

such as I make them roughly, do not convince me that the argument is without force. My chief criticism on the equation has two branches:—1. Mr. Bashforth has nowhere proved that he is entitled to use the  $k$  belonging to the mean velocity over the arc. 2. Granting that he may use that  $k$ , we have then to consider whether he has got  $v_s$  and  $k$  to accord. For my part, I do not feel the degree of certainty which Mr. Bashforth expresses about this, especially if the work is carried over a considerable arc. I will grant that his result comes near the truth, but assuredly he cannot be said to have determined  $v_s$  accurately, as he affirms.

I cannot help thinking that there is no real difference between Mr. Bashforth and myself, for all that I have said against the equation (a) can be said in another form against the method that I prefer, and I willingly indorse the statement in the last paragraph but one of his letter. I may be allowed to add that all methods hitherto proposed of calculating shot ranges seem to me too difficult for common use, and I believe what would really be a boon to the artilleryman is a book of trajectories drawn to scale. This might be accomplished very well by Mr. Bashforth's tables and methods in the hands of some one competent to use them, the simpler methods, as I think them, introduced by me, being also of some service. I trust this will be done when the resistance to shot moving with low velocities has been ascertained, as I hear it is to be, by a series of experiments under Mr. Bashforth's superintendence.

Allow me in conclusion to express my regret that I should seem to have been reviewing in a hostile spirit any part of the work done by Mr. Bashforth at Woolwich. I will only assure him that nothing could have been further from my thoughts than to do so. W. D. NIVEN

Trinity College, Cambridge, March 30

#### The Daylight Meteor of March 25

A CORRESPONDENT in NATURE described the falling of a daylight meteor on Monday, March 25. I have received information respecting this meteor from five persons who witnessed its fall.

Mr. McIntyre, who saw it from near Dunston-on-Tyne; Mr. Wood, banker, who saw it whilst leaving his residence at Benton, near Newcastle-on-Tyne; Mrs. Hopper, from Gosforth, one mile north of Newcastle; Mrs. Lupton, who saw it from a railway carriage at Brampton, near Carlisle; and Mr. W. Clarke, of Newburn, who saw it at Wallbottle, four miles west of Newcastle. All these observers agree in the following particulars:—1. That the meteor was visible at 10.20. 2. That it was very luminous with a white light slightly coloured. 3. That it fell at a slight inclination from E. to N., and reached the horizon at or near the north point. 4. That the weather was clear and the sun shone brightly at the time the meteor was visible. T. P. BARKAS

26, Archbold Terrace, Newcastle-on-Tyne

#### Meteor

ON the night of Tuesday, April 2, at about 7.55 o'clock, I was standing with two companions, facing the north, when we were surprised to observe the ground before us suddenly lighted up, and our three shadows sharply defined upon it. One of my friends exclaimed, "Why, there's the moon come out!" We turned round and beheld a wonderfully brilliant meteor descending almost perpendicularly from about 5° east of Betelgeux, in Orion, towards the most eastern of the three stars in the belt. Its course was slightly zig-zag, its colour yellow or orange, its apparent size about half the diameter of the full moon. It vanished noiselessly before reaching the belt, and left no visible remains. When we first saw it there appeared to be a short trail of light behind it. About three minutes after its disappearance a rumbling sound was heard like distant thunder, from the same direction. Whether this was connected with the meteor I cannot tell. If so it would indicate a distance of about forty miles, and we ought to hear of this meteor from the neighbourhood of Warwick. F. T. MOTT

Birstal Hill, Leicester

[The same meteor was seen by several *Times* correspondents. It made its appearance in Ursa Major, and after remaining stationary for a second or two between Orion's Belt and Sirius, fell at a comparatively slow rate and in a direct line to the horizon. It was pear-like in shape, seemed three or four times larger than Jupiter, and was intensely bright. Its colour changed from a

silvery white to a pale red as it approached the horizon, where it disappeared behind a cloud, leaving a long track of light behind it.]

#### To Entomologists

AS I have undertaken the section "Arthropoda" for the "*Jahresbericht für Anatomie und Physiologie*," of Hoffmann and Schwalbe," and find some difficulty in obtaining English scientific journals (specially the entomological ones) here in Naples, will you permit me through your columns to request such of your readers as may have published papers on the *anatomy, ontogeny, and phylogeny*, of the *Hexapoda, Myriapoda, Arachnoidea, Protracheata, Poecilopoda*, and *Crustacea* in 1877, or intend to do so in 1878 and the following years, to be kind enough to forward me a copy of the *en*, or at least to inform me of the fact? PAUL MAYER

Naples, Stazione Zoologica, March 31

#### GEOGRAPHICAL NOTES

ROYAL GEOGRAPHICAL SOCIETY MEDALS.—The Founder's Medal for 1878, of the Royal Geographical Society, has been awarded to Baron F. von Richthofen for his extensive travels and scientific explorations in China; also for his great work now in course of publication, in which the materials accumulated during his long journeys are elaborated with remarkable lucidity and completeness. The Patron's Medal has been given to Capt. Henry Trotter, R.E., for his services to geography, in having conducted the survey operations of the late Mission to Eastern Turkistan, under Sir Douglas Forsyth, which resulted in the connection of the Trigonometrical Survey of India with the Russian Surveys from Siberia, and for having further greatly improved the map of Central Asia. Mr. Stanley, being already a medallist, is disqualified from receiving a similar honour, but he has been elected an honorary corresponding member, and is to receive the thanks of the Council for his discoveries.

AFRICA.—With a view to facilitating the progress of the London Missionary Society's contemplated expedition from the East Coast of Africa to Lake Tanganyika, the Rev. Roger Price, who had had long experience of roads and waggons in South Africa, was despatched to Zanzibar in 1876, to make investigations respecting a new route and new mode of travelling into the interior. He made the experiment of using bullocks and waggons in the place of *pagazi*, and with so much success that it was resolved that the expedition should adopt that mode of conveyance for themselves and their goods, and a flourishing account of the new scheme was given before the Royal Geographical Society on February 26, 1877. Before the expedition arrived at Zanzibar in the summer of last year, Mr. Mackay, an agent of the Church Missionary Society, was reported to have cleared a road nearly, if not quite, as far as Mpwapwa, and it was supposed that the expedition would reach the Lake with great ease. Their hopes, however, have been grievously disappointed. The road has turned out to be no road at all, and most of the oxen have died from the effects of the climate. Mr. Price returned to England some little time back, convinced, we believe, of the present impracticability of his bullock-wagon scheme, and sad to relate, it has been found necessary to revert to the old *pagazi* system, the curse of African travel. By latest accounts the expedition had formed a camp at Kirusa, in Usugara, on the edge of the high plateau, and about forty miles east of Mpwapwa, and there they intend to remain till after the rainy season.—Lieut. J. B. Wathier has been appointed to join the Belgian expedition at Zanzibar, which recently lost two of its members, MM. Crespel and Maes. He has visited Dr. Nachtigall at Berlin, to obtain the advice of the experienced explorer, and left Brindisi for Zanzibar on the 5th inst. Dr. Nachtigall himself, as leader of the German expedition, is to start from St. Paul de Loanda, and it is hoped that the two expeditions may meet in the centre of Africa.