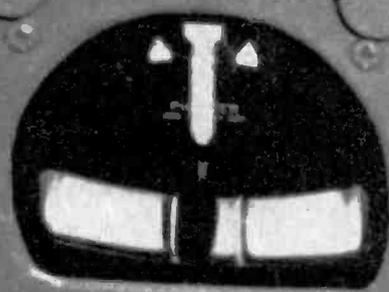
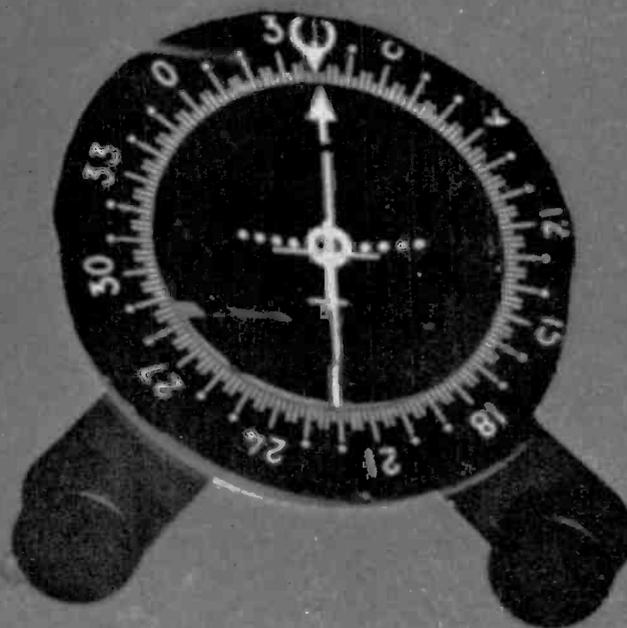


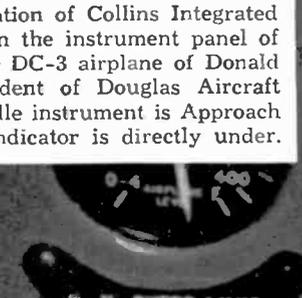
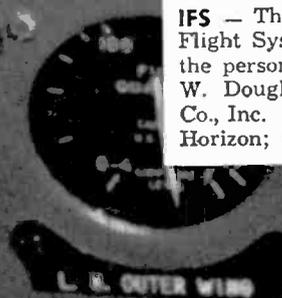
COLLINS SIGNAL

SPRING 1953

WARN.



IFS — This installation of Collins Integrated Flight System is on the instrument panel of the personal Super DC-3 airplane of Donald W. Douglas, President of Douglas Aircraft Co., Inc. Top middle instrument is Approach Horizon; Course Indicator is directly under.



COLLINS SIGNAL

COLLINS RADIO COMPANY

ARTHUR A. COLLINS, *President*
 W. J. BARKLEY, *Exec. Vice Pres.*
 R. S. GATES, *Vice Pres. & Genl. Mgr.*
 L. M. CRAFT, *Vice Pres., Eng. & Mfg.*
 S. J. STORM, *Secretary-Treasurer*
 J. G. FLYNN, JR., *Dir., Sales*
 R. T. COX, *Dir., Eng. & Research*
 G. G. JOHNSON, *Dir., Ind. Relations*
 L. E. BESSEMER, *Dir., Manufacturing*
 M. W. BURRELL, *Dir., Purchasing*
 W. GRAHAM, *Dir., Contract Adm.*
 C. W. SERVICE, *Dir., Western Division*
 J. G. FLYNN, JR., *Dir., Texas Division*

OFFICES AND FACTORIES

Main Plant, Cedar Rapids, Iowa; New York Office, 11 West 42nd Street, New York 36, New York; Texas Division, 1937 Irving Boulevard, Dallas, Texas; Western Division, 2700 West Olive Street, Burbank, California.



COLLINS SIGNAL was founded in 1933, is published by Collins Radio Company, Cedar Rapids, Iowa. Printed in the United States of America. Copyright 1953. Editor, Melvin E. Schinkel; Assistant Editor, D. Jack Jordan; Art Editor, Fred W. Schlesselman.

VOLUME II

NUMBER 4

SPRING 1953

THIS ISSUE

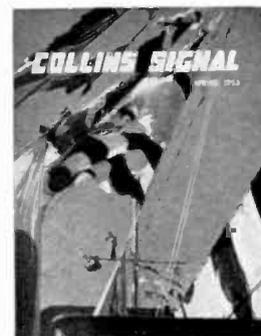
Sea-Going Weathermen—Coast Guard cutters serve as “Islands” in North Atlantic to report weather, provide aid to air-sea navigation, and assist distressed ships and aircraft.....	2
Learning with Scrap—Elementary school students put industrial scrap to use as new art material.....	8
New Engineering Building—Collins plans fall occupancy of new engineering and research building in Cedar Rapids	11
IRE Convention—Collins shows 52 equipments at 1953 New York IRE Convention.....	12

CREDITS

Front cover, pages 2, 3, 4, 6, 7: official U. S. Coast Guard photos; inside front cover: Douglas Aircraft Company, Inc.; inside back cover: Donald Holzschuh.

