weathering to unequal contraction and expansion on cooling and heating, the hillside having a northern or sunny aspect. From very large boulders the concavity is very small, and the flakes have approximately plane surfaces.

Mr. James Park, F.G.S., has suggested the term "propylite" for the decomposed andesites of the peninsula. This term was used by Rosenbusch and Becker, and revived later by Professor Judd, to designate andesites altered by solfataric action. As the majority, if not all, of the altered Coromandel andesites have been decomposed not by solfataric action, but by ordinary leaching along reefs and fissures, and by surface-weathering, the above term is obviously inapplicable. The term "porphyrite" has been adopted by some British authors to describe such a rock as the above, but, as the word is used by other authors to designate an intrusive rock intermediate between an andesite and a diorite, and as the latter is the signification generally used by myself, I have adopted throughout this paper the somewhat cumbrous term "decomposed andesite."

The following are the characteristics of the various andesites under the microscope:—

Hornblende Andesite.—Morepork Gully, north of the Kapanga Mine.—Base devitrified, dusky with magnetite grains. Felspars small, and all twinned on the albite type. Extinction angles indicate andesine as the plagioclase. Ferro-magnesian silicates are all decomposed to chlorite, but from the contours were probably hornblende. Magnetite is abundant, resulting from the decomposition of the ferro-magnesian silicate.

In situ this is a hard, black, typical andesite, analysing as follows:—

Silica (SiO_2)	56·93	per cent.
Alumina (Al_2O_3)	23·15	"
Iron-protoxide (FeO)	13·29	"
Lime (CaO)	1·97	"
Magnesia (MgO)	1·22	"
Potash (K_2O)	0·13	"
Soda (Na_2O)	3·38	"
	100·07	

Hornblende Andesite.— Steep bluff, half-mile west of Kapanga Mine.—Base devitrified Phenocrysts of felspar all twinned polysynthetically, with extinction angles averaging 20°. The ferro-magnesian silicates comprise hornblende, with strong pleochroisms, well marked resorption border and cleavage-planes. Pleochroism pale greenish-yellow to brownish-black. Augite pale-green, non-pleochroic, and almost colourless.

—— *Andesite.*—Hauraki Mine.—This rock is very much decomposed, the only recognisable constituent being the felspar. Phenocrysts of plagioclase felspar twinned both on the albite and pericline types. Their extinction angles, 20°, indicate a felspar approximating very closely to labradorite.

Augite Andesite.—Dacre's Hill.—Base glassy, crowded with felspar microlites and crystallites. Phenocrysts of plagioclase, abundant, and twinned polysynthetically. Augite abundant, pale-green, non-pleochroic. Quartz occurs as a single large included fragment, hardly justifying the use of the term "dacite" for this rock.

Hornblende Andesite.—Thames–Coromandel Road, over Preece's Point ridge.—Base slightly devitrified, and dusky with inclusions of magnetite. Phenocrysts few in number, and sparsely scattered throughout the base. Plagioclase felspars show albite twinning. A single pale-green phenocryst represents all the original ferro-magnesian silicate present. This is hornblende, with a strong resorption border and distinct cleavage meeting at angles of about 120°.

—— *Andesite.*—Main range, two miles north of Castle Rock.—This is a fine-grained, somewhat decomposed, black rock with a semi-devitrified base, crowded with inclusions of magnetite. The felspars are very small indeed, rarely exceeding $\frac{1}{10}$ in. in length. Phenocrysts are twinned on the albite type, with fairly high extinction angles. All traces of the ferro-magnesian silicates have disappeared.

Hypersthene-augite Andesite.— Awakanae Creek.—Base glassy, little devitrified. Zoned plagioclase felspars twinned on the albite type. Extinction angle 19°, indicating andesine. Zonal inclusions abundant, and disposed peripherally. The ferro-magnesian silicates are hypersthene and augite, the former extinguishing straight, occurring with octagonal sections, and pleochroic in pale-green to reddish-brown colours. The augite is pale-green and non-pleochroic. This is the rock referred to on page 9 as having a peculiar spheroidal manner of weathering.

IX.—Miocene Breccias, Lavas, and Dykes.

These beds unconformably overlie the auriferous andesites, and differ widely from them in petrological and lithological characters. While the auriferous series is built up, in the main, of lavas of a somewhat basic facies, the overlying Miocene beds are composed of a vast agglomeration of coarse trachytic or highly acidic andesite breccias. With the exception of the Castle Rock dyke, they are disposed only around the Coromandel Harbour and along the sea-coast, being typically developed on Beeson's Island, which lies across the mouth of the harbour. They increase in thickness to the south, reaching a maximum thickness about the Manaia Harbour. In many places, notably at the entrance to the Coromandel Harbour, they are seen to be distinctly stratified. (For the section at this locality, see Fig. 8.)

The old crater from whence these deposits emanated is still fairly well defined, but has suffered decay by the erosion of waves impelled by the prevailing north-west wind, and is consequently breached in that direction. The soundings show that the sea-bottom here is cup-shaped, with a maximum depth of 25 fathoms.