

separately in a rather broad-bottomed goblet over a brisk fire for about half an hour, the boiling being continued with a change of water till little or no mud appears. The coarser parcels may then be dried and spread out on a school-slate, when, with lens and a camel-hair brush wetted at the point, the fossils may be easily picked out and dropped into a pill-box for further examination. The finer kinds may be separated into lighter and heavier portions by putting, say a handful of the thoroughly dried sediment into a bowl, and turning a gentle stream of water upon it, when the lighter grains float and may be decanted into another vessel. These floated parts include the smaller kinds of foraminifera and entomostraca, the plates, anchors, crosses, and other spicules of holothurians and sponges, fragments of polyzoa, shells, etc. The effect of boiling is to loosen these organisms from the matrix and to clean them more perfectly than can be done in any other way; the minuter forms float off as dust. By this method of detection and selection, fossils which occur only in the proportion of one in a thousand of the particles may be easily secured.

Unweathered Shales.—It often happens that along cliff-sections, on the banks or beds of rivers or on the seashore, fossiliferous shales occur from which the weathered portions are continually washed or blown away, so that no opportunity occurs of adequately collecting the fossils from the exposed débris of the rocks. In such cases the solid, unweathered shale must be taken and treated somewhat differently. All layers of shale will not be found to be equally rich in microzoa, and it is desirable to try those first which seem most likely to yield satisfactory results—such, for instance, as those which are otherwise most fossiliferous. Where shale occurs in association with limestone, the portions just beneath or above the limestone should first be searched. The parts selected should be dried as thoroughly as possible in an oven or before a fire, and should then be put into water, and left there until they fall to pieces. The débris thus obtained is to be put into a rather wide-meshed sieve, and the coarser materials left behind may be again dried and steeped, this process being repeated two or three times, or until the fragments undergo no further subdivision. When thus reduced as much as possible, the débris should be boiled as above described. Some shales are completely disintegrated at once by boiling; others only after prolonged boiling, while some, though subdivided into small fragments, will not “dissolve,” that is, will not break up