one or from a field office or facility to a position in a regional office, Washington headquarters or FAA Academy is encouraged. This type of assignment offers an employee promotional opportunities, as well as enhances his experience. Consideration of an employee for an in-grade reassignment from one facility to another depends upon the operational needs of the losing and gaining facilities. It has been the practice of the Eastern Region, when announcing vacancies under MPP, to solicit, when appropriate, in-grade or down-grade bidders. In these cases, if an in-grade or down-grade bidder is selected, release and reassignment of the employee to the new position is handled in the same manner as an employee who is selected for promotional purposes. Eastern Region Supplement No. 6 to Order 3330.1A, Para. 42e-S1, states, "The provisions of this paragraph govern the release of *all* employees selected under the MPP announcements, including in-grade and down-grade bidders, when the announcement provides for the acceptance of such applicants." While employees selected shall be promptly released, in situations involving critical facilities, the release date may be extended by mutual agreement between the releasing and gaining facilities. In such cases, travel expenses for geographical moves will be paid. Mobility ranking factors are applied only when bidding for positions that involve promotions.

Q I've been researching the FAM trip program. Going through our handbooks and talking to our supervisory personnel, I can't seem to get the complete program. Would you please send me as much information as possible on the full operation of the FAM, most specifically, on how the FAM trip can be cancelled before it even starts?

A We assume you are referring to the Air Carrier Flight Familiarization (SF-160) Program. This program is described in the Facility Management Handbook 7210.3C, Chapter 5, Section 2. Paragraph 515 provides that the airline may cancel prior jump seat approval based on a higher-priority need. The FAA/PATCO agreement, dated July 1975, allows, under Article 16, Section 11, for management approval of all such travel, based on operational and staffing requirements of the facility.

Q The present controller retirement bill clearly states the qualifications as "one who is actively engaged in the control of air traffic." The flow controllers and team supervisors in our center are not in any way engaged in the control of air traffic. The only time the team supervisors work traffic is for one hour for their annual "over-the-shoulder" and seldom work more than six or eight airplanes at a time. The flow controllers don't even do this. There is a center order that clearly states they shall remain current. It is not enforced. Why do they continue controller retirement coverage for these people when they do not meet the qualifications?

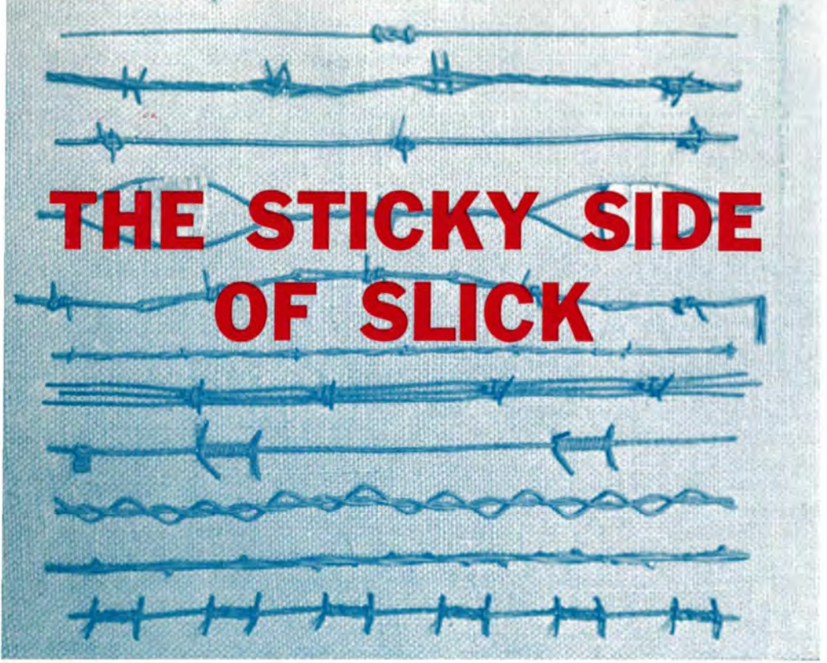
A The Air Traffic Controller Career Act of May 16, 1972, PL 92-297, specifically defines an air traffic controller as "an employee of the Department of Transportation who is actively engaged in the separation and control of air traffic or who is the immediate supervisor of an employee actively engaged in the separation and control of air traffic, in an air traffic control facility." Further, such an employee is required to meet, on a continuing basis, the physical qualification standards established by the Civil Service Commission. Team supervisors serve as first-line supervisors and are required to work the same basic schedules as their subordinates. The controllers under his/her supervision are actively engaged in the control of air traffic. Flow controllers are assigned the responsibility of regulating the number of aircraft that can be accepted in a center's area and may restrict the altitudes and/or routes to be flown during a specific period. He or she must decide the number of aircraft that will enter the center's area, their rate of movement and the routes and altitudes they will fly. Failure to make a correct decision could cause a system overload. Since these controllers are actively engaged in either the active flow of air traffic or in the direct supervision of ATCSs, it has been determined by the Office of the Secretary of Transportation that the benefits of PL 92-297 shall be provided these employees. Note also that team supervisors and flow controllers are required to meet the medical standards set for all ATCSs.

