

ches, and from stones and shells near low water, and their habits studied by placing them in a vessel of water.

The study of living specimens of Radiates will be practicable to only those living near the sea-shore, but much can be learned from the examination of preserved specimens, such as star-fish, sea-urchins and corals. Examples of the two former can be found on almost every shore.

In the case of mollusks specimens may be found everywhere, the sea-shore furnishing the greatest variety and abundance. Several species may be found in almost every lake and river, while careful search among leaves and roots and rubbish, in old walls and garden walks, will reveal numerous species of land shells.

During the summer months directions for collecting and preserving zoological specimens will be given in the "Scientist." Next month directions will be given for collecting and preserving shells.

GENERAL DIRECTIONS FOR COLLECTING MARINE ANIMALS.—Where the retreat of the tide is sufficient, the sea-shore always affords the best field for the collector, and the specimens generally increase in number and interest in proportion as we approximate to low-water-mark. Nevertheless the whole area should be searched, as each species has its peculiar range, and many forms can live only where they are exposed in the air for the greater part of the time each day. The ground may be either muddy, sandy, weedy, gravelly, stony or rocky, and the animals inhabiting each kind of ground will be found more or less peculiar to it, and rarely to occur on the others. Sand and mud are, however so similar in character that their denizens are nearly the same, though one prefer the clearer waters which

flow over sand, to the turbid tide which deposits mud. But few specimens will be found on the surface of such ground, although the little pools lying on it should be scooped with the dip net for shrimps, etc., but it is only by the spade that its true riches can be developed. By digging in spots indicated by small holes, a great number of worms, boring crustaceans, and bivalves may always be found.

Weedy ground is so called from the abundance of eel-grass and sea-weed which covers it. These weeds should be examined carefully for small shells and crustaceans; perhaps the best method of doing this being to wash quantities of the weed in a bucket of water and examine the sediment.

Gravelly ground is not generally very rich in animals life, but will repay an examination, as small crabs are fond of lurking among the pebbles.

Stony ground is by far the richest of all. Wherever there are stones, particularly flat ones, about large enough to afford a moderate degree of exercise to a common sized man in turning them over, there the zoologist can never fail to fill his basket and bottles; for beneath these stones myriads of rare and beautiful species retire for moisture and protection during the retreat of the tide. *Rocky ground* should be searched chiefly in the pools and crevices.

Littoral or sea-shore investigations should be carried on not only in the bays, harbors, and creeks, but on the ocean beach, in each locality, to get at a true idea of its fauna, as the respective animals will be found different.—*Smithsonian Directions*.

W. W. BAILEY reports to the *American Naturalist* the finding of a spider's web with guys or supports 15ft. long, and web proper 3ft. in circumference.