LETTERS TO THE EDITOR.

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Insectivorous Water-plant from Trinidad.

SPECIMENS of the carnivorous water-plant from the Trinidad Pitch Lake, referred to in the note on p. 230, have been received at Kew from Mr. Hart. It is not, however, as supposed, "a species of Nitella," which is an aquatic cryptogam, but a flowering plant, and a species of Utricularia.

The habits of these plants are fully discussed in Mr. Darwin's "Insectivorous Plants."

W. T. THISELTON-DYER.

Kew, January 5.

The Maximum Number of Double Points on a Surface.

IT is obvious that a surface, like a curve, must have a maximum number of double points; and it is also obvious that all of them may be *conic nodes*, but only a limited number of them can be *binodes*; but so far as I have been able to discover, no formula has been obtained for determining the maximum number. In Hudson's book on "Kummer's Surface," a proof is given that a quartic surface can have as many as sixteen conic nodes, but no general theorem is alluded to. I shall therefore state a formula by means of which the maximum number can be calculated.

Let a surface of degree n and class m have C isolated conic nodes. Let $\bar{\iota}$ and ι be the number of double and stationary tangents possessed by any plane section of a tangent cone the vertex of which is an arbitrary point. Then it is not difficult to show that

$$m = n(n-1)^2 - 2C \qquad (1)$$

$$\iota = 4n(n-1)(n-2) - 6C \qquad (2)$$

$$2\bar{\iota} = \{2C - n(n-1)^2 + 5\}^2 - \{n(n-1)(3n-14) + 25\} \qquad (3)$$

Now ι and $\bar{\iota}$ must be zero or positive integers; also m must be a positive integer which does not fall below a certain limit, and these conditions will in general be satisfied by taking

$$2C - n(n-1)^2 + 5 = \pm k,$$

where k is the least odd integer the square of which is not less than $n(n-1)(3n-14)+25$. The sign of k must be determined from the above mentioned conditions, and should the least value of k fail to satisfy them a greater one must be taken.

A. B. BASSET.

January 2.

Sounding Stones.

MANY hard and compact varieties of rock are sonorous when struck. Flint nodules often possess this property. The purity of the tone appears dependent upon the length, calibre, and homogeneity of the nodule, the best results being obtained from the long and slender forms. At Studland Bay I have collected many of these "musical" flints, and obtained one from a chalk pit near Faversham which can be used as a gong when suspended. This particular specimen is nearly 2 feet in length (it was once longer), and is scarcely as thick as a rolling-pin!

Many years ago I saw a "rock harmonicon" in the museum at Keswick. It was formed of strips of rock (known as "clinkstones") arranged on the principle of the dulcimer, upon which various tunes could be played.

The phonolite of the Wolf Rock, nine miles south of the Land's End, possesses sonorous properties, and Sir Wyville Thomson has described St. Michael's Mount, an island near Fernando Noronha, as being entirely formed of phonolite which "literally rings like a bell" on being struck.

In quarrying the rock from the Whit Bed, at Portland, the workmen profess to be able to judge of the quality of the limestone by the clearness of the metallic ring emitted from the blocks on being struck.

January 5. CECIL CARUS-WILSON.

Heat a Mode of Motion.

THROUGHOUT Swedenborg's "Principia," published in 1733, both heat and light are constantly regarded as ethereal undulations. The definitions of heat as a rotary movement of minute ether particles will be found in part iii., chapter v., No. 21; chapter vii., No. 10; chapter viii., Nos. 8, 9, 10, 16.

The following is from the "Principia," part iii., chapter vii.:—

"Whatever the ether presents to our organs by means of colours, the air presents to us by means of modulations and sounds. Thus Nature is always the same, always similar to herself, both in light, and in sound, in the eye and in the ear; the only difference is that in one she is quicker and more subtle, in the other slower and crasser."

Although this is not an example from the seventeenth century, it anticipates the theories of Rumford and Young as to light and heat by some sixty years.

CHARLES E. BENHAM.

Colchester, December 23, 1905.

The Naming of Colours.

PERHAPS some of your readers would be interested in, and could suggest some explanation of, the following rather fanciful colour term. A light purple, almost a mauve, is called by the Chinese 雪 (süt₀) 青 (Ts'eng), 色 (shik,) "snow green colour." I have asked many educated Chinese for some explanation of the name, but the best I can get is the Chinese are very "fanciful" in the use of colour terms. I may say that the term I have translated "green" is sometimes applied by the Chinese to the colour of the sky.

ALFRED H. CROOK.

Queen's College, Hong Kong, December 2, 1905.

Aurora of November 15.

THE aurora of November 15, 1905, was seen at Szczawnica, in Galicia (Karpathian Mountains), by the meteorological observer Mr. Wojakowski at 9h. p.m. M.E.T.

The day of November 15 and the subsequent night were in Galicia cloudy and rainy. Probably the sky was clear for a while at Szczawnica. The altitude of Szczawnica is 484 metres; longitude, 20° 30′ E. of Greenwich; latitude, 49° 26′ N.

M. P. RUDZKI.

K.K. Sternwarte, Krakau, January 1.

Ascent of Sap in Trees.

WITH reference to an article on the above subject which appeared in your issue of October 26, 1905, the following extract from a paper—which your contributor has doubtless not seen, published nearly ten years ago—will probably interest some of your readers.

FRANK HARRIS.

Maryland, Saundersfoot, December 25, 1905.

EXTRACT FROM *Indian Engineering*, FEBRUARY 8, 1896.

Ascent of Sap in Trees.

Among the various theories which have been advanced to explain the circulation of sap in plants, those dependent on purely mechanical principles are, as has been pointed out, entirely untenable. That hypothesis which relies solely on the osmotic action of the root hairs, though adequate in itself to account for the rise of water to almost any extent, is not compatible with the so-called "negative" pressure observed to exist in the vessels of living timber. The last mentioned among the explanations to which allusion has been made—that which invokes the aid of what may be loosely described as the vital principle—though unobjectionable in itself, unnecessarily complicates