

Murchison Bros., Fourteen Mile Beach.—This claim is situated in the gorge of the Molyneux River, midway between Roxburgh and Alexandra. The deposit contains a very large percentage of heavy boulders. The gold won amounted to 60 oz. 7 dwt. 18 gr., valued at £352 13s. 5d. This claim has been purchased by the Fourteen Mile Beach Gold-mining Co., which has installed an electric crane to replace the hydraulic crane. This will be used to haul away the heavy boulders, and will allow the water-supply (which has always been insufficient to work the area thoroughly) to be used for sluicing, elevating, and treatment purposes. The electric power is obtained from the Teviot Power Board, and a line has been extended from the Roxburgh-Alexandra Main Road to the claim.

Central Mines, Ltd., near Victoria Bridge, Kawarau Gorge (J. Gordon, Manager).—Prospecting and sluicing operations were carried on for several months, but nothing of importance was located. Operations were suspended for some time, then another final effort was made to locate payable deposits under the management of G. Thomson. This effort failed, and operations have been definitely concluded.

Cornish Point Gold-mining Co., Ltd., Cornish Point, Cromwell.—No work has been done during the year.

Jones and Party, Whitton's Creek, Upper Nevis (lately known as Graham and party), (F. Jones, Manager).—Active sluicing and elevating operations have been carried on during the year. The gold won amounted to 206 oz. 14 dwt., valued at £1,176 2s. 7d.

Bell and Kilgour.—This party has been prospecting at Clay Point on the Scotland Point section of the Kawarau River, a short distance below the Kawarau Gorge, Cromwell. After driving in the neighbourhood of previous drives they decided to tunnel through the clay-sandstone formation at Clay Point and, after driving a considerable distance, alluvial material was intersected. Further driving located an old auriferous river-channel. Many previous attempts had been made, during recent years, to locate this lead. The gold won amounted to 191 oz., valued at £1,146.

Bell and Hooper.—This party drove a tunnel through the same clay sandstone formation a short distance down river. They had to drive much further than Bell and Kilgour before intersecting the auriferous channel. The gold won amounted to 182 oz. 2 dwt. 23 grs., valued at £887 8s. 5d. A company, named the Bell-Hooper Cromwell Gold, Ltd., has been formed to work this area.

Kawarau Gorge, Cromwell, Bannockburn, Bendigo, Luggate, Clutha, Clyde, Waikerikeri, Blackman's, Conroy's, Matakannui, Drybread, Devonshire, Cardrona, Matatapu, and Lindis.—Four hundred and thirteen men were engaged fossicking, prospecting, sluicing, elevating, driving, and sinking. The gold won amounted to 1,670 oz. 1 dwt. 7 gr., valued at £8,783 16s. 4d., the chief producers being E. J. Williams and party, Lower Nevis, with 89 oz. 11 dwt. 21 gr., valued at £524 0s. 8d.; D. Adie, Mid Nevis, with 46 oz. 12 dwt. 22 gr., valued at £230 1s. 7d.; Murray and party, Scotland Point, with 55 oz. 15 dwt. 13 gr., valued at £315 10s. 3d.; Fountain and party, Clyde, with 39 oz. 15 dwt. 8 gr., valued at £232 2s.; P. McElligott, Blackman's Gully, with 36 oz. 3 dwt. 9 gr., valued at £208 10s. 3d.; S. E. H. Johnsen, Molyneux, Alexandra, with 30 oz., valued at £171; Parker Bros., Fourteen Mile Beach, with 30 oz. 6 dwt. 21 gr., valued at £176 13s. 10d.; Verdon Sluicing Co., Matakannui, with 55 oz. 17 dwt. 16 gr., valued at £339 5s. 8d.; J. H. Harpur and party, Matakannui, with 51 oz. 18 dwt. 21 gr., valued at £293 8s. 1d.; and G. Glassford, Drybread, with 37 oz. 14 dwt., valued at £203 6s.

Southland County.