Q Is night or shift differential considered part of the basic rate of pay for a Wage Grade employee? I know of at least two regions that are including shift differential as part of the basic rate of pay for Wage Grade conversion to General Schedule.

A The existing regulations covering the movement of Wage Grade employees to General Schedule positions are not clear as to the inclusion of night differential in establishing the new rate of pay. The agency has requested clarification from the Civil Service Commission; until CSC replies, we cannot answer this question.

Q Paragraph 902 of Handbook 7110.65 requires that controllers insure a runway is clear of ground equipment, vehicles and personnel before a departing aircraft commences takeoff roll or an arriving aircraft crosses the landing threshold. Does "clear" mean off the runway surface or a stipulated distance from the runway edge? I'd also like to know the angular variance criteria for wind to be "variable." Order 7110.65, Para. 85g, doesn't give it, nor for peak gusts. Is the word "gust" an appropriate term?

A The intent of the cited handbook is to ensure that the runway to be used is clear, that is—the runway surface. While there is no provision for a stipulated distance from the runway edge, there should be sufficient clearance from any equipment or personnel so as not to create a hazard. The handbook doesn't give these wind criteria. These items are a matter of judgmental interpretation by the controller and, as such, do not require specific criteria. General criteria or definitions are contained in the Federal Meteorological Handbook No. 1: Variable Wind Direction—When direction fluctuates by 30 degrees or more during the period of observation. Gusts—Rapid fluctuations in wind speed with a variation of 10 knots or more between peaks and lulls. Peak Wind Speed—The highest instantaneous observed or recorded wind speed. We believe that as much information as possible should be relayed to the pilot. Both pilot and controller should be aware that this information is highly perishable and valid only at the time of issuance.



THE STICKY SIDE OF SLICK

One of Gardner's collection displays, sporting a dozen mean-looking strands.

Schuyler "Slick" Gardner, operations specialist with the Western Region Air Traffic Operations Branch, would be the first to admit that his hobby is a sticky business and not one that would appeal to everybody. He's hooked on collecting fencing wire—more particularly barbed wire.

In a manner of speaking, he can blame his passion for it on the FAA. "A few years ago while attending a course at the FAA Academy, I dropped in at one of the local museums," Gardner related. "I was amazed at the variety of barbed wire that had been used in days gone by."

That started it. On a visit to his hometown in Delta, Utah, subsequently, he discovered the different forms of barbed wire that had been under his nose all along on his father's farm.

There are more than 600 different kinds of the thorny material, of which Gardner has 170 pieces, and the count is rapidly rising. His collection ranges from double-strand, two-point wire patented in 1868 by Michael Kelly, through World War I German, British and U.S. wire, to modern electric fence wire made of high-tensile steel, patented in 1959.

It was back in 1873 at the DeKalb County Fair in Illinois that farmer Henry Rose exhibited the beginnings of what is called barbed wire. The first commercial barbed wire was developed by Jacob Haish, Issac Ellwood and Joseph Glidden. When Charles Washburn entered the group, they became known as the "big four" of wire. The Washburn and Glidden families are still in the business today.

Farmers have depended on barbed wire for years to keep range cattle from trespassing and later herders and cowmen have for corralling. Among them are wire with barbs sharp enough to puncture a cow's hide, "obvious" wire with blocks of wood or sheet metal between the stands to warn animals to stay clear, modified wire that was less injurious to unwary animals, buffalo wire, horse wire (which has no barbs), net-patterned hog wire and war wire for human entanglement. With the variations within these types, collectors will come from afar to attend "Barbed Wire Shows," where they can trade and sell their to-them-precious commodity.

