

CORRESPONDENCE.

VULCANISM AND METALLOGENY.

SIR,—In a paper on Vulcanism and Metallogeny presented to the International Geological Congress which has just been held at Madrid, Mr. W. H. Herdsman refers to my early work on the earth's thermal history, and states that I "found the temperature at the base of the granitic layer and at all greater depths to be about 300° C." Mr. Herdsman does not, however, go on to say that I immediately concluded that this result was "manifestly absurd" (*GEOL. MAG.*, 1915, p. 67). My argument was that if all the heat lost by the earth were made good by radio-activity, and if all the radio-active elements were supposed to be concentrated in a granite layer, then the maximum temperature possible at the base of the radio-active layer would be 300° C. As such a result is hopelessly inconsistent with igneous phenomena, I made the obvious deduction that the radio-active elements were not wholly concentrated in the surface layer. It is perfectly clear in my original paper that I did not commit myself to the "conclusion" for which Mr. Herdsman apparently holds me responsible. What I did was to ascertain the conditions under which a temperature of 1200° C. became possible, and I then adopted those conditions for further discussion in a later paper. There is nothing in either my early or later work which supports Mr. Herdsman's views on ore deposits, and I wish to correct any impression that there may be.

An amusing case of the same kind arose some years ago and is worth recording. In *The Age of the Earth* I gave five different estimates of geological time based on denudation and sedimentation, all of which were of the order 300 million years. I was careful to point out that they were dependent on the assumption of uniformity of rate, and that therefore they could not be supposed to possess any serious value. Nevertheless the figures were seized upon by the American Theosophists as a proof that occult investigations led to sound conclusions. Madame Blavatsky by gazing backwards through time had arrived at a similar estimate of the age of the earth, and had boldly published it in *The Secret Doctrine* at a time when the shorter periods favoured by Kelvin were fashionable. Further progress, however, proved Kelvin to be wrong and Madame Blavatsky right! No reference whatsoever was made to the main thesis of my book, which was that the age of the earth is of the order 1,600 million years.

ARTHUR HOLMES.

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