65.—FRESH-WATER SPONGES: WHAT, WHERE, WHEN, AND WHO WANTS THEM.

By EDWARD POTTS.

The purpose of this article is to give to the uninitiated some idea of the appearance of fresh-water sponges; to suggest where they should be looked for and when it is best to collect them.

It seems to be a fact that very many persons, not excepting some of scientific tastes, are unaware of the existence of sponges in our fresh waters. This may be partially explained by the further fact that in England, and throughout Continental Europe, the keen eyes that for years past have been searching every body of water for its *minuter* organisms, have thus far failed to discover and describe more than two species of sponges. The zeal, therefore, enlisted in the search for them has been far less than the puzzling character of their organization—upon the border-land of animal and vegetable life—and the beauty and quaintness of form of some of their component parts would seem naturally to invite. It is to be hoped, however, that the far richer fauna which has already been developed in America, with the strong probability of a considerable increase in genera and species in the near future, may stimulate observers to aid in this interesting work.

It is not the present intention of the writer to give either a scientific or popular description of these sponges; but only by a few words to help those whose interest may be awakened in the subject, to seek them intelligently and to recognize them when found.

First, then, all fresh-water sponges which have been described at the present date are of a silicious character; that is, their skeleton structure or frame-work does not consist, as in the familiar marine sponges of commerce, of an elastic net-work of tough fibers—but of lines of fasciculated flint-needles, about one $\frac{1}{100}$ of an inch in length, so arranged as to form a loose intertexture, penetrated by canals, and supporting the sponge-flesh. When crushed, therefore, this texture is permanently destroyed and will not resume its original shape. The sponge-flesh, so called, is a thin slime covering the spicules and lining the canals of the living organism; having a peculiar and not unpleasant odor when fresh, but betraying its animal nature by an extremity of foulness when the dead sponge has been kept a few days in water.

Many of the species, native in this country, appear as mere incrustations of varying size and shape, and from less than a line to an inch or more in thickness. Their surface, smooth or more or less tuberculated, is, in some species, supplemented by a higher growth of branches or finger-like processes, frequently several inches in length. In color they vary from nearly white to the most vivid green, in an almost exact ratio to the degree of light received. The slimy growth of Confervæ occasion-

ally seen upon the bottom of pools and streams, or dense masses of water-moss, may momentarily mislead the collector; but a pocket lens will reveal to him at a glance the minute leaves of the moss, or the delicate green threads of the algæ; while in the true sponge he will hardly fail to see the characteristic pores penetrating its surface and to detect the fine points of numerous projecting spicules.

The particular feature distinguishing fresh-water from marine sponges is the presence in the former, when mature, of the reproductive bodies known as statoblasts or statospheres. These are nearly spherical, light or dark brown, generally easily visible by the naked eye, and occupy positions at the lower surface or throughout the mass of the sponge. They should be carefully looked for and gathered with the specimen, as it is upon the form of the spicules encrusting their surface that the classification of fresh-water sponges principally depends. Either very early or very late in the season minute groups of these statospheres may often be found, unaccompanied by the skeleton spicules and slime-like flesh of the sponge, and it is well worth while to gather and preserve them.

These sponges are found growing upon any supporting substance except mud, and at every depth beneath the surface of the water; but they affect chiefly the under and upper surface of stones and timbers, the sides of piling, and of submerged stumps and branches. The stems and roots of water plants are often coated and matted together by them. As the silting of earthy matter into their pores would soon suffocate them, we find in standing pools the most flourishing specimens attached to the under side of stones or water-logged timbers, which shield them from the intrusion of the heavier silicious particles; whilst in clear lakes and rapidly flowing streams they plant themselves boldly upon the upper surface of stones in the full sunlight.

A further hint as to the bodies of water which favor their growth may be found in the fact that three species, one of them the most peculiar of American forms, were found in a stream a child could step over; five were gathered at one time in the submerged cellar of a burnt mill; while the timber-work of the dams upon some of our largest rivers has furnished rich collections; so that there is scarcely a situation where water stands or runs, excepting upon the muddy bottoms of shallow streams or mill-ponds, where sponges may not be hopefully sought for and frequently discovered.

