the absorption of a larger quantity of oxygen being at times permitted, death resulted; and at other times, in an opposite state of the gas in which none was absorbed, no harm resulted.

Dr. H. C. Wood stated that he had known the administration of nitrous oxide gas to a patient suffering with uterine colic to fail to produce anæsthesia.

Richard K. Betts was elected a member of the Department.

Oct. 5th, 1868.

Director, Wm. Pepper, M. D., in the Chair.

Twenty-seven members present.

Prof. Leidy directed attention to a specimen of a sponge which had been for many years in the Museum of the Academy, and had been presented by the late Dr. R. E. Griffith, who obtained it in the Island of Santa Cruz, W. I. It is especially interesting from its relationship with that most beautiful of all known sponges, the *Euplectella aspergillum*, and apparently also to that enigmatic body the *Hyalonema Sieboldii* of Japan. Specimens of both these were also exhibited. A beautiful one of the former, from the Philippines, presented to the Academy by Joseph Henry Craven. Several specimens of the *Hyalonema*, presented by Drs. Ruschenberger and Sinclair, consist of a twisted fasciculus or rope of long, coarse, translucent siliceous threads, partially invested with a brown verrucose membrane or bark. When the first specimen was presented to the Academy in 1860, (Pr. A. N. S. 1860, 85,) Prof. Leidy, as Curator, reported it as a part of a sponge with a parasitic polyp upon it. One of the specimens may have some significance as to the relation of the rope of spicules and its polyp covering. It has attached two shark eggs and part of the tendril-like cords of another. The tendrils clasp the rope and are also partially invested with the polyp crust. In the complete condition, the *Hyalonema* fasciculus appears always to be associated at one end with a sponge-mass. Originally described by Dr. R. E. Gray, the fasciculus was viewed as the axis of a coral of which the verrucose bark formed part, the warts constituting the polyps; and he supposed the fasciculus to grow as a parasite from the sponge, frequently seen in specimens attached to one of its extremities. This still appears to be the view of Dr. Gray, as announced in recent volumes of the Proceedings of the Zoological Society, etc.

Dr. Bowerbank views the siliceous rope, with its warty investment and the sponge mass at one end, altogether as the elements of a sponge. The warts or polyps of Dr. Gray he regards as the oscules of the sponge.

Schultze, in an elaborate memoir, (Die Hyalonemen) accompanied by beautiful plates representing the complete *Hyalonema*, as the result of his investigations, determines the sponge-mass and projecting siliceous rope to be together the elements of the sponge, and the warty investment of the rope to belong to a polyp to which he gives the name of *Polythoa fatua*. In the crusts or individual polyps he detected the arms filled with nettling cells.

Brandt views the siliceous rope and its investment as a polyp, and the sponge mass at one extremity as a parasite invading, ultimately to destroy the polyp.

Lastly, among the discordant views, Ehrenburg looks upon the siliceous rope as an "artificial product of Japanese industry."

Prof. L. continued, I shall not discuss this extraordinary difference of opinions among experts, but must confess that I view most favorably the theory that the sponge-mass and the siliceous rope together constitute the sponge *Hyalonema*, while the warty crust of the rope constitutes a parasitic compound polyp, the *Polythoa fatua* of Schultze.

The sponge from Santa Cruz, in its body and projecting fasciculi of siliceous threads, reminds one of the *Hyalonema* sponge with its siliceous rope, but the structure of the threads of the former more nearly resembles those of the

anchor threads of *Euplectella*. It is evidently a different sponge from either of those just named, and may be called *Pheronema*.

The body of the sponge is oblong ovoidal, with the narrower end upward, and with one side more prominent than the other. The lower extremity is rather cylindroid and rounded truncate. The upper extremity is conical, with a truncate apex presenting a large circular orifice. This is about 4 lines in diameter and is the exit of a canal which descends in the axis of the sponge for almost half its depth, and then appears to divide into several branches. The sides of the sponge form thick dense walls to the cylindrical canal, which is of uniform diameter before its division.

In its present condition the sponge is of a light brown hue. Its surface exhibits an intricate interlacement of stellate, siliceous spiculæ, including a tissue of finer spiculæ of the same character, the whole associated by the dried remains of the softer sponge tissues. More or less fine sand, especially at the lower end of the sponge appears to be introduced as an element of structure.

From the lower end of the sponge there projects a number of distinct or separate tufts of siliceous spiculæ, looking like tufts of blonde human hair. In the specimen there are fifteen tufts projecting around two-thirds of the extremity of the sponge, but the remaining third of the extremity of the latter exhibits about ten orifices, from which as many additional tufts appear to have been extracted.

