740 ft. there is evidence of faulting, and at 754 ft. another slide was met with, striking north and dipping to the east. At 754 ft. the eastern boundary of the lode formation, through which a distance of 137 ft. had been driven, appears to have been reached. Whilst drilling in the face at 758 ft. water was tapped in sufficient quantity to increase the flow beyond the capacity of the pumps. No. 3 winze was sunk a further 56 ft. below No. 3 level; the eastern wall of the lode is exposed. Assays from 146 ft. to 200 ft. varied from 8s. 6d. to £1 9s. 3d. per ton for a width of 42 in. A crosscut at 200 ft. exposed both walls. The lode is 15 ft. wide: the values obtained were: First 5 ft. from east wall, 17s. 6d. per ton; second 5 ft. from east wall, 2s. 4d. per ton; third 5 ft. from east wall, 7s. 3d. per ton.

A drive south of the winze at 200 ft. below No. 3 level was driven 7 ft. along the east wall of the lode, and gave the following values: At 4 ft. south of winze, £2 0s. 6d. per ton; at 7 ft. south of winze, 12s. 4d. per ton.

This winze has been enlarged and retimbered to a depth of 200 ft. in order that larger buckets may be used for the haulage of the rock, and also to enable the workmen to be raised and lowered instead of using the ladders. A suitable winch has been secured and placed in position at the winze.

In March the volume of water from Muir's crosscut increased until it was more than the electric pumps could handle, and the air-driven Cameron pumps, which were previously used during shaft-sinking operations, were installed to give additional pumping-capacity. During May there was rarely less than 30 in. of water on the floor of the chamber 500 ft. down the shaft, and work was subject to constant interruptions, due to irregularity of the electric-power supply and trouble with pumps and motors. A stationary electric pump was put into commission early in November, being supplied by one electric sinking-pump only; a second electric sinking-pump was put into operation a few days later, and the three pumps gave a satisfactory trial run. It then became necessary to lower the sinking-pumps to follow the receeding water. While carrying out this operation an accident occurred which resulted in the cable-winch on the surface, and also the electric cable which supplied power to the motor of the pump, being disabled and rendered practically useless. The pumps were brought to the surface, and all work suspended pending negotiations for the purchase of a more efficient pumping plant.

Copper-mining.

Ruahine Copper-mines Syndicate.—A considerable amount of surface prospecting-work was done during the year, including a tunnel which was driven for 250 ft. The results, however, proved most disappointing. It is now proposed to clean out and retimber the old low-level tunnel, put in by Mr. Tansy some years ago, in which it is reported the lode contained high-grade copper-ore. Seven men have been kept constantly employed.

Quicksilver-mines.

Mount Mitchell Mercury-mine, Puhipuhi.—The only mining operations carried out during the year have been surface prospecting and driving a level for 50 ft. for the purpose of proving conditions below a promising surface outcrop. The results, however, showed no improvement.

New Zealand Quicksilver-mine, Puhipuhi.—No work has been done in this mine during the year.

Rising Sun Quicksilver-mine, Puhipuhi.—No work has been done in this mine during the year.

Oil-wells.

Taranaki Oilfields (Limited).—The various wells, plant, and buildings formerly owned by the Taranaki Oil Development Company (Limited) have been taken over by this company.

No. 1 Well, Tarata: On 31st January, 1926, this well had reached a depth of 4,215 ft. Drilling was continued through the same class of material that had been found higher up—namely, a soft shale, varying in colour from grey to blue. The 8¼ in. casing was run down to 4,167 ft., and at this depth it was set in cement with the object of shutting off the water and thereby enabling drilling to be carried on in what is termed a "dry" hole, under which circumstances much better progress can be expected. Unfortunately, a satisfactory shut-off was not effected. After allowing the cement to set an effort was made to lower the level of the water in the well by bailing, but after the depth was lowered to a considerable extent the water came in again. It was then considered more advantageous to continue drilling at a comparatively slow rate with the well full of water, rather than to incur the delay involved in withdrawing the casing and resetting it in cement. It seems likely that, owing to the softness of the formation at the point where the string of casing was set, the water under the heavy pressure forced its way through the ground behind the cement.

No. 2 Well, Moturoa: Actual drilling of this well commenced on the 11th February and has now reached a depth of 3,480 ft. A certain amount of difficulty was experienced in getting through the first 200 ft. or so, owing to the presence of hard boulders set in soft material, which had the effect of deflecting the tools. At 930 ft. a good show of oil was found, about four barrels of oil being bailed, after the well, which was full of water, had stood idle for a day. Apart from some minor troubles, no further incident of note occurred until 3rd June, when at 6.30 p.m. a violent blow-out of gas took place, which blew everything out of the well. No one was injured in any way, and repair work was commenced immediately. A strong flow of gas, amounting to more than 4,000,000 cubic feet per twenty-four hours, issued from the well for more than three weeks, and during that time showed no sign of diminution. On capping the well the gas-pressure was found to be 625 lb. per square inch. On analysis this gas was found to consist of 72 per cent. of carbonic-acid gas, and only about 25 per cent. of hydrocarbon gas, mostly methane. This being so, the gas had no commercial value, so that earlier plans for utilizing it were put aside and steps taken to mud off the gas to enable drilling to be resumed. This has been done, apparently effectively. Records of old bores in this vicinity are incomplete and probably not entirely reliable, but there is sufficient evidence to indicate that the principal oil-sand at or about this horizon was to be expected at some depth between 2,200 ft. and 2,300 ft. but as the nearest of the old wells is several hundred feet away and there is no definite information with regard to the amount or direction of the dip of the strata it was considered wise to make provision for testing this sand at 2,100 ft. The 10 in. casing, therefore, was landed at 2,056 ft., and at that point set in cement. Some difficulty was experienced owing to the fact that the high-pressure gas at 1,555 ft. showed a tendency to blow out from time to time, issuing from the space between the 10 in. and 12½ in. strings of casing. The process of cementing necessitated the keeping of this annular space open to the extent of allowing the circulation of the water or mud fluid through it, and the adjustment of conditions so as to provide for this circulation, and at the same time prevent the gas from blowing out, called for the exercise of a good deal of patience and skill. Satisfactory conditions having been obtained at last, the operation of cementing was carried out on the afternoon of the 23rd September, and the cement was given until the morning of the 12th October to set. The Perkins method of cementing was practised, of which the following is a brief description: The string of casing was resting on a hard ledge of rock at 2,056 ft., the space below having been filled or "bridged" with pieces of soft rock. The casing was then lifted about 2 ft. The well at the time was full of mud fluid, and of this about 100 ft. was bailed out. A soft wooden plug about 3 ft. long, tapered at the top, was then dropped in on to the top of the mud fluid. The space above this plug was then filled with cement grout, just thin enough to be handled by means of a pump. Another plug, cylindrical in shape and 2 ft. long, was placed on the cement, and a cap firmly fixed on the top of the string of casing. Both plugs were fitted with gaskets to make them fit the casing snugly. Water was then pumped into the top of the casing through a 2 in. branch pipe, which had the effect of forcing the two plugs carrying the cement between them down to the bottom of the well, the mud fluid passing up meanwhile through the annular space between the 10 in. and 12½ in. strings of casing. As soon as the bottom plug reached the seat prepared for the casing it stopped, but the top plug continued on its downward course, forcing the cement out of the bottom of the casing. The taper on the top of the lower plug provided an opening through which the cement passed from the inside of the casing and thence upward, filling the space between the outside of the casing