A New Application of Wireless

Effective Intercommunication Established by Submarines

RADIO is ever being applied to new and unusual fields. It has passed, in its development, the stages of experiment, of curiosity, and of general application. It has now reached the stage of scientific application, the general characteristic of our age. Its great value, in this manner applied, has been demonstrated repeatedly. Aeroplanes and submarines, business men and the explorers, universities and theatres, laboratories and households, Governments and individuals are daily testifying to the great possibilities of applied wireless.

The submarine is now to be ranked among those fields where wireless is to play an important role.

Underground Antenna.

IT has long been known that radio waves set up in the ether by elevated aerials may, under favourable conditions, be detected at considerable depths below the earth's surface. In fact, many devices for underground reception of wireless transmissions have from time to time been subjected to tests. It was found that although signals could be received on underground antenna, they became weaker as the distance from the surface of the earth increased.

Great claims were made from these tests, it being found that signals picked up from the ground were relatively free from static. Many and various static eliminators flooded the market, but it was found that signal strength suffered more than was gained from the elimination of static.

HOWEVER, what appears to be a practical system has been evolved by an American radio scientist, Dr. Rogers, whose system of under-water transmission and reception has within the last year been applied to all the under-water craft of the United States Navy.

Radio Waves and Water.

FOR some time it has been known that submarines may transmit and receive messages on longwave when the transmitter is situated only a few hundred yards from the receiver. Longwave was necessary because of the absorbing power of water when radio waves were generated under these conditions. Likewise when at a considerable depth signals faded out entirely. The Rogers system applied to submarines promises to do away with these defects.

The Rogers System.

RADIO energy from the transmitter situated in the heart of the submarine is fed into two highly-insulated cables, which extend over the top of the vessel to both ends of the submarine.

Such an arrangement provides what is really a loop aerial, the insulated cable representing one side of the loop and the metallic body of the submarine constituting the other. The loop circuit, therefore, will oscillate in response to electro-magnetic waves set up by the transmitter, or in virtue of similar waves transmitted to it from external sources.

A PARTICULAR feature of the system of under-sea radio is that it can be employed successfully on medium short-waves, e.g., 500 metres.

Actual tests have proved that submarines thus equipped can pick up radio signals from stations thousands of miles away. The European stations have been received by submarines in American waters.

Up to a hundred miles and in medium depths a submarine can maintain constant and reliable communication with a similar vessel.

The Interpretation.

THE possible result from this invention, or evolution as it really is, are indeed far-reaching. As instruments of war they are destined to be invaluable, yet they would add another terror to submarine warfare; but the question may be put, what part will submarines play in a future conflict when huge airplanes can pass rapidly over the heads of both ship and submarine?

But, as an instrument of war it should not be considered—war, surely, is to be outlawed by the modern peace-loving nations. The invention should be considered as another means of saving life, so that a terrible end, trapped in a sunken submarine, should be a bygone.

Wireless is destined to great things, and certainly one of its greatest services is the saving of human life.

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down, and it may be possible, therefore, for a local station, at any rate in summer, to retain part of its local features. It is a question, however, in reality not so much of local programmes against a common programme, as of good hearing against bad, and over that issue there can be no doubt which way the majority of listeners would vote. When at length it is established, the long-expected regional system will bring with it a greater choice of programmes, and there is good reason to suppose that by then there will be a far more general use of valve sets than there is now. For one thing, there is every prospect of their becoming much cheaper very soon, while they also bid fair to become much more efficient. In the last resort the enjoyment of wireless rests on the excellence with which sound is received; the better the sets, the better the finer points of a good musical programme can be appreciated. That itself is likely to react on the preference of listeners, who will be disposed more and more to welcome performances of a standard to which purely local talent can hardly be expected to attain. While no one would wish wantonly to damp down local patriotism there is a tendency for it to shrink of its own accord in face of undeniably superior merit; and there are grounds already for believing that, strong as it still is in certain sections and in some centres perhaps stronger than in others, the tide of fashion is on the whole setting away from it. With management, in those quarters where to deny it scope would be unfair, there may still be room for a certain amount of it in the future; but even the B.B.C., resourceful as it is, is not omnipotent. It intends for the time being to get millions of its humbler clients out of a difficulty which leaves them for the present with no other alternative to a single programme than chaos; and when two years hence, as it is hoped, the change-over to the regional system will have been everywhere accomplished, there is little question that large numbers of listeners on the cheaper sets will have facilities given to them which are now out of their reach.

TO minimise interference, Germany is making the experiment of putting relay stations on the same wavelength as their main station. The only problem, apparently, is to keep each carrier-wave level with the others, but this is believed to have been solved.