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"Nec araneorum sane textus ideo melior quia ex se fila gignunt, nec noster vilior quia ex alienis libamus ut apes." *JUR. LIRS. POFIT. lib. i. cap. 1. Not.*

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XIX. *A Description of Matlockite, a new Oxychloride of Lead.*
By R. P. GRIG, Jun., Esq.*

MR. WRIGHT of Liverpool has recently obtained from the old heaps of the level mine at Cromford, near Matlock, a small number of specimens of the murio-carbonate of lead, or phosgenite of Haidinger; and he has also found a few specimens of another ore of lead, differing in appearance from any of the known salts of that metal.

At my request this mineral has been examined by Dr. Robert Angus Smith of Manchester, and his analysis of it has afforded the following results:—

Chloride of lead	55·177
Oxide of lead	44·300
Moisture	·072
	<hr/>
	99·549

The proportions by theory would be—

Chloride of lead	55·46
Oxide of lead	44·53
	<hr/>
	99·99

This gives a definite chemical composition of 1 atom of chloride of lead combined with 1 atom of oxide of lead; differing in this respect from Mendipite, in which the proportion of chloride to that of oxide is as 1 to 2.

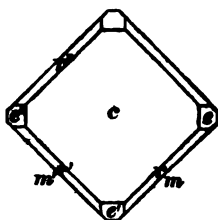
The specific gravity of Matlockite is 7·21, and its hardness 2·5 to 3. Colour yellowish, with sometimes a slight greenish tinge; its lustre is adamantine, and occasionally pearly, and it is transparent and translucent. It cleaves, but not readily, parallel to P. Its fracture is uneven and slightly conchoidal. It decrepitates in the flame of the blowpipe, but with care is reduced to a grayish-yellow globule.

It occurs in tabular crystals, generally thin and superimposed on each other, and occasionally slightly curved; but my friend Mr. W. G. Lettsom has a perfect transparent crystal an inch square and an eighth of an inch thick.

The primitive form is a right square prism; and the following figure, drawn by Professor Miller of Cambridge, who has also corrected the measured angles, represents all the modifications hitherto observed:—

* Communicated by the Author.

$mc = 90$
 $mm' = 90$
 $ec = 119\ 34$
 $ee'' = 59\ 8$
 $er = 138\ 59$
 $ed = 104\ 6$
 $rc = 111\ 50$
 $rr'' = 43\ 41$
 $rr' = 97\ 58$



Professor Miller adds, "A slice parallel to the plane c , 0.0204 inch thick, being placed in a polarizing instrument having the planes of polarization of the polarizer and analyser at right angles to each other, the angular radius of the first blue ring in air was found to be $22^\circ 81'$."

Dr. Smith has also analysed a crystal of the urio-carbonate of lead, and has obtained—

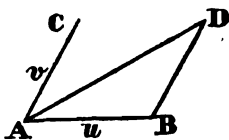
Chloride of lead . . .	51.784
Carbonate of lead . . .	48.215
	99.999

corresponding to 1 atom of chloride combined with 1 atom of carbonate, which agrees with the proportions given by Klaproth and Berzelius.

Norcliffe Hall, near Wilmslow, Cheshire.

XX. *On Symbolical Mechanics*. By the Rev. M. O'BRIEN, M.A., Professor of Natural Philosophy and Astronomy, King's College, London, late Fellow of Caius College, Cambridge*.

IN the previous paper I pointed out the distinction between *geometrical* and *mechanical* addition; the former consisting in the *successive* tracing of lines, the latter in the *simultaneous* action of forces. When + is used in its geometrical sense, $u + v$, or $AB + AC$, denotes the change of position produced in a tracing point by causing it to describe the lines AB and BD in immediate succession, BD being parallel and equal to AC ; but when + has its mechanical signification, $U + V$ denotes the mechanical effect produced by the simultaneous action of the two forces represented by U and V . In this way it is that $AB + AC$ denotes the line AD , while $U + V$ denotes the resultant of U and V .



* Communicated by the Author.