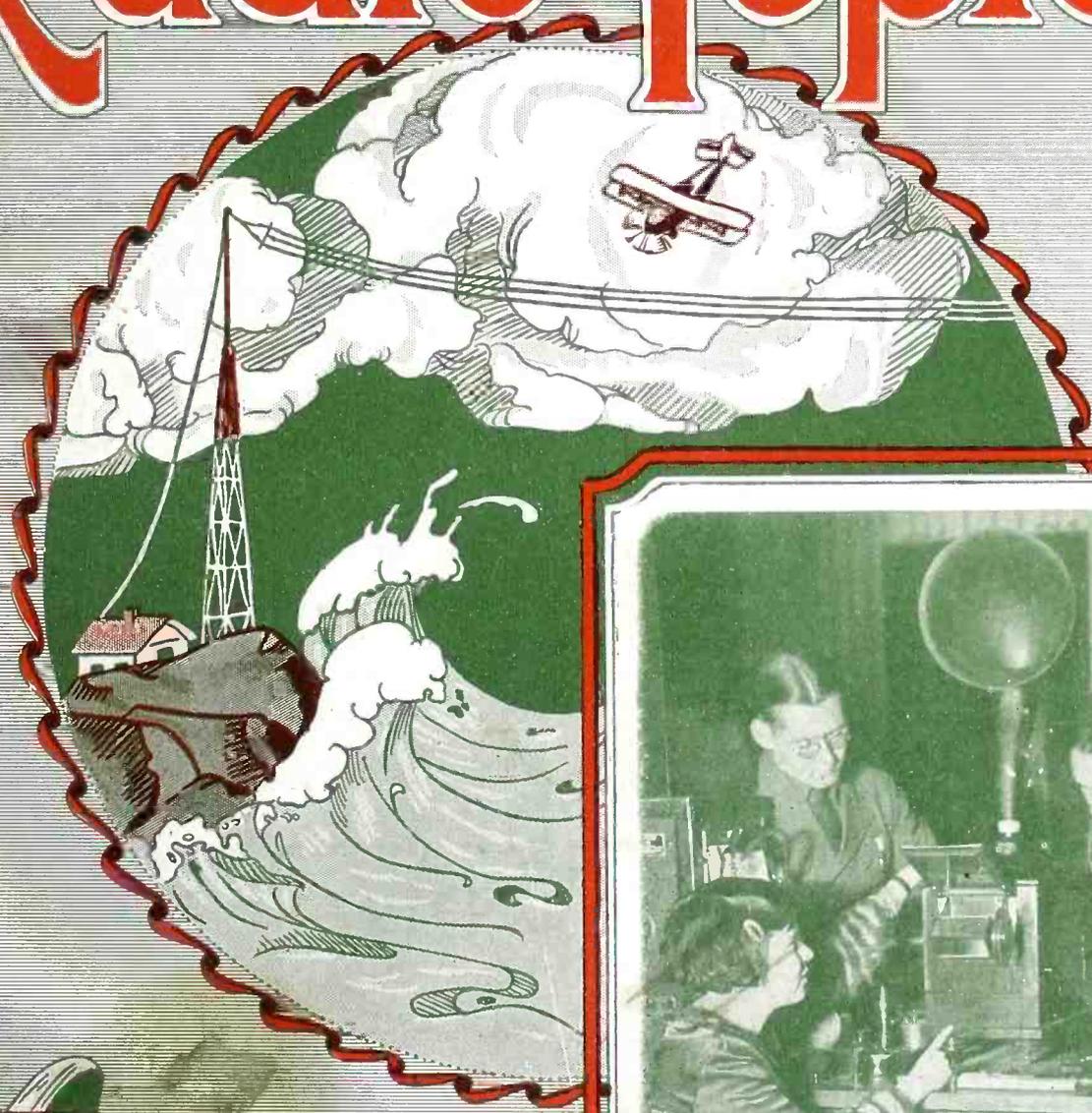


MARCH, 1924

Radio Topics



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Radio Topics

An Illustrated Monthly Devoted to Radio

Volume IV

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Number 2



PASSION PLAYERS GET CROSELY SET

Anton Lang, "Christus" in the cast of the Passion Play, receiving a radio receiver from Powel Crosley, Jr., for installation in Oberammergau, Bavaria. Andreas Lang, who plays "Peter" and Guido Mayr, who plays the role of "Judas," are interested spectators.

