Warning Ships of Cyclones

Value of Radio

THE value of the Willis Island radio station for the purpose of warning shipping on the Queensland coast of approaching cyclones, is evidenced by the following story of an officer of the Australian mercantile marine service.

At 3 p.m. on a Thursday afternoon, he states, ships at sea were advised of "suspicious conditions north of Willis Island." At this time his vessel was on the way from Sydney to Brisbane. Between the Thursday and the following Wednesday, 17 reports on the approaching disturbance were received, and on the Wednesday when the ship was between Cairns and Port Moresby advice was received over the air, "Cyclone centred at 8 p.m. approximately 20 miles east from Cape Capricorn; still very intense and now apparently moving south-east."

At one stage of the voyage the master deemed it advisable to anchor under Gloucester Head off Bowen to avoid running into the centre of the disturbance. The reports gave the position of the cyclone's centre, its intensity, and its progress at regular intervals. With such information in their possession, ship masters can take the necessary steps to avoid trouble and so minimise the risk to life and property.

Rain and Radio

Some Curious Effects

DURING the South African War—the first time that wireless was ever used in warfare, by the way—it was noticed that signals were very much better after a shower of rain had fallen on the veldt.

In the case of the veldt, the reason why the signals were better after the rain than before was because dry ground tends to absorb wireless waves and they are quickly damped out, whereas when the ground is covered with a layer of moisture this has the effect of preventing the waves from sinking into the ground and they will last longer.

MRS. ZOE BARTLEY-BAXTER, who, on Tuesday, April 14, will produce from 1YA "Destiny's Door, a one-act radio play by de Clive Lowe.

Insulator Leakage.

THIS after-rain effect is more noticeable in the day time, when the ground wave only is received At night, when reception is accomplished mainly by reflected or refracted waves from the Heaviside Layers, this effect is not so obvious.

Other factors, of course, enter into this phenomenon For example, a beneficial effect should not be so noticeable immediately after rainfall, because the aerial insulators at the transmitting and receiving stations are usually wet, and, therefore, are not up to their usual efficiency. This is because water is a conductor, so that the high-frequency currents in both aerials will tend to leak away to earth over the wet insulators.

When, however, a wind has dried the wet insulators, and the rain is still lying on the ground, then reception should be and usually is above normal.

In the case of reception during falling rain, conditions are different. The aerial insulators are usually wet, and consequently there is a definite loss of energy over the wet insulators. More energy is, of course, lost in the high potential aerial of the transmitter than at the receiving end, and this loss we may say will largely counterbalance any benefit gained by the passage of the waves over the wet earth.

There is also the fact that when the rain is falling, a certain amount of energy is conveyed from the aerial to the ground by the conducting rain. In other words, the insulating properties of the aerial are still further reduced, and more high-frequency energy passes directly to earth without going through the receiver.

Precisely what happens to wireless waves when they pass through a rainstorm is not definitely known. In the usual way they appear to be unaffected to any appreciable extent, yet theoretically they should be reflected by the rain slightly, somewhat in the same way as the reflecting wires of a beam station reflect wireless waves in one particular direction.

This reflection must occur to a slight extent, but as far as is known has not been remarked upon in practical working.

Absorption Effects.

ANYONE on the edge of a rainstorm might expect, however, to experience a slight increase in signal strength due to reflection, provided the oncoming waves are arriving from a suitable direction; whereas a receiving station within the area of the rainstorm may experience a slight falling-off in strength from this reflection. We may also expect the rain to absorb a certain amount of the wireless energy from the ether on the same principle that trees absorb wireless waves by acting as aerials.

Then, of course, the type of rain has a great deal to do with its effect on radio. In some parts of the world wireless reception is impossible when it rains, owing to a continuous hiss issuing from the phones or loudspeaker. This is due to the electrified rain energising the aerial.

Charged Clouds.

RAIN is not the simple drop of water we used to think it was. Not so long ago rain was explained as being due to the condensation of the air by cooling, when water was formed and it rained.

Within the last few years, however, we have learnt that the raindrop is a very complicated unit, indeed, intimately connected with atmospheric electricity and electrified dust. Every raindrop has a material centre which is in many cases electrically charged.

This centre is in fact an ion, and this ion, it may be added, is due to the gas called radium-emanation, which is given off by the radio-active substances in the earth. The gas spreads through the atmosphere and breaks up the molecules of air with which it collides, so forming eletrically-charged particles which we call ions.

Thus falling rain may be, and often is, a widespread descent of atmospheric electricity, and it has been found that the electrical charge on some raindrops is greater than the force of gravity; so that a rainstorm is an electrical force to be reckoned with by anything passing through the air such as wireless waves.

After a shower of this kind of rain, the atmosphere has been cleared of much of its electricity, the rain has brought the ions to earth, as it were, so that we might expect the insulating properties of the air to be more efficient, therefore clear and crisp reception is likely. Speaking tentatively this may account for the clear reception sometimes noticed after a storm, as if the air had been cleaned up.

On the other hand, during such a rainstorm, we may expect a slight background of "atmosphere," a slight hiss or noisiness which muffles reception slightly. This is due to the electrical charges in the raindrops energising the aerial.

So far we have only touched the fringe of the effect of weather on wireless and vice versa—Professor Houllevigue, of Paris, claims to have proved, for instance, that the mist surrounding a transmitting aerial is dispersed when the station is radiating. There is ample scope for research in these directions by amateurs, as it is largely a matter of observation with an ordinary receiver.—G. H. Daly, in "Popular Wireless."