

depending portion of the rod, and when the galvanometer spot showed that the temperature gradient along the rod had become steady, the galvanometer was adjusted to false zero; the flame was then removed, and after waiting a second or so until the spot was beginning to move in the cooling direction, a vessel of water was brought up over the hot end, the galvanometer spot at once moved nearly across the scale in a direction indicating a rise in temperature. Further experiments seemed to show that this heating effect was greater when the temperature of the heated end was sufficiently high to produce the spheroidal state; when this was not the case, the movement of the spot in the cooling direction was decreased or altogether stopped, but no increase in temperature was indicated. With the copper rod arranged as described, no perceptible movement of the spot in the heating direction took place until about thirty seconds after the application of the bunsen flame. An attempt was made to see if an opposite effect could be obtained when a heated metal sleeve was slid over the 4" portion, but nothing definite was observed. In connection with the apparently instantaneous manifestation of a rise of temperature at the cooler end of the bar following the cooling of the hotter end, other experiments suggested themselves. For although the experiments described were only preliminary and somewhat rough and ready, yet I think it was established by them that the velocity of transmission of the effect is very much higher than that of heat by ordinary conduction or convection. The objects of the further experiments were to find out, if possible, to what the effect is due and what is its mode of propagation. In order to ascertain if the effect could be obtained in liquids, a piece of thin weldless steel tube, closed at one end and about 9 inches long, was filled with mercury and the bulb of a thermometer was just submerged beneath the mercury. On experimenting in the manner already described a very slight heating effect was observed, which might have been due to a sudden cooling of the glass bulb, and no definite results were obtained. Here the writer had to drop the investigation.

When a heated sphere is plunged into water, a rise of temperature in the inner portion might take place owing to the work done on it by the cooled and contracting envelope, but in the case of the copper rod this does not seem a sufficient explanation.

If, as I hope, some of your readers undertake to investigate this very interesting phenomenon, I would be pleased, if it be of any service, to give them particulars of the experiments I had proposed carrying out, but for which, unfortunately, I have neither time nor opportunity. ALBERT T. BARTLETT.

Old Charlton, S.E., August 22.

The Use of Digraphs.

If all writers, or, better still, all printers followed the rule of Mr. Horace Hart, and never permitted the use of æ and œ, but always spelled them out ae and oe, many happy results would ensue. Authors would cease to confuse editors and printers with undecipherable attempts to represent a diphthong; 5 per cent. of the misprints that have to be corrected in technical biological papers would disappear; zoological names, if no others, might at last be written correctly, and the student no longer confused with *coelatus* when *caelatus* was meant, and so forth. There need be no confusion with those rare words in which the vowels are distinct, since the custom of printing "aërated," "oölogy," and the like already prevails. If the only evil in sight is that Mr. Montagu Browne will feel impelled to the exceedingly unnecessary task of rewriting his museum labels, by all means let us entreat the printers to reform. F. A. BATHER.

Natural History Museum.

THE APPROACHING MEETING OF THE BRITISH ASSOCIATION AT BRISTOL.

THE EXCURSIONS.

IN a district so rich in geological and antiquarian, as well as industrial, interest as that of which Bristol forms the centre, it is to be expected that the excursions will form an attractive feature of the approaching meeting. A brief synopsis will serve to

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indicate some of the salient points of the varied programme.

Taking first the Saturday excursions, that (1) to Bath will occupy the whole day and will include the Roman Baths and Remains, the Moore Museum (geological), the valuable collection of local antiquities at the Institution, and the fine Abbey Church. Geologists will have an opportunity of visiting sections of White Lias and Rhætic, under the guidance of the Rev. H. H. Winwood. In the afternoon the party will drive to Claverton Down and Manor, returning by Widcombe and Bechen Cliff, where a bird's-eye view of Bath is obtained. Another whole-day excursion (2) includes the Severn Tunnel, with its pumping apparatus of fourteen engines on the Cornish type capable of lifting eighty million gallons per diem; Chepstow Castle, which still retains some of the original eleventh century masonry and an Early English chapel; the Chepstow railway bridge, in which the tubular and suspension principles are combined, and the Severn Bridge with its swing-bridge weighing about 400 tons. A half-day excursion (3) is arranged to Aust Cliff, which presents a section of great interest to geologists. This will be examined with Mr. H. Pentecost of Clifton College as guide. It is hoped that enough of the Rhætic bone-bed, with its rich store of saurian and fish remains (including the teeth of *Ceratodus*) may be brought down to the beach to give the geologists of the party an opportunity of securing good specimens. This excursion also includes a visit to Over Court and Knowle Park. Another half-day excursion (4) is to Stanton Drew with its striking megalithic remains, including three stone circles, two "avenues," a dolmen (if such it be), and several outlying stones included in the scheme of construction. Prof. Lloyd Morgan will here be guide. The drive also includes Sutton Court, the residence of Sir Edward Strachey, and, if the weather be clear, Dundry Hill, whence a fine and extensive view, comprising scenic features of formations from the Old Red Sandstone to the Chalk, is obtained. Those who are interested in docks, lairage, chill-rooms, and granaries, may devote the afternoon to Avonmouth (5) and see, under the guidance of Messrs. Girdlestone and McCurrich, the floating pontoon dock and cold storage installation. Those for whom architecture has stronger attractions will perhaps select either Raglan Castle and Tintern Abbey (6), to which the whole day will be devoted, or Bradford-on-Avon (7), with its unique and perfect little Saxon Church of St. Lawrence, its quaint old Town Bridge, its fourteenth century Tithe Barn, and its residential houses, including that in which Dr. John Beddoe, F.R.S., now resides. Those, again, who seek an impressive lesson in physical geology and the origin of scenery, may drive from Yatton to Cheddar (8), through the Vale of Wrington, and Bur-rington Combe, over the arched dome of Mendip, and beneath the splendid mural bastions of Carboniferous Limestone in the Cheddar gorge, visiting the interesting stalactitic caves near the little village of Cheddar. While those who wish to see one of the best examples of an ancient dry-walled camp, with a number of curious pits, probably for storage of grain, in which skeletons with ugly gaps in their dolicho-cephalic skulls have been found, may take the afternoon excursion to Weston-super-Mare and Worlebury.

On Thursday, as on Saturday, there is a wide range of choice. One party will have an opportunity of driving to the Barrow reservoirs and Chelvey pumping station of the Bristol Water Works (10). The supply of water comes from springs on the Mendip Hills, about sixteen miles from Bristol, from others at Barrow Gurney, and wells at Chelvey, near Nailsea. The storage reservoirs at Barrow Gurney have a water-area of about 130 acres, and extensive filter-beds. At Chelvey there are pumping engines of the rotary beam type, with single and