of hydrochloric acid, the colouring matter is set free, and remaining suspended in the fluid gives it a blue tint. It is, however, not in solution, but can be observed under the microscope to exist in the fluid in the form of small, amorphous, intensely blue masses adhering to small shreds of tissue, &c., and in this condition may be proved to be insoluble in strong hydrochloric acid. If the coloured solution formed by hydrochloric acid be filtered, the blue colouring matter remains on the filter, and the filtrate has only a very slight greenish tint.

The colouring matter is dissolved at once off the filter by alcohol, and an intensely blue solution, very like that of sulphate of copper in colour, is thus obtained. The colour, however, is not dissolved out of the corallum by the action of alcohol alone. The deep blue and alcoholic solution gives a spectrum in which all the violet, red, and yellow are totally absorbed, and the green and blue alone transmitted. The absorption of the violet end of the spectrum extends to the position of the G line of the solar spectrum, that of the less refrangible end to a little short of the E line. Addition of potash or ammonia solutions to the blue solution changes the colour to a dirty green, which is contained in a flocculent precipitate. The blue colour reappears on the solution being rendered acid again.

Dana states that the blue colour of *Heliopora* is of animal origin, and is lost on immersion of the coral in nitric acid. The colouring matter was not analysed by Mr Silliman (U. S. Expl. Exped., vol. vii., Zoophytes, J. D. Dana, Philad., 1846, p. 537).

Structure of the Soft Tissues of *Heliopora*.

The arrangement of the structures constituting the general superficial layers of *Heliopora*, and of those common to the cœnenchymal tubes and calicles, will be considered in the first place, and in the second the structure of the polyps themselves.

As in other Alcyonarians, the various structures are to be classed as belonging to an ectoderm, a mesoderm, and an endoderm. The general arrangement of these three layers of tissue will be seen in Plate I. fig. 1.

Ectoderm.—The ectoderm consists of a layer of cells, which invests the whole external surface of the coral with a uniform covering. Its structure is shown in Plate II. fig. 4. The cells composing it are elongate and club shaped, with wide rounded summits and pointed lower extremities which run out into fine threads which can be traced some way into the layer beneath them. The cells contain a nucleus and nucleolus, and their general contents are finely granular; they are closely packed side by side, placed parallel to one another, and vertically to the surface of the coral. When the external layer is viewed from above, the ends of the cells present a series of polygonal areas. The cells are about ·02 mm. in length. Between the contracted bases of these cells are other irregularly shaped cells with similar nuclei and contents, and also scattered throughout