

50 metres (27 fathoms), the depths being in all cases carefully recorded, and if this sea-water could be placed in glass vessels covered with suitable glass plates and exposed to diffuse light, so as to avoid the great heat of the direct rays of the sun, after a month Diatoms might appear in some of the vessels. In this manner it is not unlikely that the bathymetrical limit of plant life might be fixed with approximate certainty. Moreover, the great facility with which this method of determination may be practised recommends it as one likely to aid in solving this important problem.

THE BIOLOGY OF DIATOMS.

This interesting group of organisms, the knowledge of which we owe entirely to the perfection of the modern microscope, has for upwards of half a century occupied the serious attention of naturalists.

To the entire series of forms the designation Diatomophyceæ was given by Rabenhorst and Bacillarieæ by Kützing, but the name of Diatomaceæ is now generally adopted.

Diatoms may be defined as unicellular algæ having a siliceous coat. Each organism forms a small box, the siliceous walls of which completely enclose a space; these walls in many, if not in all species, are formed by two distinct plates or valves, each possessing its own hoop, one of which embraces and slides over the other like the tube of a telescope or the lid of a box. This hoop, connecting zone or belt, may be single, double, or of complex structure, as in *Rhabdonema*, *Striatella*, and some other species, where it is formed of several hoops. Such a complete individual Diatom is called a *Frustule*, and it may be viewed from two aspects, to which, however, confusing terms have been applied. Thus Kützing and W. Smith, followed by the English micrographers, speak of *front view* when the organism presents its belt to the observer, and *side view* when its valve is next the eye; but, as the frustule is formed by two plates joined together, it seems reasonable to speak of the *front* of the box when the valve is seen, and of the *side* when the union of the two plates (*i.e.*, the belt) is presented. This latter opinion has been adopted by the German naturalists, who call Kützing's *side view* the *secondary view* and his *front view* the *primary*. In order, however, to avoid confusion, the terms *valval* and *zonal* might be applied according as the valve or connecting zone is next the observer.¹

¹ The following arrangement will serve to show the relationship between these various terms:—

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| (a) Front view (Ralfs, W. Smith, &c.), <i>i.e.</i> , hoop next observer = | { | Lateral surface (Ehrenberg).
Primary side (Kützing).
Secondary side (Rabenhorst).
Zonal view. |
| (b) Side view (Ralfs, W. Smith, &c.), <i>i.e.</i> , surface of valve next observer = | { | Dorsum and venter (Ehrenberg).
Secondary side (Kützing).
Primary side (Rabenhorst).
Valval view. |