

(Trinity College, Dublin), Exhibition of 3*l.* a year [Mathematics and Physics].

For Hebrew: G. C. Ewing (Merchant Taylors' School, London), Exhibition of 33*l.* 6*s.* 8*d.* a year.

SOCIETIES AND ACADEMIES

LONDON

Royal Meteorological Society, December 19.—Mr. J. K. Laughton, M.A., F.R.A.S., president, in the chair.—The following were elected Fellows:—R. Bentley, W. Bonallo, Miss E. Brooke, Rev. A. Conder, T. H. Cowl, J. A. W. Oliver, C. M. Powell, W. B. Tripp, and Fung Yee. The papers read were:—On the explanation of certain weather prognostics, by the Hon. Ralph Abercromby. The author explains about forty-four well-known prognostics belonging to the following groups—(1) diurnal; (2) sun, moon, and stars; (3) sky; (4) rain, snow, and hail; and (5) wells, springs, and coal-mines—by referring them to the isobaric conditions in which they are observed. By this means he is able to indicate the circumstances under which any prognostic fails, as well as those under which it succeeds.—Preliminary inquiry into the causes of the variations in the reading of black-bulb thermometers *in vacuo*, by G. M. Whipple, B.Sc. It has long been known that there is a want of accordance between the different instruments used for measuring the intensity of radiation, and with a view of ascertaining the cause of the variations in the readings of the black-bulb thermometers *in vacuo*, the author has made a comparison with a number of these thermometers, the results of which are given in the paper. It is shown distinctly that the effect of an increased coating of lamp-black on the bulb is to raise the temperature, and also that the size of the thermometer-bulb is a most important factor in the case of this instrument.—Report on the phenological observations for 1883, by the Rev. T. A. Preston, M.A.—Mr. J. S. Dyason exhibited a series of coloured sketches illustrating the recent atmospheric phenomena during November and December.

Geological Society, December 5.—J. W. Hulke, F.R.S., president, in the chair.—George Jonathan Binns, Horace T. Brown, James Dairon, Rodolph De Salis, Hugh Exton, John Forrest, Prof. Bernard J. Harrington, James Patrick Howley, John Sylvester Hughes, Prof. George T. Kennedy, Rev. Arthur Noel Malan, Robert Sydney Milles, Edwin Radford, Edward Pierson Ramsay, William Henry Rands, Thomas Roberts, Joseph Ridgway, and Harry Page Woodward were elected Fellows of the Society.—On the Cambrian conglomerates resting upon and in the vicinity of some pre-Cambrian Rocks (the so-called intrusive masses) in Anglesey and Carnarvonshire, by Henry Hicks, M.D., F.G.S. In a former paper the author had maintained that there was no evidence to show that the so-called intrusive granite in Anglesey had altered the Cambrian and Silurian rocks in its immediate vicinity, or that they had been entangled in it as described, but that it seemed to be a rock of metamorphic origin, varying much in its general appearance at different points. He contended that, instead of being an intrusive granite, as supposed by the officers of the Survey, it was in all probability the oldest rock in Anglesey. The basal Cambrian conglomerate in contact with it is in an unaltered condition, and at Llanfaellog contains an extraordinary proportion of well-rolled pebbles, identical in mineral composition with the so-called granite immediately below. Fragments of all the varieties of rock found in the granitoid axis are recognisable in the conglomerate, and in precisely the same condition as in the parent rock. Fragments of the various schists of the area were also present; so that he thought there cannot be the shadow of a doubt that the so-called granite and the metamorphic schists are older than the conglomerate, and therefore pre-Cambrian. The view maintained by the Survey that the schists are altered Cambrian and Silurian strata, and the granitoid rock an intrusive granite of Lower Silurian age, is consequently quite untenable. In Carnarvonshire equally conclusive evidence was obtained from many areas. Fragments of the Dimetian (Twt Hill type) occurred abundantly in the basal Cambrian conglomerates at Dinas Dinorwig, Pont Rothel, Moel Tryfane, and Glyn Llifon. Quartz-felsite pebbles in every respect identical with the varieties found in the so-called intrusive ridges between Bangor and Carnarvon, and to the north and south of Llyn Padarn, were found on the shores of the Menai Straits, in the railway-cutting at Bangor, at Llandeiniolen, Dinas Dinorwig, Llyn Padarn, and

