

inhabited only by sea-birds and seals, and the nearest house is on the opposite side of the island at least four miles away by the coast. The sea-water seemed very clear of salinity 26.5, and the sandy bottom could be seen from the yacht anchored in five fathoms.

Diatom patches are no doubt abundant in many places; probably the simple green alga encrusting the sand-grains is known to botanists, and I have certainly seen the pink organism elsewhere. Probably other coloured patches due to micro-organisms are present on many beaches. It would be interesting to have them more thoroughly investigated—biochemically, if possible—by someone living on the spot, and able to study their changes day by day.

W. A. HERDMAN.

S.Y. Runa, Sound of Islay, August 27.

#### Physiological Factors of Consciousness.

MR. ABDUL MAJID (NATURE, August 28) asks: "What is the true explanation of the fact that stimuli sufficiently strong to arouse vivid sensations in a subject while he is wide awake apparently fail to arouse any sensations at all in a state of unconsciousness?" But is there any evidence that stimuli do not arouse identical sensations in the waking and the sleeping states? As a medical man, I am frequently "rung up." As far as I am able to judge, I am invariably awakened out of a dream. I am never dreamless. My consciousness never sleeps.

But in proportion to the depth of slumber, memory appears to be abolished. Memory is in proportion as it is clear and coherent—in proportion as it links the present with the past and so fulfils its function of affording a guide for the future. In dreams, since it is so much in abeyance, we live almost wholly in the "immediate present," taking little thought of the past or the future. Absurd or improbable happenings do not then surprise us; for these do not then contradict stored experience. On that account, also, we seldom remember our dreams unless they occur in light slumber (half-wakefulness), or unless our attention is called to them immediately on waking; while our minds are still tingling with them. I am sure, if anyone tries the experiment of having himself awakened for a few occasions by the insistent question, "What are you dreaming about?"—if his attention is immediately fixed on his dream—he will soon be convinced that there is no such thing as dreamless sleep.

By way of illustration; I remember a terrible dream. An enemy had his hand on my mouth and was suffocating me. I awoke to find the tail of my friend the cat, who had come on his morning visit, laid across my lips. The dreams of ill-health, and especially of indigestion, are usually unpleasant and sometimes fearful.

I take it, then, that sensations are the stuff that dreams are made of. They are the same sensations that we feel in our waking states, but, when woven into our dreams, they are wrongly interpreted.

G. ARCHDALL REID.

Netherby, Victoria Road, S. Southsea,  
August 29.

#### The Elephant Trench at Dewlish—Was it Dug?

THE question of the brain capacity of the Piltdown and other fossil skulls must be decided by anatomists; but a sidelight may be thrown on the subject of the intelligence of early man by a consideration of the works of which he was capable. The most indestructible of these, and consequently the most frequently

referred to, are worked flints. Upon their testimony Mr. Moir, and those who agree with him, would carry man's work back to the Pliocene period of the Suffolk Crag. Mr. Moir kindly allowed me to see a few of his specimens, and I am inclined to think that some of them show artificial chipping. The deposit in which the Piltdown skull was found is said to be early Pleistocene. Have we any indication of man's work between this and the Crag period? In my opinion we have. I refer to the remarkable trench at Dewlish, Dorset,<sup>1</sup> which before it was excavated contained abundant remains of *Elephas meridionalis* and no other fossils, though Mr. Grist has found eoliths.<sup>2</sup> It is difficult to account for the formation of this peculiar trench in chalk by any natural process. Mr. Clement Reid, who spent four days to examine it, tells us that "the fissure, or rather trough, ended abruptly without any trace of a continuing joint. It was not a fault, for the lines of flint nodules corresponded on each side."<sup>3</sup> Mr. Reid, at the British Association at Cambridge, described the termination of the trench as "apse-like." It opened out diagonally at one end on to the steep slope of the side of a valley. It was 103 ft. long and 12 ft. deep. The width, as the photographs show, was not quite uniform, and Mr. Reid said that in the narrow place he could just get along. It is remarkable that here the walls approach from each side—a feature apparently incompatible with any natural causation. After the trench had been refilled, I met with a description and photograph of a pitfall for elephants in Africa; and that led me to believe that this trench was artificial, and dug out for the same purpose.

If this view is correct, it shows that man existed in Pliocene times, and was already a social being capable of a great undertaking, for no one individual could have effected such a work.

My hope is that this trench may be reopened for the express purpose of testing this question. It has never been bottomed except at the end where it opened on the valley. Elsewhere two or three feet remain undisturbed. If it was artificial, some indication of the tools used might possibly be found at the bottom. The expense could not be great, and my object in writing this is to endeavour to excite such interest in the subject as may perhaps lead to a proper investigation. But a competent geologist, whose verdict would carry weight, ought to undertake it.

Graveley, Huntingdon.

O. FISHER.

#### Note on the Dicynodont Vomer.

IN 1898 I directed attention to the fact that the paired elements in the front of the palate of lizards and snakes seem in all their relations to agree with the pair of bones in Ornithorhynchus, which afterwards fuse to form the dumb-bell bone, and that they cannot be homologous with the median unpaired vomer of mammals, and must have another name, and I proposed to call them *prevomers*. While the embryological evidence seems conclusive, the palæontological testimony has not hitherto been so satisfactory as one could desire. Cynodont reptiles appear to have a single median vomer, very like that of the mammal, and one specimen of Gomphognathus shows what appear to be a pair of elements in front. Dicynodon appears to have also a single median vomer, and no paired elements. The Therocephalians, on the other hand, have a pair of large anterior elements, and apparently no median element. With the palæontological

<sup>1</sup> See paper by the writer with two photographic views, *Quart. Journ. Geol. Soc.*, 1905.

<sup>2</sup> *Journ. Roy. Anthropological Institute*, vol. xl., 1910.

<sup>3</sup> See "Geological Survey Memoirs," 1899, p. 34.