

Coal has not yet been found of any commercial value, but as in this portion of the Colony the Carboniferous rocks are so largely developed it is highly probable that it will be found.

Graphite is found in the Northampton District and on the Gascoyne River.

Mica has been found near the Shaw and on the Gascoyne.

Kaolin occurs in large quantities at the Nullagine.

The following is a more detailed account of the principal discoveries that have been worked :—

### NORTHAMPTON DISTRICT.

The mineral-bearing portion of this district is to be found in the low broken table-land about 20 miles wide, bounded by the sea on the West, by the high sandy plateau on the East, the Greenough River on the South, and the Murchison River on the North, covering an area of about 1,000 square miles.

The upper strata is of Mesozoic age, and through which the streams have cut many deep channels and gorges leaving flat-topped ranges and hills, which attain an elevation of between 500 to 600 feet above the sea level. In the beds of these streams, and in those other portions of the country where the more recent formations have been denuded, the underlying Metamorphic rocks, containing mineral veins, are exposed.

The rocks are of a highly metamorphic character, *e.g.*, micaceous slate, mica schist, crystalline schist, gneiss, granite, quartzite, and quartzose sandstone; often containing garnets and iron pyrites. Their general strike is North and South, but owing to their highly broken condition and the numerous dyke masses traversing them they are often thrown many hundred yards out of position.

Diorite, granite, and felstone form the greater number of the numerous dykes that occur, and they bear a close relation to the lodes; their strike is 20° East of North.

Quartz veins, often containing crystals of tourmaline, felspar, and large plates of mica, are numerous, as cross-courses, wherever the Metamorphic rocks outcrop.

The lodes, which follow the same strike as the dykes, 20° East of North, are large and well-defined. They are generally capped with quartz and oxide of iron (gossan), and contain the following ores :—

Malachite	...	...	green carbonate of copper
Azurite	...	...	blue do.
Copper Glance	...	...	sulphide of copper
Chalcopyrite	...	...	sulphide of copper and iron
Galena	...	...	sulphide of lead
Cerussite	...	...	carbonate of lead,

associated with quartz, calcite, barytes, often also with small quantities of blende (sulphide of zinc), iron pyrites, and a ferruginous graphite.

Lead and copper were first found in this district about the year 1840, when several very rich lodes were mined by English Companies, but owing to the fall in the prices of lead and copper they were abandoned a long time ago.

It is very distressing to see the extensive plant and buildings going to ruin, the large quantity of good ore at grass or ready for shipping, and Northampton, which almost might be called a deserted village, all at a standstill on account of the low price of lead. There are several old copper mines in the district, one of which is now being tested, and it is to be hoped that the results will be successful. Several of the old mines that worked at a profit years ago ought to be starting again now, as everything can be done so much more economically and the market price of copper is so high.

At the Geraldine two mines are still at work, the South Geraldine lead mine and a copper mine a little farther East, on the North side of the Murchison River.

The South Geraldine is being worked by Captain Mitchell, in spite of the low price of lead, at a slight profit owing to its great richness, the large size of the lode, and the shallowness of the present workings. The lode is from three to four feet of solid galena, which is so clean that it requires scarcely any dressing.

The copper mine on the North side of the Murchison River is also being worked by Captain Mitchell. The lode here consists of rich bunches of grey ore, and being easy to "win," it pays to send it home as ballast in the wool ships.

One very marked feature of this district is the pooriness of the galenas in silver, which seems so universal over this district; if this metal is found, it will probably not be associated with lead, but with copper or iron gossan.

#### NANGRANG HILLS.

In the early part of 1890, gold was discovered in a reef on a low range of hills, about 5 miles to the Eastward of Yuin station.

It is a large reef of a bluish glassy quartz, striking E. and W. and apparently dipping to the North, but going down nearly vertically as far as can be judged from a small hole about six feet in depth.

The rocks follow the same strike as the reef, namely, E. and W., and are quartzites and mica slate, with granite dykes and ironstone lodes.

The low range of hills which is strewn with quartz rise from a large alluvial plain, which is also strewn with quartz near the range.

There is plenty of water but timber is scarce, but when the position is considered, if the stone is of any value at all, it should pay very well to work.

At the present moment there seems to be a good deal of uncertainty about the richness of the stone, as the assays have varied very greatly although some of the stone crushed gave a very good return, and many pieces of stone not showing any gold when crushed and washed yielded very nice prospects. One thing is certain in a settled district like this, companies or claim holders should be made to fulfil the labor conditions, for they have no excuse in not doing so in a place like this, and it only leads one to look upon the whole thing with suspicion, for were it as good as represented it would pay to put on the extra men and work the area instead of obtaining exemption on the grounds of putting on machinery which never seems to come.

#### MULGA MULGA, OR BIEREN.

In the early part of 1888, gold was discovered by Mr. Birk in a small reef on a hill between Austin's Lake and the Weld Range.

The reef is small and not well defined at the surface, but shows fine gold in places. It is of a saccharoid character, containing a little pyrites and sulphide of antimony.

The reef strikes a little E. of N. dipping to the West where the gold was found, but higher up the hill there is a larger body of stone dipping to the East. Its width is very variable, but is generally between 2 and 3 feet.

It was opened up, but later on abandoned.

This is situated on the Northern extension of the Yilgarn line of country, and there are many nice looking reefs about here which should be prospected; also this belt of country to the Northward, on towards the Murchison.