

to Moose River, the horizontal distance being 10 miles and the vertical thickness of strata 18,000 ft., in one broad monoclinical fold with minor undulations. Across this section quartzite predominates, the slate appearing in beds relatively infrequent and thin. The sand-rock from which the quartzite originated must have contained lime, for calcite is abundant. The fine silt, now changed to slate, has been much hardened, but its true character is not obscured. Of later igneous rocks there is scant evidence, save at Tangier, where dikes of diorite have been noted; but they do not appear to have influenced the distribution of the gold. We have to deal, therefore, with metamorphosed sediments of one series and the granite that has intruded into and through them.

The age of the granite is important, for it bears upon the geologic antiquity of the ore deposits. By reference to maps\* it can be seen that the granite has displaced more than a third of the superficial area formerly occupied by the slate and quartzite formation; indeed, it has been suggested that the granite represents these rocks in the last phase of their metamorphism; but this is a deep question, in more senses than one, and need not concern us just now. As we see the granite today it is an intrusive rock, and therefore younger than the gold-bearing formation into which it has been thrust. How much younger? The evidence on this point is adequate: fragments of detrital granite are found in northern Nova Scotia within Middle Devonian sediments; on the other hand, in the Bear River basin the granite cuts into the Upper Silurian of the Oriskany horizon. Therefore the granite is older than the middle, and younger than the base of the Devonian; it is of early Devonian age. Between the deposition of the sediments now constituting the slate-quartzite series and the irruption of the granite, there stretches the whole of the Silurian period, and a part, if not all, of the Cambrian.

The slate-quartzite series is probably Algonkian; the granite is early Devonian; what, then, is the age of the gold-bearing quartz? The best answer to that is afforded by the fact that the quartz veins in places (as at Forest Hill) follow tongues or apophyses of granite, and gold has been detected in the granite at such places. Moreover, mineralized quartz penetrates the granite at other places (as at Country Harbour). Therefore the quartz is younger than the granite. Finally, a conglomerate known to be of Lower Carboniferous age and composed of the eroded fragments of the slate-quartzite series has been found at Gay's River, and from this conglomerate gold

\* I refer to the excellent maps prepared by E. R. Faribault for the Geological Survey of Canada.