SCHOOL OF MINES.

The necessity for the establishment of a School of Mines having been brought under the notice of the Government, I was appointed, in the month of April, Chairman of a Committee selected for the purpose of inquiring into the best method of giving facilities for scientific instruction in mining and cognate subjects on the Goldfields. The meetings of the Committee were held in the offices of the Chamber of Mines at Kalgoorlie. The deliberations of the Committee resulted in a unanimous recommendation that a scheme for scientific instruction in mining should embrace one central and fully equipped Mining School, which should work any of its outside branches by corresponding additions to the teaching staff. It was recommended that there should be two distinct sides to the school, viz.:– (*a*) the Metallurgical, and (*b*) the Mining, and that the teaching staff should be arranged accordingly, necessitating one very highly skilled man on each side of the school, together with an adequate staff of assistants. It was further recommended that the following subjects be taught in the school, viz.:—Chemistry, Assaying, and Metallurgy, Geology and Mineralogy, Mine Surveying and Mechanical Drawing, Mining Engineering, together with Mathematics and Elementary Physics.

PRINCIPAL RESULTS OF THE YEAR'S FIELD OPERATIONS.

KIMBERLEY.—There being good ground for believing that a portion of the lesser known area of the Kimberley Division included within its boundaries country which might prove to be mineral bearing, advantage was taken of the despatch of an exploration party to attach a geological unit thereto. Colour seemed to be lent to the assumption that the district would prove to be metalliferous from the fact that "Mineral Country" was shown on the official map 10A issued by the Department of Lands, as occurring on the Drysdale River between the 15th and 16th parallels of latitude, a statement which gained additional confirmation from the Geological Sketch Map of Western Australia, issued in 1884, in that a considerable tract of country to the North and West of King Leopold Range was shown as consisting of crystalline schists and granite, the matrices of the metalliferous minerals.

The following extract from a paper, which appeared in the year 1886, would seem to indicate the source from which the information embodied in the first mentioned map was derived:—

Monday, 3rd May, 1886.—Lat. 15deg. 31min. 38sec.; long. 126 deg. 45min. 20sec. Left camp on McKee River at 8 a.m.; course S.W. by W.; 240 deg. Then steered due W. 270 deg. Struck river flowing from S.S.E. 155 deg. and traversed river up this course to a point three miles up stream, then S.W. 225 deg. . . . At three and a-half miles up river came upon a black's grave. . . . . At four and a-half miles had to head a small gully flowing into the Lorimer. Steered W.S.W. for half a mile and came back on the opposite side at four and a-half miles. Crossed river (Lorimer) here at a very good crossing, and travelled due West through fine, undulating, timbered country, gradually rising from the time we left the river. At nine miles came upon a fine line of lagoons, where we camped at 12 noon for lunch. . . . At 11 miles came on a fine chain of waterholes flowing North. . . At 18 miles came upon the top of a tableland, and beheld, I think, the finest view I ever saw in my life. Cliffs on all sides, with a range of mountains in the distance. Below is a magnificent valley, in extent, as far as I can see here, about 100 square miles. Succeeded in getting down with some difficulty, and at 18½ miles got to bottom. Struck bed of river at foot, which I named the Carson, after Mr. David Carson, of Melbourne, and also the valley, which I named the Valley of the Carson. This river, I should say, was the head of a river flowing into the sea about due North from this point. Followed river down two miles, where we camped on the right bank in the best and thickest grasses I ever beheld—blue, Mitchell, and Kangaroo grasses. *Every indication of gold. Here quartz abounds, and I think eventually this valley will be a massive goldfield.* . . . Soil very dark chocolate, the darkest I have ever seen. . . . I have named the ridge we have just crossed, in the above latitude and longitude, the Ashton Range, after a friend of mine in Melbourne. Although a very heavy range owing to the tableland on the East side, it is only visible on the West, or I might say from the S.W. to North, and then from the Valley of the Carson in all its splendour. . . . Distance, 20 miles.*

The staple formation in the country traversed is made up of a series of quartzites, sandstones, fine conglomerates, and shales, disposed in a series of broad anticlinal folds. These beds extend as one continuous formation from Wyndham to Mount Hart, a pro-

* "The Kimberley Country:–A Page from an Explorer's Diary." The *Victorian Naturalist*, Vol. III., No. 8, pages 106-107. Melbourne, 1886.

minent summit on the King Leopold Range. No fossils were met with in any of the sedimentary rocks, so their position in the geological scale can only be approximately determined. The quartzites of the King Leopold and Mueller Ranges were shown on the map accompanying Mr. Hardman's Reports as being of Lower Silurian or Cambrian Age; no geological work having been carried out since the date of that gentleman's examination, no apparent reason can be found to alter them from the position to which he assigned them.

Associated with the quartzites, etc., are a series of bedded and intrusive igneous rocks, the prevailing types being andesite, dolerite, and diabase. The individual characters of the different beds naturally present a large amount of variation. The rocks are sometimes amygdaloidal, and contain nodules of zeolites and agates. Beds of volcanic ash and breccia are common in certain localities. In certain isolated portions of the district excellent sections are exposed, showing the intrusive nature of some of the igneous rocks. The sandstones are sometimes altered into hard compact quartzite, portions of which have been caught up in the body of the igneous rock.

Other sections indicate quite clearly that the igneous rocks have, in some cases, found an easy passage along the bedding planes of the sedimentary beds, and evidently occur in the form of sills. The lavas are traversed by almost vertical dykes of epidosite, which are traceable across country for long distances.

These igneous rocks are of considerable economic importance, in that they form excellent pastoral country wherever they are exposed at the surface. Careful attention was paid to the structural relations of the volcanic plateau and other cognate points. The igneous rocks rest upon quartzites, etc., of a type identical with those by which they are covered.

Both the sedimentary and the igneous rocks are intersected by numerous segregation veins of quartz, some of considerable size and horizontal extent; they are, however, from an economic point of view, of no commercial importance whatever.

Having in view the fact that the researches of the late Mr. E. T. Hardman showed an extensive area of crystalline schists—the matrices of the metalliferous minerals—trending in such a direction as should carry them into the South-Western corner of the country examined, attention was directed towards ascertaining whether any mineral country existed thereabouts. As a result of our investigations it was evident that the quartzite formation—which unconformably overlies the crystalline schists—has not been cut down to its base by any of the rivers to the North of the King Leopold Range, hence any mineral country is entirely concealed from view, and any extension thereof will have to be searched for on the South side of the Range, among the crystalline schists and allied rocks.

A full report on the district is in course of preparation, and will be duly submitted; but as the bulk of this can only be prepared outside the usual official hours, some little time must necessarily elapse before the work is completed and ready for the printer.

Uaroo Find, Ashburton River.—Mr. S. Göczel was commissioned to report upon the copper deposits of Uaroo, on the Ashburton River; from this gentleman's researches it appears that the staple formation consists of crystalline schists associated with granitic gneiss. The beds form a belt of about 50 miles in width, which has been traced for a distance of about 150 miles in a North and South direction. The granitic gneiss apparently rises to the surface along the crests of anticlinal folds, along the flanks of which lie very much contorted crystalline schists. The schists often occupy