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EARTH STRUCTURE AND EARTH ORIGIN¹

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In his book "The Solar System and Its Origin,"² Henry Norris Russell presents a critique of the several theories of earth origin, which may fairly be taken as representative of the attitude of most astronomers toward this problem, responsibility for the solution of which they share with geologists. Full consideration is given to the planetesimal hypothesis of Chamberlin and Moulton and to the modifications of that hypothesis which have been proposed by Jeffreys and Jeans. The obstacles which forbid whole-hearted acceptance of any one of these hypotheses are forcefully presented. The conclusion is frankly stated "that no one can yet say how our system originated in detail."

It is nevertheless apparent that the most hopeful

line of research leads toward some hypothesis of origin during an encounter between the sun and another heavenly body. In other words, the fundamental principle of the planetesimal hypothesis is accepted. Future investigators are most likely to work toward the discovery of the particular modification of that hypothesis which will best fit the facts now known or to be ascertained.

Commenting specifically upon the planetesimal and tidal theories, Professor Russell states: "It is here that the two theories part company—the planetesimal supposing that the existing planets were formed mainly by the slow agglomeration of small cold bodies, and the tidal that they were all once liquid and have picked up much less matter in later times. This difference, while very important to the geologist, is really rather small from the standpoint of the astronomer."³

¹ Address of the vice-president and chairman of Section E, American Association for the Advancement of Science, Richmond meeting, December 28, 1938.

² New York, 1935.

³ *Loc. cit.*, p. 102.

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