

Radio's Mission in the Antarctic



WHEN the small bark City of New York put out from New York City on August 26 bound for New Zealand, the first unit of the Byrd Antarctic Expedition set forth for an absence of certainly one and one-half, and possibly three years. The City of New York was christened Samson many years ago. She has been plying the sealing trade off the shores of Spitzbergen for over forty years. On her voyage south through the Canal to New Zealand thirty-seven of the seventy men who will take part in Commander Byrd's Antarctic adventure were present.

On September 15 the second unit of the expedition sailed from New York, when the trim ship Eleanor Bolling (nee Chelsea) set sail with additional men and additional equipment. Early in October the 10,000 giant C. A. Larsen, a veteran Ross Sea whaling steamer, left Hampton Roads, Virginia, with four aeroplanes and additional food and equipment and at about the same time the fourth and last ship, the Sir James Clark Ross, another Ross Sea whaling steamer of some 10,000 tons, left from the West Coast with the remainder of the supplies and men.

The four ships will meet at the Ross ice barrier near the Bay of Whales, where the City of New York and the Eleanor Bolling will tie up alongside the barrier to remain as the base camp. The supply ships C. A. Larsen and J. C. Ross, will unload and depart.

During the year following, there are some four million square miles of territory, upon which no person has yet set eye, to be explored by "land" parties and aeroplanes. This Antarctic expedition is probably the best-equipped expedition which ever set forth; certainly the best to go to the South Pole regions.

The Radio Equipment.

THE radio equipment includes some thirty-three transmitters and receivers, with reserve supplies to keep them in operation for four or five years, if necessary.

Call letters for the various major radio units of the expedition have been assigned by the Department of Commerce as follow:—

KFK—General call for any or all units of the expedition.

WFAT—The Eleanor Bolling.

WFBT—The City of New York.

WFA—The main base on the ice barrier (probably near Bay of Whales).

WFB—The Ford tri-motored Floyd Bennett aeroplane.

WFC—The Fairchild Stars and Stripes aeroplane.

WFE and WFF—Advance bases on land parties.

WFF—The Fokker Virginia aeroplane.

An additional plane will use either call letters WFD or WFE.

THE intermediate calling frequency for all units will be 500 k.c. and the high frequencies used for calling will be 5600, 11,200 and 16,800 k.c. The intermediate working frequencies will be 375 and 425.5 k.c. and the high-

frequency communication frequencies will be 3290 k.c., 4405 k.c., 5650 k.c., 6580 k.c., 8810 k.c., 11,300 k.c., 13,187 k.c., 16,717 k.c., and 21,805 k.c.

It is expected that all high-frequency communications will be confined to the following frequencies, after the ice barrier has been reached: 3290 k.c., 4405 k.c., 6580 k.c., and 8810 k.c.

Both expedition ships carry 375 k.c. radio compass equipment. The compass receiver of one of the ships will be set up on the ice ten or fifteen miles

verted to a 500-watt ICW set (type ET-3628). This transmitter will be used for short-range communication en route to the ice-pack and for radio compass work with advance base parties and aeroplanes.

The high-frequency transmitter on this ship (shown in the illustration) was designed under the supervision of Hanson and Mason and was built by the expedition's radio personnel. It employs two 750-watt oscillator tubes in a special series-feed circuit

and two stages of tuned audio-frequency amplification are provided for both ships and for the base camp. High-frequency reception on the ships and at the base camp will be provided by the G.E.-R.C.A. high-frequency receiver using tuned r.f. amplification with the UX-222 tubes.

Radio on the 'Planes.

EACH of the four planes is provided with 50-watt combined intermediate and high-frequency transmitters built by Heinz and Kaufman. Emergency battery-operated transmitters for planes and for advance parties were provided by the Burgess Battery Company. The main plane transmitters obtained plate and filament potentials from small generators driven by the plane's motor of the constant current type. The tri-motored Ford plane is equipped with a spare generator geared to a second engine. The receiving equipment for all planes uses the super-regenerative circuit. The receivers were constructed under the supervision of Hanson at the National Electric Supply Company.

A main base camp transmitter, similar to the installation on the Eleanor Bolling, and constructed by the ship's radio-men at the Staten Island shops of the Bureau of Lighthouses, will be set up near the Ross Sea.

