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ON A NEW GENUS OF ALGÆ, *CLEMENTSIA* MARKHAMIANA.*

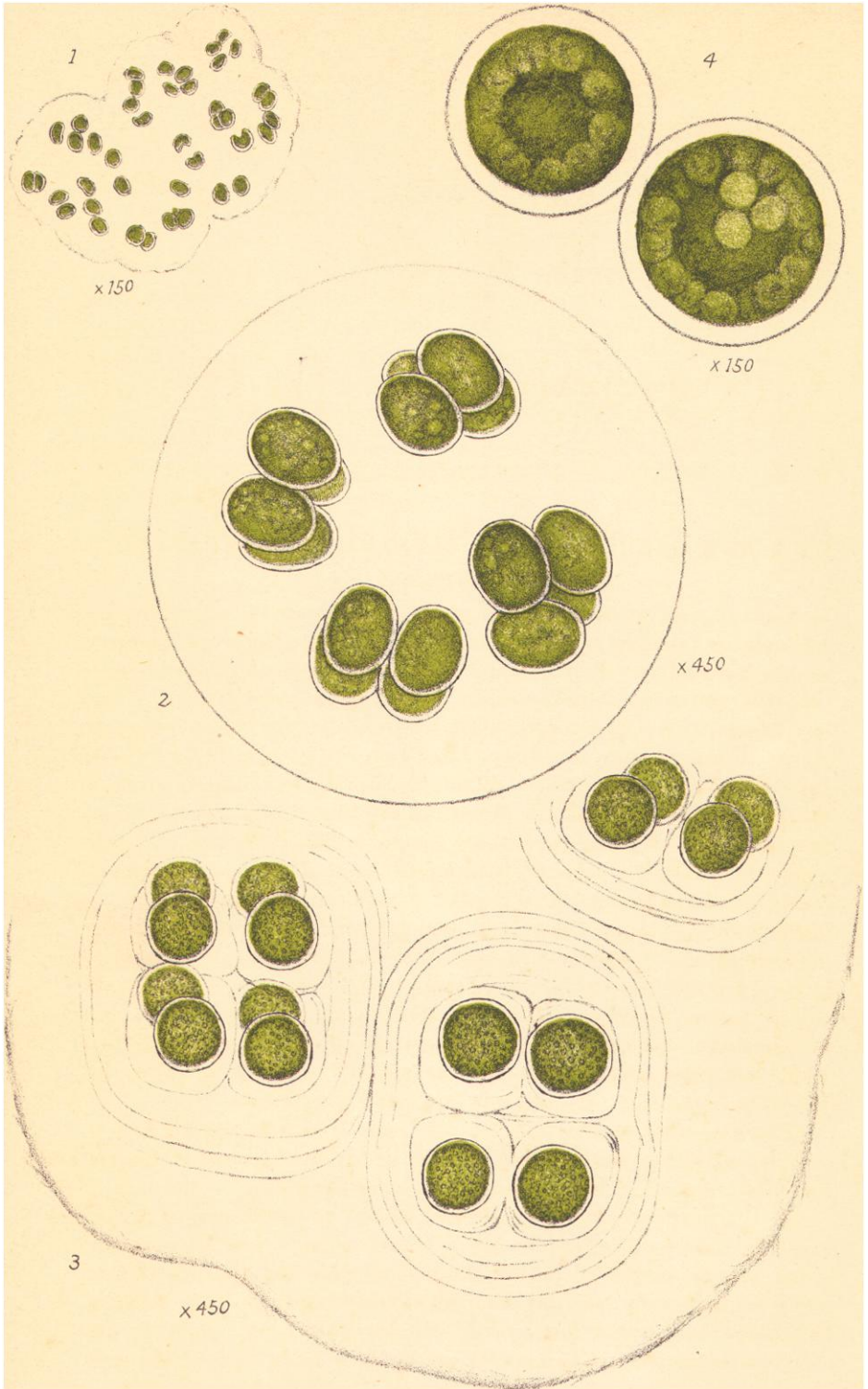
By GEORGE MURRAY, F.R.S.

IT was a great pleasure, and I might be excused for thinking it a triumph, that the first new organism which fell to the bag of the *Discovery* should have fallen to my personal share. A new species would have been welcome. My delight was the greater when I realized that I was face to face with a new generic type. This realization did not come at once. In looking into my diary, I find that for a whole day I puzzled over the possible relationships of this organism, unwilling as I am to think a type new; to think I should be the first to see something no human student of pelagic organisms should have seen before, and this a generic type! If a personal reference in one sentence may be excused, I may claim the permission to recall a day of restraint when I tried to disguise from Captain Scott (who had taken an active interest in the microscopic study of plankton) and from Dr. Koettlitz my hopes and, it may be, my fears. The next morning's tow nettings brought in mature forms, which enabled me to decide once and for all that the *Discovery* had captured a new type of pelagic organism—a generic type which can most fittingly bear the name of the man who initiated the *Discovery* Expedition; the name is *Clementsia Markhamiana*.

