

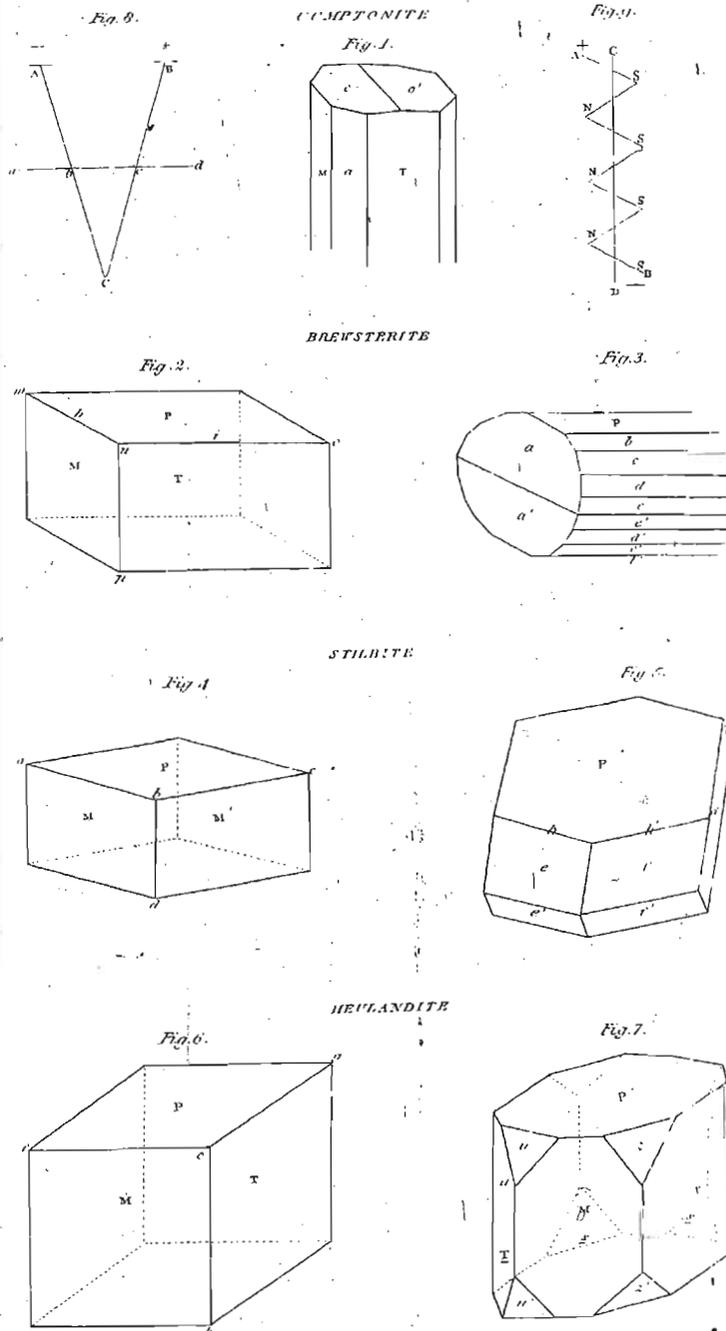
ART. XIX.—On the Comptonite of Vesuvius, the Brewsterite of Scotland, the Stilbite and the Heulandite. By H. J. BROOKE, Esq. F. R. S. Lond. M. G. S. &c. &c. Communicated by the Author.

IN the Edinburgh Philosophical Journal, Vol. IV. p. 131. Dr Brewster has described a new mineral, and given it the name of *Comptonite*. I have found the crystals of this substance cleave parallel to the planes M and T, Plate V. Fig. 1. the cleavage planes meeting at an angle of 90° . This circumstance, combined with the existence of the planes o, o' , which meet at an angle of about $177^\circ 35'$, shews that the primary form is a rectangular prism, the terminal edges of which are, however, very nearly equal. On three crystals of my own, I have found M on a measure $135^\circ 30'$, $135^\circ 30'$, and $135^\circ 45'$; and on the same crystals respectively, a on T measured $134^\circ 30'$, $134^\circ 45'$, $135^\circ 15'$. If $135^\circ 30'$ and $134^\circ 30'$ be taken as the true measurements, the edges of the base terminating the planes M and T, will be to each other respectively very nearly as 56 to 55.

A mineral from Strontian, which has been called in France *Primitive Stilbite*, and was at one time considered to be *Apo-phyllite*, is certainly a distinct substance.

I have therefore given it the name of *Brewsterite*, on account of the many important discoveries connected with crystallography, which have resulted from the experimental researches of Dr Brewster. The primary form of the *Brewsterite* is a *right prism*, Fig. 2. whose bases are *oblique-angled parallelograms*, M on T measuring $93^\circ 40'$, as deduced from the inclination of a on a' , c on c' , and a on c , Fig. 3. I have not been able to cleave the crystals with certainty in any other direction than parallel to the plane P. Yet when an attempt is made to divide them perpendicularly to P, and parallel to T, the new surfaces exhibit traces of cleavage planes.