COVER

Clear, bright days this time of the year come seldom for the North Atlantic weather patrol ships, and on such occasions the crew is likely to take advantage of the opportunity to “air the bunting”—take the code flags out of their musty storage bags and air them in the sea breeze. On the front cover, Coast Guardsmen are shown adjusting an anemometer (which measures surface wind velocity). Ocean weather station story beginning overleaf tells how rarity of good weather is a cause for the ships being there.





This United States Coast Guard cutter, shown on duty at its North Atlantic station, must stick to its post regardless of weather conditions.

Since the assigned stations are in water much too deep for anchoring, the ships must drift, periodically get underway to correct for wind, current.

Sea-Going Weathermen

*Coast Guard Cutters Serve as 'Islands'
In North Atlantic to Report Weather,
Provide Aids to Air-Sea Navigation,
Assist Distressed Ships and Aircraft*

RIGHT NOW the weather is probably overcast and stormy about ten ships "hove-to" at distant stations throughout the North Atlantic. A stretch of good weather in this part of the world is somewhat of a rarity, and, indirectly at least, this is the reason the ships are there.

During the early transoceanic flights by commercial airliners in the 1930's, weather information was obtained by radio from mariners in the trans-Atlantic shipping lanes. This information, inadequate for air navigation as it was, ceased with the submarine menace in 1939 because ships were unwilling to disclose their positions. With the war's great increase in trans-Atlantic flying and also Great Britain's dependency upon knowledge of North Atlantic weather to forecast her own, the need for reliable weather reports over the area became critical.

Ocean station weather patrols were instituted in 1940 when President Roosevelt assigned two ships to observation posts between Bermuda and the Azores. The ships and communication facilities were supplied by the U. S. Coast Guard, and the

U. S. Weather Bureau supplied the meteorological personnel and equipment. By 1944 heavy air traffic and air operations out of Britain had increased the number of stations to eight, and operational control of the entire weather patrol was turned over to the U. S. Navy because of military considerations. After V-E Day, the biggest movement of aircraft in history began as personnel and planes were re-deployed across the North and South Atlantic enroute to the Pacific theater. To assist in this operation, the number of weather stations was increased to 20 of which 13 were manned by the United States and 7 by the British. After this operation, the number of stations dropped rapidly until only one was left in 1946.

Along with the drop in military need for ocean stations, however, came a new postwar commercial need. Conferences* of interested nations of the North Atlantic region in 1946 and later in 1949 resulted in agreements to maintain ten stations (earlier 13) with cost proportioned among the mem-

*PICAO (Provisional International Civil Aviation Organization) Conference of North Atlantic States on Ocean Weather Observation Stations in the North Atlantic, held in London, September 1946, and April-May 1949.

ber nations. The United States' share of the program is five and one-half stations (five stations full time, one station shared with the Netherlands).

For the present weather collecting program, U. S. Coast Guard cutters serve as "Islands" on which personnel and equipment operate to make weather reports. Weather Bureau men aboard the vessels report weather observations on the ocean's surface every three hours. Twice daily the weathermen release RAOBS (radiosondes) from the ship to obtain upper air data. RAOBS are small radio transmitters attached to helium-filled balloons which also carry radar reflectors. When the RAOBS are released from the cutter, the small transmitters send back the upper air temperatures, pressures and humidities. The radar reflector is tracked by the cutter's radar for wind direction and velocity aloft. An additional check on wind and velocity aloft is made by a RAWINS four times daily. The RAWINS is a free-balloon with a radar reflector attached which is also tracked by shipboard radar.

Weather data from all of the 10 stations are sent to the U. S. Weather bureau which prepares the forecasts, storm warnings, winds aloft, and so forth from the entire North Atlantic air mass analysis,

