

## FOURTH MEETING: 11th February, 1902.

Mr. G. V. Hudson, President, in the chair.

*New Members.*—Dr. Archer Hosking, of Masterton; Messrs. A. B. Chalmers, Gerald Fitzgerald, A. E. Pearce; and William Gray, of Palmerston North.

*Papers.*—1. "Embryology of New Zealand *Lepidoptera*," by Ambrose Quail, F.E.S. (*Transactions*, p. 226.)

2. "On a Marine *Galaxias* from the Auckland Islands," by Captain Hutton, F.E.S. (*Transactions*, p. 198.)

3. "On the Latent Heat of Fusion of the Elements and Compounds," by P. W. Robertson; communicated by Professor Easterfield. (*Transactions*, p. 501.)

Sir James Hector and Professor Easterfield spoke in high terms of the accuracy of Mr. Robertson's work, and of the great importance of his discovery. It would be known, the professor thought, as "Robertson's Law."

4. "On the Phenomena of Variation and their Symbolic Expression," by E. G. Brown. (*Transactions*, p. 520.)

Sir James Hector said that Mr. Brown was doing substantial and valuable work in one of the obscure corners of scientific research.

5. "On the Horizontal Component of the Earth's Motion in Space," by D. Hector; communicated by Sir J. Hector. (*Transactions*, p. 513.)

6. "Mathematical Treatment of the Problem of Production, Rent, Interest, and Wages," by D. Hector; communicated by Sir J. Hector. (*Transactions*, p. 514.)

7. "Notes on New Zealand Fishes," by Sir J. Hector. (*Transactions*, p. 239.)

8. "The Vapour Densities of the Fatty Acids," by P. W. Robertson; communicated by Professor Easterfield. (*Transactions*, p. 499.)\*

## ANNUAL MEETING: 12th March, 1902.

Mr. G. V. Hudson, President, in the chair.

## ABSTRACT OF ANNUAL REPORT.

During the past year five meetings were held, at which twenty papers were read.

Nine new members have been added to the roll during the year, making a total of 147 members.

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\* For discussion, see p. 570.

The balance-sheet shows the receipts for the year to be £156 10s. 5d., and the expenditure £76 14s. 3d., leaving a balance in hand of £79 16s. 2d. The Research Fund, a fixed deposit in the bank, now amounts to £36 10s. 10d., which increases the credit balance to £116 7s.

ELECTION OF OFFICERS FOR 1902.—*President*—W. T. L. Travers, F.L.S.; *Vice-presidents*—Sir J. Hector, F.R.S., and R. L. Mestayer; *Council*—Messrs. H. N. McLeod, E. Tregear, F.G.S., M. Chapman, G. Hogben, M.A., R. C. Harding, G. V. Hudson; and Professor Easterfield; *Secretary and Treasurer*—R. B. Gore; *Auditor*—T. King.

*Papers*.—1. "The Theory of the Polar Planimeter," by C. E. Adams, B.Sc.

Sir James Hector said that a most ingenious form of a planimeter had been devised by Mr. Beverley, an inventive gentleman of Dunedin, still among us, and was shown at the New Zealand Exhibition nearly forty years ago. The following was an abstract of the account of Mr. Beverley's instrument which was given in the Report on the New Zealand Exhibition, 1865, page 188. This was now a very rare book. "Two Planimeters (not named 'Planimeters'), invented and made by A. Beverley, Dunedin, are interesting and valuable instruments. An instrument to effect the same purpose was first exhibited by the famous inventor and mathematician Mr. E. Sang, of Kirkcaldy, in Scotland, at the exhibition of 1851. Other similar instruments have been invented, especially by Professor Clerk Maxwell, to overcome the mechanical difficulties by the introduction of contact spheres. This is a beautiful idea, but mechanically impossible. Mr. Beverley's platometer, which rejects sliding motion, and is very simple and inexpensive, should come into general use in all survey offices." At the same time he showed a clock which had been going ever since it was made without the aid of weights or springs—which, in fact, as far as motive-power was concerned, had been untouched since its construction. A glass cylinder filled with air resting on a surface of castor-oil supplied the power, every change in temperature affecting the pressure. The force thus generated was taken up by an ingenious mechanical contrivance and conveyed to the works. For forty years the timepiece had kept time without stopping, and it bade fair to go as long as the works held together and the day and night temperatures continued to vary.

A member who objected that the pinions would clog and wear out was reminded that the problem of perpetual motion was apart from wear-and-tear of mechanism.

Mr. Martin Chapman remarked that he had known the clock, which was still going, for many years past.

2. "Notes on the Sydney Chain Standard," by C. E. Adams, B.Sc.

Mr. Martin Chapman said that in order to be able to tell whether a thing was done properly its actual working had to be gone into. He once happened by accident to be concerned in a matter which enabled him to see how the testing of weights was worked practically. As members of the society probably knew, there were Inspectors of Weights and Measures all over the colony. These Inspectors were generally policemen. Sometimes they were retired policemen. An Inspector had a set of standard weights with which he had to compare weights submitted to him to be tested, or weights which were suspected to be untrue and which he had secured in order to test them. An important question, therefore, was how nearly the standard weights in the possession