

PALÆOLITHIC FRESCOES AND MURAL ENGRAVINGS.<sup>1</sup>

ATTENTION has already been drawn in NATURE (vol. lxxv. p. 299) to the recent discovery of large mural decorations by Palæolithic artists, and as the subject is of such extraordinary interest we do not hesitate to give a further account of the more recent discoveries of like nature.

MM. Capitan and Breuil presented at the meeting of the Paris Academy of Sciences of June 23 a communication describing some paintings on the wall of the cavern of Font-de-Gaume in Dordogne. Of the eighty figures which are painted in red ochre and manganese black on the walls of the cave, forty nine are of bisons; all are engraved and painted, but sometimes the surface of the rock has also been scraped; a thick layer of stalagmite has covered many of the designs. The original of the figure of the running bison that we reproduce has a length of 1 m. (39½ in.) and a height of 60 cm. (25½ in.); it is entirely painted in a brown colour with a red tint on the forehead. These are the first frescoes recorded for France, as the engraved designs from the cave of La Mouthe, published by M. Émile Rivière in 1895, were rarely and, even so, but partially coloured.

M. Henri Moissan has analysed the colouring matters employed by the Palæolithic mural decorators, and finds that they are ochres composed of oxides of iron and manganese in variable proportions.

At the meeting of the Academy on July 28, M. Émile Rivière drew a distinction between the true frescoes described by the former authors and his own discoveries in the cave of La



FIG. 1.—Fresco of a Bison, Font-de-Gaume.

Mouthe, also in Dordogne. The latter are almost exclusively more or less deep engravings or shallow markings produced by scraping or scratching the rock. Two of the figures present some traces of paint; one of these represents a ruminant, perhaps *Bos priscus*; the contour only of the hind limb is coloured a blackish red-brown, especially at the level of the joints and hoofs; the left flank of the animal is marked with ten spots of the same blackish-brown colour, extending in a line from the shoulder to the upper portion of the thigh. The other design represents a kind of hut, not engraved by a simple line which indicates the contour as in the numerous animals represented upon the walls of La Mouthe, but by a scraping of the rock. Ochre (possibly mixed with manganese) has been applied superficially to portions of the scratches in such a manner that the colour is much less deep than in the former figure; it is laid on in a series of bands approximately parallel and alternately clear and dark. This is the only known drawing of a habitation of primitive man.

M. Rivière does not commit himself as to the contemporaneity, or otherwise, of the engravings of La Mouthe with the paintings of the Font-de-Gaume; but he reasserts that the figures of La Mouthe are undeniably Palæolithic (Magdalenian), and, geologically speaking, of the Quaternary epoch. The prehistoric

<sup>1</sup> "Reproduction des figures paléolithiques peintes sur les parois de la grotte de Font-de-Gaume (Dordogne)." By MM. Capitan et Breuil (*Comptes rendus Acad. Sci.*, Paris, t. cxxxiv. p. 1536); "Sur les matières colorantes des figures de la grotte de Font-de-Gaume." By M. Henri Moissan (*l.c.*, p. 1539); "Les figurations préhistoriques de la grotte de La Mouthe (Dordogne)." By M. Émile Rivière (*l.c.*, t. cxxxv. p. 265).

artist who engraved them was the contemporary of the reindeer and of the mammoth the portraits of which he delineated.

In a recent number of *l'Anthropologie* (t. xiii. Mai-Juin, 1902), M. Emile Cartailhac gracefully acknowledges that he was wrong in doubting the genuineness of the pictographs of animals painted on the walls of the cave of Altamira in Spain. He gives two illustrations of these frescoes, one of which (Fig. 1, p. 351) contains a group of seventeen animals, drawn with spirit and with a considerable degree of accuracy. The Altamira artist, or artists, evidently belonged to the same "school" and period as that of the Font-de-Gaume artists. A. C. H.

SEA TEMPERATURE VARIATIONS ON THE BRITISH COASTS.

THE Meteorological Office pilot chart for September contains very interesting information relating to the temperature of the sea water round the coasts of the United Kingdom in the month of June last. Over nearly the whole of the Atlantic between the 30th and 50th parallels the temperature for the month was below the average, in many places the deficiency amounting to 5° and upwards. This fact is clearly shown on the general chart, but two small charts have been added to illustrate a remarkable change experienced close inshore. Daily records at a large number of coastguard stations and lightships disclose the prevalence of very cold water during a considerable part of the month, and a rapid increase of warmth towards the close. The extra sketches exhibit the mean results for June 1 to 24 and June 25 to 30 respectively. Along the western and southern coasts, many of the minimum values during the cold

