

have been laid down. This idea no doubt originated in the fact that granite is found rising from beneath gneiss, schist, and other crystalline masses, which in their turn underlie very old stratified formations. The intrusive character of granite, shown by its numerous ramifying veins, proved it to be later than at least those rocks which it had invaded. Nevertheless, the composition and structure of gneiss and mica-schist were believed to be best explained by supposing these rocks to have been derived from the waste of granite, and thus, though the existing intrusive granite had to be recognized as posterior in date, it was regarded as only a subsequent protrusion of the vast underlying granitic crust. In this way, the idea of the primeval or fundamental nature of granite held its ground. From what is known regarding the fusion and consolidation of rocks (*ante*, p. 510 *et seq.*), and from the evidence supplied by the microscopic structure of granite itself (p. 199), it appears now to be established that granite has consolidated under great pressure, in presence of superheated water, with or without liquid carbon-dioxide, fluorine, etc., conditions which probably never obtained at the earth's immediate surface, unless, perhaps, in those earliest ages when the atmosphere was densely loaded with vapors, and when the atmospheric pressure at the surface must have been enormous (p. 70). Whether the original crust was of a granitic or of a glassy character, no trace of it has ever been or is ever likely to be found. There can be no doubt, however, that the oldest known rocks are either granites or granitoid gneisses which have probably been formed out of granite.

The presence of granite at the existing surface is, doubtless, in all cases due to the removal by denudation of masses