Length of the body of the sponge $4\frac{1}{4}$ inches; diameter at middle 22 lines, at lower end 15 and 17 lines, at upper end 8 lines. Length of tufts of spiculæ 2 inches. The coarser stellate spicules of the surface of the sponge in general have five rays, of which four are irregularly cruciform, while the fifth projects at a right angle to the others towards the interior of the sponge. The rays of the contiguous crosses form together a lattice work on the surface of the sponge, and the intervals are covered by the rays of the finer spiculæ which also in general have a five-rayed stellate character. The finer tissue in the interior of the sponge, seen through the lattice work of the surface, contains a multitude of spicules which differ from the others only in their minute forms. Some of the largest stellate spicules on the surface of the sponge have a stretch of three-fourths of an inch.

The spicules of the tufts projecting from the sponge are two or three inches in length and vary in diameter. They become attenuated towards both extremities, but especially that inserted into the sponge-mass. Starting from the latter, they are at first smooth, then finely tuberculate; the tubercles gradually become converted into well marked recurved prickles or hooks, and finally the spicules end in a pair of longer hooks, recalling to mind the arms of an anchor. The spicules bear a near resemblance to those at the lower extremity of *Euplectella*, but have only two instead of four hooks at the end. In the specimen but few of the spicules present the complete character as described, most of them apparently having been broken.

The object of the tufts of spicules with their recurved prickles, and anchor-like free extremities, in *Pheronema* would apper to be to maintain the position or preserve the anchorage of the sponge in its ocean home, and perhaps in the living animal they are incessantly produced as occasion may require, just as a *Mytilus* or a *Pinna* renews and attaches its threads of byssus to secure its position.

The siliceous spicules of *Pheronema* are composed, as in sponges generally, of concentric layers, and exhibited a delicate tubular axis. A spicula from one of the tufts measured as follows:—

Spread of the anchor one-tenth of a line; shank of the anchor one-thirtieth of a line; prickled portion of shaft one-fortieth of a line; shaft where thickest and without prickles one-eighteenth of a line, thinning out to the inserted end where it was not more than 1-300th of a line.

The species I propose to dedicate to my wife under the name of *Pheronema Annæ*.

Dr. Leidy fur remarked, that if any of the members desired to examine

Euglena viridis, he had observed it in great profusion on Friday last in a ditch skirting the Delaware road below the coal oil depot, south of the built portion of the city. The water looked in the spot as if Schweinfurt green had been strewed on the surface. He also exhibited drawings of a species which appeared to be an undescribed one, and which he had several times noticed late in the spring and early summer some years ago. The drawings were made from specimens obtained in a pond near Gloucester, N J., in May, 1858. The water of the pond was thickly coated with a ferruginous red color due to the *Euglena*. The infusorium is not of a blood-red hue, as is stated to be the case in *Euglena sanguinea*, but is of a uniform ferruginous red. Upon keeping the animalcule a few days in a glass vessel exposed to the northern light, the exterior of the contents assumed a bright green hue, and the red eye point, previously invisible, came into view, while the central mass of contents remained of the original color. The animalcules remained in this condition subsequently until they died. In motion the animalcule assumed the various forms observed in *E. viridis* and other species. It would elongate to about 1-15th of a line by the 1-75th of a line wide. In the resting condition assuming a globular form, it measured 1-37th of a line in diameter.

The head is obtuse; the mouth oblique; the tail acute, and the flagellum is about the length of the body. Generally two nucleus-like vesicles occupied the interior, besides a clearer space around the position of the eye-point.

Dr. R. W. Hargadine exhibited some beautiful crystals of hæmatocrystallin, prepared by himself after the method of Bojanowski, who takes a quantity of blood drawn from a vein, or better from the blood vessel of an animal after death, and places it from two to four days in a cool place, until the blood corpuscles begin to form a thick, dark red, or black mass. A drop of this fluid is placed on a slide, covered, and placed in a dark place for several hours, when the crystals begin to form.

Dr. Chas. H. Thomas was elected a member of the Department.

Oct. 19*th*, 1868.

Director, Wm. Pepper, M. D., in the Chair.

Twenty-two members present.

Dr. H. C. Wood, Jr., called the attention of the Department to the manner in which one of the plant inhabitants of the ditches below the city produces its *zoospores*. The plant in question is filamentous, and grows in great numbers attached to twigs, bits of dead grass, splinters of wood, &c., in stagnant or partial stagnant water.

At its maximum size it is very apparent to the unaided eye, and is of a dark green or even blackish color. Such large filaments are perfectly opaque and are composed of numerous cells. The base of the filament is narrowed, and at irregular intervals in its length there are very marked contractions. The younger filaments are uniform and composed of a single series of cells. The *zoospore* is of the ordinary conical form, with the usual transparent space at the smaller end, from which arise three long cilia. The living *zoospore* soon becomes attached by its pointed end to some support, its cilia withering away, and commences to elongate at the expense of its transverse diameter. At the same time it acquires a cellulose coat. After a while the cell thus formed divides transversely into two. Growth continuing, each of these cells after attaining a certain size, again divides transversely, and so the process goes on, until finally a long filament is produced, which is composed of a single series of cells placed end to end. When this filament has reached a certain stage of development, one of two things occurs, either the cells begin to divide in the direction of their length, or the production of *Zoospores* takes place. In the first instance each cell

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