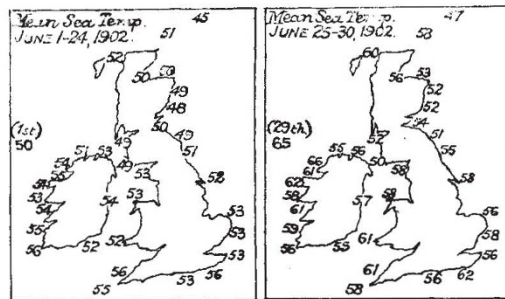


FIG. 1.—Sea Temperature Variations on the British Coasts.

period were as low as 48° to 52°, the lowest in several places occurring as late as the 15th of the month. Off Eastbourne, 54° on the 8th and 9th was the lowest June record in nineteen years. On the east of Britain and west of Scotland the minima were from 42° to 48°. Before the end of the month the west and south coasts were generally above 60°, and the east and north 55° to 60° and upwards. Up the north-western shores the temperatures were higher than in any other neighbourhood, the maxima being registered on the 28th or 29th as a rule. Stornoway and Seafield touched 66°, Ballyglass 67°, Liscannor 68°, Teelin Head 70°, and Blacksod Point 72°. Even the Orkneys reached 60°, while Eastbourne did not pass 62°. Confirmation of these very high readings in the north-west is afforded by the records of ships well out in the offing, the observations in about 55½° N., 11½° W., showing 50° on the 1st and 65° on the 29th.

Judging by the mean results for the two periods, the greatest change took place off Teelin Head, Donegal, where the closing days averaged 12° warmer than the previous part of the month. Blacksod, to the south, was 8°, Arran Island 7°, Seafield 5° and Minard 4° warmer, while Ballydonegan, at the south-west extremity of Ireland, showed no change. Northward from Teelin Head we find a rise of 8° at Stornoway, 7° at the Orkneys, and, curving southward down the coast of Caithness, 6° at Cromarty. The warmth scarcely affected the Shetlands, where the increase was only 2°. Eastward past the north of Ireland the effect diminished rapidly, the rise at Sheephaven being 4°, at Port Rush and Lamnah 3°, and at Ballantrae 1°. For the warm period the Orkneys equalled and the Hebrides exceeded by 2° the result at Scilly, 58°. It must be remembered

in connection with this phenomenon that the country experienced almost the only few days of warm weather of the summer, but while the water was decidedly warmer in the north-west than elsewhere, the air temperature was higher over England than over the south of Ireland, and still higher than in the north of Ireland.

#### RECENT EDUCATIONAL REPORTS.<sup>1</sup>

THE protracted discussions in the House of Commons, the numerous leading articles in the newspapers and the frequent public speeches of politicians, concerned with the subject of education, with which we have been provided during the past six months, are evidence enough that English people are at least beginning to be interested in the important question of the provision made by the State for the education of its citizens. But interest alone is not enough, it must be intelligent; and to ensure this it is important that the instructors of public opinion should themselves be well informed, both as to what is actually happening in the schools and colleges of our own country and as to the systems of education in other lands. For these and similar reasons, the special reports published from time to time by the Board of Education, under the editorship of Mr. Michael E. Sadler, the director of special inquiries, have a peculiar value just now; while the general reports of H.M. Inspectors serve admirably to remind Members of Parliament that despite the changes which may be necessary in our educational administration, good, thorough work is even now being accomplished in most of our State-aided schools, whether elementary or secondary.

The two volumes dealing with education in the United States of America are concerned more with general principles and tendencies than with specific details as to methods of instruction. Though this will detract from their value to practical teachers, it gives greater opportunities to insist upon the necessity for the possession by our legislators of proper, high ideals as to the function of education. As Mr. Sadler says in a paper he contributes to the second volume, "a national system of education which made money-getting its central aim would deserve all the contumely which history in a more enlightened future would be certain to heap upon it." American educators are showing the world that it is possible at the same time to develop the higher faculties, to have a due regard to the pleasures of cultivated leisure, to encourage "sweetness and light," and yet thoroughly to equip their young men with a knowledge of recent advances in pure and applied science, so that without difficulty they may take an honourable part in the production of those material comforts without which the most cultured would find it hard to live.