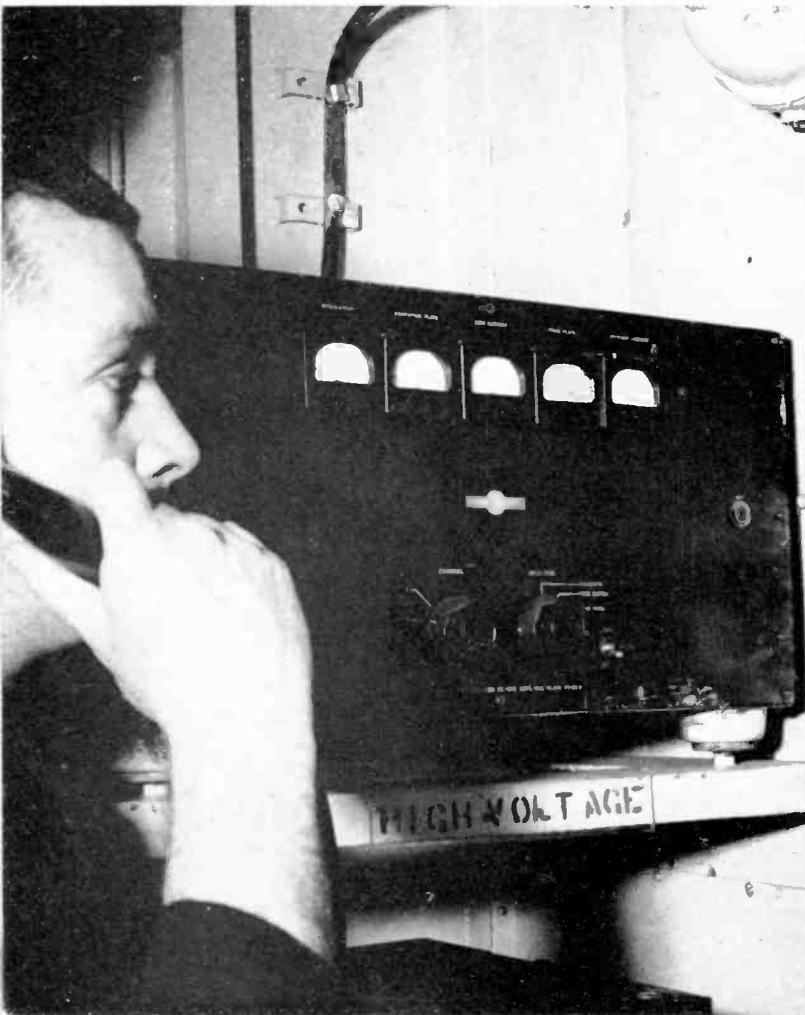
When weather is too rough for drifting, the ships are usually "hove-to" (headed into wind and kept in place with minimum engine revolutions,

making no headway). In heavy weather (below) the cutters generally cruise upwind for five miles, then cruise downwind for the same distance.





Men above are preparing to release a radioballoon from the cutter to obtain upper air data. Operator below uses a Collins 32RA transmitter to give latest weather information to an aircraft passing over the station.



much in the same manner as the weather charts for the United States (although 598 observation stations are used for this purpose).

Although the chief purpose of the ocean stations is weather reporting, there are two more good reasons for the patrol. These are aids to air-sea navigation and assistance to distressed ships and planes.

In bad weather Loran equipment aboard the cutter enables accurate position determination of the vessel itself or location of other ships and aircraft. Always remaining within five miles of the center of the 10-mile-square station, the cutter's Collins 32RA Transmitter* can give an airplane its grid position in a 200-mile square around the station, and a ship its position in excess of 100 miles. These signals are made by radio-telephone or radio-telegraph. Radio bearings may be obtained by ships and airplanes from the cutter's radiobeacon service. Four transmissions an hour, lasting five minutes each, are sent on continuous wave. Identification of the ocean station is made by a signal superimposed over the CW. Special transmissions are made whenever requested.

Scheduled transmissions begin at five, twenty, thirty-five and fifty minutes past the hour for five-minute durations around the clock. The beacon signal consists of a group of four letters, the first two being the beacon identification and the latter two representing the ship's position with reference to the center of the station. A position-reporting grid is used to explain the meaning of the last two letters. Emission of the radiobeacon on the U. S. Ocean Stations possesses a high degree of polarization which produces a very good direction-finding signal.

If the regular radiobeacon equipment becomes inoperative, the service is made using the ship's communications transmitter. This transmitter, a Collins 3-kilowatt 231D, emits an interrupted tone-modulated signal in place of the CW, and in this case, the identifying signal is followed by a 20-second dash to provide for automatic direction finders.

The ocean station vessels in the North Atlantic guard 500 kcs (CW), 3270 kcs (Voice), 121.5 mcs (Voice), 118.1 mcs (Voice) and the appropriate ICAO Route Frequency (CW). Commercial vessels can establish communications with these ships on any of these frequencies.

What these ocean station vessels mean for ocean

*A 4-channel, 50-watt voice and 75-watt CW transmitter, one of Collins' oldest and most reliable products having been in production since the 1930's to the present day. Its compact form, instant frequency selection and ease of maintenance have made it a primary piece of equipment for use in geological exploration parties, all sorts of research expeditions, military communications services and airways transmitters the world over.



