

ferred to. M. Didon was kind enough to allow me to make drawings of them for publication, and in the accompanying figure at B, C, D they are shown side by side with the Eskimos' shaft-straightener described by Dr. Boaz (Franz Boaz, Bull. Am. Mus. Nat. Hist., xv., p. 84, Fig. 117, 1901). They are all reduced to the same scale. The larger holes are no doubt intended to be used upon the shafts of javelins or lances; the smaller ones are of an appropriate size for arrows. The largest hole in A is 24 mm. in diameter, in B 21 mm.; the small hole in C is only 10 mm.

The most important feature in these implements is the obliquity of the holes; their axes are not perpendicular, but strongly inclined to the face of the implement. Singularly enough, in the more artistic *bâton de Commandement* of the Magdaleniens this refinement is absent, and the hole goes straight through.

The ridges produced by the drill in boring these Aurignacian straighteners are still preserved, except on two opposite sides of the hole, where they have been worn away by use.

Whatever may be the ultimate verdict upon the Magdaleniens "bâtons," there can be no question as to the nature of their Aurignacian homologues, since in no essential feature do these differ from the shaft-straighteners of the Baffin's Bay Eskimos described by Dr. Boaz.

A similar straightener has been described and figured by Maška from the Kulna cave near Sloup, in Moravia.

Oxford, January 7.

W. J. SOLLAS.

#### The Turkestan Earthquake of January 3-4.

SOME details of the seismographic and magnetographic records of the great earthquake of January 3 may be of interest to readers of NATURE. The three oscillation phases as seen on the seismogram are comparatively large. They commenced suddenly, each with a westward displacement, at 11h. 37m., 11h. 44.5m., and 11h. 48.5m. p.m. respectively. The large waves (third phase) then continued for 23.5 minutes, producing rapid oscillations of the boom at an average of 35 mm. double amplitude, indicating 14.4" arc swing of the pillar. But these suffered an early interruption of 5 minutes by an apparent interference of two systems, reducing the amplitude to a minimum at 11h. 54m. p.m. The recovery was immediate and sharp, as if by the arrival of a second train of large waves, resembling closely the effect of the initial shock of the first large waves.

The maximum amplitude may have occurred between midnight and 8 minutes after, during which interval the registering light-spot travelled frequently beyond the limits of the camera aperture. But there is a probability that the maximum occurred precisely at midnight; and this is supplied by the mechanical effects upon the three magnetographs, each of which shows a clear maximum oscillation at midnight.

As on former occasions, the bifilar suspension of the horizontal force magnet was much more sensitive to the shakes than the unifilar declination or the vertical force balance. The bifilar responded to the first preliminary earth-tremors, and did not come to final rest for half an hour. Its record shows two groups of lines. The first contains three clear oscillations, marking the beginning, middle, and end of the first tremors. The second group contains five oscillations, including the maximum; and there is a smaller oscillation near the middle of the intervening lull at 11h. 50m. p.m., the commencement of the large waves. The other two curves show only the last group, containing the maximum.

We have therefore on the horizontal force curve oscillations responding to the three initial shocks of the first and second earth tremors, and of the large waves. To these may be added the maximum oscillation at midnight, as probably responding to a sudden increment of the large waves.

The bifilar suspension, being a torsion balance against the horizontal force, is naturally more sensitive to sudden vertical movements of its pillar than to horizontal or slower vertical displacements.

WALTER SIDGREAVES, S.J.

Stonyhurst College Observatory, January 11.

NO. 2151, VOL. 85]

As given by the Milne-principle seismograph here, the commencement of the phases of this quake were as follows:—Preliminary: both N. and W. boom, 11.34 p.m. Second: N. boom, 11.40; W. boom, 11.39.5 Principal: N. boom, 11.52.9; W. boom, 11.52.8.

The actual maxima were:—N. boom, 110.8 mm. at 11.58.7; W. boom, 131.0 mm. at 11.55, and 127.6 mm. at 11.58.3.

There were 30 after-shocks on the N. boom, lasting until 5.11 a.m., and 37 on the W. boom, lasting until 5.26.

F. EDWARD NORRIS.

Woodbridge Hill, Guildford, January 17.

#### The Markings of Mars.

MAY I mention on behalf of my relative, Mr. J. H. Worthington, to whose previous letter M. Antoniadi has replied in NATURE of January 5, that he is at present away on an eclipse expedition to the Pacific Ocean, and out of reach of correspondence?

A. M. WORTHINGTON.

1 The Paragon, Blackheath, S.E., January 17.

#### Fireball of January 9.

THE Rev. W. F. A. Ellison, of Fethard Rectory, near Waterford, saw a splendid meteor on January 9 at 7h. 35m. G.M.T. The apparent path was near Aries and Cetus from  $25^{\circ}+3^{\circ}$  to  $27^{\circ}-13^{\circ}$ . Motion very slow, the whole duration being at least seven seconds.

The flight was directed from the radiant of the January Quadrantids, and it is possible that the fireball formed one of the larger fragments of that stream. But this is uncertain, and another observation is desirable to discover the true radiant. From Cornwall the meteor must have been a very fine object, and must have attracted the notice of many persons, though I have seen no published description of it.

W. F. DENNING.

#### THE ADMISSION OF WOMEN TO THE PARIS ACADEMY OF SCIENCES.

IN our last week's issue we gave an account of the action taken at the quarterly plenary meeting of the five academies of the Institute of France on January 5, in relation to the proposal of the Academy of Sciences to elect Madame Curie to the vacancy on the physical section of that body caused by the death of Monsieur Gernez.

A Paris correspondent has sent us a copy of the *Temps* containing a remarkable letter from M. Darboux, the permanent secretary of the Academy of Sciences, giving the reasons and motives of the academy for their decision. We have not space for the whole letter, which is admirable from start to finish, but M. Darboux insists upon a point missed in all the preceding polemic, which should have an important bearing upon the general question raised by it.

After referring to the magnificent work done by Madame Curie, and the honours which have been showered upon her, he points out that her proposed election as a working member of a busy academy is a matter of great importance, not so much to Madame Curie as to the academy itself.

"Tant de titres, tant de résultats mémorables obtenus dans un si court espace de temps donneraient certes à Mme. Curie le droit de réclamer comme une récompense méritée le siège occupé naguère par son mari. Mais un siège à notre Académie est plus et mieux qu'une récompense. S'il donne une satisfaction légitime et quelques droits, il impose aussi des