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WIGPOOL IRON MINE, SURFACE DRAINAGE

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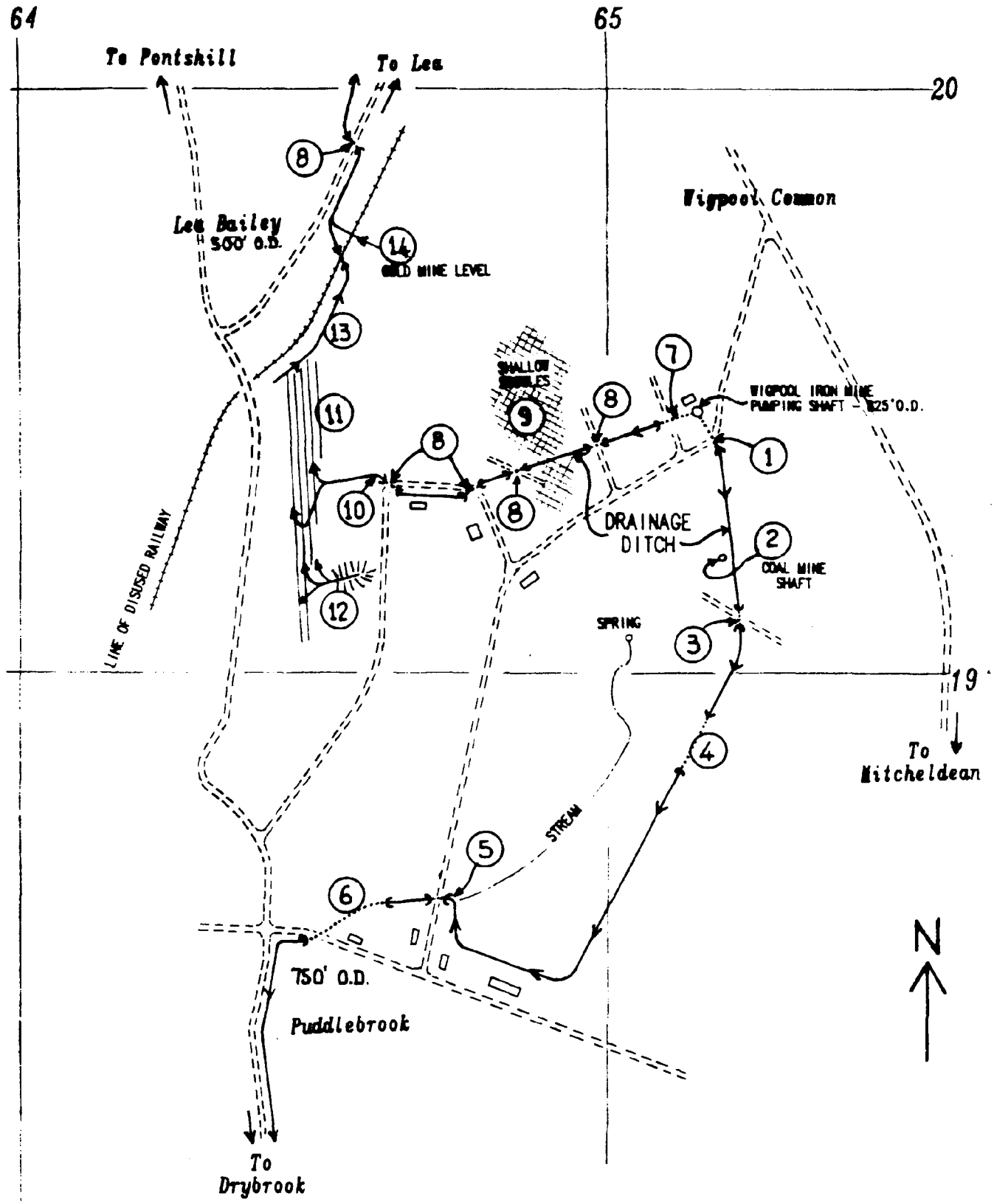
Artificial drainage ditches can be seen throughout the Forest of Dean, they were usually dug for forestry or agricultural purposes, but, occasionally a ditch may be found to have a more profound origin.

