

reefs. The channels separating the islands are often over 200 feet deep.

*List of Mineral Specimens.*

Reg. No.	Description.
8424	Koolan Island, Yampi Sound, South side of M.L. 130, quartzite showing ripple marks.
8425	Do. Quartzite showing markings (organic remains (?)).
8426	Do. Conglomerate composed principally of iron ore.
8427	Do. Iron ore.
8428	Do. Iron ore showing iridescence.
8429	Do. Magnetic iron ore from South side of M.L. 132.
8430	Do. From South side of M.L. 132, sandstone, underlying iron ore on the North side.
8431	Do. South side of M.L. 129, vesicular iron ore.
8432	Do. Sandstone accompanying iron ore.
8433	Do. Conglomerate.
8434	Do. South side of M.L. 129 at sea level, micaceous schist.
8435	Do. South side of arm of bay, opposite M.L. 128, shales sandstone.
8436	Do. Ochreous bed.
8437	Do. Sandstone, $\frac{1}{2}$ mile North of M.L. 130.
8438	Do. $\frac{3}{4}$ mile North of M.L. 131, iron ore.
8440	Sunday Island, North side, gneiss.
8441	Yampi Sound, one mile South of Water Point, dark schistose rock.
8442	Do. One mile South of Water Point, quartz reef in dark schist.

On returning to Derby he proceeded, as soon as pack-horses were available, to the Federal Downs where wolfram had been found, of which he brought some bulk samples to head office, and prepared the following report:—

*Wolfram Find near Federal Downs Station, West Kimberley.*

"In accordance with instructions I proceeded after my return from Yampi Sound, as soon as horses and equipment were available, to the Wolfram Find with an aboriginal guide. The locality is about 70 miles north-easterly from Derby. At Mount Marmion a day was occupied collecting fossils from a calcareous zone at the base of the hill in the Upper Carboniferous beds; these fossils together with some samples of the limestone bands, which appear likely to afford good cement-making material, will be despatched by dray later on to Perth. The deep bore at the 67-mile on the Derby to Lennard Road was then visited and reported on, and the journey to the wolfram was resumed. The precipitous limestone range which forms the north boundary of the clay and sandstone plain was passed through by the valley at the head of the watercourse which passes near the Hawkstone Peak, when diorite and garnetiferous micaceous and chlorite schist hills appear. These schists contain numerous quartz veins which trend mostly in the direction of their foliation about 275 degrees and dip 80 degrees southerly. The hills are mostly steep, and in one of these about 350 feet high, comprising M.L. 146, the wolfram occurs crystallised out in the quartz veins which range from 3 to 15 inches wide, the wolfram crystals projecting from the side of the vein into the quartz matrix. The ridge of the hill is about

a quarter of a mile long in the direction of the quartz veins. The principal patch of wolfram ore is towards the west end of the hill and on the south side.

"Samples were taken from various parts as well as bulk specimens totalling 163lbs. A sample of wolfram and quartz from here was submitted by Mr. J. F. Taylor, the lessee, and the laboratory report dated 9th October, 1907, stated that there was 68.5 per cent. of tungstic oxide.

The show of wolfram is fair and it may be found that the various veins unite at depth. No developmental work however had been done but tools were brought on the ground while I was there by Mr. Armitage, who is Mr. Taylor's representative. The approach to the lease is along the valley-flat right up to the outcrop.

An assay for gold also has been made in the Laboratory and the report states that 'none was found, but some specimens of a green mineral which proves on examination to be scorodite (arsenate of iron). It doubtless results from the weathering of arsenical pyrites, which mineral will probably be found below water level in the wolfram lode.'

"I then proceeded westerly to Mondooma, passing along the same belt of likely mineral country to near Trig. 12 where some promising schistose and pegmatite rock occurs, the latter containing tourmaline, staurolite, and kyanite, the last named being a translucent pale blue mineral which when clear and of good colour is cut as a gem and it is therefore well worth further attention.

"To the westward of Mondooma, the schists with quartz reefs re-appear for about 3 miles; beyond this is an extensive plain with a few scattered granite hills. until the white quartzite mountainous Wyndham Range is approached near Obagooma. This white quartzite is similar to that occurring at Yampi Pass.

"Several bores have been put down by the pastoralists to depths of 150 feet and more, on the line of springs that occur on the flat plain 10 to 18 miles south from Obagooma, and a copious flow of good artesian water has been obtained."

He next was occupied with preliminary work in connection with re-gauging the Artesian bore discharges, but this was eventually taken over by the Public Works Department, when a progress report was prepared. For facilitating water supply information the boundary of the granite hills was sketched from the Canning River to St. John's Brook south of Donnybrook, a distance of about 120 miles.

Inspections and recommendations were made for mineral reservations on the Oakabella Estate and on proposed mineral resumptions in the Northampton district also on reputed coal measures at Lynton, and reports and inspections on the possibility of artesian water supplies at Cookernup and Capel; also report on coal near Serpentine and on an alleged gold find near Highbury.

*Reputed Coal Indications at Lynton, Northampton District.*

"I have to report that I visited the Lynton District in company with Mr. J. W. Acton, prospector. I drove out by the Nonga Road and Chearry Well (The Gardens) and saw the square shaft sunk many years ago by Mr. Gregory. It is about the centre of Loc. 2395 and is in friable sandstone with thin ironstone beds. The shaft is nearly filled in now and the dump showed no indications of any other material, but coal is said to have been found in it. I consider the report to be manifestly absurd.