GREENLAND

ICELAND

METRO

NORWAY

ALFA

INDIA

BRAVO

BRITISH ISLES

CANADA

COCA

JULIETT

FRANCE

DELTA

KILO

SPAIN

UNITED STATES

HOTEL

ECHO

AFRICA

CUBA

SOUTH AMERICA

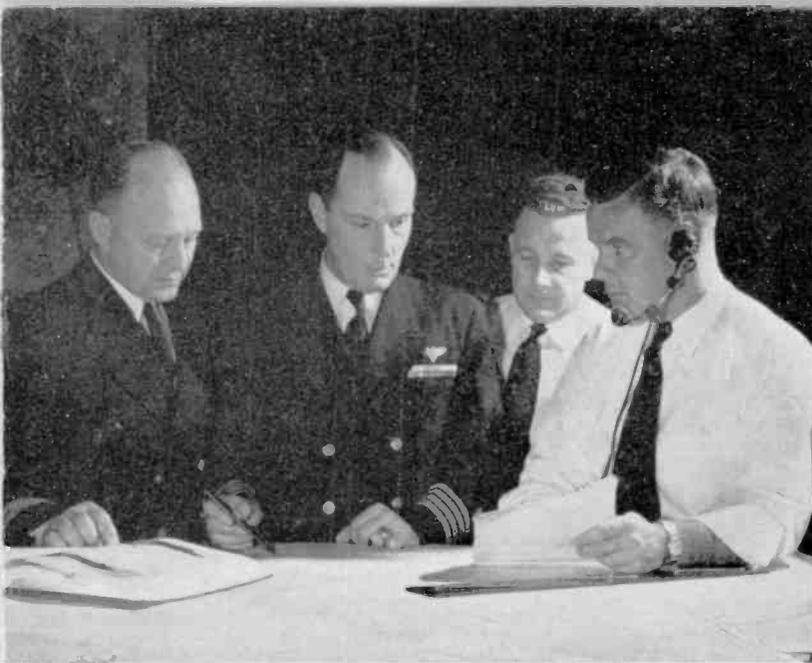
**NORTH ATLANTIC WEATHER PATROL
IS AN INTERNATIONAL PROGRAM**

Five countries are currently manning the North Atlantic ocean stations. The stations and the countries operating them are: ALFA, United States and Netherlands; BRAVO, COCA, DELTA, ECHO, and HOTEL, all of which are operated by the United States; INDIA, United Kingdom; JULIETT, United Kingdom and Netherlands; KILO, France and Netherlands; METRO, Norway.



The USCG cutters' communication transmitters are Collins three-kilowatt 231D models. Autotune controlled, these transmitters are used as ship-

to-shore, ship-to-ship and ship-to-air units. The cutter's chief above is making a maintenance inspection of the transmitter's modulator section.



At USCG's Search and Rescue Control Center (above) in N. Y. last month came message: "One engine out—must ditch—trying for Station ECHO." Center alerts RD finders, "scrambles" two planes, directs ships to scene.



Manning Ocean Station ECHO (see chart p. 5), USCG Coos Bay (above), guided by radar, speeds to distressed P2V bomber homing on cutter. On sighting, cutter crew dropped smoke flares to show wind direction.

air travel and navigation, over and above the weather reports they supply, was demonstrated in October 1947,* by the cutter *Bibb* while at an ocean station 800 miles from Newfoundland. After flying over the cutter, the flying boat *Bermuda Sky Queen*, bound from Ireland to Newfoundland, spent so much of its fuel bucking headwinds that it would not have been able to make land. The plane returned to the *Bibb*, and despite 35-foot waves, made a landing. The *Bibb* rescued all 69 passengers and crew.

All of the cutters are prepared to offer assistance to planes and ships in case of emergency. They carry outfits of warm clothing for survivors, breeches buoy apparatus for transfer of a person from one ship to another, rubber life rafts and so forth.

Life aboard these ships is lonely. Recreation is necessarily limited, consisting chiefly of movies, shortwave broadcasts, reading and card games. Comfort is subject to the pitching and rolling of the cutter, which occasionally makes sleeping an art even for the old clipper seamen. But the food is excellent with regular items like steaks, chicken and ice cream on the crew's menu—plus a never ending stream of coffee from coffee pots that never cease to percolate.