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Mail Planes Radio Equipped

STEPS have been taken, at the instigation of the Postoffice Department at Washington, to make the air safer for government mail planes by equipping them with one-man radio sets. The first experimental coast-to-coast flight, following preliminary tests conducted by radio engineers and air-mail service officials at Schenectady, N. Y., was a complete success. Pilot Jack Knight, of Mail Plane No. 245, in his recent cross-country flight was in almost continuous communication throughout the flight with landing stations along the route. The installation of radio equipment of planes in the trans-continental air-mail service is expected to ensue at an early date.

THE resultant advantages are obvious when it is realized that in time of heavy snowstorms or dense fogs, especially at night, a pilot is likely to stray from his course and find it difficult to locate his next landing station, or even be forced to risk his life and loss of his valuable cargo by coming down on unfamiliar ground. Although aided by powerful beacon lights along the way, it is not unusual for a pilot to lose his bearings while flying at night.

Radio transmitting and receiving sets eliminate these dangers. By talking with the landing stations, the pilot can be directed accurately on his course. He can be warned of weather conditions ahead of time to avoid storm centers by detouring.

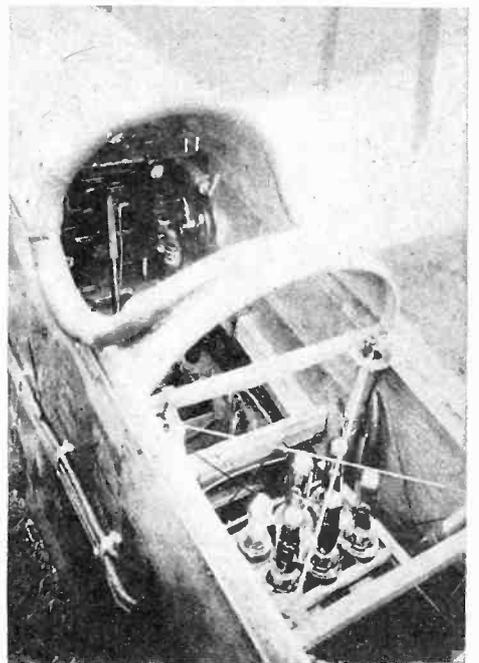
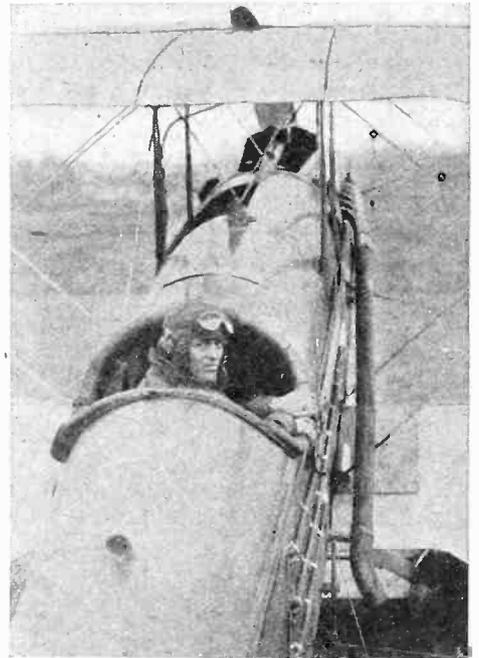
For these and many other purposes, radio equipment on the mail planes will be invaluable,

Postoffice Department officials declare.

