mounds emitting gas. Shattered sandstones in Raukumara East Survey District have their fractures filled with pitch, and the sandy mudstone along the Karakatuwhero Stream has a strong smell of benzine.

(2.) *Limestone and Greensandstone.*

On the south side of Iron or Te Koau Point, near Hicks Bay, a thick and extensive bed of limestone outcrops in the surf, and extends west across the road into the Punaruku, forming high cliffs encircling the stream. It could be readily quarried, and is easily accessible. Several bands of the same limestone crop out in the Oweka, and form cliffs westward above the site of the new road. Near Cape Runaway, also, limestone forms easily accessible cliffs. The samples taken have not yet been analysed, but the stone appears suitable for burning or grinding.

Besides this limestone, which occurs in thick regular continuous layers at the base of the Tertiary rocks, and can be distinguished by its coarse texture and fossils, there is an inconspicuous shattered fine-grained limestone that forms broken, irregular patches in the lower, sharply folded strata. No large deposit of it was seen; but it appears in many places in the subdivision, close to the boundary of the Tertiary rocks, in small deposits which should be useful for local needs.

Associated with the fine-grained limestone are thick beds of greensandstone. In Arowhana and Hikurangi survey districts it forms several large hills difficult of access; but in Waiapu Survey District some beds outcrop in handy places along the coast and in the Poroporo Valley. The greensandstone when ground would improve the soil-texture and supply potash. Incomplete analyses of three samples are as follow:—

	P_2O_5.	K_2O.	Na_2O.
Awanui greensandstone	0·36	4·56	0·86
Weraroa greensandstone	0·38	3·52	0·32
Puniatara greensandstone	0·30	5·66	0·13

Under present conditions little limestone, lime or greensand could be profitably used in the subdivision; but in the near future, as more of the flats are tilled and subdivided into small farms, the increasing demand will enable these materials to be economically worked.

(3.) *Copper.*

In November a trip was made to Te Kumi, in Raukumara West Survey District, whence for the past eight years or more prospectors have been sending small samples of copper-ore for analysis. The result of the inspection is given in a special report. Similar samples have also been received from other parts of the Waiapu Subdivision, and at Potikirua, on the north coast in the east of Matakaoa North Survey District, prospectors sank a shaft in search of copper. When visited it was full of salt water. It is in a crush-zone in the basalt marked by twisted and broken red and green bands and by irregular veins of calcite. Many similar crush-zones were seen, especially along the north coast. At several places they contain masses of pyrite 10 ft. long and 6 ft. wide in the middle, thinning away at the ends. So far as seen the pyrite is small in quantity and poor in quality. Samples have not yet been analysed, but probably, like the Te Kumi stone, contain less than 1 per cent. copper.

East of Te Kumi, in the headwaters of the Mangahamea, a tributary of the Tapuwaeroa, 20 ft. boulders of siliceous hæmatite containing secondary copper sulphides littered on the hillside show that a solid outcrop must exist on the slope close above. The sample from these boulders has not yet been analysed.

(4.) *Stone for Roadmaking, Harbour-works, &c.*

In the North Island east of the mountains from East Cape to Wairarapa no high-grade stone has been recorded as a possible source of material for roadmaking or harbour-works, and rock for the Gisborne roads has been brought from the Hauraki Peninsula and from Dunedin. Yet as early as 1874 Hector mapped the district and showed two large areas of igneous rock ("trachytic agglomerate") extending inland from Matakaoa Point and Iron Point. Later geologists confirmed this, and extended the boundary of the rocks, till Marshall in 1914 mapped the northern igneous area and showed that the rock ranges from tachylite to gabbro.

There is an immense amount of igneous rock: it covers more than 50 square miles and builds mountain-masses 3,000 ft. high. It is not, of course, all of the best quality; but high-grade stone forms long high cliffs in many places along the coast and inland, so that there should be no difficulty in getting blocks of any transportable size. For works requiring small stone there is much rock already broken by natural agents; the agglomerate and breccia will furnish a great amount of 3 in. angular pieces, and the conglomerate at the base of the Tertiary contains a great quantity of the harder stones rounded to smaller dimensions, and set in an easily worked matrix.

(5.) *Building, Decorative, and Monumental Stone.*

As timber gets scarcer more concrete will be needed. Beach-shingle from Napier and river-shingle from the streams of the district have already been used; but the Napier shingle is expensive, and the river-shingle poor in comparison with the igneous rock so abundant in the district near Hicks Bay. Some of the larger blocks of the limestone found in the crush-zone would yield slabs of fine-grained pink "marble" beautifully veined with white; but there is only a small quantity of such material. The large masses of coarse-grained crystalline rock would yield black-and-white stone, similar to the Coromandel "granite." In several places were seen boulders of a basalt-porphyry which has a fine dark groundmass enclosing large light crystals, and a coarsely crystalline augite-feldspar rock shows a pleasing contrast of large crystals of dark augite and white feldspar. Both would yield decorative and monumental stone.