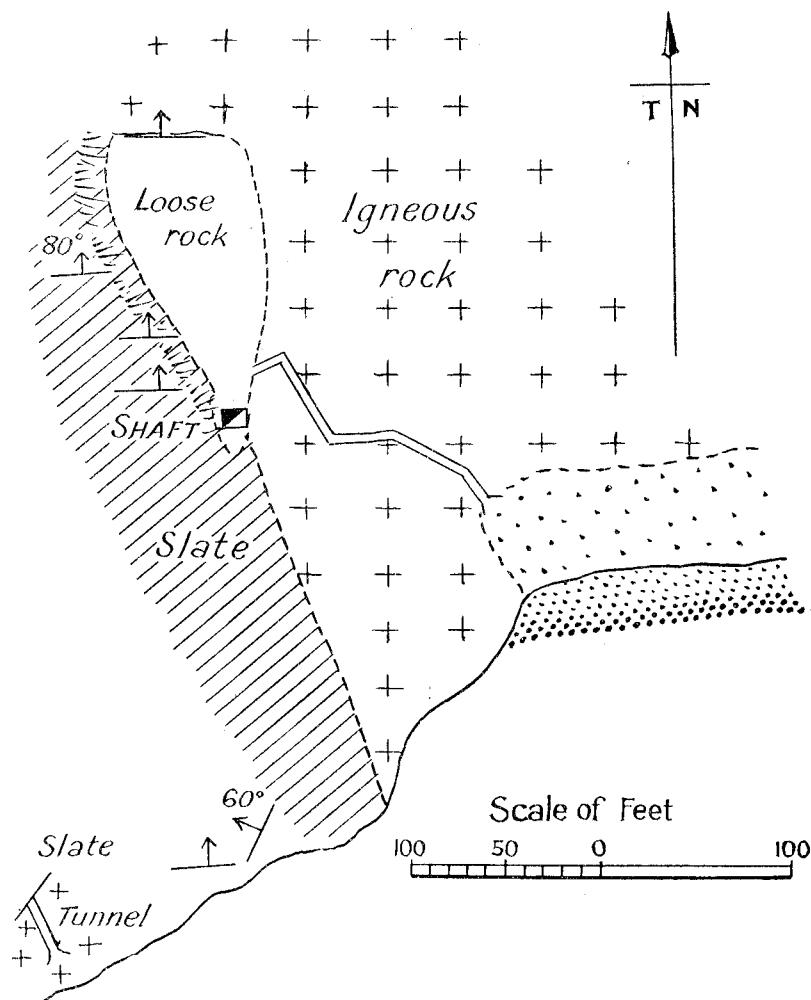


floor. The slightly overhanging western wall of silicified argillite strikes north-north-west. It is stained with copper salts, and three decided east-west "heads" dipping steeply north shatter the rock near them. This shattered rock contains much chalcopyrite. The east wall of the chamber strikes north, and is smooth and vertical. It consists of the igneous rock Bartrum names pegmatite or granitic granophyre. The north side of the chamber is formed of the same igneous mass, the wall of which here dips at 60° . Probably the molten rock forced itself along fractures crossing the shattered sedimentaries at right angles. At the south end the eastern and western walls converge, and about 8 ft. of crushed and silicified argillite with veinlets and films of chalcopyrite shows in the face. There is a shaft near this point, at present filled with water which has a metallic taste but is not sea-water. According to Hutton, this shaft is at least 72 ft. deep, and ore 9 ft. thick is showing at this depth.



PLAN OF COPPER-MINE, GREAT BARRIER ISLAND.

The deposit is in a narrow peninsula, the ridge where the workings have collapsed being about 200 ft. above the sea. The descent on the northern side is precipitous, and landing on the shore possible only in calm weather. The cliffs in this locality were seen from a boat, and copper-stainings show strongly on both sides of the cove on the north side of the headland, but there seemed to be no definite lode. On the south side of the headland the large dyke penetrated by the adit to the chamber continues along the shore for 3 chains before the sedimentary rocks outcrop. There is little crushing at the contact and no copper-stains. About a chain farther south-west two strong "heads" are prominent. Two chains farther on a short tunnel is driven through igneous rock to shattered slates showing copper-stains. On the south side of the peninsula there is no definite lode.

A few other observations were made. On the north side of Mine Bay, 60 chains south-east of the mine, a short adit 100 ft. long follows a contact on the north side of a dyke which strikes west-north-west and dips steeply north. There is a little pugged rock and some copper-stains. A wide zone of intensely crushed sedimentary rock outcrops on the south side at the head of Mine Bay. A large dyke showing occasional copper-stains crosses the headwaters of two small tributaries from the north to the creek entering Mine Bay. Close to the north side of the main creek, about 60 chains from the sea, an adit, now collapsed, cuts a well-marked fracture in sedimentary rocks. This, which contains a good deal of pug and shows copper-stains, strikes nearly west and dips south at about 65° .

Evidently the magma that supplied the many dykes contained copper. This was concentrated in the residual solutions, and escaped to the surface along the contacts of the igneous and sedimentary rocks. The igneous rocks had solidified, and the solutions altered them widely and in places deposited