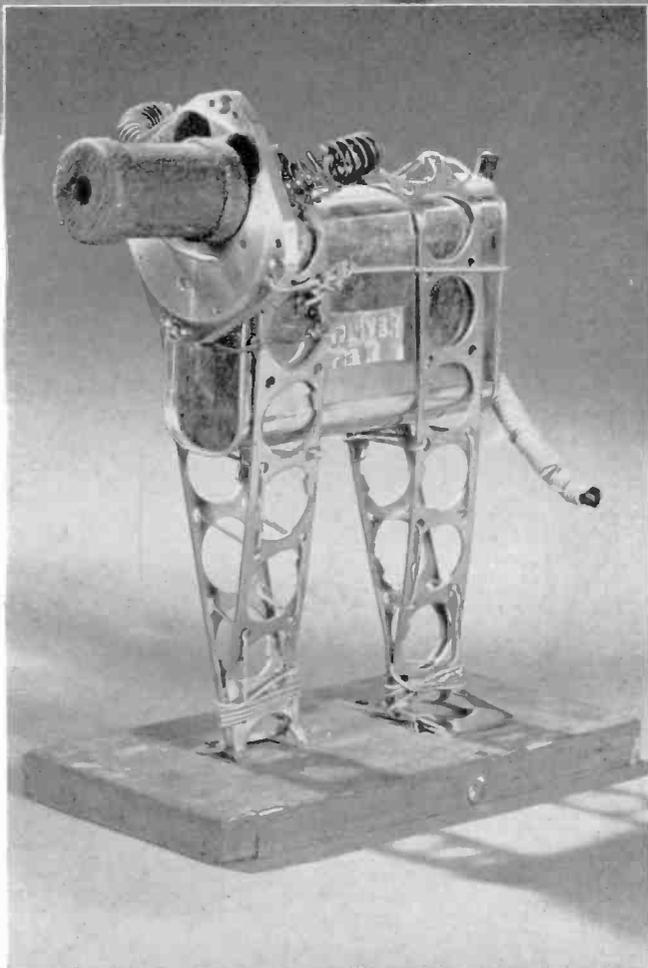
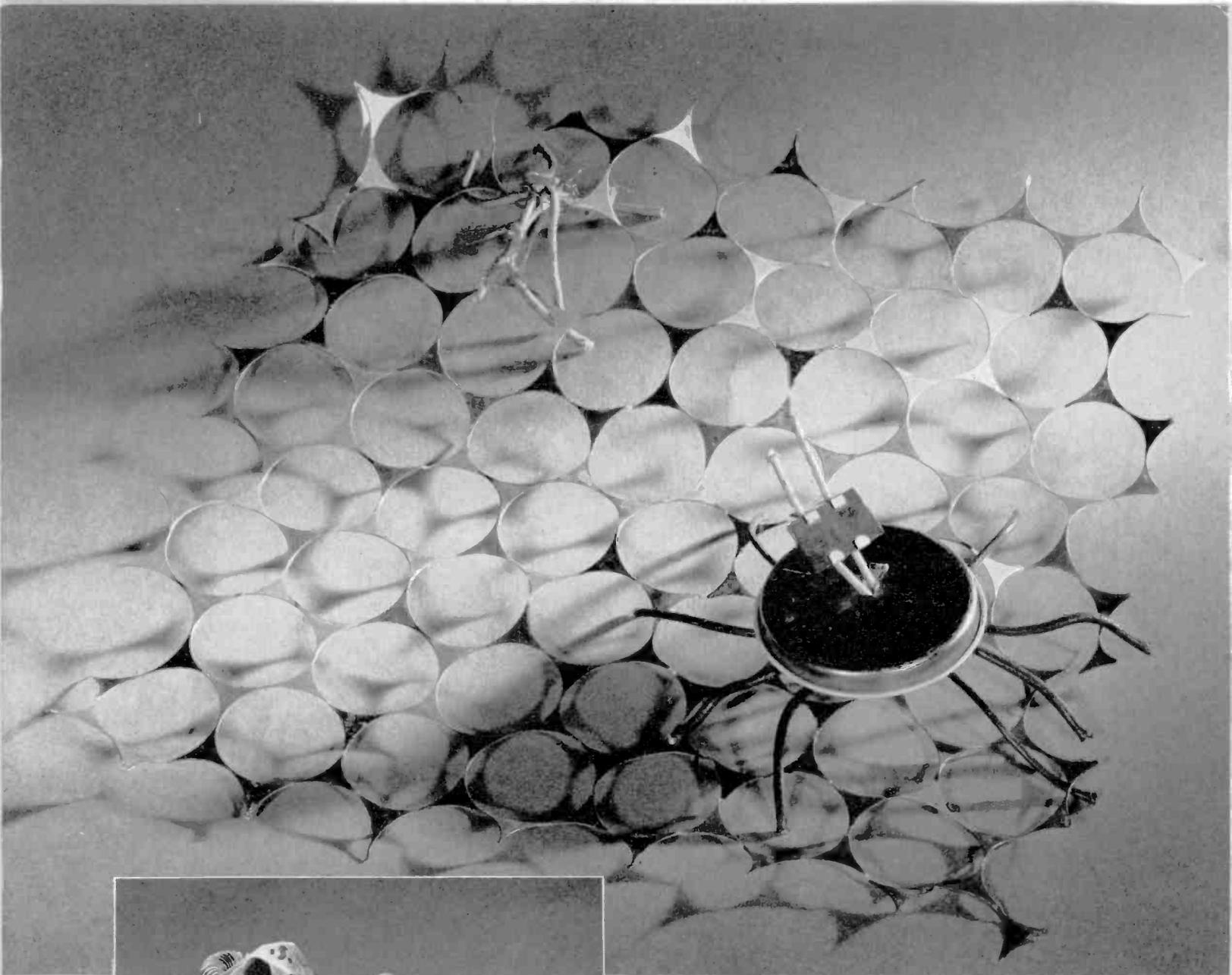
A cruise for the 135 men aboard the U. S. cutter lasts about one month which includes ten to twelve days' travel time depending upon the station's location. All are Coast Guard men except for five Weather Bureau men. Forecasts and storm warnings based upon the station's data permit ships and transoceanic airplanes to avoid dangerous weather conditions, but the men aboard the cutters have to stick to their posts and ride out the heaviest seas in the foulest of weather.

*For latest demonstration, see photos this page.



Moments after ditching, the aircraft (above), its tail section broken away, begins to sink. Over port wing are six of survivors on raft. Four are in water. Below: One of the survivors (all were rescued) climbs aboard.





Learning
with
scraps



MOST PERSONS look back on elementary art training as an attempt to learn expression with a pencil or brush, or modeling clay, or woodworking. And regardless of the medium, it wasn't easy. Especially when it came to origination.