The recent uncovering of the top of the Wigpool Iron Mine shaft(GRID REF 6515 1940), which is to the north west of Mitcheldean, together with subsequent fieldwork, has revealed an extensive system of drainage ditches. These were used to convey the ochreous water, pumped out of the mine, to the nearest suitable natural drainage point. A total of about two miles of ditches can be traced, in two different directions, complete with various conduits and culverts.



SKETCH MAP showing
SURFACE DRAINAGE FEATURES
of the WIGPOOL IRON MINE

CRB - 1988

SCALE:- GRID = 1 KILOMETRE SQUARES

← :- INDICATES DIRECTION OF FLOW

Originally, drainage was southwards towards Drybrook, but at some later date this was abandoned, the shaft modified and drainage taken westward towards Lea Bailey, where briefly the waste water was utilized in the prospecting for gold.

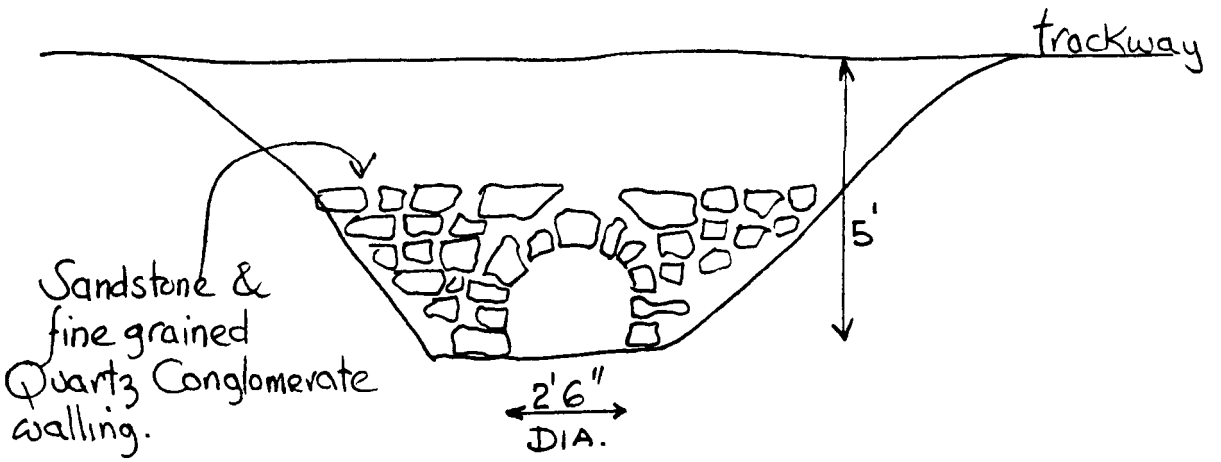
Today these ditches lie hidden in the Forest, virtually unchanged since their construction. The southerly ditch is the oldest, no doubt dug around 1861 when the iron mine was started.

Details of Ditch Draining South to Drybrook (see sketch map to locate numbers).

