SEISMOLOGY FROM A MATHEMATICAL VIEW-POINT

By Professor W. D. Cairns

The high honor attaching to the office of vice-president of the American Association for the Advancement of Science demands a worthy effort on an occasion like the present. Very properly a general consideration of some field within the scope of mathematics may come under review, and all the more will this be appropriate for a section of the American Association if it links itself to some other department of science. I am therefore returning to an old-time love of mine and considering to-day the advance that has been made in seismology within, let us say, the last thirty years.

At first sight the phenomena to be studied seem hopelessly confused; the ground effects near the origin of the earthquake show buffeting blows from all directions; earthquake records, even those of the same earthquake, often look widely different; and the layman wonders what can be made of these happenings as a science. It is, however, the glory of the human mind that it can select, classify, analyze, and can thus bring order out of chaos.

The universe is a system, a unit,
Only in the mind of man.

[The speaker described (1) the evident mechanism of earthquakes consisting of a gradually increasing strain and subsequent fracture of the rock structure; (2) the transmission of the shock, the longitudinal and transverse wave through the earth and a wave of greater amplitude over the surface; (3) various reflected and refracted waves; and (4) methods for obtaining information about velocities below the surface,
Editor's Summary

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