

need of most of these small museums is an adequate and settled annual income sufficient to defray the cost of intelligent management. Capital sums for building, fittings, &c., would flow in, and donations of good local collections would often be made, if the fear of "want of permanence" could be allayed. It is this which is the difficulty in the management of local museums in the vast majority of cases, and a moderate grant of "technical instruction" funds in a county would often give far better results, educationally considered, than many of the objects to which this money is now applied.

The matter is by no means political or controversial—such grants would benefit many deserving institutions; and I hope that all well-wishers of museums will use their influence to get such a clause as that above indicated inserted in the Bill when before Committee. I commend the subject to the Museums Association and to the Secretaries of local scientific societies as one in which their energies would be most usefully exercised.

C.

A Bright Meteor.

WE had the good fortune to witness a splendid meteor here on Sunday evening, the 12th of this month. The sky was perfectly clear, the hour 8 p.m. The lady with whom I was walking, by an exclamation called my attention to it, so that I did not see it on its first appearance, but it must have started from the neighbourhood of α Draconis; it then pursued a south-easterly course, passing nearly parallel to ζ and η Ursæ Majoris and α Bötis or Arcturus, and disappearing at last behind a hill to the east. We did not, therefore, see its termination; but I hear from others who did, that there was no explosion. It must have taken several seconds in its flight, as there was time for my companion to make several remarks. Its size was very considerable, and its light intermittent. Three or four times it seemed as if about to be extinguished, but again blazed forth; the colour was a fine yellow, changing to crimson; a train of sparks followed it of about 5° in length. The whole path traversed could not have been less than 50°. In the evening twilight not many stars were visible, so that I was unable to determine its exact course as accurately as I could have wished.

J. D. LA TOUCHE.

Stokesay Vicarage, Craven Arms, Shropshire, April 14.

IT may be of interest to record the appearance of a fine meteor, the finest I remember to have seen, on the evening of Sunday, April 12, about 8.6 p.m. I was standing in a field in the parish of Mathon, on the extreme western border of Worcestershire, when a friend who was with me drew my attention to it. The meteor was then about 20° E. of N., and roughly half-way between horizon and zenith. It passed downwards and eastwards, very slowly as it seemed to us, till it reached a spot about 30° N. of E., and perhaps 20° above the horizon, when it disappeared. Its course was right underneath the Bear, which, lying east of the pole-star, was just becoming visible at the time. The time during which we watched the meteor I should estimate at from 10 to 15 seconds. The meteor consisted of a bright head appearing many times as large as Jupiter, and a train like a rocket's, but much shorter in proportion. The night, in the intervals of fierce north-westerly squalls, was exceptionally fine and clear.

West Malvern, April 16.

A. G. TANSLEY.

A Daylight Meteor.

AT 7.25 a.m., April 18, a meteor was observed by an inmate of my house. The sun was shining clearly in an almost unclouded sky when, in looking up, three bright stars were seen in rapid succession shooting over the trees in a northerly direction. The person who made the observation was much excited with the sight, never having witnessed fire-balls of such brightness and rapidity before.

JAMES SHAW.

Tynron, Dumfriesshire.

"Rana esculenta" in Kincardineshire.

WHEN on a brief visit to Kincardineshire last month, I was surprised to find *R. esculenta* in considerable numbers at a few places which I visited. I found the frogs in pools beside the Bervie, and also in places several miles away. One of these was a small isolated bog. Mr. George Sim, of Aberdeen, who is well acquainted with the fauna of Kincardineshire, was unaware of the existence of this frog in the county until I called his attention

to it. In 1837 and 1842 large numbers of these animals were introduced into England, but I have not heard of a similar introduction into Scotland. It does not seem probable that the frog should itself have migrated so far north. When a thorough examination of the district has been made, it may be found that the animal is widely distributed.

PHILIP J. WHITE.

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THE RÖNTGEN RAYS.

THE investigations of M. Henri Becquerel on the radiation emitted by certain salts of uranium have shown the existence of a kind of radiation intermediate in its properties between light and the Röntgen rays. These investigations are exceedingly interesting on account of the differences as well as the analogies they disclose between the uranium radiation and the Röntgen rays. M. Becquerel has shown that the radiation from the double sulphate of uranyle and potassium is analogous to Röntgen rays, inasmuch as it can affect a photographic plate after penetrating substances such as aluminium, copper, wood, &c., which are opaque to ordinary light; it also resembles these rays in being able to discharge an electrified body, whether the charge be positive or negative. On the other hand, it differs from Röntgen rays and resembles ordinary light, inasmuch as it can be refracted and polarised. It is also much more easily reflected than Röntgen rays. The radiation from the uranium salts is thus intermediate in properties between ordinary light and Röntgen rays; and as there can be no question but that this radiation consists of transverse vibrations, inasmuch as it can be polarised, it affords strong presumptive evidence that the Röntgen rays are also due to transverse vibrations.

The persistence of the radiation from the potassium uranyle sulphate is very remarkable. M. Becquerel found that crystals which had been kept in the dark for 160 hours continued to radiate vigorously. This radiation is absorbed almost equally by aluminium and copper, so that it does not show the same dependence upon the atomic weight of the absorbing medium as that of the Röntgen rays; on the other hand, the radiation resembles Röntgen rays in not being homogeneous.

With respect to direct evidence of the Röntgen rays being due to transverse vibrations, such as would be afforded by a difference between the absorption by two plates of tourmaline (1) with their axes parallel, (2) with their axes crossed, the results are somewhat conflicting. On the one hand, Prince Galitzine and M. de Karnojitsky get a greater absorption through two plates of tourmaline when their axes are crossed than when they are parallel; while, on the other hand, M. H. Becquerel, M. Sagnac, and the writer get no appreciable difference between the two cases. It is just possible that as tourmaline is a mineral which varies greatly in chemical composition, those varieties which contain abnormal quantities of the heavier metals may show this effect, whilst in other specimens it may be too small to be appreciable.

A considerable number of experiments have been made to find the part of the tube where the Röntgen rays originate. Perrin, using pin-hole photography, came to the conclusion that they arise at the places where the kathode rays strike against a solid obstacle. Rowland, Carmichael and Briggs, on the other hand, using a very highly exhausted tube with the terminals only one millimetre apart, located the origin of these rays at the extremity of the *anode*. Prince Galitzine and M. de Karnojitsky place the origin inside the tube some millimetres behind the glass. The writer, with the assistance of Mr. McClelland, investigated this point by measuring the rate at which electricity leaks through an air space of fixed length at different distances from the bulb; the Röntgen rays passing through a small hole in a thick plate of metal. The rates of leak were found to vary inversely as the square of the distance from a point, but