1 Underground conduit leading from shaft to edge of wood, close to road side.

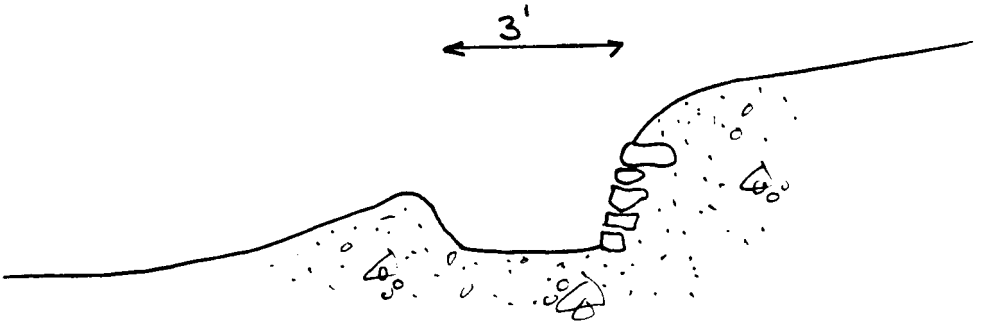
2 Coal mine - This must have influenced the drainage ditch in this direction as it would have had the same problem of disposing of water as the iron mine. However, the lack of waste tips suggests the coal mine was unproductive. Until recently the top of the open shaft was protected by brick arching but this has now been destroyed and the shaft infilled.

3 Culvert under old trackway.



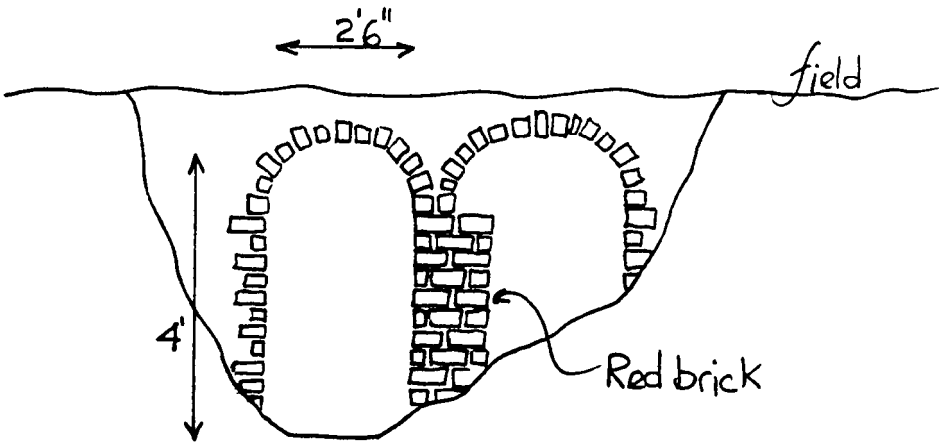
Culvert under trackway at (3)

4 Underground conduit - Approximately 100 yards long and 8 to 12 feet below the surface.



Section thro ditch halfway between ④ & ⑤

5 Ditch joins the small active streamway and is culverted under the road.



Conduit entrance at ⑥

6 Underground conduit - The entrance is a curious red brick double arch, both inlets are about 4 feet high and 2 feet 6 inches wide, said by the landowner, to have been part of a water supply to nearby Euroclydon house.

The ditch continues, following the road side until it joins the Drybrook near Drybrook village.

Details of Ditch Draining West Towards Lea Bailey

7 Underground conduit - No visible remains now, but when the shaft was open, the arched opening in the shaft wall could be seen about 20 feet down from the shaft top.

8 Culvert under track or road. Culverts and conduits are well constructed of local stone and are about 30 inches diameter.

9 Line of shallow scowles.(1) Here the ditch banks are reinforced with rough stonework. It would have been important to keep this section watertight as escaping water would penetrate the scowles and quickly return back into the mine workings. In I988 water was leaking from the ditch and disappearing into the ground. Both ditches collect some surface water in wet weather.

10 The ditch here is obliterated by old quarry workings, but it appears to have been carried through on a small embankment. The continuation of the ditch on the other side of the quarry can clearly be seen behind the raised mound of quarry waste.

11 This is where, in the early 1900s the water from the iron mine was used to scour the surface of the hillside in the search for gold. The steep hillside is coursed diagonally with deep grooves, ledges and faces across the outcrop of the Quartz Conglomerate.

12 A short separate ditch draining a small boggy depression. This may have been a small storage pond for "hushing".(2)

13 Ditch running along edge of old railway cutting. It collected water from the various prospecting trenches and channelled it under the railway line.