"Mr. Acton then showed me the site where he wished to make a trial boring at the junction of the Whitewater and Hutt Rivers at the crossing of the track from Lynton, opposite the north end of Loc. 1500. There are here massive beds of ferruginous sandstone, which dip to the west about 2 degrees, and these are overlaid by coastal limestone a few chains westerly. I could not find any fossil remains in the beds and the only specimens that Mr. Acton had found proved to be only circular ferruginous concretions. The strata are evidently of Jurassic age and are not likely to contain coal beds."

#### *Cookernup Water Supply.*

"I have to report that I visited Cookernup and saw Mr. A. L. Cunnold, the Secretary of the Farmers' Association, who showed me the site suggested by the Association for the test bore; it is on the west side of the Railway adjoining the railway crossing and is Crown land. Mr. Cunnold said that the Association have applied to have this block made a camping reserve for the convenience of settlers out west, so that if any water was struck it would be of public benefit as that obtained by wells is not good, and he represented that if artesian water was obtained at a reasonable depth it would encourage the settlers generally to put down bores. The site is marked on the accompanying litho of the townsite.

"The nearest indication of gneissic rock is one and a quarter miles easterly from the site, and it is probably about 30 feet higher, a steady rise occurring eastward of the township boundary. The strata hereabouts consist of a very stiff clay with ferruginous seams or patches. The probabilities of obtaining artesian water are fair and a supply would be of considerable value to the district. I can therefore commend the proposal."

#### *Capel Water Supply.*

"I have to report that I visited Capel and inspected the geological conditions of the site of the proposed bore and also of the locality generally. The site suggested is on the edge of the coastal limestone (8580) and the nearest granite occurs about seventeen miles easterly. The intervening country is flattish for six miles and is composed of clays and argillaceous sandstone, there are then hills of sandstone and clay, capped extensively with ironstone gravel and laterite.

"Basalt has been found to occur in the bed of the Capel River at Boronia Bridge, six miles south-easterly from Capel (8579). There appear to be several reported outcrops of this rock, viz., at Blackwood River, two miles from St. John's Brook and at Black Point on the South Coast; these are all approximately in a due south direction from Bunbury where the basalt can be seen on the sea-coast. There does not however appear to be any probability of this rock occurring at Capel.

The conditions appear to be favourable for obtaining an artesian supply of water here.

In regard to the position of the site, I do not think that there would be any objection as far as the probable flow is concerned if a higher site was chosen, as this one would be only a few feet above the bed of the river."

#### *Proposed Boring for Artesian Water and Coal at Serpentine.*

"I have visited the blocks of land numbered 468/72 at Serpentine, referred to by Mr. C. J. R. Le Mesurier in his letter of the 5th August. They are situated

three miles south of the Railway Station between the Perth-Bunbury road and the railway line. The foot of the Darling Range is here a quarter of a mile east of the road; this is the boundary of the gneiss rock.

"The ground is flattish and is formed of clayey and sandy strata, with a covering of ironstone gravel and laterite in places. The north end of the blocks is watered by the Two-mile Brook and the south end by the Three-mile Brook, which however do not run throughout the year. There are shallow wells in the neighbourhood having subsoil soakage. I could not hear of any well near that had been sunk to 100 feet, but I have found since that it is situated about three miles to the south.

"The specimens submitted to the Department consist of:—

- (a) a ferruginous clayey conglomerate,
- (b) friable grey sandstone, and
- (c) loose particles from a bed at the bottom of the well.

"These contain a few fragments of lignite about the size of a pin's head and a few larger particles of a ferruginous cement.

"Since returning to Perth, Mr. Le Mesurier has called on me and stated that he has given up the idea of boring here and that he has applied more recently for a prospecting area on Crown lands, two miles south of Keysbrook or four miles further south than the former place.

"I consider both sites to be too near the range for successful sinking for artesian water and the strata to be too porous for the existence of coal seams."

#### *Reported Gold Find near Highbury, Narrogin.*

"In accordance with instructions I visited the site of the reported find of gold, five miles south of Highbury, which is on Loc. 5592 belonging to Mr. George Syme and is marked on Lands Department litho, 385/40D, and specimens showing gold are said to have been picked up on the ploughed field but no reef has been found. Two trenches have been made in the direction of 21 degrees (magnetic) about two chains apart; the western one is about 5 chains long and about 1 foot deep with several deeper parts, in decomposed granite sand and ironstone gravel. The eastern one is 2 chains long and about 3 feet deep with a cross trench about 15 feet long; there are here a few blocks of pegmatite apparently from a vein about 9 inches thick. Granite outcrops a few chains to the south, the joints trending 256 degrees. I did not see any auriferous quartz.

"I saw Mr. George Syme on my way back who said he had no specimens as they had all been given away but that he intended to resume prospecting in about 2 months. Police Constable Crowe had a small sample said to have been found here which is a ferruginous quartz showing gold. Although it is not impossible for the samples to have been found in this locality, I can only say that I did not see any similar quartz there.

"I also visited Loc. 2456 about 1½ miles to the north of Syme's, where there is a large white quartz reef about 20 feet wide trending in the direction of 251 degrees, which is about the same as the jointing of the granite, and underlaying about 45 degrees to the east. A sample has been assayed in the Laboratory (L. 1733) but no gold was found."

During the year Mr. Campbell was engaged for 180 days in the field.