Fading and Dead Spots

KDKA and Byrd

IMMEDIATELY following the musical numbers and messages constituting the regular broadcast programme to the Byrd Expedition at Little America which was transmitted recently by the Westinghouse Station KDKA, Pittsburgh, listeners heard a long-drawn-out "buzz," which was maintained for five minutes. This buzz constituted the first of a highly-important series of tests in which the radio experts of KDKA are co-operating with those of the Byrd Expedition.

The object of these tests is to secure a better understanding of one of radio's most mysterious phenomena—"blind spots," or "dead areas."

As most radio listeners are aware, there are many small areas where certain broadcasting stations can be heard only with difficulty, if at all, although the same stations come in clearly all around these areas. While some of these "dead spots" are caused by peculiarities of land configuration, others cannot be explained away so easily, and many scientists now believe that the trouble is chiefly due to the so-called "Heaviside layer."

The "Heaviside Layer."

THE "Heaviside layer," according to theory, is a stratum, possibly magnetic in character, which surrounds the earth. Radio waves cannot pass through it, but are reflected back to earth by it, just as light rays are reflected by a mirror. In some places waves thus reflected are the ones chiefly received, and this applies especially to long-distance broadcasting: at other places, the waves sent out directly by the transmitter are the ones that convey the messages; but in certain places, both sets of waves are received together, and it is due to the interference of these two sets that dead spots, and possibly fading, are thought to be caused. Tests indicate that the Heaviside layer encircles the earth at an average distance of 350 miles, but there is some reason to think that at either the North Pole or the South Pole, or both, this layer approaches close to the earth, or perhaps actually touches it. Definite confirmation or refutation of this theory is the object of these tests.

These tests are sponsored by the U.S. Navy, not merely in the interest of pure science, but also of national defence, as dead spots occur at sea as well as on land, and naturally interfere with naval operations, so that it is most important to secure as much information on the subject as possible.

Osiso to Catch Echoes.

THE investigative work at Little America is in charge of Malcolm P. Hanson, radio engineer of the Byrd Expedition, and the most important instrument he will use is an ingenious and versatile instrument, known as the Osiso, which was invented by the late Joseph W. Legg, oscillograph engineer of the Westinghouse Electric and Manufacturing Company. The Osiso makes photographic records of radio signals and other electric waves, and is so sensitive that it will measure time-differences of only a few millionths of a second.

By means of the Osiso, Engineer Hanson can record the reception of both direct radio signals and their echoes, as reflected by the Heaviside layer, and by measuring the time difference between them he is able to determine the height of the Heaviside layer near the South Pole.

He has already done considerable experimental work along this line, and as reported by Russell Owen in the "New York Times" for July 25, took a trip for this purpose with two companions ten miles outside of camp in weather so cold that the dogs' noses froze. Hanson carried the Osiso on his back and packed the necessary dry batteries inside his shirt to keep them from freezing. On his return from this trip he radioed the company as follows:—

"Osiso giving splendid results in temperatures down to 70 below zero with ski and knapsack and dog-sled transportation. Suggest Westinghouse co-operate oscillographic study by sending special signals to us, co-operating with Dr. Taylor of Bellevue."

KDKA's radio experts, having received Dr. Taylor's suggestions, arranged with Hanson to send him a long, powerful signal on exactly 25.4 metres, which enabled him to make more accurate measurements than was possible with ordinary radio signals. This signal was also transmitted on KDKA's regular broadcasting wave so that it could be heard by listeners.

Al Jolson's Voice at Little America.

THE musical programme sent to Byrd included a programme arranged and produced by the Brunswick-Balke-Collender Company and consisted of electrical transcriptions especially prepared for this broadcasting. Among the participating artists were Al Jolson, Nick Lucas, Harry Richman, Belle Baker, Dick Robertson, Scrappy Lambert with his pianos, and other well-known Brunswick stars. Five orchestras were also heard. Hanson recorded parts of this programme on his Osiso as a check on his measurements of the main test signal.

Fashions of Filmland

MISS FLORA CORMACK—a prominent executive of one of Wellington's leading film exchanges, whose work brings her constantly in touch with news of the film stars of Hollywood—will shortly commence a series of lecturettes, "Fashions of Filmland," "Homes of Hollywood Stars" "Beauty Hints," "Care of the Hair and Eyes," and other topics of interest to the world of fashion to-day.

This series of lecturettes, which will be given during the afternoon session, once a week, should prove very interesting to our listeners-in of the fair sex, as the Fashion Talks, Beauty Hints and Home Furnishings, which will be presented are Fashion's latest decree, and many valuable hints to the home lover are contained therein.

Boosted in the States

THE incident which occured several months ago when Commander Byrd sent a radio telegram to 2YA requesting a broadcast of the latest American song hit, entitled "Button Up Your Overcoat, You Belong to Me," has been made the subject of a good deal of publicity in the United States. It will be recollected that on that occasion a special programme was broadcast for the benefit of Little America in Antarctica, and the 2YA announcer conveyed a special message of greeting to the expedition marooned in the long Antarctic night. The "Christian Science Monitor," in a recent number, contained an interesting summary of the incident, which will still be fresh in the minds of 2YA listeners.

Topical Notes

H.M.S. DUNEDIN, after a few weeks' stay in Wellington, has departed for the north. The interference from the cruiser's transmission of Morse while in port, which was a frequent source of annoyance to local listeners on the occasion of previous visits of the ship, was seldom heard during her recent stay at Wellington. The Dunedin's transmitter was heard, however, occasionally sending brief messages, and its note was unmistakable. Nevertheless the ship behaved very well on the whole, and there was less desire on the part of local listeners to wish the cruiser were elsewhere.

RECEPTION, in Wellington, of the Australian stations during the recent bad weather was down to zero, and not a few less experienced listeners have been blaming their receiving sets, valves, or batteries. "Switch" has been approached by some listeners who had first "tried to find fault" with their equipment before ascertaining the conditions of the ether. Listeners who find distant reception poor should ascertain from other listeners their experience before blaming their equipment. Though the trans-Tasman stations were a whisper only, the "YA" stations came in very well.

THE statement by the new Commonwealth Labour Prime Minister (Mr. Scullin) that in the review of the broadcasting position the Government would consider the advisability of charging higher fees for powerful receivers than for crystal sets has evoked a storm of opposition from country listeners, who, in letters to the editor of the "Sydney Morning Herald," vigorously protest against the change. They point out that in the country it is necessary to have powerful receivers if any station is to be tuned in at all, and contend that the three, four, or five-valve sets in the country areas give no better service to their owners than to crystal sets in the metropolitan area.

JOHN Philip Sousa, the great march composer, of America, whose latest items are heard from the "YA" stations, has been before the public for many years as a band conductor. By a coincidence, Sousa and the Marine Band were photographed, in 1882, beneath one of the first electric arcs ever used to light a band-stand. Sousa and his own band have lately been appearing before microphone in America, and by means of a network of stations, linked up together, their music has been heard by millions of listeners.