

NOTES REFERRING TO THE GEOLOGICAL MAP OF THE STAWELL GOLD-FIELD.

NORTHERN SHEET.

1. Red quartz gravel and fragments of schist.
 2. The surface soil in the cutting is full of nodular limestone and sandy ferruginous concretions.
 3. Box, bull-oak, and honeysuckle forest; native ovens are common, the natives having used burnt clay instead of stones.
 4. Mixed angular and rounded quartz, with ironstone pebbles.
 5. Outcrop of a very coarse grit or conglomerate.
 6. Outcrop of thin vertical and contorted white shales; strike, N. 40° W.
 7. Semi-angular and rounded quartz, and large angular pieces of reef quartz.
 8. Large angular quartz.
 9. Indurated red clay, with quartz and glazed ironstone.
 10. Cement.
 11. Yellowish calcareous soil; clayey in winter, loose and friable in summer.
 12. Red soil.
 13. Sand and ironstone.
 14. Much angular quartz.
 15. Cement and gravel.
 16. Very ferruginous schist.
 17. Ironstone.
 18. Shallow shafts in cement and sand rock.
 19. Shaft 20 ft. deep in ferruginous cement and sand rock.
 20. Hard schists in river bed; strike, N.E. and S.W.
 21. Highest point of range.
 22. Gravel.
 23. Protruding boss of ironstone cement.
 24. Ferruginous cement.
 25. Sandy ironstone.
 26. Yellowish white and brown sand rock.

Ferruginous cement and 27.
 Do. do. do. 28.
 29.
 Cement and sand rock. 30.
 Ferruginous cement and quartz gravel. 31.
 Hard ferruginous cement on dense ironstone. 32.
 Gravel and cement. 33.
 Gravel. 33(°).
 Gravel and yellow cement. 34.
 Friable thin white sandstone and shale, with quartz veins; dip, E. 30° to 40°, N. 55° to 60°. 35.
 Siliceous cement. 36(°).
 Hard schists; strike, N. 35° W. 37.
 Grit and sand, with ironstone pebbles. 38.
 Level ridge covered with sand; heath and scrub on the higher ground, rushy grass on the lower. 39.
 Grits. 40(°).
 Crabbhole and calcareous. 41.
 Crabbhole and calcareous. 42.
 Quartz drift. 43.
 Red and yellow grits. 44.
 Ferruginous sand rock in creek bed. 45.
 Do. do. 46.
 Ironstone cement. 47.
 Gravel and sand rock, 20 ft. 48.
 Ferruginous cement. 49.
 Shaft 25 ft.; ironstone grit, cement, and sand rock. 50.
 Cement. 51.
 Indurated sand rock. 52.
 Glazed ferruginous grit. 53.
 Shaft; fine white micaceous sandstone, white sand, and red and yellow quartz pebble cement.

54. Bank of solid cement; below is a thick bed of drift pebbles from the same.
 55. Cement 10 ft. from surface.
 56. Calcareous soil.
 57. Do.
 58. Boundaries of formations very indistinct.
 59. Grit.
 60. Do.
 61. Two deep shafts; cemented white sand, loose sand, ironstone, grit, &c.; some of the ironstone beds present peculiar wormlike concretions on their surfaces.
 62. Thick beds of grit.
 63. Indurated and contorted white rock in post-holes of fence.
 64. The flats along both sides of the river are generally crabbhole and calcareous; the tributaries of the Wimmera, though appearing by plans to run into the river, in reality run out of it, and are only filled by high floods in the river.
 65. Yellow ferruginous cement of rounded quartz pebbles.
 66. Crabbhole and calcareous.
 67. Quartz gravel.
 68. Shallow shaft; hard cement, grit, &c.; bottomed on decomposed white schists.
 69. Angular quartz; the drift appears to be thin round this eastern margin.
 70. Shaft 180 ft. deep; very wet.
 71. Ferruginous grit.
 72. Shaft 33 ft. above the Bunyip Creek, and 61 ft. deep, showing a great dip northwards in a short distance from the rock outcrop in the bed of the creek.
 73. Yellow and red micaceous sandstone, overlaid by friable earthy conglomerate.
 74(°). Grit.
 75(°). Ironstone.
 76. Shaft from which fossils were obtained. *Vide Report.*
 77(°). Grit.

