

what Pound* found necessary to cut off all the radiations of the β type issuing from a sample of radium in equilibrium.

It follows then that the wall emitted a radiation of the β type which produced a conductivity in the air in the zinc receiver corresponding to about 1.5 ions per c.c. per second.

From the nature of the observations it is impossible to determine whether this radiation was emitted directly by the wall or was a secondary radiation produced at the wall by the penetrating rays present at the surface of the earth. In either case it seems justifiable to conclude that a similar radiation was probably emitted by the soil of the lawn and contributed to the ionization obtained in the receiver when the observations were made there. It should be possible, however, to get more direct evidence of the existence of this β radiation from the soil by making observations at the surface of the pound in a clear space and at a point directly above in the free air about 15 metres from the ground. Such measurements should not involve great difficulty and it is hoped shortly to undertake them. Additional observations will also be made to see if a β type of radiation is emitted by walls generally of structures which are exposed to the earth's penetrating radiation.

III.—SUMMARY OF CONCLUSIONS.

1. At Toronto the ionization obtained in air confined in a thin walled zinc receiver of about 30 litres capacity on the surface of the bare ground of the University lawn is greater than that obtained in the same air on the ice in Toronto Bay by about 5.8 ions per c.c. per second.

2. Evidence has been presented which goes to shew that this same difference exists at Livorno, Italy, and near Cape Town in South Africa between readings taken on the open sea and those taken on the neighbouring land.

3. As Eve† and Simpson and Wright‡ have shewn that the penetrating radiation over the ocean from radium and thorium in the sea is negligible, it follows that 5.8 ions per c.c. per second represents the average effect of the penetrating radiation emitted by the earth and any rays of the β type which may accompany it.

4. The observations at Toronto give evidence of the existence of a radiation of the β type accompanying the penetrating radiation from the soil which produced in the air in the zinc receiver about 1.5 ions per c.c. per second.

* Pound, *Loc. cit.*

† *Loc. cit.*

‡ *Loc. cit.*