

over the States in early days, but has since been supplanted, as in England, by the brown rat (*M. decumanus*). Forty years ago the black rat was the only rat in South-west Ohio. About thirty years ago the brown rat drove him out. Some years later the same occurred in Illinois. I have been informed by one of my students living in Minnesota, that neither rat is known in and about the town of St. Cloud in that state, only one having ever been seen there, and that was killed on landing from a steamer. I have seen it stated that the black rat is still to be found in some localities in England, among them the White-chapel Docks.

E. W. CLAYPOLE

Antioch College, Ohio, April 7

#### Did Flowers Exist during the Carboniferous Epoch?

I CANNOT accept Mr. McLachlan's reference of the interesting *Breyeria borinensis* to the Ephemeroidea, even though he has "examined the fossil," and "has no doubt" about it. The photograph which I possess is so beautifully sharp that it brings out the minutest details, and a careful examination and comparison of it with specimens and drawings leads me to the conclusion, that in the general character of the wing-neruation it is strictly lepidopterous and of the Bombycine type, having the costal, subcostal, and median nervures, with their branches and bifurcations, arranged precisely as in that group, but differing in the much greater length of the wing and the increased number of the branches of the subcostal vein—seven instead of four. In some of the Chalcosiidae, however, there are often six branches to this vein, but crowded together and sometimes anastomosing, owing to the much shorter apical portion of the wing. In this family also we often have an intermediate false vein, which is distinctly visible in the fossil. Until, therefore, I am referred to some group of insects with which it more nearly agrees, I must believe it to be an ancestral moth, even though, according to Prof. Haeckel and Mr. Scudder, moths ought not to have existed in the carboniferous epoch.

After a careful comparison of the photograph with specimens and figures of Ephemeroidea, I can see *no resemblance whatever* to the neuration of the family with which Mr. McLachlan so confidently associates it; while the "dense transverse reticulation" to which he refers seems to me to be merely due to crumpling of the membrane, and certainly bears no close resemblance to the strong reticulation of the veining of the Ephemeroidea, and it is, moreover, only visible at all at the base of the wing. The general form of the wing and arrangement of the veins are, however, so different, as, to me, to be conclusive against this view.

ALFRED R. WALLACE

#### Blue Flame from Common Salt

At the present time any spectroscopic observations of coloured flames are peculiarly interesting, and I am glad to see the origin of the blue or violet flame produced by common salt and other chlorides again discussed in your pages.

In the letter of Mr. Percy Smith (NATURE, vol. xix. p. 483), he considers the only feasible explanation to be "that it is due simply to hydrochloric acid," but he gives no proof, and admits that a spark between carbon points in a bottle of this gas does not give the violet bands. In a short paper on the subject in the *Philosophical Magazine* of December, 1862, I considered "this supposition is negated by the fact that anhydrous chloride of copper emits these rays equally whether it be placed in a flame of hydrogen or of pure bisulphide of carbon." Neither does this characteristic flame seem due to any carbon compound, inasmuch as several chlorides will give it in a hydrogen flame. I also found that "a stream of chlorine or hydrochloric acid passed into a flame never gives the violet light, nor does Dutch liquid, muriatic ether, or chloroform mixed with alcohol and burnt in a spirit lamp," though chloride of platinum or gold give a flash of it at that temperature.

Would Mr. Smith favour us with any details of his experiments which may support his conclusion?

17, Pembridge Square, April 10

J. H. GLADSTONE

#### Cape Diamonds

At the Croydon County Court a lady sought to recover 36*l.* 15*s.* paid for a ring, the stone in which had been represented

to be a diamond, and which was indeed admitted to be a Cape diamond.

Judgment was given for the plaintiff, because several diamond dealers gave evidence which, the judge stated, clearly showed that what were described as "Cape diamonds" were not at all to be regarded as ordinary diamonds, and the receipt showed that the ring was sold as a diamond ring. The "several diamond dealers" stated that so-called Cape diamonds were comparatively valueless and lacked the essential qualities of the Brazilian stones, viz., lustre, hardness, and colour.

Now all this is beside the question, which was not as to the value of Cape diamonds, nor yet what they lacked of the qualities of the Brazilian stone, but simply whether this stone was a diamond or not, not even whether it was or was not an ordinary diamond, and I am surprised that any judge could be thus led away from the legal point.

I see that notice of appeal has been given, and it is to be hoped for the credit of elementary science that the court above will require some scientific evidence, such as specific gravity or chemical composition, about Cape diamonds. If, for instance, it can be shown that they are a form of carbon, the point is settled.

It would be just as absurd for a person to object to Derby coal as not coal because it lacked the good qualities of Wallsend. The ring was sold as a diamond ring; the question is: Is the stone a diamond?

I have no personal interest whatever in the matter. I know nothing of the case except as it appears in the report. I possess no diamonds, not even a "Cape"; but I am interested in seeing justice administered with some regard to the scientific knowledge of the day.

B. G. JENKINS

April 14

#### Sense of Temperature

YOUR correspondent J. T. B. asks for further instances of the cultivation of the sense of temperature. None can be more striking than that of the caste of egg-hatchers in Egypt, who determine the temperature in their ovens entirely without the aid of instruments, and maintain it at 100° to 103° Fahr. during the requisite three weeks. How successful they are is shown by the official return for 1831, given by Lane ("Modern Egyptians," London, 1842, vol. 2, p. 5, *et seq.*) from whom I take these particulars. Out of a total of 26,204,500 eggs artificially incubated, 17,418,973 were successfully hatched.

April 19

ALFRED H. HUTH

#### Tides at Chepstow

THE highest tides in the Wye and in the Severn for the present year were on Tuesday, April 8. On that day, up the Wye, at Llandogo, the tidal rise was 13 feet; at Tintern Abbey, 21 feet 5 inches; at Chepstow Railway Bridge, 44 feet. Up the Severn, at Newnham, the tidal rise was 20 feet; at Portske Witt, 46 feet 6 inches; at Cardiff, 44 feet; at Clevedon Pier, 52 feet.

Reference to Cox's "Historical Tour in Monmouthshire," 4th Edition, 1801, p. 358, containing his own soundings at high tide, on September 4, proves that there has been no perceptible change in the depth of the Wye at high tide this century.

The Severn has been confined within narrower limits by the South Wales Railway embankment, on the Monmouthshire side, since 1850, and by Lord Fitzhardinge's breast-works on the Gloucestershire side, from about same date, but the height of the tide and the depth of the river have not been sensibly affected by these slight alterations. One fact further may be worth mention, however: a gun-boat or armed sloop, commanded by Capt. White, came up the "Pill," below St. Pierre, in 1827, on a surveying expedition, remained at anchor some days, and re-entered the Severn without difficulty, piloted by W. Wheeler, a thing that would now be impossible on account of the embankments. The Pill is a mere creek—the "anchorage," dry ground.

JOHN YEATS

#### OUR ASTRONOMICAL COLUMN

BRORSEN'S COMET.—The following ephemeris of this comet for May is deduced from Dr. Schulze's elements, with the time of perihelion passage corrected so as to accord better with the observations in March at Florence and Kremsmunster. The heliocentric co-ordinates, referred to apparent equinox of May 1, for combination