78. Outcrop of schist.
 79. Surfacing in ferruginous cement and grit.
 80. Ironstone.
 81. Grits.
 82. Do.
 83(°). Do.
 84. Coarse grits; flat-topped scrubby ridge.
 85. Cemented angular quartz, probably the cap of a reef.
 86. White quartz veins full of fragments of gneiss.
 87. Thin contorted schists; strike, N. 50° W., vertical; lower down the gully they have a high easterly dip.
 88(°). Micaceous sandstone.
 89. Cement.
 90(°). Much large angular quartz; the drift is thin, and consists of large rounded quartz; the bed rock outcrops in places.
 91(°). Concretionary ironstone.
 92. Black-wattle scrub.
 93. Ironstone rise.
 94. Ferruginous sandstone.
 95. Concretionary ironstone, mottled sandy grits, and rounded white quartz; deep shafts.
 96. Manganiferous cement.
 97. Grits and cement, with large quartz boulders.
 98. Boulders of siliceous cement occur in this lead; the bottom consists of brown fissile shales.
 99. Shaft 40 ft. deep; red grit and sand rock; bottom clay, with lumps of white powdery quartz.
 100. Shaft 38 ft. deep; a reef appears to have been struck in the bottom; the surface everywhere round consists of ironstones and ferruginous sandstones.
 101. Surface workings along creek.
 102. Shaft 45 ft. deep; siliceous and ferruginous sandstones and grits, with rounded quartz.

103. Shaft 45 ft. deep; yellow sandy concretionary ironstone.
 104. Shaft 37 ft. deep; cement, ironstone, sand rock, sand, and rounded quartz.
 105. Shaft 33 ft. deep; white and red grit and cement, with semi-angular quartz; surface covered with flat cakes of ironstone; black wattle and rushy grass.
 106. Ironstone, white sandstone, and grit.
 107. Shaft 25 ft. deep; mottled clay rock, rounded quartz cement and ironstone.
 108. Mottled sandstone and clay rock.
 109. Shaft 49 ft. deep; semi-angular white quartz, and floating flattened pebbles of schist; the bottom is a rotten quartzose schist or gneiss.
 110. Sand rock.
 111. Grits.
 112. Flat slabs of honeycombed ferruginous sandstone and grits.
 113. 744 feet above sea-level.
 114. The bottom consists of white and brown decomposed fissile shales, full of quartz veins and cubical cavities once occupied by pyrites; red and brown loosely adherent sandstone conglomerate, containing flat pebbles of the bottom, rests upon it. There is a little ironstone, but no wash. The plain consists of mottled grits, covered by a thin wash of glazed ironstone gravel and a red soil; heathy and rushy.
 115. Heavy wash of quartz boulders and cement; bottom, decomposed gneissose schist.
 116. Shaft 52 ft. deep; brown ferruginous sandstone, resting on decomposed fissile pyritous slates, and no wash.
 117. Cement.
 118. Worked reef, said to have been rich.
 119. Strike N.W.; beds vertical and contorted.
 120. These ranges are everywhere covered with angular quartz.
 121. Coarse and fine grits on olive shales.
 122. Glazed ironstone pebbles.
 123(°). Grits.

