

Wern-y-scadog, Llanfyllin, was described as *P. tumida*, and a *Thamniscus* from the volcanic ash of Middleton Hill, near Welshpool, probably of Bala age, as *T. antiquus*, both from a collection sent by Mr. J. B. Morgan, of Welshpool, to Prof. Lapworth for identification. A list of the species of *Phyllopora*, hitherto described from Lower-Silurian beds, and of both Upper and Lower Silurian forms of *Thamniscus*, was added, and the relations of the various known species to those described in the present paper were discussed at some length.

CORRESPONDENCE.

FULLERS EARTH AND WATER SUPPLY.

SIR,—At Woburn, Beds, the Fullers earth is obtained by digging cylindrical holes or wells, as they are there called, in the Greensand, until this marl is reached. Sometimes there is water, oftener not; but when there is, it is the finest and sweetest in the country, very clear, never failing, but not very abundant. So good is it that those domestic wells deriving their supply from some other source than the Fullers earth, are treated to it, from time to time artificially, by having masses of it placed in them. The cleansing properties of this 'earth,' as applied to blankets, etc., is universally recognized, but I never heard before of its being used for cleansing water supply. I understand, however, that such is the case, the Woburn earth having been sent into a neighbouring county for that purpose; though I have not as yet been able to obtain corroboration of this, nor to find out whether it is put into filter beds with the other material, or in what way it is made use of. A. G. CAMERON.

H.M. GEOLOGICAL SURVEY, BEDFORD.

THE PHENOMENA OF STRAINS, Etc., OBSERVABLE IN OBSIDIAN.

SIR,—In the August number of the Quarterly Journal of the Geological Society, Mr. F. Rutley describes the phenomena of strain in the glass of some obsidians around embedded crystals. I enclose a photograph of similar depolarizing effects in a slide, cut from a specimen of Mexican obsidian given to me some years ago by my friend Mr. J. Backhouse of York, among a number of pieces several of which showed the phenomenon in question.

It is rather remarkable that in the same slide some of the crystals exhibit the luminous brushes as described and figured in the article cited, while others apparently have no effect upon the state of the glass. This is the case round both the crystals of felspar of various kinds, and the black specks, mostly rounded, which I suppose are magnetite.

I determined that the glass is compressed by observing the effects produced by the interposition of different parts of a strip of glass between the slide and the objective when bent by the pressure of the fingers in a horizontal plane. By this means it was possible to so

compensate the effect, that at any point of the luminous brushes darkness could be restored; and this was found to be the case when the stretched part of the glass strip was superposed. On the other hand, either pair of the quadrants could be brightened by placing the length of the glass corresponding with their direction and bringing the *compressed* side into action. The effects are still more marked when a selenite is used, but disappear entirely on inserting a quartz plate until the analyser is somewhat rotated.

In one case I have met with appearances quite the reverse of those described by Rutley in the case of perlitic cracks. One of these surrounds a crystal to the extent of about $\frac{2}{3}$, and *within* this the field is dark, while the line of the crack is fringed with light due to pressure in the glass surrounding the pearl. Connected with this encircling crack, although, owing to the thickness of the section, the connection is not very definitely traceable, is a long straight crack extending both ways from the crystal. At the extreme points of this the brushes reappear, and when the crack is parallel to the principal plane of either of the Nicols prisms, they are quite brilliant. We have here evidently the expression of the rending force which at this point was not able actually to separate the particles of the glass, but only to produce the strain which results in depolarization.

The connection which Mr. Rutley suggests between strain and crystallization is, I think, scarcely available here, as the glass is compressed, and the phenomena seem to me rather to point to a higher coefficient of expansion by heat for the obsidian glass than for felspar and magnetite producing in the former, since it was fitted, so to speak, to the crystal at a high temperature, a strain similar to that of an iron tire shrunk on the woodwork of a wheel. If any data of the expansions of the substances involved are known it would be easy to test this, but I do not know where to find any.

BIRMINGHAM.

THOS. H. WALLER.

 POSIDONOMYA BECHERI.¹

SIR,—I have just seen in your interesting article in the last Number of the GEOLOGICAL MAGAZINE, "On the Discovery of Trilobites in the Culm Shales of Devonshire," a reference (on p. 540) to the occurrence of *Posidonomya Becheri* in the rocks at Budle, Northumberland. Please allow me to point out that this shell was found there by Sir Roderick Murchison and others, many years ago (see p. 291, Siluria, 4th edition), and the late Mr. G. Tate, of Alnwick, has noticed its presence here along with many well-known Carboniferous limestone fossils, *eg. Griffithides, Bellerophon, Unio, Euomphalus, Chonetes, Hardrensis*, etc. (Trans. Ber. Nat. Club. vol. v. p. 73, 1863). I never heard till now that any one regarded these beds as "Tuedian." They are underlain and entirely surrounded by beds of the ordinary Carboniferous Limestone type, and there is no Tuedian within many miles of them. If the *Posidonomya Becheri* is characteristic of genuine Tuedian, why is it not shown to occur

¹ See *ante*, pp. 73-76.