Fifth and sixth graders of the elementary schools at Cedar Rapids, Iowa, are experimenting with one of the latest art materials — industrial scrap — and this new medium is probably all the more taxing to creative imagination. Nevertheless, the kids, with traditional freshness and vigor of the young, study the various pieces of metal formerly destined for salvage, and visualize "locomotives" from old castings, "fish" from wire cuttings, and "antenna towers" from punch press sheet metal scrap. Then they set out to make them from scrap donated by the barrel by the local Collins factory.

The whole purpose of the project is little more than to stimulate the children's imaginations. And although the viewer's imagination may also have to be stimulated to see the real intent of their finished work, there is definite expression in all of their art representations.

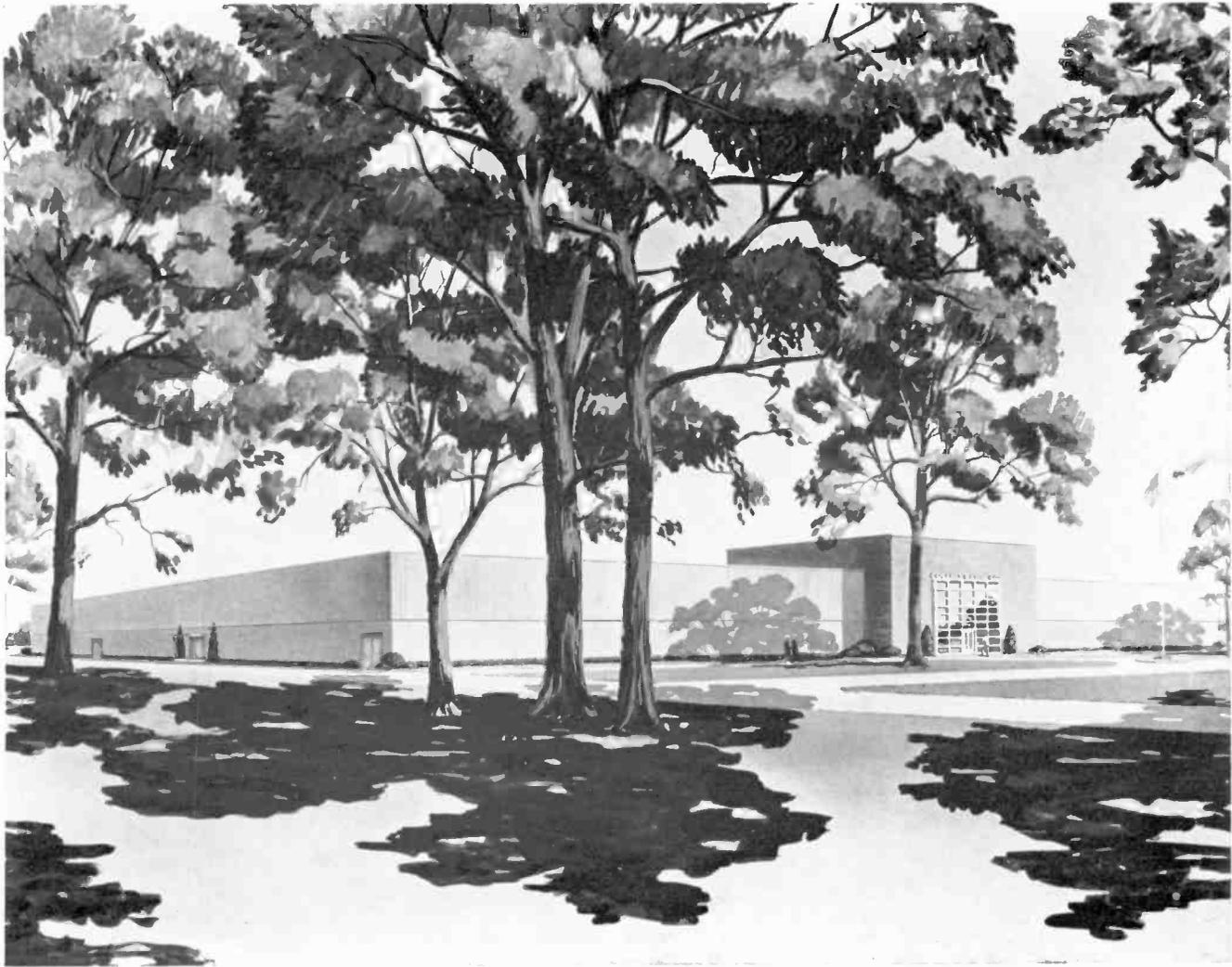




Reports have been made of college and university classes using industrial scrap as a "modern" art material, but its regular use at the elementary school level is believed to be new. Enthusiasm for instruction value of

the work is voiced by all teachers concerned at Cedar Rapids elementary schools and may be expected to extend to similar schools throughout the country in cities where scrap can be supplied by local manufacturers.





