XXVIII. On the relative hardness of road materials

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oxalic acid and three equivalents of water. If then exposed to a damp air, they increase slightly in weight by absorbing water hygrometrically, and its extent varies with the humidity of the atmosphere. In dry air at 70° Fahr. the crystals lose some of their water of crystallization, and effloresce on the surface. The efflorescing temperature is thus very little above the ordinary heat of summer.

XXVIII. On the relative Hardness of Road Materials. By
B. BEVAN, Esq.

To the Editors of the *Philosophical Magazine and Annals*.

Gentlemen,

I AM not aware of any published experiments on the relative hardness of road materials; and having for my own use examined a considerable variety of substances, as to their power of withstanding the percussion of a given weight, falling a few inches, I take the liberty of sending the results for your Magazine, if you think them sufficiently interesting. They were chiefly made in 1825, and the weight used was of cast-iron, falling upon the several specimens broken to the ordinary size adopted in modern roads, resting upon stone, or upon iron.

If the weather to which these materials were exposed had no effect towards their destruction, the table hereby given would nearly express their relative value for the purpose of supporting the wear of a road. Such of the articles, therefore, which resist the action of frost and atmospheric moisture, and have the highest numbers, will be found the most valuable.

Remaining, yours truly, B. BEVAN.

Mount Sorrel sienite	100
White marble	37, 31
Chert pebbles, much used in Middlesex* 34, 27, 52, 56, 55, 65	
Quartz pebble in Bedfordshire gravel.....	70
Ferruginous sandstone of Bedfordshire	20, 42
Hurlock, from lower chalk.....	10
Chalk.....	3
Granite, Scotch	110
Flint, yellow	33, 26
Greenstone or basalt, Quittlehill, near Coventry...	110
Sandstone, soft	13, 6
Tile fragment	20
Gritstone, near Brixworth, Northamptonshire ...	48, 60
Limestone, near Bradwell, Bucks.	5

* These pebbles, we believe, are merely rolled chalk-flints, altered in colour by the protoxide of iron contained in them having been converted into peroxide.—EDIT.

Dry

Dry clay	12
Flint, black	11, 30
Portland stone, hard	14
Quartz, white	56
Blue pebble, like Rowley rag	105, 110
Coarse limestone, near Stilton, Huntingdonshire	60
Gritstone on road, near Leeds	100, 115
Yorkshire paving-stone	20
Ketton, hard	20
Tetterhoe	4
Chert [?] from hills in Devonshire and Cornwall	57
Gray wether of Hertfordshire and Wiltshire	18
Grit of upper bed, Collyweston, near Stamford, Lincolnshire	40
Second bed, do.	100
Slate at do.	50
Stockton limestone, Warwickshire, (lias)	45
Newbold-on-Avon	do. 36
Limestone of Stoke Cruerne, Northamptonshire	35

The steady pressure, without percussion, required to crush
a piece of the marble weighing $\frac{1}{4}$ oz. = 600 lbs.

To crush the gray flint of 1.2 oz. weight = 2000 lbs.

To crush rolled white quartz pebble 2 oz. = 3400 lbs.

B. B.

P.S. To-day we have summer weather. At half-past three
this morning, in clear starlight, the exposed thermometer
was at ... 48°

At half-past seven in the morning..... 49°

At half-past one in the day 60°

At half-past five this afternoon 54°

The larks and other spring birds are singing; and the
yellow butterfly is in full action. B. B.

Leighton Bussard, Feb. 10th, 1831.

XXIX. *Observations on a Species of Muscae Volitantes apparently existing in the Aqueous Humour of the Eye.* By
THOMAS BATCHELOR, Esq.*

AMONG the numerous defects and diseases to which the
component parts of the eye are subject, accidental cir-
cumstances have led me to investigate several, which appear
to have their seat in the humours; and which, as far as I can
learn by inquiries among medical men, are not very accurately
understood. That disorder of vision, to which I shall chiefly

* Communicated by the Author.