124(°). Rounded quartz and ironstone.
 125. Pisolitic grit.
 126. Reef dipping S.W. about 70°; the water-level is 75 feet.
 127(°). Siliceous cement, with ferruginous grit and conglomerate.
 128(°). Outcrops of ironstone.
 129. Foliated pyritous schists.
 130. Ironbark ranges, clothed with a dense scrub of black-wood, always an indication of schist country or of its proximity from the thinness of the drifts.
 131. Level plain, covered with glazed ironstone gravel, and timbered with ironbark, gum, box, and black wattle, with Hakea, Grevillea and dwarf Casuarina scrub.
 132. Sinking, from 7 to 9 ft.; large quartz boulders.
 133. Outcrop of contorted schist; strike, W. 80° N.
 134. Escarpment of grits.
 135. Sandy beds and mottled red, brown, and yellow grits and sandstones, "pot metal," and white indurated clay rock; sinking about 40 ft.
 136. 768 feet above sea-level; crabbhole and calcareous plains, timbered with stunted gums.
 137. Brown ferruginous honeycombed sandstone; sinking, from 70 to 80 ft. Some of the ironstone beds contain traces of fossils similar to those at Poverly Hill.
 138. Sinking, from 38 to 40 ft., through ironstone, brown and yellow ferruginous sandstone (with *Ditrupea Wormbentensis* and *Lepralia Stawellensis*), whitish indurated clay conglomerate, and sand rock. The highest yield of gold on this patch has been about 14 dwts. to the load, but the average is only 3 to 4 dwts.
 139. Sinking, from 18 to 20 ft. on decomposed metamorphic schist. At the head of the gully are concretionary and honeycombed sandy ironstone and cement.
 140. Red and yellow mottled sandy clay rock, on a bottom of rotten yellow shales.
 141. Shallow holes through conglomerate on to fissile shales; higher up the gully are shafts through thin conglomerate, grit, mottled sand rock, &c.; much angular quartz is scattered about.
 142. Very siliceous cement, and the ordinary ferruginous conglomerate.

SOUTHERN SHEET.

1. Sand rock crops out on the flanks of the table-land, while siliceous quartzite, cement, and ferruginous grits occur in the valleys, where they are apparently very thin.
 2. Thin micaceous fine-grained sandstone, with quartz veins.
 3. Ophir Co.—The ground here is from 60 to 70 ft. deep, and consists of cement, sand rock, ironstone, &c., similar to the Band of Hope. The yield has averaged from 18 dwts. to 1 oz. gold to the ton. The bottom is pot-holed, and very level, with a slight fall eastwards, where the deepest ground is supposed by some to be, while others think it lies to the westward; but the deep ground there and to the north is only due to surface inequalities, the bottoms of all the shafts being apparently much on the same level.
 4. Junction Co.—This ground is at the foot of the range and on the level of the Welshman's Flat. The depth of sinking is 50 feet, the water is intensely salt. This is supposed by some to be a continuation of the deep lead from the Ophir Co., but it is probably only a tributary to the more recent lead coming down the Welshman's Flat past the Belfast and Menai companies.
 5. Menai Co.—Now abandoned. A line of bores was put down by this company across the flat from S. to N. (see section), which proved that the deepest ground is on the N. side of the flat, being from 79 to 81 ft. There are also minor and shallower runs of gold, though not payable, to the southward of the deepest run.
 6. Fine gritty soft rock, and white felspathic grit, with clay veins, at the west end of the lead; mottled red and white cement at the east end; sinking about 18 ft.
 7. The workings show about 7 ft. cement, resting on schists; the wash-dirt contains subangular and rounded quartz, the former probably derived from the reef close by; gold coarse, and not much water-worn.
 8. The road-cutting exposes a bed of hard cement, resting on white micaceous sand rock, and that again on metamorphic schists with quartz veins.
 9. Ferruginous sandstone ridge with quartz veins, probably the cap of a reef.
 10. The tertiary rocks here, and it may be taken as generally characteristic of them, consist of fine micaceous sand rock, with ferruginous and siliceous cement and ironstone. In places the bottom is an elvan decomposed into kaolin, containing double pyramids of quartz.
 11. Indurated clay, on ferruginous grit and sand rock.

12. Sandy beds, with white grit and cement.
 12a. These ranges consist of metamorphic schists intersected by quartz veins, the debris of which strews the surface. They are covered by a dense growth of black wattle (*Acacia melanoxylon*). The ironbark trees, from which the range obtained its name, have almost entirely disappeared.
 13. Pisolitic ironstone and grit.
 14. Shafts in grey, yellow, and white pyritous schists and indurated slates, some of which have peculiar lines of grooves in the cleavage planes. The ridge is covered with scattered angular quartz.
 15. Heathy and sandy country, consisting of ferruginous grits, pisolitic ironstone, and cement.
 16. Ferruginous schist with quartz veins, probably the cap of a reef.
 17. Massive large-grained conglomerate or "cement" on surface.
 18. Deep shaft in ferruginous grit.
 19. At the head of the gully shafts have been sunk through 37 ft. (said to be 45 ft.) of fine white and yellow sand, with angular quartz grains, the bottom consisting of satiny shales. Lower down the gully the sinking is only 16 ft., and the quartz pebbles become more rounded and larger as it descends. At the junction of a smaller gully there occurs a light-brown sandy open grit, containing quartz pebbles, ironstone nodules, and fossil wood. Some large pebbles occur of a peculiar white rock with quartz strings and black crystals, which, from their decomposition, have given the surface a pitted appearance; the cavities, in some instances, showing the crystalline form of their former occupants. Pebbles of quartzite with felspar crystals also occur.
 20. The sinking is from 12 and 14 to 20 ft. (increasing eastwards to 40 ft.) in hard white cement on to a soft decomposed schist.
 21. The conglomerate and grits are here exposed resting on the bed rock, which strikes W. 10° N.
 22. Foliated pyritous schists.
 23. Finely micaceous mottled red and white slates with quartz veins; strike, W. 40° N. On the hill to the west the strike is W. 25° N. The range is covered with scattered angular quartz and patches or bursts occur of a rich ironstone.