The inclination of the edge h on the edge i being $93^\circ 40'$, it was necessary to adopt a prism oblique in one direction, as the primary form; and I have preferred placing that prism in the position I have just described, from its agreement with Sulphate of Lime, Enclase, and some other substances belonging to that



class of primary forms, in the facility with which it cleaves parallel to the *terminal* plane, and in the constant brilliancy of the planes developed by this cleavage. Fig. 3. contains all the modifications I have observed on the crystals I have examined, the angles at which some of the planes incline to each other measuring nearly as follows:

P on a ,	93° 30'
b ,	119 30
c ,	114 30
d ,	112
e ,	92
$a - a'$,	172
$a - c$,	} 95
$a' - c$,	

Finding on several crystals the planes c, c' , larger than any of the others, and on one crystal finding those planes alone, I have taken them to fix the ratios of two of the edges of the prism. Supposing them to result from a decrement by one row on the edge no , the edges np to nm would be as 35 to 16. And if the planes a, a' be supposed to result from a decrement by four rows in height on the edge nm of the terminal plane, the ratio of np to no would be as 35 to 10.

On examining the Abbé Haüy's varieties of *Stilbite*, I have found, that those which Werner distinguished by the names of Radiated and Foliated Zeolite, are two distinct species; and I am happy in the opportunity which this discovery has afforded me, of associating the name of Mr Heuland more intimately with mineralogy, by calling one of the substances *Heulandite*, and of thus recording the readiness with which Mr Heuland has on all occasions opened his cabinets to the researches of science, and his very liberal contributions of specimens, whenever they have been required, for the purposes of either chemical or crystallographical examination*. The first of the two species of the Abbé Haüy's *Stilbite*, from which he appears to have de-

* We cannot omit the present opportunity of adding our testimony to the liberality of Mr Heuland, and to his unceasing zeal for the progress of his favourite science. It is fortunate for mineralogy, that the possessor of one of the finest collections in Europe, should be a most generous dispenser of its benefits for the purposes of scientific research.—D. B.

duced his primary form, and for which I shall retain the same name, includes his *dodecaedre* and *epointée* varieties, and is the Radiated Zeolite of Werner.

The secondary planes, however, which meet under the angles which he has given, do not occur on any of the crystals I have seen.

The cleavage he describes parallel to the plane *d*, Fig. 5. is easily effected; but there are also natural joints very apparent, parallel to the edges *h h'*, which induce me to consider the *right rhombic prism*, Fig. 4. as the primary form.

In Fig. 5. the measurement of P on *e* or *f* is $120^{\circ} 30'$

$$\left. \begin{array}{l} e - f \\ e' - f' \end{array} \right\} 114$$

$$\left. \begin{array}{l} e - e' \\ f - f' \end{array} \right\} 119 \ 15$$

These measurements have been taken by the reflective-goniometer on several small crystals, with tolerably bright planes. Supposing them correct, and that the planes *e* and *f* result from a decrement, by one row on the terminal edges of the prism, the inclination of M on M', Fig. 4. is nearly $101^{\circ} 36'$, and the edge *db* is to the edge *ab* or *bc* nearly in the ratio of 26 to 31.

The second species included under *Stilbite* by the Abbé Haüy, and to which I have appropriated the name of *Heulandite*, is the Foliated Zeolite of Werner, and crystallises in the form of a *right prism*, whose bases are *oblique angled parallelograms*, Fig. 6. This species comprehends the *anamorphique* and *octoduodecimale* varieties, on the latter of which figures the Abbé Haüy has placed four planes, which do not appear on any of the crystals I have examined, and which may be said to be incompatible with the primary form of the mineral*.

The planes I allude to, are four of those which he has marked with *u*,—the four which belong to the crystal, I have marked with the same letter in Fig. 7. this being the form under which the mineral most frequently presents itself. It is rather remarkable, that the Abbé should have omitted to give the measure of his plane T on the two adjacent planes *s*, or the measure of *z* on the two adjacent planes *s*; for, although the

* That which has been called Red Stilbite from Dumbarton, is the Heulandite.

differences do not exceed 2° , even those might have shewn that the primary form was not that which he had supposed. It is however possible, that he might not have measured these planes. To enable the reader to compare the Abbé Haüy's figures with mine, I have added on three of the planes of Fig. 7. in small letters, (scored under thus, *s*, T), the letters he has used to designate those planes. The measurements on the natural planes of this substance frequently disagree on large crystals; those on which I have most relied, have been taken on small crystals with the reflective-goniometer, and are as follows:

<i>z</i> on P,	$112^{\circ} 15'$
M,	$146 \ 30$
T,	148
M — <i>a</i> ,	114
T — <i>a'</i> ,	116
M — T,	130
<i>a</i> — <i>u</i> ,	$129 \ 40$

From these measurements may be deduced the ratios of the edges *cf*, *ch*, *cg* of the primary form, which are nearly as the numbers 160, 161, 162. These ratios suppose the planes *a* and *z* to result from decrements by one row on the edge and angle of the primary form which they replace.

The figures are drawn merely as diagrams, to render the descriptions intelligible, and with little regard to accuracy of form*.

ART. XX.—*Observations on the Impregnation of Wood with Sea-Water, and on the Fogs of the Polar Seas* †. By WILLIAM SCORESBY, Esq. F. R. S. E. M. W. S. &c.

I. Impregnation of Wood with Sea-Water.

IT has been my privilege to make a number of experiments on the effect of enormous pressure on wood sent to great depths

* Since I received the above paper from Mr Brooke, I have examined the Radiated Zeolite, and find it to differ by the most palpable optical characters from the Foliated Zeolite which I had examined in 1817. See *Phil. Trans.* 1818, p. 230. —D. B.

† Read before the Wernerian Natural History Society, 17th Nov. 1821.