Nokomai Sluicing Company, Nokomai.—This company has been actively employed during the major portion of the year sluicing and elevating the alluvial gravels to a height of 90 ft. The gold won amounted to 573 oz. 19 dwt., valued at £3,186 7s. 2d. The new power-house machinery and drag-line excavator, together with the necessary transport and treatment plant were also in course of erection. During the latter part of the year the extensive water-races were reconditioned and put in order. The following is a brief description of the V.S.C. excavator plant installed: (A) Power-house—The generating-plant, installed to supply electric power for the operation of the drag-line equipment, consists of a 700 B.h.p. Boving turbine of the Pelton-wheel type directly coupled to a British Thomson Houston alternator to supply 540 k.v.a. at 415 volts. An exciting generator of 110 volts D.C. is also coupled to the main shaft. The equipment includes the governor of the turbine and the switch-gear necessary to regulate and meter the power generated, and to protect the machinery against faults. The amount of water flowing is controlled by needle valve and seat in each inlet pipe. The speed of the turbine is controlled by an oil-pressure governor, which is extremely sensitive over the full range of the turbine's capacity. The governor opens and closes the two needle valves and also operates deflectors over each jet; these latter are operated very rapidly, giving fast and efficient control of the speed of the turbine, as the demand of power fluctuates. The needle valves, while opening up rapidly, are, however, arranged to close slowly, so that the water-pressure in the pipe-line will not be increased to dangerous values. The governor is assisted in its control of the machine by the fly-wheel, which has been designed to give the maximum possible stabilizing effect at rapid and large fluctuations of the load. The generator is connected to the switchboard where the control and measurement of the power take place. Here also are situated the main switch and the protective devices. The voltage of the generator is automatically and efficiently controlled by means of a Tirrill regulator. The whole plant is fully protected against such faults as overloading, short circuits, leakage of current, lightning, internal trouble in the generator, overheating of bearings, failure of belt, &c. These automatic protective devices are so arranged that any fault outside the power-station disconnects the supply at the main switch, but leaves the generator running, while any fault inside the power-station automatically shuts the water off as well. This arrangement enables the station to run efficiently and safely with no attention other than a daily inspection of a few minutes. A storage battery with charging apparatus is installed to supply the necessary power for the protective devices, also to light the power-house independently of the main power-supply. (B) Transformers—The current of 415 volts thus generated is augmented through the primary transformer to 6,600 volts, which permits an economical transportation of energy to the various consuming units. At these latter the current is again reduced to the original 415 volts by means of three secondary transformers—namely, one on the excavator, which travels with the structure, one stationary, at the conveyers, and one on the site, for lighting and sundry purposes. (C) Excavator: (1) Structure—The structure consists of powerfully constructed steel members, carefully designed to withstand the heavy stresses and shock loads they may be subjected to, with a liberal safety-factor allowance. The complete structure is portable. It reposes on four trolley carriages, each trolley possessing four wheels, running on a four-line rail track. The weights of the structure itself, as well as of the numerous heavy units installed therein, are judiciously distributed, so that the centre of gravity of the whole system is most advantageously situated, with a view to counteract the powerful overturning moment due to normal loads as well as any possible accidental loads, and again with a generous safety-factor. The overall height of the structure exceeds 60 ft. The traverse movement of the excavator can be effected by means of either a small hand winch with suitable reduction blocks, or by using the spare drum provided in the main winch. A powerful chain, anchored at both ends, is laid all along the rail track, and this chain in itself serves as an anchorage for the pulling ropes for moving the structure. (2) Motor—The motor is of 310 h.p., and is provided with a solenoid brake, which comes into immediate operation, as soon as the current is severed. The motor is connected by flexible coupling to the driving-shaft of the winch. (3) Winch—The sundry primary production gears are encased in a gear-box, where they operate in a permanent oil bath. All the bearings, with only one exception, are of the ball or roller type. The clutches are of the friction band type and are pneumatically operated. Both hauling and tensioning drums are machine grooved, to assure a uniform winding-on of the ropes, and are liberally dimensioned, so that all the required length of rope could be wound on in one layer. The hauling-sheave has also a traverse motion which coincides with the coiling or