There were many who did their best; the President did his best so conspicuously from the first that it is fitting his name should be that of this first organism to be named after the expedition.

On the next day, to my great delight and particular pleasure, Dr. Koettlitz discovered a new species of Peridininian. I had thought the ocean was exhausted of Peridinians; they were my own particular preserve, and here was my own particular pupil in such matters, Dr. Koettlitz, beating his master on his own ground. With his characteristic modesty, he met me on the deck for a verification, and

* In the plate the name is incorrectly given as *Clemensia*.



E. A. Wilson del

P. Highley lith.

Clemensia Markhamiana.

scarcely before I had spoken, Dr. Koettlitz had announced a new species, to be called after our captain. This species Dr. Koettlitz will describe in due course.

The original drawings of *Clementsia* were made by Dr. Wilson at the time of its capture, and the engraving is by Mr. Highley.

The particular interest in this type is not only its unique character as an oceanic plant, but its significance from the point of view of the geographical distribution of such organisms. There are allied forms, both Gloeocapsoid and Chlorococcoid—not well defined for the most part—on sea-shores, but I have never met with, either under the microscope at sea (I mean the high seas) or in botanical records, anything nearly related to *Clementsia*. Its nearest allies are from fresh water, and this fact alone will account to any naturalist for my day of bewilderment mentioned above.

The difficulty that arises in interpreting the development and life-history of pelagic organisms is this: one cannot submit them to the normal tests of cultivation, as one would do with fungal and bacterial organisms, or with fresh-water algæ. The only real groundwork to go upon is the assembling of numerous specimens, and the intelligent understanding of these specimens in their various stages by the light of the known life-history of allied forms. This must be done in the case of *Clementsia*, and I shall try to show what I take to be its course of development.

Fig. 1 shows what I take to be the youngest stage in which the cells are living in association—in colonies—enveloped in a common mucilaginous membrane. In Figs. 2 and 3 we see (much more highly magnified) the process of subdivision of the cells, a division into fours, and especially in Fig. 3 these forms are displayed in an encysted, stratified integument. The next ascertained stage is Fig. 4, in which we have the escaped cells grown much larger and free, and—such is my interpretation—about to give birth, or inevitably destined to give birth, to a colony like that shown in Fig. 1. This interpretation is based, of course, on known facts in the life-history of allied forms. No man can tell from the available material what may happen between the stage shown in Fig. 4 and the establishment of the colony shown in Fig. 1. The magnification is identical. It will be seen there is a great increase in size in these cells from the subdividing stage in Figs. 2 and 3, as would be expected in a stage about to establish a colony such as that shown in Fig. 1.

Clementsia Markhamiana, nov. gen. et spec.

Units existing in colonies within a stratified integument, dividing into groups of four, varying much in the numbers of the colony; the integument gradually growing in thickness and in stratification, ultimately bursting and permitting the escape of the unit cells; unit

cells increasing in size markedly and (presumably) subdividing into colonies like the parent colony; in nearly every stage characterized by the thick and many times stratified walls of the integument, and especially also by the abundant oily and chlorophyllaceous contents of the cells.

Lat. 7° S. to 12° S. ; long. 30° W. to 33° W.

ON CERTAIN RECENT CHANGES IN THE CRATER OF STROMBOLI.

By TEMPEST ANDERSON, M.D., D.Sc.

IN 1875, Prof. Judd, F.R.S., published in the *Geological Magazine* an admirable series of articles entitled "Contributions to the Study of Volcanoes."

The part dealing with the Lipari islands has been my constant companion and guide during two visits to those islands in 1888 and 1904, and it deals so fully with the subject, both from a historical and scientific point of view, that I feel it would be presumptuous to attempt to paraphrase the excellent description which he has so well written. Since his visit, however, Stromboli has continued in its wonted activity, generally of a moderate character, and so regular that it might almost be called rhythmical, though occasionally varied with periods of violence, and sometimes of almost total quiescence. As a result, certain changes have occurred in and about its crater; not on any very large scale, it is true, but sufficient to be of interest. When I visited the islands in 1888, I carried with me a camera, with which I took photographs * from selected points of view, believing that I was thus securing records more accurate and unbiassed than any mere verbal description; and in 1904 I revisited the islands, carrying the same camera and lenses, and took comparison photographs from as nearly as possible the same positions. These photographs form the basis of this paper, and have been supplemented by several other photographs and diagrams placed at my disposal by Prof. Riccò, of the Reale Osservatorio, Catania, and Mr. Geo. S. Eunson, of Northampton, who visited the volcano with the Geologists' Association in 1889. These fill up the gaps and show the changes during the intervening years.

Believing as I do that photographs should themselves form the record, and that the letterpress should be mainly explanatory of them, I have placed opposite each plate a note calling attention to the main points shown, and prefaced the whole by such a description of the island as may serve to make my story intelligible. To this I have added a summary of the main changes noticed.

Stromboli is the most easterly and northerly of the Lipari islands. It is situated north of Sicily, close to the track of steamers plying

* See 'Volcanic Studies by Tempest Anderson.' Plates xx. to xxvii. Murray: 1903.