PLANKTON OF THE JAVA SEA*

AN interesting preliminary investigation into the plankton of the Java Sea by Dr. H. C. Delsman shows that the coastal waters contain much plant and animal life and that towards the central part larger animals abound. The two monsoons, the east monsoon about September and the west monsoon about February, have an important influence on the currents.

Two special cruises were made across the Java Sea, from Java to Borneo and from Borneo to Java, when a number of stations were made. The first cruise was in April at the end of the wet, west monsoon, the second in October at the end of the dry, east monsoon. Vertical hauls were also made from near the surface to near the bottom. A comparison of the catches shows that the volume of plankton is higher in October, even if it is taken into account that at this time the larger organisms predominated, such as salps, siphonophores and mysid and amphipod crustaceans. The diatom plankton was generally found along the coasts, whereas the zooplankton was greater farther out and in the middle of the Java Sea, where diatoms were practically absent but where, sometimes, there were masses of Trichodesmium. The coastal plankton is generally of a finer composition, and besides diatoms contains numbers of the smaller copepods. Copepods, both small and large, abound and are the main food of the plankton-eating fishes.

The largest and commonest copepod is *Undinula vulgaris*, reaching in the female 3 mm. in length. This species is absent near the coast at both seasons and is found at a maximum away from the coast but is not present in the middle of the Java Sea. In April it appears in greater numbers than in October. Fishes sometimes have their stomachs full of Undinula, which in value as fish food may be compared with *Calanus finmarchicus* in other seas. *Labidocera acuta*, another large copepod, apparently occurs under more oceanic conditions, occasionally replacing Undinula. The presence of the larger species of copepods at a certain distance from the coast is of much importance in connexion with the fisheries, and further studies in this direction should be of great value. This part of the sea is already a favourite place for the mayang fishers to put out their nets for carangids and clupeoids, presumably where their copepod food is most abundant.

It is found also that the structure of the gill rakers of the plankton-eating fishes, their shape and the nature of the eyes are different in the different regions. Those clupeoids which feed in the coastal waters on the fine plankton have finer and more numerous gill rakers; those feeding a certain distance from the coast, where the plankton is much coarser and probably swallowed more discriminately, have much coarser gill rakes, a more slender body and larger eyes, thus being more capable of darting after their prey. The higher the number of gill rakes the greater their length and the smaller the diameter of the eye.

It is to be hoped that these preliminary plankton studies will lead to others on a larger scale.

* "Preliminary Plankton Investigations in the Java Sea". By Dr. H. C. Delsman. (*Treubia, bijdragen over Zoologie, Hydrobiologie en Oceanographie van den oost-indischen Archipel.* Deel 17. Aflevering 2. July 1939.)

SEVENTY YEARS AGO

NATURE, vol. 1, January 6, 1870

Plea for the Mathematician

PROF. J. J. SYLVESTER, F.R.S., in an article based on his presidential address at Exeter to the Mathematical and Physical Section of the British Association said: "Some people have been found to regard all mathematics, after the 47th proposition of Euclid, as a sort of morbid secretion, to be compared only with the pearl said to be generated in the diseased oyster, or, as I have heard it described, 'une excroissance maladive de l'esprit humain'. Others find its justification, its 'raison d'être', in its being either the torch-bearer leading the way, or the handmaiden holding up the train of Physical Science. . . . What is it to us, they say, if the three angles of a triangle are equal to two right angles, or if every even number is, or may be, the sum of two primes, or if every equation of an odd degree must have a real root? How dull, stale, flat and unprofitable are such and such like announcements! . . . But this is like judging of architecture from being shown some of the bricks and mortar, or even a quarried stone of a public building—or of a painting from the colours mixed on the palette, or of music by listening to the thin and screechy sounds produced by a bow passed haphazard over the strings of a violin."

Force of the Human Heart

IN an article on "The Labouring Force of the Human Heart", the Rev. Prof. Haughton, F.R.S., states that "its energy equals one-third of the total daily force of all the muscles of a strong man; it exceeds by one-third the labour of the muscles in a boat-race, estimated by equal weights of muscle, and it is twenty times the force of the muscles used in climbing, and eight times the force of the most powerful engine invented as yet by the art of man.

"No reflecting mind can avoid recognising in its perfection, and regarding with reverential awe, the Divine skill that has constructed it."

A SUCCESSFUL treatment for snake bite is recorded from the Rio Grande. Two horses were bitten by the same rattlesnake. A few hours afterwards the submaxillary, parotid, and all glands situated about the head and neck were greatly enlarged; from the nostrils and gums, a clear mucous discharge ran down; the eyes were glairy, with the pupils greatly dilated, and the coat was rough and staring. To each animal Dr. Bell gave half-a-pint of whisky, with a little water, and half an ounce of ammonia, while the wounds were fomented with a strong infusion of tobacco, and afterwards poulticed with chopped tobacco leaves. Both horses recovered.

"In furtherance of natural science work at Eton, an excellent telescope has been recently given to the school by the energy and liberality of some of the masters." Mr. H. G. Madan describes the instrument, a refractor of 5·9 in. clear aperture and 88 in. focus, made and erected by Messrs. Cooke and Sons, of York; it was equipped with a battery of eyepieces, of powers ranging from 30 to 400, and with a bifilar micrometer.

THE trigonometrical survey of England and Wales, on the scale of one inch to a mile, has been completed during the past week. It was commenced in the year 1791.