Two factors, among many others, preeminently contribute to the success of American education. In the first place, there is the munificence of wealthy Americans. Mr. Percy Ashley, at the end of his article on American universities, tabulates the total amount of benefactions reported during the years 1890-1901. During these eleven years, very nearly twenty-three millions of pounds were given to higher educational institutions, not including libraries and museums, and more than two millions went to the Leland Stanford University alone. These princely sums are largely devoted to the encouragement of research; as Mr. Ashley says:—"In all the arrangements for research work the United States is much under German influence; and it is greatly to be regretted that England should be so far behind. . . . In spite of the establishment in recent years of degrees avowedly for research by Oxford and Cambridge, there is still no place where organised research work is carried on in England. . . . It must be said that the research work of the American universities is probably the part of their activity most worthy of study by those interested in academic progress in England. It must be admitted, however, that the material attractions to research and an academic career are far stronger in the United States than here."

<sup>1</sup> "Special Reports on Educational Subjects." Vol. x. "Education in the United States of America." Part i. Pp. 538. Price 2s. 3d. Vol. xi. "Education in the United States of America." Part ii. Pp. 624. Price 2s. 6d. (Eyre and Spottiswoode.)

"General Reports of H.M. Inspectors on Elementary Schools and Training Colleges for the year 1901." Pp. 234. (Eyre and Spottiswoode.) Price 1s.

"General Reports of H.M. Inspectors on Science and Art Schools and Classes and Evening Schools." Pp. 98. (Eyre and Spottiswoode.) Price 5½d.

The second factor in the success of American education to which reference has been made is the recognition of the existence of a science, as well as an art, of education. Sir Joshua Fitch points out in his introductory paper that "America may be regarded as a laboratory in which educational experiments are being tried on a great scale, under conditions exceptionally favourable to the encouragement of inventiveness and fresh enthusiasm, and to the discovery of new methods and new truths." The experimenters are, moreover, well trained for their work. There is little scepticism as to the value of training for teachers in the minds of American authorities, and some idea of the pains taken to make the training as helpful and practical as possible can be obtained from Dr. Russell's account of the admirable Teacher's College of Columbia University, included in Part i. of the report. Among the numerous proofs, contained in these pages, of the success attained by the teachers proceeding from American training colleges, President Hadley's opinion may be quoted:—"Our best American schools of technology are no longer places for shop work, but places for the training of thinkers—of men who may not know how to do the particular things which will first be wanted of them, but who are in possession of that general knowledge which will enable them to learn more thoroughly the real bearings of any new problem as it arises. They have become less technical and more scientific."

The space available allows only the briefest reference to the general reports of H.M. Inspectors. Attention must, however, be called to the remarks of Mr. Pullinger, Chief Inspector of science and art schools in the northern division of England, on the work of evening continuation schools. He finds that many of the pupils in these schools "come for warmth, for the comforts of an attractive, well-lighted room, for the monthly lantern lectures and for the free trip to Blackpool at the end of the session." The schools have been variously described as "gather-'em-in-at-any-price-schools" and as "a sort of shelter for homeless boys and girls." Mr. Pullinger wishes "to state emphatically that the supply of really educational night schools is most inadequate." When it is remembered that the evening classes of our technical schools have largely to rely upon the preliminary training given to their students at these evening continuation schools, the immediate necessity for their improvement becomes evident, and it is to be hoped that the Board of Education will refuse its grants to all schools where the chief aim is recreative.

#### SNOW-WAVES AND SNOW-DRIFTS.<sup>1</sup>

THE primary object of a visit to Canada at the end of 1900 was to continue the investigation of terrestrial surface waves and wave-like surfaces, without, however, confining attention entirely to the study of such forms or motions of the snow as might be wave-like in character.

In Canada a geographical distribution of the kinds of snow was noticed. Near Montreal the snow was, on the whole, only moderately dry, and during December did not differ very much from what was seen in Scotland, on the Pentland Hills and near Grantown-on-Spey, during February, 1900, except that the freshly fallen flakes did not cling together to form mottling and rippling. The forms of the snow-drifts, or banks, in the neighbourhood of obstacles were not very dissimilar. The same general character of snow was observed as far west as Port Arthur, 1000 miles by rail from Montreal, the surface of the snow being generally soft. Near Winnipeg and westwards, at least as far as Medicine Hat, the appearance of the snow-banks accumulated in the neighbourhood of obstacles was strikingly different. Here the snow was almost perfectly dry and the snowfall light. The prairie was often swept quite bare of snow in the neighbourhood of the banks, and the surface of the snow on the prairie was generally hard and rough. But for its whiteness, the landscape resembled a desert with low isolated sand-hills more than a snow-scene in England. Much of this snow was granular, like sand, as the result of processes which it had undergone since its deposition.

On reaching the Rockies, the snow was seen to resemble more that of eastern Canada, but afterwards it became, apparently, still more moist, so that, in the next range, the

<sup>1</sup> Abridged from a paper by Dr. Vaughan Cornish, read before the Geographical Society on May 12 and published in the August number of the *Geographical Journal*.