

not smooth but produced by a large number of irregular facets, making the curvature quite unfit for optical purposes. In truth it may be fairly taken as established that there is no evidence of any kind to justify us in believing that lenses for optical purposes were known or used before the invention of spectacles."

While studying the evolution of fire-getting it occurred to me that this lens might have been used for obtaining fire from the sun; in other words, as a burning glass. It is well known that when the fires on the ancient altars happened by some accident to go out they had to be renewed by "pure" fire, obtained either by rubbing two sticks together or by concentrating the rays of the sun.

It would be an interesting investigation to see if this lens could be thus used. Of course, in the dull climate of England it might not work so well as in the sunny latitude of Nimroud, but the experiment would be worth trying, and by noting the extent to which the temperature was raised a good guess might be made as to its efficiency.

JOHN PHIN.

Paterson, N.J., U.S.A., December 25, 1912.

### "Primeval Man."

YOUR brief review of "Primeval Man" (NATURE, January 9, p. 512) devotes rather more than half of its space to the flat contradiction of two statements contained in a footnote. Your reviewer writes:—"That there was no connection between the Druids and the megaliths is absolutely unsupported by evidence. The idea is certainly older than the eighteenth century."

It is now commonly held that the Druids were an institution peculiar to the Celts, and there is no reason for tracing their origin to the pre-Celtic inhabitants of our islands. As the first wave of Goidelic or Brythonic invaders cannot have reached Britain much before 600 B.C., a gap of many centuries separates the Druids from the builders of the megalithic structures, which, by common consent, belong mainly to the end of the Neolithic or beginning of the Bronze age.

With regard to the popular notion connecting the Druids with the megaliths, the earliest printed reference appears in the enlarged edition of Camden's "Britannia," 1695. Here seven theories as to the origin of Stonehenge, &c., are cited, and the Druidic theory is quoted as being derived from a MS. paper of Aubrey. It is interesting to note in this connection that there is no instance of the words *druidic*, *druidical*, recorded in the "New English Dictionary" before 1755.

I am able to take a somewhat impartial view of the objections raised by your reviewer, as the footnote in question was written for me by the author of the articles, "Druidism," "Celt," and "Early Ireland," in the "Encyclopædia Britannica."

A. HINGSTON QUIGGIN.

88 Hartington Grove, Cambridge, January 14.

THE origin of the footnote is satisfactorily explained. Sir John Rhys's papers in the Transactions of the British Academy are strongly recommended. For literary information about the British Druids Welsh and Irish sources should be consulted. The material evidence bearing on primeval man, which was omitted from Mrs. Quiggin's book, is the astronomical testimony of the monuments, as interpretative both of Neolithic culture and of the real avocation of the Druid, whose nationality or race should be regarded as a secondary matter. Mrs. Quiggin's Celtic chrono-

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logy should be revised. Mr. Common Consent, *alias* Commonly Held, is very apt to ignore evidence which he cannot quite follow, and what he follows generally is the angle of least resistance. He is very hard on astronomers and Druids—ancient astronomers.

Mediæval Welsh bards speak of bardic prophets as *derwyton*, modern Welsh *derwyddon*, "Druids." The traditional regulations for the erection of a stone circle for bardic purposes are prefaced with the statement that the regulations had been handed down from the time of the Welsh princes—that is, before the subjugation of Wales by Edward I. (see the section, "Voice of Gorsedd," in Welsh and English, in the printed collection called "Iolo MSS.," which may be consulted in most large libraries). Efforts have been made to show that such bardic documents are forgeries, with what motive is not stated. It has been proved, on the other hand, that the "forgers" did not understand their own alleged productions, and that their traducers are still more unaware of the meaning of the architectural principles involved in the traditional account (see NATURE for the last twenty years, and the second edition of Sir Norman Lockyer's "Stonehenge")

JOHN GRIFFITH.

### X-rays and Crystals.

IT is not at all difficult to measure the ionisation produced by the radiation reflected by crystals, as indeed Prof. Barkla has already suggested. Using a sheet of mica and a pencil of a few millimetres diameter, I find it possible to follow with an ionisation chamber the movement of the reflected spot while the mirror is rotated

W. H. BRAGG.

Leeds, January 17

### ANTARCTIC BIOLOGY AND THE ROCKS OF WESTERN WILKES LAND<sup>1</sup>

THE three last publications on the results of the Antarctic expeditions of the *Discovery*, *Scotia* and *Gauss* show that these works are approaching completion. The new contribution to the scientific results of the *Scotia* includes all the botanical reports except that on the phytoplankton, which may prove the most important. Of the ten memoirs in this volume, two deal with localities, Ascension and Gough Islands (lat. 50° S.), which are outside the Antarctic area. Seven of the memoirs are republished from various journals, while that by Mr. and Mrs. Gipp on the marine algæ is a compilation of their three papers with a rediscussion of some of the results. It is a great convenience to have these valuable memoirs collected into one volume; but it is unfortunate that the species founded in them are described in this work as "new species." Much trouble may be thus caused by the annual biological records again cataloguing these species, or by their being subsequently assigned to wrong dates.

<sup>1</sup> "National Antarctic Expedition, 1901-4." Natural History. Vol. vi. "Zoology and Botany." Pp. xvi+9+32+63+plates in text. (London: Printed by Order of the Trustees of the British Museum, and sold by Longmans and Co.; Bernard Quaritch; Dulau and Co., Ltd.; and at the British Museum (Natural History), 1912.) Price 16s.

"Scottish National Antarctic Expedition." Report on the Scientific Results of the Voyage of the S.V. *Scotia* during the years 1902, 1903, and 1904. Under the leadership of Dr. W. S. Bruce. Vol. iii. "Botany." Parts i.-xi. Pp. ix+153+plates in text. (Edinburgh: The Scottish Oceanographical Laboratory; Edinburgh and London: Oliver and Boyd; Glasgow: James MacLehose and Sons, 1912.) Price 23s. 6d.

"Deutsche Südpolar-Expedition, 1901-3." In Auftrag des Reichsanthes Intern. Herausgegeben von Erich von Drygalski. II Band, "Geographie und Geologie." Heft vii. Pp. viii+617-662+2 plates. (Berlin: Georg Reimer, 1912.) Price 7.50 marks (Subscription price 6.20 marks.)