Gardner has been able to pick up scraps in farming communities all around the country, in antique shops, at swap meets—wherever he can. His son, Donald, sent him three rare specimens from Italy.

"Once," recalls Gardner, "I spotted this piece with tiny blocks of wood between each barb and snapped it up for only 10 bucks, but I still don't have the rare "Dodge Star," an 18-inch piece of which goes for $300." One of these days, though, he hopes to *find* one.

Gardner's enthusiasm for his hobby has infected his family, but his wife, Joyce, and daughters, Kathy and Jeanne, know that any vacation plans inevitably will have to include side trips in search of a rare bit of early fencing.

—By Barbara Abels

Schuyler Gardner carefully examines several recent finds for his collection.

PERSPECTIVE ON POLITICKING

A Federal Employee's Guide

The Democratic National Convention is just around the corner in mid-month, and the Republican National Convention follows in August. It's the quadrennial bout in big politics, and partisan passions are likely to sizzle. But cool it, Federal employee; for the most part, you're a spectator until election day.

When earlier this year the President vetoed a bill that would have liberalized the provisions of the Hatch Act, it meant that the 1939 law would remain unchanged and would continue to regulate the partisan political activities of Federal employees. The law was designed primarily to protect us from abuses that once were rife. At one time, it was common practice for politicians to force career government employees to support a party or candidate or even to contribute money. That is a thing of the past, thanks to the Civil Service Act of 1883 and the Hatch Act of 1939.

FAA believes that employees not only have a right to seek information, express opinions and participate in the political process but also have an obligation to perform their civic duty. It's a sad commentary that only about half of the American electorate actually casts its votes. There is no restriction on a Federal employee voting in an election or a primary or expressing a political opinion, but the employee cannot take an active part in political management or campaigns, even if willing.

The Hatch Act prevents us from assuming general political leadership or from becoming prominently identified with any movement, party or faction. For the most part, employees of the Federal government and the District of Columbia are subject to political-activity restrictions whether career or excepted service, part-time or temporary.

Below is a guide for your political conduct this year. If you have a specific question, contact your servicing Personnel Management Division or ARTCC personnel specialist.

YOU MAY . . .	YOU MAY NOT . . .
YOU MAY register and vote as you choose.	YOU MAY NOT campaign for partisan candidates or political parties.
YOU MAY assist in voter-registration drives.	YOU MAY NOT work to register voters for one political party only.
YOU MAY express your opinion about candidates and issues.	YOU MAY NOT make campaign speeches or engage in other activity to elect a partisan candidate.
YOU MAY participate in campaigns where none of the candidates represents a political party.	YOU MAY NOT be a candidate or work in a campaign if any candidate represents a national or state party.
YOU MAY contribute money to a political organization or attend a political fund-raising function.	YOU MAY NOT collect contributions or sell tickets to a political fund-raising function.
YOU MAY wear or display political badges, buttons or stickers.	YOU MAY NOT distribute campaign material in a partisan election.
YOU MAY attend political rallies and meetings.	YOU MAY NOT organize or manage political rallies or meetings.
YOU MAY join a political club or party.	YOU MAY NOT hold office in a political club or party.
YOU MAY sign nominating petitions.	YOU MAY NOT circulate nominating petitions.
YOU MAY campaign for or against referendum questions, constitutional amendments, ordinances, etc.	YOU MAY NOT campaign for or against a candidate slate in a partisan election.

HAPPY BIRTHDAY, AMERICA

Mrs. Haigler originally designed the cake as a model for a float for a parade, but got carried away. She cut the circular layers, bought the doll at the top, made her clothes, wired the cake for lights and sound, decorated it and then made a four-by-six-foot patriotic collage of the past, present and future of America to serve as a backdrop.

Commenting on her creation, she said, "Mainly I'm trying in some small way to get people to be more aware of what a beautiful country they do have. If we all pull together, it will be a better place to live, no matter what our color, race or creed."

