quartz, felspar, and mica, in particles of tolerably uniform size (Figs. 15 and 29). The felspar is chiefly white or pink orthoclase, but triclinic felspars (oligoclase and albite) may often be observed in smaller quantity, frequently distinguishable by their fine striation and more waxy lustre. Microcline is not infrequent, as well as the intercrystallization of orthoclase and plagioclase (Perthite). The mica may be the potash (muscovite) variety, usually of a white silvery aspect, but more commonly biotite or other dark brown or black variety. The quartz may be observed to form a kind of paste or magma wrapping round the other ingredients. Only in cavities of the granite do the component minerals occur in independent well-formed crystals, and there too the accessory minerals (beryl, topaz, tourmaline, garnet, etc.) are chiefly found.

Fig. 29.—Holocrystalline Structure of Granite (magnified).

From a microscopic examination of granite, it was formerly inferred that the rock has a thoroughly crystalline structure, with no megascopic ground-mass, nor microscopic base of any kind between the crystals or crystalline individuals. More recent and exhaustive study of the subject, however, has led to the conclusion that though nothing like a vitreous, or even porphyritic, ground-mass can be detected, there is yet sometimes discernible an analogous kind of entirely crystalline magma, in which the crystals or crystalline débris of the rock are imbedded, and in which they are partially dissolved. Having regard to the relations between this magma and its inclosed minerals, M. Michel-Lévy has observed that microscopic examination points to a distinction between granites in which the quartz is more recent than the other constituents and has consolidated at once, and those in which there are remains of earlier bipyramidal quartz. He distinguishes these two series as—(A) Ancient granites, composed of black mica, hornblende, oligoclase, and orthoclase, forming a crystalline débris im-

Parallel), p. 111 *et seq.* Michel-Lévy, Bull. Soc. Géol. France, 3d ser. iii. p. 199. Rosenbusch, Zeitsch. Deutsch. Geol. Gesell. xxviii. (1876), p. 369. H. Möhl, Nyt. Mag. Nat. xxiii. p. 1 *et seq.* J. Lehmann, "Untersuchungen über die Entstehung der Altkrystallinischen Schiefergesteine," 1884, p. 3. W. J. Sollas, Trans. Roy. Irish Acad. xxix. Part xiv. (1891).