

This makes the number of months in the year thirteen; but it has this advantage over Mr. Pearce's scheme, that not only are the months all of the same length, but that they all begin on the same day of the week, and thus any given day of the month is on the same day of the week in every month.

The seven-day week, which is no doubt descended from the Jewish week, is one of the most widely spread institutions in the world. All Christian and all Mohammedan nations, although they may agree in little else, agree in respecting the week; and it would be impossible to induce many of them to interrupt the continuity of their weeks by excluding one day annually from any week and two days every fourth year, and unless the change were international and all but universal it would only introduce confusion and destroy that identity of the week which now obtains throughout Christendom and Mohammedom.

D. MACKIE.

4 Polmuir Road, Aberdeen, March 28.

#### Helium in the Atmosphere.

RECENT investigations have demonstrated the widespread presence of the inert gases in the crystalline rocks, and the Hon. R. J. Strutt has shown that while the bulk of the gases in granite consists of nitrogen, there is a small but appreciable quantity of argon and helium, the former amounting to from three to four times the latter. On the disintegration of the rocks a portion of these must find their way into the atmosphere. The question arises whether our present atmosphere contains the accumulations of past accessions from the earth's crust, in the same way as the sodium chloride in the sea represents, subject to certain qualifications, the sum of the contributions of the rivers in the past.

It is found, however, that while the air examined in our laboratories contains about 1 per cent. of argon, there are only one or two parts in a million of helium. The small proportion of the latter has given rise to the suggestion that it is escaping from the atmosphere as fast as it enters it. This receives no support from the kinetic theory of gases. Dr. G. H. Bryan calculates (*Phil. Trans.*, A, cxvii., p. 19) that at a temperature of  $127^{\circ}$  C. it would take eighty-four thousand million years to remove a layer 1 centimetre thick of helium from the surface of the earth. In other words, the pressure of the gas which at the beginning of that period was found at the height of a centimetre would at its end, other conditions remaining the same, be found at the surface of the earth.

Dr. Johnstone Stoney, however, supposes that there may be extraordinary molecular velocities, due to collisions and other causes, which result in the loss of helium. Such an hypothesis, however, is quite unnecessary, for, according to the ordinary views as to the constitution of gases, they will not distribute themselves uniformly in the atmosphere, but to a certain extent take up positions according to their relative densities. Mr. J. H. Jeans (*"Dynamical Theory of Gases,"* 1904, p. 316) calculates that if helium forms a millionth part by volume of the air at sea-level, it must amount to more than 2 per cent. at an altitude, which is dependent on temperature. With our increasing knowledge of atmospheric temperature and the distribution of helium in the earth's crust, we ought soon to be in a position to calculate the present amount of free helium, and employ it to obtain an approximate higher limit for the total disintegration of crystalline rocks since the consolidation of the earth's crust.

J. W. EVANS.

#### April Meteors.

MOONLIGHT will prove a serious impediment to observations of the Lyrids in the present year, the more especially as, according to calculations made by the writer, the general maximum of these meteors will take place immediately after full moon. The following are particulars as to when meteor showers at this period may be expected to make their appearance, and the computed intensity of the display in each instance, the results being expressed in Greenwich Mean Time:—

Epoch, April 18. Shower of second order of magnitude;

NO. 2006, VOL. 77]

the maxima precede the epoch, the principal of which occur on April 16, 6h. 25m.; April 16, 14h.; and April 17, 6h. 50m.

Epoch, April 18, 15h. This shower is of the twenty-second order of magnitude, and has its principal maxima on April 16, 7h. 45m.; April 16, 9h. 40m.; and April 17, 13h. This minor shower has also two secondary maxima, occurring on April 17, 23h., and April 18, 3h., respectively.

Epoch, April 21. This shower is of the twenty-first order of magnitude, its principal maxima, which precede the epoch, occurring on April 19, 16h. 35m.; April 19, 19h. 20m.; and April 20, 17h.

Towards the end of April there is another meteor shower of the ninth order of magnitude, the epoch of which occurs on April 29, 6h., and the principal maxima of which fall on April 27, 16h.; April 27, 19h. 30m.; and April 27, 21h.

As a general rule, the intensity of a meteoric display is inversely as its estimated order of magnitude; hence meteors may be expected to be most abundant on the night of April 16, as the two strongest maxima of a shower of the second order of magnitude occur on this date, besides two maxima of another shower which is partly superimposed on the former. Lyrids will probably be most in evidence on the morning of April 17.

Dublin.

JOHN R. HENRY.

#### Coloration of Glass and Quartz by Radium.

ON many occasions attention has been directed to the coloration of glass and quartz by the rays from radium. The coloration of glass is generally connected with the presence of manganese or lead, and I venture to suggest that in quartz too the darkening arises from the association of some foreign substance with the silica.

A small plate of quartz crystal was exposed to radium for three weeks, and became, not only irregularly violet at one place, but also showed two sharply defined parallel lines strongly coloured, with the space between them scarcely affected. On the other hand, a quantity of powdered chemically pure silica acquired no colour after the same exposure. It may also be pointed out that pure boric acid, fused to a transparent plate and protected from moisture, was unaffected by radium even after two months' continuous exposure to the rays.

Borax, however, will show a slight action after three weeks, and both these substances afford, when incorporated with a small quantity of pure sodium silicate, a good basis for the production of experimental glasses to test the action of radium when other constituents, such as lead, iron, &c., are added either singly or together.

It may be found that the coloration by radium will serve as a test for the purity of the silica used in making vessels for certain classes of chemical research, so that, apart from its physical interest, the matter seems worth following up.

CHARLES E. S. PHILLIPS.

Castle House, Shooters Hill, Kent, April 2.

#### An Early Notice of Neolithic Implements.

THE subjoined quotation must, I think, be among the earliest specific descriptions of a Neolithic implement found in this country.

Newbery's *"A Compendious History of the World"* (vol. i., London, 1768, pp. 11-12):—"That the earth has been amazingly altered since its first formation is evident from the spoils of the sea being daily discovered even in the midst of rocks and the tops of mountains: to which let me add that the skeletons, horns, &c., of the animals of one country, have been dug out of the bogs and mines of another, even at an immense distance, and where such animals are not now to be found: even stones have been discovered at a great distance in the earth, which bore evident marks of art about them; and some time since I had two taken out of a peat pit near Newbury in Berks, which were large, ground to an edge in the form of an ax, and so perfect that wood might be cut with them."

JOHN L. MYRES.

The University of Liverpool, March 23.