She comes by her fervor from her travels with her father, who in the '30s built one of the nation's first mobile homes of steel. Her German-born father, Karl Horst, lived in the United States for 65 of his 80 years, taking as his first job in the U.S. that of aircraft mechanic to the Wright Brothers. He went on to build his own glider, which he crashed on its maiden flight. He obtained a student-pilot certificate at the age of 64 and flew his own airplane until the year before his death. In his retirement, he enjoyed traveling throughout the country with his family of 12.

Mrs. Haigler's cake is ensconced in the Vacaville library. After it was finished, she tackled the full-size float. How large is full-size? Well, the 30-inch doll rotating atop the model was replaced by a real woman!

—By Barbara Abels

Word Search Answer

(Puzzle on page 15)

T L O C K S Y O E E B A E S L
R E I L Y S N O R T U P K T E
O A R B O C N A N V C A A A A
P I H S D N E I R F A C L G R
L L E B T E J I R T Z H P G A
A A E B A R O N L G N E A E T
V E G A O R E A O E A S N R S
E N A T I T A V B E N S S W T
H Y E A C E N E S B O W S I E
C A R D I N A L P E B I E N J
E K S A C N A L L E B F C G S
E E K N A Y K W A H Y T T I K
B T I N G O O S E R S I C M M
S P I T F I R E E S H H O A A
T C O W T U M N R T A B A V E
E F L R E P I P O M O T T E R
N L I O N L U M P M I L B E T
A Y H A E A C H E R O K E E S
L E Y R T E S C H E E T A H F
Y R B S T I T S R E L L I H L
K A Y Z E R O G N A T S U M U
S P A D C T H R E E L P O A G

A funny thing happened to Penny Haigler on her way to making a float for the Vacaville, Calif., bicentennial parade. The model she was making became an end in itself and a "Gift to America."

Mrs. Haigler, wife of Frank Haigler, FAA Air Traffic Representative at Travis Air Force Base, spent nearly three months building an inedible, eight-foot birthday cake. The red, white and blue masterpiece is made of plywood and plaster, iced with cameos of all the signers of the Declaration of Independence, lighted with 202 twinkling candles ("200 for America's birthday, one for being good and one for being bad") and crowned with a twirling 30-inch "Statue of Liberty" holding a lighted torch. And it's wired for sound—patriotic music emanates from within.

A CLOCK'S CLOCK

Ira McDaniel makes an adjustment on FAA's most accurate clock installed at NAFEC. The cesium-beam atomic clock is accurate within six ten-millionths of a second for time and frequency.

In the old days, Ira McDaniel's job might have been winding the town clock, if he were doing the same kind of work he does today, even though he's an electronics engineer. Among his other tasks is supervising the operation of NAFEC's cesium-beam atomic clock.

You can set your watch by this clock—which looks like nothing more than an equipment rack—it is accurate within .6 microseconds.

The atomic clock not only can present time but also can derive and send standard frequency signals to other labs at the center. Its time signals are used in a variety of tests including airplane tracking in testing experimental guidance and navigation equipment and in calibrating test instruments from other FAA facilities. McDaniel says the lab is the agency's equivalent of a "Bureau of Standards" and contains a variety of testing facilities, including environmental chambers, compression machines and centrifuges.

To maintain its accuracy, the clock is kept where temperature and humidity are carefully controlled, he points out. The lab is shielded from electromagnetic radiation and has a floor composed of two layers of concrete separated by plastic foam to protect the equiment from vibrations.

When the clock was installed three years ago, it had to be electrically adjusted to the earth's magnetic field. "Once it was installed, it had nothing to do but sit and run," McDaniel said However, periodically, an official from the Naval Observatory does visit the lab to meticulously check the clock's accuracy.

In the rack with the clock are high-frequency and very-low-frequency receivers to obtain time signals from the Bureau of Standards radio station at Boulder, Colo., and an amplifier for sending time and frequency signals over telephone lines in the center. It also has a stand-by power supply.

There's another peripheral use for the cesium-beam atomic clock. It's used as a time reference for another clock at NAFEC that generates a tone to signal employees when the workday begins and ends.

"Sometimes they're off—the tone lags a second or two," said McDaniels, "and we know it." *—By Frank McHugh*

DEPARTMENT OF TRANSPORTATION
FEDERAL AVIATION ADMINISTRATION
Washington, D.C. 20591