

MODERN SEISMOLOGY

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Modern Seismology by G. W. Walker

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G. W. WALKER

**MODERN
SEISMOLOGY**

MONOGRAPHS ON PHYSICS

EDITED BY

SIR J. J. THOMSON, O.M., F.R.S.

AND

FRANK HORTON, D.Sc., M.A.

OF THE CAVENDISH LABORATORY, CAMBRIDGE

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BY

G. W. WALKER, A.R.C.Sc., M.A., F.R.S.

FORMERLY FELLOW OF TRINITY COLLEGE, CAMBRIDGE

WITH PLATES AND DIAGRAMS

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1913

PREFATORY NOTE.

ONLY a week after this book had been handed to the publisher, the scientific world had to mourn the loss of Dr. John Milne, who entered into Rest on 31 July, 1913.

It was my melancholy privilege on 5 August to pay a last tribute to one who had proved a very kind friend.

The assembling of a large congregation in St. Thomas's Church, Newport, Isle of Wight, was an eloquent testimony to the love and esteem with which Milne was regarded by those among whom his daily life was spent.

No one will deny that Milne was truly the father of modern Seismology. He founded the subject, he developed it well-nigh single-handed, and he lived to see the importance of his life work recognised not only by his fellow-countrymen but by the whole civilized world.

The credit for several important points in modern Seismology is sometimes assigned to others, and it was only Milne's greatness of heart that prevented him from claiming the priority that was rightly his.

But his claim to scientific fame rests not on details, for he made the whole subject. As Prince Galitzin remarked at Cambridge only a year ago, "There are not many questions of modern Seismology that have not been attacked by Milne long before any other person had thought about them".

G. W. W.

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INTRODUCTION.

THE present volume owes its existence to Sir J. J. Thomson's suggestion that I should write an account of the present position of seismological investigation.

The book is written from the point of view of Seismology as a branch of Physics, and particularly as it is determined by observatory conditions. My qualification to deal with the subject in this aspect rests on what is probably the unique experience of having set up at Eskdalemuir and having had under daily personal observation a Milne twin-boom seismograph, a Wiechert 80 kgm. two horizontal components astatic inverted pendulum seismograph, a complete Galitzin installation of seismographs with galvanometric registration for three components, and an Omori seismograph for one horizontal component. Simultaneous records of the magnetographs and autographic meteorological instruments were also available for comparative study.

This limited treatment of the subject is determined as much by conditions of available space, as by my ignorance of the geological side and of the practical application of earthquake study to building construction which is of so much importance to those who live under the daily danger of the "earthquake". But the limitation is no disadvantage since we already have Dr. Milne's works on "Earthquakes" and "Seismology" (International Science Series), which deal with the subject in its wider aspects and with the authority of Milne's unrivalled personal experience.

The history of Seismology has been traced back to the