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 minutest 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 \( \frac{1}{10} \) 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 Converva 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 deli-
cate green threads of the algae; 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 pre-
serve them.

These sponges are found growing upon any supporting substance ex-
cept 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 settling 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 pecu-
liar 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 coun-
tries. 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 gather-
ing 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. Carterina 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, parnumiform 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, inequibiotulate spicule of statosphere and disk.
6. Meyenia Leidii—a, skeleton spicule; d, birotulate statosphere spicule and disk.
7. Uruguaya coralloides—a, skeleton spicule.
8. Spongilla lacustris—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.
13. Heteromeyenia argyrospertia—e, long; f, short, birotulate statosphere spicule.
14. Heteromeyenia Ryder—e, long; f, short; birotulate statosphere spicule.