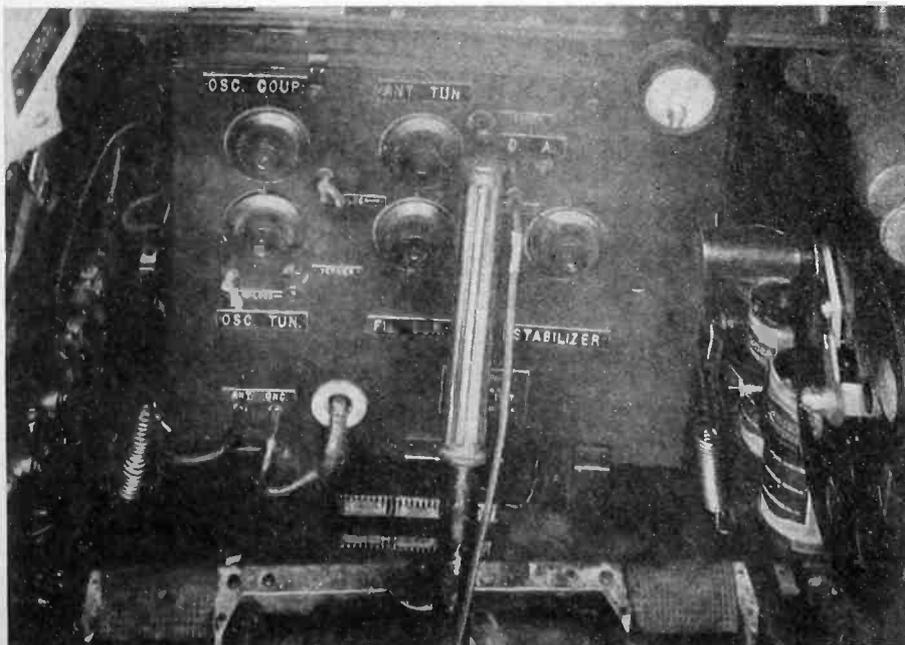
Hopping off at Hazelhurst Field, L. I., Pilot Knight, flying the first air-mail service plane to be equipped with radio kept in constant touch with landing stations within two hundred miles and over, talking one minute-out of every ten. The messages were sent on a 220-meter wavelength. Knight flew at an average of 2,000 feet, using a device to shut out the sound of the motor. His voice was easily heard by landing stations up to a distance of 245 miles.

Powerful Equipment

Radio equipment used in the flight tests were developed especially for the purpose by the General Electric Company's radio department, acting in conjunction with C. F. Egge, general superintendent of the air-mail service, and Eugene Sibley, radio traffic supervisor. It is said to be without ques-



(Above) Pilot Jack Enright hopping off at Schenectady, N. Y. (Below) Cockpit of U. S. mail plane, showing receiving and transmitting sets.



Close-up view of radio equipment of U. S. mail plane as it looks to pilot from his seat in cockpit (Gilliams Service.)

tion a long step forward in the commercialization of airplane radio.

The equipment is powerful and highly efficient, but at the same time so simple that anyone can operate it after brief instruction. Of necessity, the apparatus must be installed in such a manner that the pilot may control it with a minimum of effort. Planes in the air-mail service carry only one man in order to conserve space for the mail bags. This means the pilot must operate the radio instruments in addition to his duties in piloting.

Consequently the equipment must be practically as easy to use as an ordinary telephone.

The pilot, in order to talk, merely throws the switch handle, conveniently mounted under his seat, to the transmit position and turns a large knob—the antenna variometer—until the ammeter mounted on the board in front of him shows a maximum reading. That is the whole process of tuning the transmitter. He then locks the knob in position and it is only necessary to throw the handle from “transmit” to “receive” as desired.

Super-hetrodyne Type Receiver

The receiver is of the “super-hetrodyne” type, selected because of its sensitivity and high selectivity, the latter reducing engine noises and other interferences to a minimum. While the seven-tube “super-hetrodyne” receiver sounds complicated, this particular one is, in reality, very simple, as it is designed in such a way that only two control-knobs are necessary to adjust it in tuning.

Ordinarily it is not possible to “duplex” on the plane, although this may be done and in fact was done at the landing station during experimental tests. The pilot must throw his switch back and forth to talk or listen, but that requires only a single movement of the hand and can be done in a fraction of a second. The famous XL or thoriated tungsten filament tubes were used throughout and contributed largely to the successful operation and high efficiency of the apparatus.

