

manifold currents and gyratory movements we add the phenomena of endosmosis, nutrition, and growth, we shall have some idea of those forces which are ever active amid the apparent repose of vegetable life.

Since I attempted in a former work, *Ansichten der Natur* (Views of Nature), to delineate the universal diffusion of life over the whole surface of the Earth, in the distribution of organic forms, both with respect to elevation and depth, our knowledge of this branch of science has been most remarkably increased by Ehrenberg's brilliant discovery "on microscopic life in the ocean, and in the ice of the polar regions"—a discovery based, not on deductive conclusions, but on direct observation. The sphere of vitality, we might almost say, the horizon of life, has been expanded before our eyes. "Not only in the polar regions is there an uninterrupted development of active microscopic life, where larger animals can no longer exist, but we find that the microscopic animals collected in the Antarctic expedition of Captain James Ross exhibit a remarkable abundance of unknown and often most beautiful forms. Even in the residuum obtained from the melted ice, swimming about in round fragments in the latitude of $70^{\circ} 10'$, there were found upward of fifty species of silicious-shelled *Polygastria* and *Coscinodiscæ* with their green ovaries, and therefore living and able to resist the extreme severity of the cold. In the Gulf of Erebus, sixty-eight silicious-shelled *Polygastria* and *Phytolitharia*, and only one calcareous-shelled *Polythalamia*, were brought up by lead sunk to a depth of from 1242 to 1620 feet."

The greater number of the oceanic microscopic forms hitherto discovered have been silicious-shelled, although the analysis of sea water does not yield silica as the main constituent, and it can only be imagined to exist in it in a state of suspension. It is not only at particular points in inland seas, or in the vicinity of the land, that the ocean is densely inhabited by living atoms, invisible to the naked eye, but samples of

filament, which commences an active spiral motion. The signification of these organs is at present quite unknown; they appear, from the researches of Nägeli, to resemble the cell mucilage, or proto-plasma, in composition, and are developed from it. Schleiden regards them as mere mucilaginous deposits, similar to those connected with the circulation in cells, and he contends that the movement of these bodies in water is analogous to the molecular motion of small particles of organic and inorganic substances, and depends on mechanical causes."—*Outlines of Structural and Physiological Botany*, by A. Henfrey, F.L.S., &c., 1846, p. 23.]—*Tr*