a "cubo," as this wasp is called in Ecuador, had my whole hand and forearm considerably swollen for a couple of days.

A common spot chosen by the cubo for his nest is high up on a palm stem at the river-side, and natives are well aware of the danger of uttering any loud cry when in its proximity. I have frequently experimented by giving a shrill whistle—his particular abhorrence—from a safe distance, with the invariable result of all the wasps flying in confusion from the nest in manifest anger.

It is said that there is a wasp in New Granada in whose proximity one dare not speak, but for this I cannot vouch, and very possibly this may be an exaggerated account of the cubo. It would certainly be a dangerous experiment to speak loud when very close to a cubo's nest, even on the Guayas, and a shrill voice would be sure to irritate the wasp. ALFRED SIMSON

4, Fairlie Place, Calcutta, August 20

Circulating Decimals

IN NATURE, vol. xviii. p. 291, is an extract from a letter by Mr. R. Chartres, in which is given a remarkable property of certain circulating decimals. Mr. Chartres only refers to fractions of the form $\frac{1}{nr-1}$ (where $r = 10$); but I have since found that a somewhat similar property belongs to other fractions when expressed as circulating decimals.

For instance, $\frac{1}{7} = \dot{1}42857\dot{}$; here we observe that the last figure of the circulator is the same as the denominator of the vulgar fraction; moreover, by multiplying the 7 by 5, we get the next figure, and this by 5, taking in the remainder, gives the third from the end, and so on till we get the whole recurring decimal.

So far this is somewhat similar to Mr. Chartres' discovery, but now observe the curious property in the following fractions:—

$$\frac{1}{7} = \cdot\dot{1}42857\dot{}$$
$$\frac{1}{17} = \cdot\dot{0}5882352941176\dot{4}7\dot{}$$
$$\frac{1}{27} = \cdot\dot{0}3\dot{7}$$
$$\frac{1}{37} = \cdot\dot{0}2\dot{7}$$

In each case the last figure of the circulator is the same as the unit figure of the denominator of the vulgar fraction. Now the multipliers which give the remaining figures are, for the first fraction, 5; for the second, (5 + 7); for the third, (5 + 14); for the fourth, (5 + 21); and generally to convert a vulgar fraction of the form $\frac{1}{nr+7}$ ($r = 10$) to a circulator, we put down the last figure 7 and multiply successively by $7n + 5$.

For fractions of the form $\frac{1}{nr+3}$ the multiplier is $3n + 1$, and the last figure 3.

For fractions of the form $\frac{1}{nr+1}$ the last figure in the circulator is 9, and the multiplier is $9n + 1$.

Of course the last figure must be that one which, multiplied into the unit of the denominator, and the unit of the result being subtracted from 10, leaves a remainder of 1.

These rules added to that of Mr. Chartres include every case of fractions which, when reduced to decimals, circulate.

Littlehampton, Sussex EDMUND P. TOY

Autophyllogeny

WITH reference to the note in NATURE on autophyllogeny in a leaf of *Papaya vulgaris*, I wish to place on record another freak which I have more than once noticed in the Papeea or Papeeta, as we call *Carica papaya* out here. The plant is dioecious, the female being stumpy and her flowers and fruit sessile; the male plant, on the other hand, is tall and graceful, and the flowers depend from long stalks. The freak I have above alluded to *consists in the presence of distinct and well-formed fruit on the male plant*, and I regret I was unable, on both occasions, to secure the anomalous production for examination. R. F. HUTCHINSON, M.D.,

Mussooree, August 19 Surgeon-Major, Bengal Army

The Sea-Serpent Explained

THE letters of Dr. Drew and others remind me of what I witnessed at Sandgate twenty-four years ago. I was staying at a cottage on an elevation which commanded an extensive sea-view. One morning my attention was called to a large, dark, undulating body, which moved rapidly through the sea. As it was some way out from shore, I naturally concluded it to be of enormous length. I lost no time in making inquiries as to the nature of this phenomenon, and was so fortunate as to discover a fisherman who had witnessed it. He told me it was a flight of petrels. But for this I should certainly have believed that I had seen the Great Unknown. I have often seen a similar phenomenon, but nothing nearly so striking as this.

Valentines, Ilford, September 16 C. M. INGLEBY

RECENT PROGRESS OF SELENOGRAPHY

THE most active period in the study of selenography during late years is comprised between two epochs, that of the announcement of a change in the crater *Linné* in the year 1866 by Dr. Schmidt, Director of the Observatory at Athens, and that of the announcement of a new crater north-west of Hyginus, by Dr. Klein, of Cologne, in the year 1877. The years elapsed between the two events above-mentioned have been characterised more or less by the manifestation of considerable interest in lunar studies, of which the projection of a map of the moon 200 inches in diameter, to have been constructed under the auspices of the British Association for the Advancement of Science was the first indication. Of this map, four sections embracing an area of 100 square degrees of lunar latitude and longitude have been published, containing all the formations known in 1866-1868 to exist on this area, each of which is separately catalogued. Three of these sections, with catalogues, were published in the *Reports of the British Association* for 1866 and 1868; the fourth was published by the aid of a private subscription, in 1870. We are not aware that much use has been made of these areas and catalogues in endeavouring to ascertain if the 433 objects chronicled in them retain the characteristics they possessed in the above-mentioned years. It was a part of the duty of the Committee appointed by the Association to receive the reports of volunteer observers who undertook to examine the objects in certain subzones at stated intervals, which resulted in the addition of several new objects to those originally published, but nothing has been effected in this direction since the Committee was not reappointed in 1868.

In February, 1869, a map of the Grey Plain, the *Mare Serenitatis*, was published in the *Astronomical Register* for that month, by Messrs. Joynson and Williams. It contained several new objects not on former maps, and was followed in the course of a few months by a map and monogram of the same region. The map was divided into the British Association areas, and it contained 277 objects, each being distinguished by a British Association symbol; they were briefly described in a table of the areas in which any part of the Mare was found.

The four areas of the British Association map on a scale of 200 inches to the moon's diameter accompanied by a monogram of the formation *Hipparchus* on a scale of 100 inches, with that of the *Mare Serenitatis* form a collection of maps, which, with the descriptions of 710 separate objects embody the conditions of those portions of the moon's surface which were telescopically or photographically examined between 1866 and 1870. As placing in the hands of the student a body of facts especially suitable for future reference, these maps and monograms will furnish most important information on the condition of objects recorded on or in them during the four years above mentioned. It is in the future the real progress of the past is more truly measured.

In the years 1871 and 1872, Reports of a Committee appointed for discussing observations of lunar objects suspected of change, was read before the British Association for the Advancement of Science, the principal results being the discovery of about thirty-six spots and