14 Small stream flowing from gold mine adit.

Numbers 5, 6, and 10 are on private land, the remainder is on land controlled by the Forestry Commission.

Wigpool Iron Mine was worked in two periods, 1861 to 1883, during which 150,000 tons of ore were raised and 1911 to 1918 when 7,000 tons were won. The deepest main level was at 400 feet, although ore was extracted well below this. To keep the level and lower workings free from water, pumping was necessary. As there was no level drainage adit, all water had to be pumped up the shaft, in the rising main which discharged into the stone lined conduit about 20 feet below the shaft top.

It seems that heavy pumping was required at the start, as during the sinking of the shaft, at a depth of 500 feet, a large feeder of water was encounterd and the water rose in the shaft. With the gradual lowering of the water table, less demand was put on the pump, in 1918 light pumping was sufficient to unwater the 400 foot level.(3)

The pump was a 12 inch diameter bucket pump, powered by a horizontal rotary, high pressure steam engine which was also used for winding but not at the same time. The engine cylinder was 30 inches diameter with a six foot stroke and at 12 strokes per minute, 345 gallons of water per minute could be raised to the surface. Steam for the engine at 35 pounds per square inch was generated in three egg ended boilers 6½ feet diameter and 40 feet long.(4)

In 1987 some details of the shaft were revealed when the top was uncovered for infilling. (The shaft was uncovered and filled in by the occupier of the adjacent dwelling, on grounds of safety.) Originally the shaft section was eliptical, about 10 feet by 7 feet, stone lined with dressed sandstone blocks, with the drainage conduit on the south side. Sometime later the shaft was modified by "squaring" the western end of the elipse and constrcting a new drainage outlet conduit. The shaft is now infilled to the surface.

Prospecting for gold took place at Lea Bailey in the early 1900s. This is recorded by Hart (5) and by a note on the Six Inch Geological map "Unsuccessful trial trenches and small levels for gold". Water was used to scour the hillside to expose the outcrop of the supposedly gold bearing Quartz Conglomerate and would also be needed for simple sluicing to separate the gold. This water was obtained from the natural drainage of Wigpool Common, (No 12 on the sketch map) with an additional supply in the period 1911 to 1918 from the iron mine. However it appears that the most active gold working period at Lea Baily was 1906 to 1908, in which case the water supply was either totally from the natural drainage source, or it may have been possible that the iron mine pump was operated solely to supply water to the gold works. Water from the iron mine may also have been used for prospecting during 1911 to 1918 because applications to prospect for gold in the Forest were received by the Office of Woods up to 1921.

The are two basic types of mine drainage surface drainage: 1 the drainage of water pumped out of a mine to the surface and 2 the drainage to prevent surface water from penetrating mine workings. Both types occur in the Forest of Dean and probably other areas but little other work has been done on this subject.

Notes and Bibliography

(1) Scowles - A local term for ancient iron workings where the iron outcrops at the surface. These shallow workings communicate with deeper underground mine workings.

(2) Hushing - An ancient method of prospecting on hillsides, where a quantity of stored water is released suddenly to create maximum scouring effect.

(3) T.F. Sibly, 1927, "The Haematites of the Forest of Dean and South Wales", Vol X Special Reports on the Mineral Resources of Great Britain.

(4) H.R. Insole and C.Z. Bunning, 1881, "The Forest of Dean Coalfield", The British Society of Mining Students.

(5) C. Hart, 1971, The Industrial History of Dean".

Notes on our new contributor

Mr C.R. Bowen is a mine enthusiast. He is a member of the Royal Forest of Dean Caving Club and a member of the Northern Mine Research Society and he is a local rescue warden of the Gloucestershire Cave Rescue Group. Mr Bowen, however, worked on this project on his own and is hoping to do a complete survey of surface drainage in the Forest. An enormous task and one in which we wish him well. No doubt it will provide further publications in due course.