The high voltage required for the plates of the 50-watt transmitting tubes is supplied by a 52-pound, 700-watt dynamotor, operating from a 12-volt battery and delivering direct current at 1,000 volts. The storage battery charges continually while the engine is running, in exactly the same manner as the starting battery of an automobile.

Novel Antenna

The antenna for the mail plane radio equipment consists of a 200-foot trailing wire. This is carried on a special reel in the cockpit and let out when the plane takes to the air. A counter-poise, consisting of the engine, the gas-tank and all the struts and wires of the plane, connected together by binding straps, is used for the ground connection.

Exposure to the elements does not reduce the efficiency of the apparatus. During the time the installation work for the preliminary

tests was in progress it rained constantly for two days and nights. As the equipment was covered only by canvas, it became thoroughly saturated with moisture, to such an extent that the aluminum brackets and other parts were dotted with moisture-spots. Nevertheless, the tests were carried out with great success. The equipment was tested out on the ground without being dried, and operated perfectly. During one of the preliminary trial flights both rain and snow were encountered, but neither interfered with the operation of the set.

The preliminary tests comprised trial flights from Schenectady to Hazelhurst Field, L. I., and air distance of 175 miles, during which the pilot carried on a continuous conversation with the landing station at Schenectady. Having demonstrated to their own satisfaction that radio equipment on mail planes was not only feasible, but was in every way practicable and highly desirable, officials of the air-mail service instructed Pilot Knight to test the apparatus further by putting it into actual use on a trans-continental flight.

Planes carrying mail for the Pacific coast and intermediate points leave the air-mail service station at Hazelhurst Field every morning. During his flight in Plane No. 245 Pilot Knight sent and received messages at frequent intervals. Tests were conducted with landing stations at Chicago, Omaha, North Platte and other cities along the way. At no time did he experience any difficulty in hearing the voice of the ground operator. Messages sent from the plane also were heard clearly. After crossing the Rocky Mountains, Pilot Knight established communication with the San Francisco station and held it until his landing at the completion of the flight.

During the trip Knight's leather helmet was equipped with receivers automatically clasped to his ears. A microphone was adjusted around his neck and was always within speaking distance of his lips. The radio telephone on the plane, it is said, was merely a “make-shift” arrangement. It will be perfected along lines suggested by Pilot Knight after his experimental flight.

Tests Were Successful

As a result of the successful tests, all planes in the air-mail service will be equipped with radio

sets, according to an air-mail service official at Hazelhurst Field.

Manufacturers of Airplanes are studying the data obtained during the flight with deep interest. They see in it a means of safeguarding passenger planes and extending the use of airplanes for commercial purposes. When the projected trans-Atlantic air service becomes a reality, in the near or distant future, the planes employed will undoubtedly be furnished with radio equipment, enabling the pilot to communicate with stations on both sides of the Atlantic and to get his bearings from the shore while in flight over mid-ocean.

Many accidents, some of them fatal, that have occurred during recent years might have been prevented if the plane had been equipped with sending and receiving sets, officials point out. The instance is cited of the naval dirigible that broke away from its field moorings, Mineola, L. I., last year and drifted far into Canada. For many days the fate of the two aviation officers on board was problematical, while their families and relatives were kept in agonizing suspense. The officers themselves suffered great physical distress, nearly perishing from cold and hunger before they could be located. With radio equipment on board, they could have broadcast directions to the searching party sent out to look for them, and in this way effected their immediate rescue.

More than once have airplanes crossing the Rocky Mountains lost their way in banks of dense fog and made perilous landings. Often, while flying at a high altitude, the aviator encounters unfavorable elements and dangerous air currents caused by unsettled weather conditions. With a radio set in his plane, he can obtain reports from U. S. Weather Bureaus and be advised of conditions prevailing along his route of flight.

Members of the Aero Club of America, government officials and others interested in the development of aerial transportation service are confident it will not be long before all government planes are adequately equipped with radio telephone apparatus for receiving and transmitting messages. They find in the successful results of Pilot Jack Knight's experimental light unqualified evidence of the tremendously important role radio is destined to play in protecting the lives of air pilots and passengers.