Collins Plans Fall Occupancy Of New Engineering Building

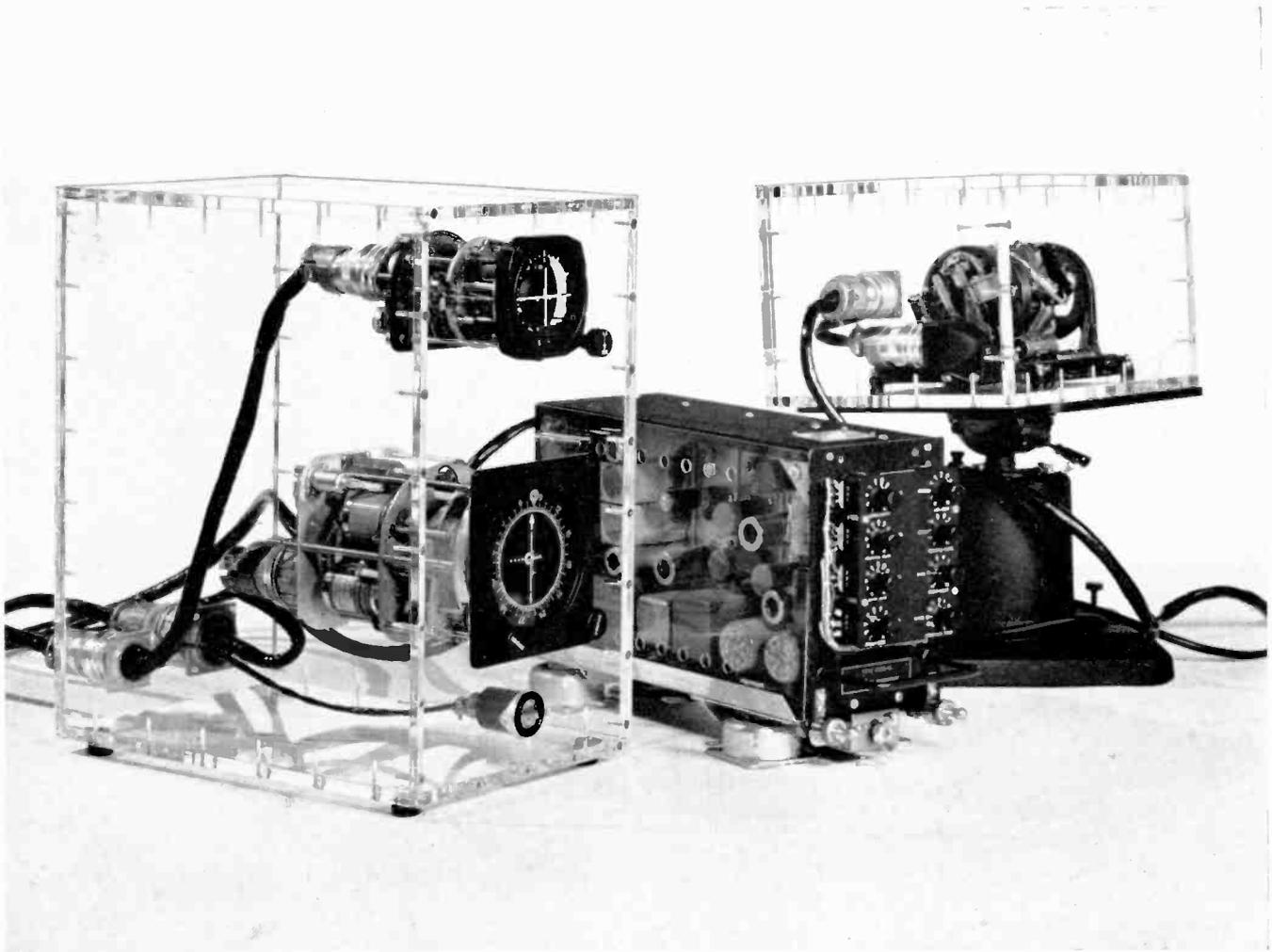
CONSTRUCTION of a new Collins Engineering and Research building in Cedar Rapids, Iowa, has proceeded according to schedule and is slated for completion this summer.

The 90,000-square-foot building will be a one-story steel and concrete structure, standing in the center of a 52-acre, wooded plot located about one mile north of Collins Main Plant. Cost is in the neighborhood of \$2,000,000.

Occupancy of the 12 additional laboratories and office space by 600 engineers and technicians is

expected to be accomplished before November. The building's plans call for a large lobby, a modern technical library, and a cafeteria-auditorium.

The lowest portion of the building's exterior will be tilt-up sill walls of reinforced concrete, and the top half of the outside walls will be insulated steel side panels, vertically fluted. There will be no windows other than the entrance; air conditioning and artificial lighting will be used throughout. The structure is similar to other Collins buildings and is adaptable for expansion.



Mechanical operation of Collins IFS is shown in this display. Scorsby gyro table (right) simulates roll, pitch and yaw through computer (center)

to Approach Horizon (top left). Potentiometer simulates signals sent through computer to Approach Horizon, Course Indicator (under A/H).

