

the Great War the market collapsed and production here practically ceased, only 21½ tons being produced between the years of 1921 and 1933. With the increasing demand for tungsten since 1934 the price has had an upward trend, reaching in 1937 the remarkable level of £500 per ton, resulting in renewed mining activity in the district. Most of the old claims were reopened and prospected farther along the lodes. Recently a sharp decline in the price of scheelite has been recorded, which if it continues will result in a considerable slackening off in the mining activity at the head of the Lake.

The instability of the market and the fluctuation in price are two important factors that prevent any extensive or expensive mining operations, with the result that the main object has been to produce as much scheelite as possible while the price was high without paying any attention to development-work for the future. In spite of this, however, the total production of the district up to 1936 was 1,199 tons of ore, having a total value of £165,963.

The scheelite itself occurs in the lodes as veins and stringers, which may range from a mere fraction of an inch to several feet in thickness, and in nests and bunches. Apart from the mineralization of the reefs by pyrites and arsenopyrite, calcite generally, though not invariably, occurs with the scheelite. Some miners claim calcite as an indicator, though there is diversity of opinion on this matter.

The major reefs of the district are those found on Mount Judah and strike about N. 30° W. dipping to the east at angles of from 12° to 30°. The Glenorchy lode is the only one on the western face of Mount Judah at present being worked extensively, though a certain amount of prospecting work is being carried out on its southward extension. On the eastern face of Mount Judah, the Sunshine, Groves', and several other claims are worked, the reefs here striking much as before, but the dip varying as the country rock has been intensely crushed and sheared since the lodes were formed.

On the ridge to the east of the Bonnie Jean Creek above the Buckler Burn is the Heather Jock Claim, the best productive mine of the district. The reef here is extremely shattered and crushed and strikes about N. 10° W. and dips at a low angle to the west. Small quartz reefs which have been worked for scheelite outcrop to the south on the Heather Jock ridge at Alaska 6,000 ft. and Mount Larkins 7,432 ft. On the MacIntosh-Temple Peak ridge of the Richardson Mountains small reefs generally rich in scheelite striking N. 13° W. and dipping at angles from 30° to 50° to the east have been worked at Mount MacIntosh, Black Peak, and Temple Peak. On the hillside just north of Twelve-mile Creek and about 300 ft. above the road is a much crushed and shattered quartz reef formation at present being worked and producing a fair quantity of scheelite. At the old Mount Alfred Mine, Paradise, a massive quartz reef strikes N. 20° W. and is practically vertical; no work has been done on this mine for quite a number of years.

The quartz reefs carrying scheelite lie in a belt extending approximately north-west from Mount Larkins to the northern end of Mount Alfred, and are connected with the north-east faulting of the district.

In addition to the quartz-mining, a considerable amount of interest is being taken in the recovery of alluvial scheelite from the Buckler Burn and Temple creeks, the gravels of both streams being comparatively rich in this mineral. Till recently this was carried out on a small scale by a few subsidized miners, but mining companies have become interested and extensive developments are foreshadowed.

Gold.—Compared with the scheelite production, the amount of gold-production in this district is rather insignificant, though it realized a considerable value in the "eighties."

In 1880 the Invincible quartz reef was discovered 1,200 ft. above the Rees River on the Richardson Mountain, and a few miles north of the Rees Bridge. This was extensively and profitably worked, until 1890, when, on account of the low returns, the company went into liquidation. During its period of activity some 6,518 oz. of gold was produced. Little trace can be seen of the actual workings today.

A minor amount of gold has been found in the quartz of the Glenorchy lode, but nothing of importance. Alluvial mining has never been very extensively developed, though the gravels of the Buckler Burn, Temple, Twelve-mile and Chinaman creeks have been prospected with varying degrees of success. At the present day little to no gold-mining, either alluvial or reef, is carried on. Some sluicing was carried out on the gravels resting on the schist a few chains below the present Buttery, locally known as Wilson's Dream, with quite a considerable measure of success. Work on this claim has now been abandoned for several years.

PALÆONTOLOGY.

By J. MARWICK.

The fossil mollusca collected by the field officers during the past year have been examined, in large part prepared and identified. These collections have come chiefly from Wakaia, Dannevirke, and Moeraki subdivisions. Collections from a number of other localities have also been identified as far as time has permitted.

The Reference Collection of New Zealand mollusca has been augmented by specimens kindly donated from Lower Waipara by Dr. R. S. Allan, and from Hawke's Bay by Mr. J. D. H. Buchanan. The Foreign Collections received two useful additions through exchange from Australia and from Texas.