24. A peculiar pinkish-yellow earth, obtained from the "track" of the Wonga Wonga reef, between well-defined walls, yields a small quantity of fine gold to the Chinese working there.
 24a. Hornblende rock; strikes W. 80° N. to N. 35° W., and dips slightly easterly.
 25. A flat reef was struck here at 108 ft. deep, 14 in. thick. It is said to have at first yielded about an ounce of gold to the ton.
 26. The Wild Cat reef was struck at 9 ft. from the surface. Passing through it, and at 130 ft. below it, a cross course was met with, with well-defined walls, and containing flatfish rounded pebbles of the adjoining schists.
 27. Joints dip E. 8° N. 83°. The reef to the north dips N. 10° E. 75°.
 28. The southern flank of this hill is covered with angular quartz.
 29. Borough Quarries.—This isolated rise of hornblende schist and hornblende gneiss has all the appearance, at first sight, of an intrusive mass. It is much jointed in many directions, and rarely shows bedding planes.
 30. Pisolitic ferruginous cement and grit.
 31. Scallan's Reef.—Soft yellow pink and white banded and concretionary sandstones.
 32. A large bed of kaolin, probably a decomposed dyke, is exposed in nearly the whole length of this cutting, either on one side or the other and sometimes on both. As it occurs under the Church Hill cement, and near the Maid of Screen whim shaft, and also as a solid much-jointed felspathic elvan on the north side of Taylor's Gully, in the road-cutting at Church Hill, on the Glenorchy road near the police station, and in the bottom of some shafts on the flat a few chains further N.W., it may probably be of considerable extent, but, from its non-appearance on the surface, no boundaries can be shown for it.
 33. Mottled red and white indurated and ferruginous clay rock, finely micaceous.
 34. Olive shales, passing in a wedge-like mass into the hornblende rock at the quarries.
 35. The metamorphic schists are here superficially decomposed into a white chalky rock with quartz veins in the bedding planes.

36. St. George's Lead.—The wash-dirt contains angular quartz and fragments of schist and cement; the gold is not water-worn.
 37. Mottled brown and slate-colored metamorphic schists and gneissose rocks.
 38. One-hole Lead.—Depth of sinking, 14 ft.
 39. Burst of ferruginous schist.
 40. Shaft in a decomposed dyke; kaolin, with double quartz pyramids.
 41. Decomposed brown shales and quartz.
 42. White cement.
 43. Kaolin dyke in shaft.
 44. Brown sandy clay, enclosing angular and rounded pebbles of quartz and ironstone.
 45. A few shafts have been sunk along the northern flank of this hill in white cement and drift. The lead, if any, would probably be found on the southern flank, where there is a strong outcrop of ferruginous cement.
 46. Fine white arenaceous fissile sandstone.
 47. Holes in flat on both sides of the road, bottomed at 48 ft. on a felspathic dyke.
 48. The quartz boulders in the drift at the east end of this hill are much larger than in any other locality; some are over 4 ft. through. This end only has been worked, on a pot-holed bottom, falling easterly under hard cement. The gold was very little worn.
 49. The wash-dirt contains angular quartz, dykestone, &c.; depth of sinking from 8 to 14 ft. near head, and deepening to 25 and 35 ft. below, but becoming lost on reaching the flat. It is said to have a well-defined gutter. On Cooper's Flat the sinking is from 12 to 15 ft.
 50. The beds are here much contorted, and strike about W. 10° N. The contortion is due probably to the dyke which is exposed in the road-cutting and in the wells of the houses to the south.
 51. The flanks of these hills are covered with a wash of ironstone gravel.
 52. Earthy grit, in places hard and siliceous.