elsewhere. This evidence, supplementary to that previously furnished by Prof. Hughes, Prof. Bonney, and the author, is conclusive as to these areas, since the basal Cambrian conglomerates, which are in contact with these supposed intrusive masses, are composed almost entirely of rocks identical with the latter; and this could not possibly be the case if the granitoid masses had been intruded among the conglomerates after their deposition.—On some rock-specimens collected by Dr. Hicks in Anglesey and North-West Carnarvonshire, by Prof. T. G. Bonney, F.R.S., Sec.G.S. The author stated that pebbles in the blocks of conglomerate collected by Dr. Hicks to the north of Llanfaellog were practically undistinguishable macroscopically and microscopically from the granitoid and gneissic rocks which occur *in situ* between that place and Ty Croes, and that the matrix contained smaller fragments, probably from the same rock, with schist bearing a general resemblance to members of the group of schists so largely developed in Anglesey, and with grits, argillites, &c. Pebbles of granitoid aspect in the Cambrian conglomerate near Dinas Dinorwig, &c., bear a very close resemblance to the Twt Hill rock, and are associated with abundant rolled fragments of rhyolite resembling those already described from the Cambrian conglomerate and the underlying conglomeratic beds and rhyolites. Two pebbles of rather granitoid aspect in the Cambrian conglomerate by the shore of the Menai Straits, near Garth, prove to be spherulitic felsite, somewhat resembling that already described by the author from Tan-y-maes. He pointed out that the evidence of these specimens collected by Dr. Hicks, added to that already obtained, led irresistibly to one of two conclusions—either that, when the Cambrian was formed, an area of very ancient metamorphic rock was exposed near Ty Croes and in the Carnarvonshire district, or that the rhyolitic volcanoes were so much older than the Cambrian time that their granitic cores were already laid bare by denudation. Hence, in either case, the existence of Archæan rock in North Wales was proved. To one or other of these conclusions he could see no possible alternative, and he considered the former to be (even if some of the granitoid rock were granite) far the most probable.—On some post-Glacial ravines in the Chalk Wolds of Lincolnshire, by A. J. Jukes-Browne, F.G.S.

EDINBURGH

Mathematical Society, December 14.—Mr. Thomas Muir, president, in the chair.—Mr. J. S. Mackay read a paper on the medioscribed circle of a triangle with its analogous and associated circles viewed from their centres of similitude.—Prof. Chrystal stated some propositions in geometry for which he wished proofs.—Mr. Muir made a communication on determinants with β -termed elements.—The Secretary gave a new construction by the Rev. G. McArthur for Euclid ii. 9, 10; and Mr. James Taylor Dollar proposed for solution a theorem in elementary geometry.

CONTENTS

	PAGE
Vortex Rings. By Prof. Osborne Reynolds, F.R.S.	193
Our Book Shelf:—	
Brezina's "Krystallographische Untersuchungen an homologen und isomeren Reihen"	195
Letters to the Editor:—	
The Remarkable Sunsets.—D. Pidgeon; Hon. F. A. R. Russell; Prof. Lewis Campbell	195
Peripatus.—Prof. H. N. Moseley, F.R.S., and A. Sedgwick	196
A New Rock.—Dr. Karl Pettersen	196
Diffusion of Scientific Memoirs.—W. M. Hicks; Prof. P. G. Tait	196
The "Talisman" Expedition. By Prof. Alphonse Milne-Edwards	197
Music and Science. By Dr. W. H. Stone	198
The Remarkable Sunsets. By Edward Whymper	199
Notes	200
International Polar Observatories. By Robert H. Scott, F.R.S., and Dr. Wild	201
Movements of the Earth, III. By J. Norman Lockyer, F.R.S. (<i>With Illustrations</i>)	201
Probable Nature of the Internal Symmetry of Crystals. By William Barlow (<i>With Diagrams</i>)	205
University and Educational Intelligence	207
Societies and Academies	208