3·2 mag. Two determinations of the parallax are given:

(1) 0·20″ ± 0·05″ M. Philippot.
(2) 0·06″ ± 0·07″ M. Delporte.

Both determinations appear to be improbably large, judging by the small proper motion and the values obtained for other novæ.

A. C. D. CROMMELIN.

THE LIVERPOOL MARINE BIOLOGY COMMITTEE.[1]

THE issue of the thirty-third annual report of the Liverpool Marine Biology Committee, and, as we are informed, the last of the series, is an opportune moment for the publication of a review of the important work that has been done since the formation of the committee in 1885. This report is not the swan-song of a dying enterprise, but rather the triumphant cry of those who have achieved an initial victory that gives hope for a rapid and continuous advance in the future;. and, although the old L.M.B.C. ceases to exist, there is every reason to believe that its work will be carried on with increased efficiency by the newly organised staff of the oceanography department of the University of Liverpool.

In the short history of the work of the committee that is published in this report it is clear that a very substantial contribution has been made to our knowledge of the species of animals and plants that inhabit the waters of the Irish Sea, and that valuable information has also been acquired about the many characters of the sea-bottom round the Isle of Man and the north coast of Wales.

All this is necessary pioneer work, although much of it may seem dull and uninteresting when in print. The workmen must learn the use of their tools before undertaking the more serious work of production. But we see in the L.M.B.C. memoirs, of which twenty-three have already been published, in the important investigation of Prof. Herdman and his colleagues on the fluctuations of the plankton, and in the biochemical researches of Prof. Moore and others, that these valuable contributions to our scientific knowledge of the sea have outgrown the "Records" of the early years of the life of the committee.

The work of recording and describing the booty of the sea must, of course, continue; but with the ripe experience of thirty-three years, with the more complete equipment of laboratory space and apparatus, and with the new organisation of the oceanography department of the University, we may confidently look forward to further important developments in the general scientific work of the Port Erin institution.

We may tender to Prof. Herdman our cordial congratulations on his achievements in the past and our good wishes for the full success in the future of the great enterprise which is so largely due to his own personal genius and enthusiasm. S. J. H.

APPLICATIONS OF INTERFEROMETRY.

IN a report by Prof. Carl Barus, of Brown University, recently published by the Carnegie Institution of Washington, a number of interesting applications of achromatic interferometry are described. In the first chapter a method of measuring small angles is discussed. The general theory of the subject is developed at some length, and a variety of interferometer devices, with mirror, ocular, and collimator micrometers, are instanced. As the achromatic fringes cannot (in general) be found without first finding the corresponding spectrum fringes, the second chapter is devoted to spectrum fringes. The work described in the third chapter was undertaken at the request of Prof. W. G. Cady, in the endeavour to obtain the elastic constants of small bodies. The application of the displacement method proved astonishingly easy in a case where a degree of rough handling is inevitable, but it was found that there lurked in the elastic apparatus some discrepancies, both of viscosity and hysteresis, the nature of which escaped detection after many attempts to locate its origin. The fourth chapter contains applications of the rectangular interferometer using achromatic fringes to the study of gravitation. A method for the determination of the Newtonian constant is worked out. Again, the same interferometer is associated with the horizontal pendulum for the detection of small changes in the inclination of the earth's surface. Series of observations extending between January and August are recorded. In the fifth and last chapter the author deals with the application of interferometers to the study of vibrating systems. To test the method, an examination is made of the vibration of telephonic apparatus. Interference-vibration curves have been obtained for two identical telephonic systems joined directly in series, while these forms subsided completely when the telephones were joined differentially.

[1] The Marine Biological Station at Port Erin. Thirty-third Annual Report of the Liverpool Marine Biology Committee. Drawn up by Prof. W. A. Herdman. Pp. 84. (Liverpool: C. Tingling and Co., 1919.)

RESEARCHES AT HIGH TEMPERATURES AND PRESSURES.

BY THE HON. SIR CHARLES A. PARSONS, K.C.B., F.R.S.[1]

I.

JUST ten years ago in this room Sir Richard Threlfall discussed the effects of temperature and pressure on various substances, and commenced by referring to a suggestion I made in 1904 to sink a bore-hole twelve miles deep in the earth with the object of exploring the region beneath us, about which so little is known. Last summer at Bournemouth I ventured again to direct attention to the desirability of such an exploration in the interests of science generally, and to the possibility that it might ultimately lead to some developments of practical importance and utility.

Ten years ago no experiments had been made on the behaviour of rocks under the conditions existing at great depths below the surface of the ground; but, prompted by my suggestion in 1904, and after some subsequent correspondence in regard to the possibility of the rock crushing in and closing the shaft, Prof. Frank D. Adams, of McGill University, Montreal, commenced experiments on the strength of rocks to resist the closing up of cavities under the conditions prevailing at great depths below the surface. He published the account of these experiments in the *Journal of Geology* for February, 1912.

Adams's method was to place a block of granite or limestone in a tightly fitting cylinder of nickel-steel, which was shrunk lightly around the block to ensure perfect fitting and support; hard steel rams actuated by a hydraulic press were arranged to exert a known pressure against the ends of the block. Two small holes were previously drilled in the specimen, one axial in the centre and one transverse, the diameter of the holes being 0·05 in., or one-tenth the diameter of the specimen. The temperature of the container and specimen was maintained at any desired point up to the softening point of steel. In some experiments no heat was applied, while in others the temperature

[1] Discourse delivered at the Royal Institution on Friday, January 23.