observe adjacent parts where they have been so largely developed as to usurp the place of the original glass, and give the rock in consequence a lithoid aspect (Fig. 11, C and pp. 278–283).

D. DETRITUS.—Many rocks are composed of the detritus of pre-existing materials. In the great majority of cases this can be readily detected, even with the naked eye. But where the texture of such detrital or fragmental (clastic) rocks becomes exceedingly fine, their true nature may require elucidation with the microscope (Figs. 21, 22). An obvious distinction can be drawn between a mass of compact detritus and a crystalline or vitreous rock. The detrital materials are found to consist of various and irregularly shaped grains, with more or less of an amorphous and generally granular paste. In some cases, the grains are broken and angular, in others they are rounded or water-worn (pp. 227–228). They may consist of minerals (quartz, chert, felspars, mica, etc.), or of rocks (slate, limestone, basalt, etc.), or of the remains of plants or animals (spores of lycopods, fragments of shells, crinoids, etc.). It is evident therefore that though some of them may be crystalline, the rock of which they now form part is a non-crystalline compound. Water, with carbonate of lime or other mineral matter in solution, permeating a detrital rock, has sometimes allowed its dissolved materials to crystallize among the interstices of the detritus, thus producing a more or less distinctly crystalline structure. But the fundamentally secondary or derivative nature of the mass is not always thereby effaced.

2. *Microscopic Structures of Rocks*

We have next to consider the manner in which the foregoing microscopic elements are associated in rocks. This