The best season for collecting sponges varies with the different species, but may be generally stated to be from the last of July to the middle or latter part of November, when the spicules and statospheres are likely to be fully matured. They may be preserved in dilute alcohol or dried by a few days' exposure to the air; in which condition (as the personal "application" of the foregoing sermon), the writer would be very happy to receive specimens from all parts of this and other countries. If packed in light boxes, strong enough to prevent crushing, the

postage by mail (4th class) will be but one cent per ounce, which the writer will gladly repay, with any other reasonable expenses. He will acknowledge their receipt, giving the names of known species and full credit to the collectors of all that are novel or interesting. Every gathering should be marked with its habitat, the date of collection, and the name and address of the sender.

A principal motive for the preparation of this circular at the present time is found in the desirability of securing as full a representation as may be, of the American forms at least, in a monograph now in course of preparation; but contributions will always be very acceptable.

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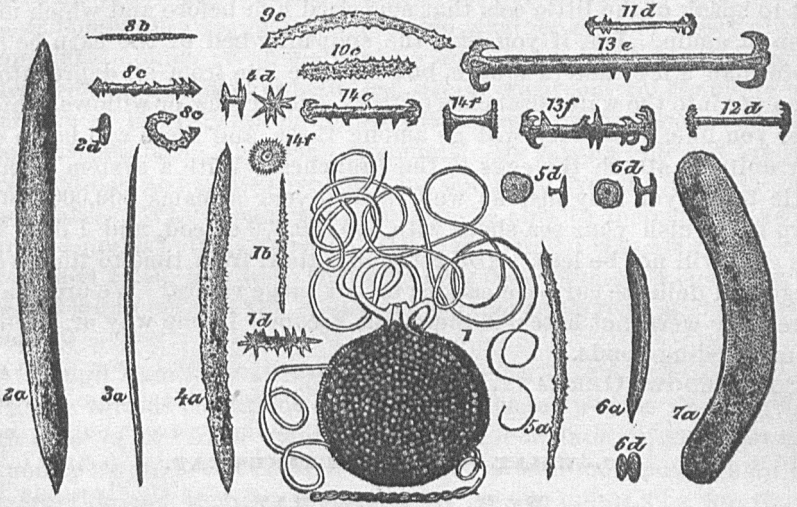

EXPLANATION OF CUT.

The accompanying figures are drawn from nature by the aid of the camera lucida and represent the relative sizes and shapes of *like parts* of several sponges. The statosphere is magnified about 35 times, the spicules of the skeleton, marked *a*, 150 times, all other figures 225 times.

1. Carterius tenosperma—Section of statosphere. (In the other genera these are *without* tendrils.) *b*, dermal or flesh spicule; *d*, birotulate spicule of outer coat of the statosphere.
2. Parmula Batesii—*a*, skeleton spicule; *d*, *parmuliform* spicule of statosphere.
3. Spongilla montana—*a*, skeleton spicule.
4. Meyenia fluviatilis—*a*, skeleton spicule; *d*, birotulate statosphere spicule and disk of rotule.
5. Tubella Pennsylvanica—*a*, skeleton spicule; *d*, inequibirotulate spicule of statosphere and disk.
6. Meyenia Leidii—*a*, skeleton spicule; *d*, birotulate statosphere spicule and disk.
7. Uruguaya corallioides—*a*, skeleton spicule.
8. Spongilla lacustroides—*b*, dermal spicule; *c*, statosphere spicule.
9. Spongilla fragilis, var. minuta—*c*, statosphere spicule.
10. Spongilla fragilis, var. calumeti—*c*, statosphere spicule.
11. Meyenia crateriforma—*d*, birotulate statosphere spicule.
12. Meyenia Everetti—*d*, birotulate statosphere spicule.
13. Heteromeyenia argyrosperma—*e*, *long*; *f*, *short*, birotulate statosphere spicule.
14. Heteromeyenia Ryderi—*e*, long, *f* short; birotulate statosphere spicule.