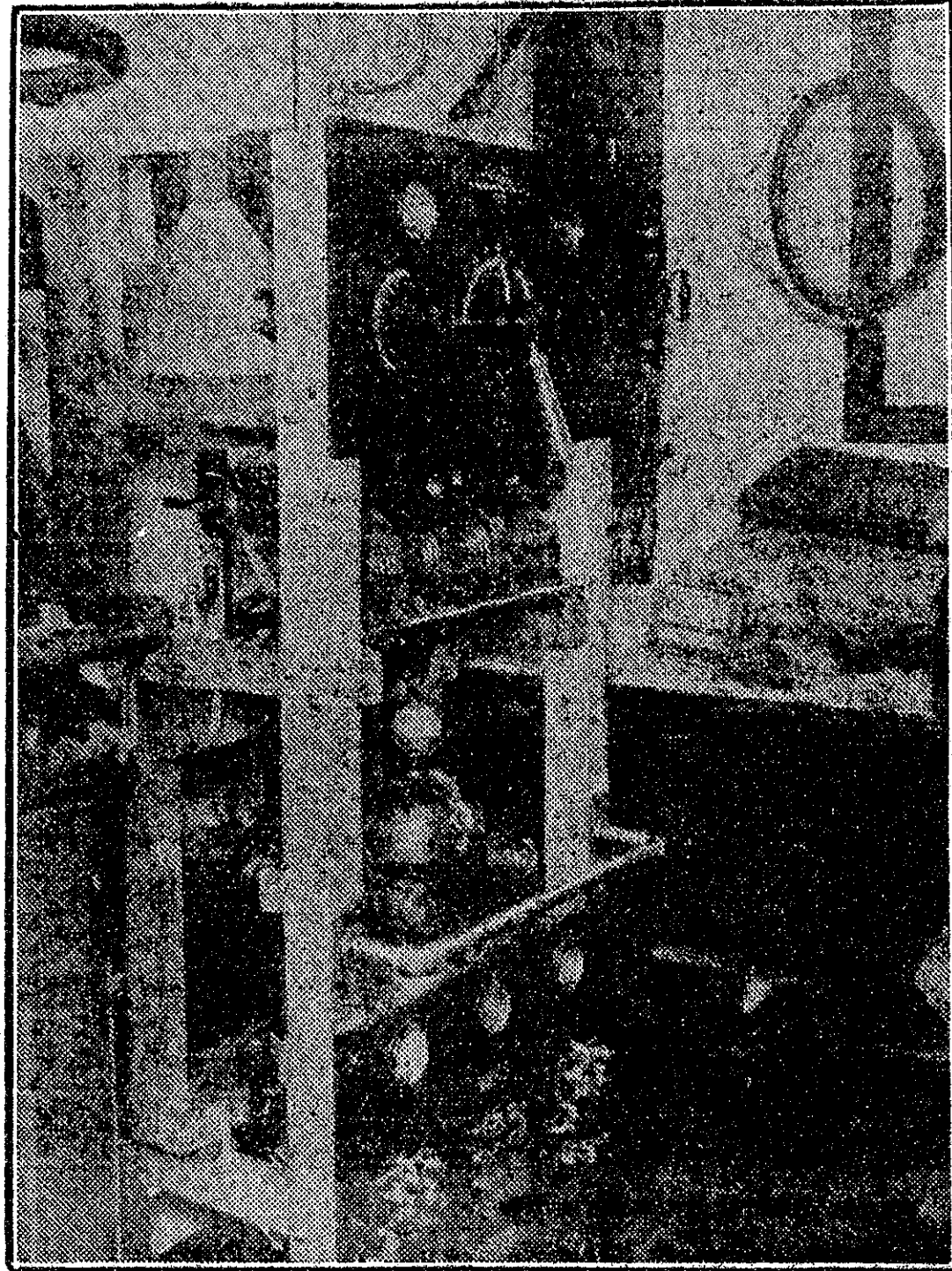
For reception on all planes a doublet from the tip of each wing extending to the tail, with feeder wires through the fuselage, will be used. For transmission in the planes a trailing wire will be dropped from the tip of each wing.

The expedition is carrying a great deal of laboratory equipment for making fading observations, oscillograms of echo signals, and much other scientific data. The fading recorder is a Westinghouse superheterodyne which was calibrated by the Bureau of Standards, and a Westinghouse oscillograph is to be used for recording echo signals.

While the main function of the radio equipment will be the provision of reliable contact with the world, it is expected that much scientific radio information will be collected and collated.

Weekly Broadcast from Home.

ON October 6, about two weeks after the City of New York left Panama Canal for Dunedin, the Westinghouse Electric Company's radio station KDKA, at Pittsburgh, started a regular Saturday night broadcast for the members of the expedition. According to the "New York Times," Captain Melville, master of the City of New York, reported to KDKA that the high-frequency broadcast transmission from that station was received satisfactorily by the ship, which was 2000 miles south-west of Balboa. In a special message to the "New York Times," Dr. Francis B. Coman reported by wireless from the City of New York:—"Probably very few ships have both morning and evening newspapers such as we have from the 'New York Times' and the 'San Francisco Examiner.' And without doubt no ship's crew ever found it so easy to keep in almost constant touch with friends at home. Several of the men have ar-



High Frequency 1500-Watt Transmitter on the Eleanor Bolling.

from the main base camp and will be used in conjunction with the compass receiver of the other ship to fix the position of all advance parties and planes by taking simultaneous bearings from the movable transmitters.

The radio personnel includes Lieutenant M. P. Hanson, of the Naval Research Laboratory, who is chief radio engineer for the expedition; Ensign Lloyd Berkner, of the Bureau of Standards; Lloyd Grenlie, who accompanied the Byrd Arctic expedition; and Carl Petersen.

High-Class Transmitters.

BOTH expedition ships (WFAT and WFBT) carry two transmitters, one for intermediate and one for high-frequency work. The intermediate frequency set on the Eleanor Bolling is an R.C.A. P-8 spark transmitter con-

Plate supply of 500 cycles is obtained from a 5-kw. steam-driven generator. A 2-kw. auxiliary gasoline-driven unit is available for emergency work.

The intermediate-frequency transmitter on the City of New York is a fog signal type 500-watt ICW set, which was obtained from the Bureau of Lighthouses. It is a General Electric type RT-I-F transmitter with a tuning range of from 300 to 500 kc. The high-frequency transmitter employs the conventional tuned-grid tuned plate circuit, using two UX-204-A 250-watt tubes with 500-cycle plate supply. The latter set was constructed by the expedition personnel.

For intermediate-frequency reception (1000 to 300 kc.) standard navy type R.F. receivers using four stages of transformer-coupled radio-frequency amplification, an autodyne detector