53. Scattered angular quartz, probably a reef.
 54. Mottled red and white grit, and sandy and ferruginous conglomerate.
 55. Mottled red and white grit.
 56. White clay, in part ferruginous, cementing quartz pebbles; it hardens on exposure.
 57. White semi-granitic cement and ferruginous grit; large quartz boulders; sinking, 15 ft. From 6 to 8 ozs. gold to the bucket was obtained here.
 58. The sinking on the east side of the Mia-Mia was 25 ft., with no cement; the gold was patchy, and from 3 to 4 dwts. to the tub. No gold was obtained above where the older lead crosses the gully, that obtained in the flat being only a redistribution of the older drift, when the old lead was broken through during the cutting out of the gullies. This applies also to all the gullies to the westward running at right angles to the course of the lead. To the north of the Mia-Mia the sinking is 60 ft., and to the west 30 ft. in brown sandy cement on white sandy granitic cement.
 59. Depth of sinking on flat, 18 to 20 ft.; on rise, 30 to 40 ft.
 60. Decomposed soft white fissile shales on bottom.
 61. Bottomed on fine satiny shales.
 62. Large quartz boulders in drift; bottom, brown fissile shales.
 63. Bottomed on fine satiny shales. Reefs are said to have been found under both the 70 ft. and 25 ft. leads.
 64. Bottom soft fissile white micaceous sandstone and shale, slightly contorted.
 65. The gullies on the north side of Hooper's or Robertson's Flat are hardly recognizable, and the boundary of the flat itself is merely approximate, as also is the tertiary boundary, the whole ridge being covered by a thick undergrowth of heath, &c.
 66. Shales exposed in the post-holes.
 67. Mottled recent cement, with pebbles of older grit.
 68. Fine white micaceous sandy beds and satiny shales, with thin quartz veins; surface, red clay and much scattered quartz.

69. Shales and fine micaceous sandstones; much scattered quartz.
 70. Surface covered with scattered angular quartz.
 71. This dyke varies from a felspar porphyry with black prisms to a quartz porphyry and a caritic rock; the joint faces are sometimes covered with white mica. The adjoining rock is altered to a nearly black glittering mica schist.
 72. Red and yellow grit and cement in place. At the head of the gully are some deep shafts in hard white micaceous grits.
 73. Deep shafts in sandy and ferruginous grit and cement with well-rounded quartz, on to satiny shale with quartz veins.
 74. A brecciated reef in thin coarse brown and white sandstone.
 75. Ferruginous schist; strike N. 40° W. Probably a reef-capping. Much scattered quartz over these ridges.
 76. Sandy beds with quartz veins, much indurated close to the dyke; dip apparently W. 15° N. 52°.
 77. The Black Range is timbered with myrtle, cherry, silver wattle, prickly acacia, honeysuckle, sheoak, and gum.
 78. Re-formed granite drift in horizontal beds.
 79. Strike of granite joints, N.W. and S.E., slight E. dip. This main joint line splits the granite into layers or beds, giving it an appearance of stratification.
 80. White, blue, and brown vitreous quartz with grit and cement, resting on rotten granite.
 81. White syenitic granite.
 81a. The granite is exposed in the railway cutting under an extremely thin layer of drift. It is possible the drift is, in places, absent altogether.
 82. The whole of the granite ranges east of the Ararat road are more or less covered with a wash of granite sand and pebbles of ferruginous grit. The granite, where exposed in blocks on the hill tops, is undermined and hollowed out towards the N.W.

NOTE.—The metamorphism of the rocks does not appear to have extended eastward of the Big Hill Range, but it is traceable for about two miles to the westward of the same range, though no boundary can be definitely determined, owing to the covering of tertiaries. The rock is also metamorphosed in the neighborhood of the dyke on the west of the Black Range. The small numbers in brackets, thus 33(°), show that the same formation occurs in more than one place on the map.

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