Collins Shows 52 Equipments At New York IRE Convention

AT THE RADIO SHOW of the year, the Institute of Radio Engineers Convention, March 23 to 26 in New York City, the Collins Radio Company's booth displayed 52 new and improved equipments.

Among the new advancements featured:

- Integrated Flight System — display (above) showed instruments' mechanism operating under flight conditions simulated by a gyro table. Collins IFS provides pictorial presentation of information needed for ILS approaches and VOR navigation.
- NC-101 Navigation System — punch card-operated navigation equipment which automatically com-

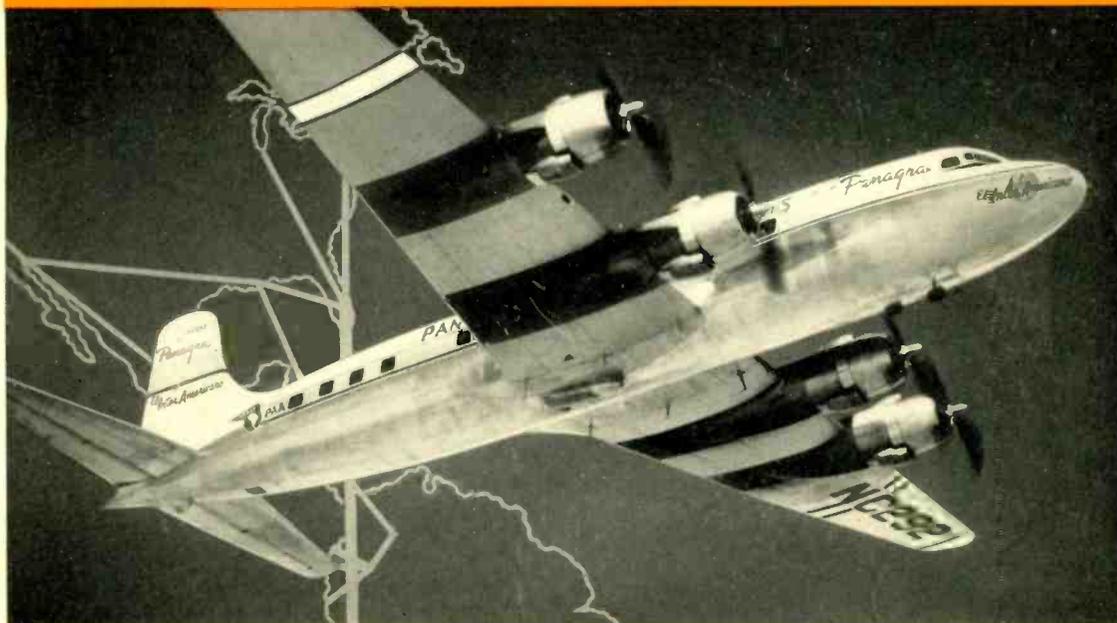
putes air miles to and from a selected destination.

- 75A-3 Amateur Receiver — incorporates two Mechanical IF Filters with controls in addition to proven features of 75A-2 for instantaneous choice of desired selectivity.
- 17M VHF Transmitter — 360 channels, full 50-watt signal for executive and airline use. Operates between 118.0 and 135.9 mcs. with fingertip remote control.
- 618S Transceiver — a transmitter-receiver with 144 channels, automatically tuned, and operating 2 to 25 mcs. on full 100-watt power.



NEW TVOR — In final testing stages is Collins new Terminal Visual Omni Range equipment which will provide, in package form, a complete TVOR ground station. Requirements are met by this low-cost equipment for a highly-reliable, low-powered station which can be used to augment the CAA's existing VOR network or overseas VOR navigation where ground stations do not presently exist. Besides VOR transmitting facilities, the station can also be used for ground-to-air communications during the time it is transmitting azimuth information. Engineer here is checking resonant frequency of one of the 12 slot radiators of the antenna unit.

linking the Americas by air



Panagra
PAN AMERICAN GRACE AIRWAYS INC

and COLLINS

Keep good neighbors in touch

Over night to Buenos Aires . . . daily via the short route down South America's west coast . . . this is the "Red Carpet" air service that has made Panagra one of the leading international airlines in South America. The men who pilot Panagra's luxury fleet of DC-6's and DC-6B's rely on Collins' communication and navigation equipment to maintain daily, overnight service on schedule. Collins research, design and precision production skills provide Panagra with radio and electronic equipment second to none in accuracy and dependability.

Known as the "World's Friendliest Airline," Panagra treats every customer as an honored guest, actually rolling out a red carpet at every airport of call. El Inter Americano, Panagra's deluxe service, is the ultimate in air travel . . . extra fast, with such luxury flight features as the Fiesta Lounge, Gourmet Galley meals, bed-sized berths and pressurized cabins. In its 24th passenger-pleasing year, Panagra remains the only International airline giving daily DC-6 service to South America. Panagra's silver streaks across the equator tie North and South America with bonds of acquaintance, keeping good neighbors in touch.



In Radio Communications and Navigation Equipment, it's . . .



COLLINS RADIO COMPANY, Cedar Rapids 6, Iowa