The Wonder of the Cosmic Ray Problem for Science

SOUND, wireless, heat, light, violet and X-rays are together merely vibrations or movements of the ether, the medium which surrounds us. They are by no means separate phenomena, but only different varieties of the same species as a biologist would say. Whereas, sound waves travel from their point of origin at the rate of from 16 to 15,000 per second. X-rays leave at the amazing rate of 25 million billion (18 O's). The penetrating power of these waves depends on their speed. A deep note will not travel so far as a shrill note of the same intensity. Likewise, a white light can be seen farther than a dark red one. For this same reason short wave signals can be heard at a greater distance than long waves; X-ray has greater penetrating power than violet ray; and finally the newly-discovered cosmic ray has a speed and penetrating power that can only be estimated by hypothesis.

The Power of the Cosmic Ray.

THIS ray, or series of oscillations (vibrations), will penetrate 190ft. of water, or about 16 feet of lead, before dying out. This is double the penetrating power of any other wave previously known.

The power of this ray before it has been toned down by the atmosphere can only be imagined. Incidentally it adds another terror to anyone contemplating a trip to the moon, or anywhere else in space. Probably it would shrivel them up before they left the earth's sphere of influence.

Its Origin.

ITS origin is a mystery. The earth was suspected, but it was found that the higher the altitude the stronger the ray. The sun was next put to the test. The ray was equally intense when the sun was overhead, sinking or set. The sun, then, has nothing to do with it, or at least no direct influence. Likewise, the planets and the Milky Way were tested but without avail. The mysterious super-ray holds its secret.

The Possibilities.

IT is interesting to speculate upon the possibilities of the ray. Popular rumour has it that someone may be examining us by means of this ray, in somewhat the same way as a photograph can be taken of a man in a pitch black room by means of the invisible infra-red ray, without the man being aware of the fact at all.

It is probable that the cosmic ray, or perhaps we should say the cause or creator of the ray, whatever, or whoever it is, is the most powerful force in existence.

The ray is undoubtedly only the outward and visible sign of something quite appalling in the realm of force.

THE ray, at its source, must be infinitely more powerful than light or heat rays on the hottest or most brilliantly-lit part of the earth's surface, but it is doubtful whether the influence on man would be the same.

If the method of its creation were discovered man would have a means of communication that would require so little power that anyone could carry a transmitter with world-wide range in his pocket. With more powerful outfits inter-planetary communication would be possible. The principles of its reception would be the same as wireless so that little adaptation would be necessary to convert the receiver of radio waves to the receiver of cosmic waves. If anything it would be more simple.

Whether cosmic rays are created by an intelligence or merely by natural causes is at present causing much discussion.

In some scientific circles it is thought that the cosmic ray is created by direct encounter between the nuclii of atoms and high-speed electrons, but there are many other equally feasible explanations.

The atom theory is a popular one and some go so far as to suggest that in the distant future all our power will be harnessed from the decomposed atom. It is a well-known fact that the power in a pinch of salt is sufficient to steam at full pressure a great liner like the Leviathan across the Atlantic. Were the secret of breaking up the atom discovered our civilisation would be revolutionised—but it has yet to be done.

Alarmists tell us that in some hundred years our coal supplies will be exhausted and our oil wells dried up. What matter! by then, surely, we will be talking to Mars on cosmic rays and flying our aeroplanes from a grain of dust!

Aids to Navigation

Steps Taken by Canada

FROM time to time references have been made to direction-finding radio beacons and their service to navigation, aerial and maritime. This is by no means a new service. Such beacons were used to great extent during the Great War, especially in the tracking down of submarines and the saving of shipping from this menace. For this purpose Canada had four such stations on the east coast during those trying times, and all four were responsible for the saving of many lives and much shipping.

Since then Canada has done much to improve and extend this important means of communications, and now such stations are dotted over each coast.

The plan has met with great success, and many a fine ship has been saved from the Atlantic graveyard between Sable Island and Halifax by getting her correct location from the shore stations. It was not until 1924 that a station of this type was installed on the west coast of Vancouver Island, a coast much dreaded by mariners. During the last year 3100 bearings were given to ships of all nationalities, including war craft.

The Vancouver station has a splendid record, the bearings being almost 100 per cent. correct. Hundreds of letters are received yearly from satisfied users. Stations of this type are usually manned by four men. Service is supplied free.

Graveyard of the Pacific.

SOME time ago two ships in-bound from the Pacific went ashore in a fog at Race Rocks, a lighthouse station near Victoria. It was stated that a silent zone existed as the fog-horn was not heard. After a great deal of investigation it was thought that perhaps there was a "silent zone," a serious menace to navigation.

The department decided to install a radio beacon. This apparatus is practically the same as an ordinary transmitter, but it is operated automatically and does not require the attention of any person other than to start it. As soon as the lighthouse-keeper starts the fog alarm apparatus he puts in a switch and the radio beacon starts transmitting the letter "J." During the transmission any ship properly equipped can get bearings on the Race Rocks. The plan has been admirably successful.

Other Measures.

ANOTHER step has been taken to ensure the safety of ships plying between Canada and the Pacific ports. Numerous short-wave stations keep in touch with ships until they drop anchor in their port of destination. This development of the short-wave has been attributed to the work of the amateur transmitters, who are numerous in Canada.

In addition to these the Canadian Government has established radiophone installations at several points along the coast. These are exclusively used in connection with life-saving stations. Land lines are not dependable, and then the wireless comes to the rescue. It is to the credit of those concerned that very few disasters have occurred on the Vancouver Island coast since the establishment of the various aids outlined. Vancouver Island can no longer be called the "Graveyard of the Pacific."

WIRELESS conversations from a Vickers Rolls-Royce air liner flying over London were clearly picked up at Cairo. The feat is the more remarkable in view of the power used on the aeroplane, which was only sufficient to light an ordinary electric lamp.