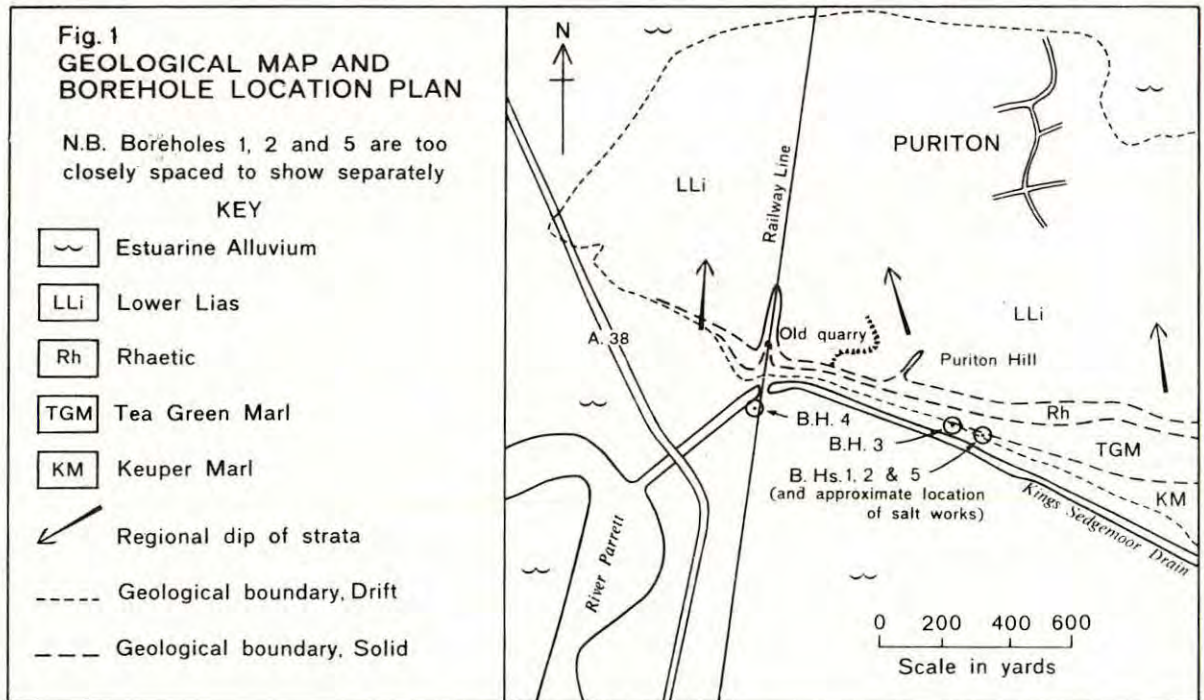


THE SALT INDUSTRY AT PURITON, SOMERSET¹

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Rock salt was accidentally discovered near Puriton, Somerset, during the sinking of a borehole for coal in the year 1910. Informed geological opinion had long considered it likely that Coal Measures strata were preserved at depth in that part of Somerset south of the Mendips (see McMurtrie 1911, p. 25). Early and unsuccessful attempts to find coal in this district were numerous, although all the drilling explorations were relatively shallow. Undaunted by these failures, in 1901 Mr. C. W. M. Greenhill of Puriton Manor asked the geologist James McMurtrie for general advice about the prospects of finding coal in this vicinity. Subsequently McMurtrie was commissioned to prepare a detailed report, completed in 1908, which was favourable. As a result, the Bridgwater Collieries Company was formed, the leading entrepreneur being Ernest Jardine, M.P., of Abbey House, Glastonbury.

The site selected for the trial boring was at the foot of the south-facing scarp of Puriton Hill, north of the King's Sedgemoor Drain and 640 yards E.S.E. of Dunball Station (No. 1 Borehole, Fig. 1). The location was chosen for its proximity to good water supplies (Sedgemoor Drain) and its position *vis-à-vis* the geological structure of this area (Fig. 2). The Carboniferous rocks of south-west England are succeeded by Permo-Triassic or New Red rocks, a series of predominantly red coloured conglomerates,



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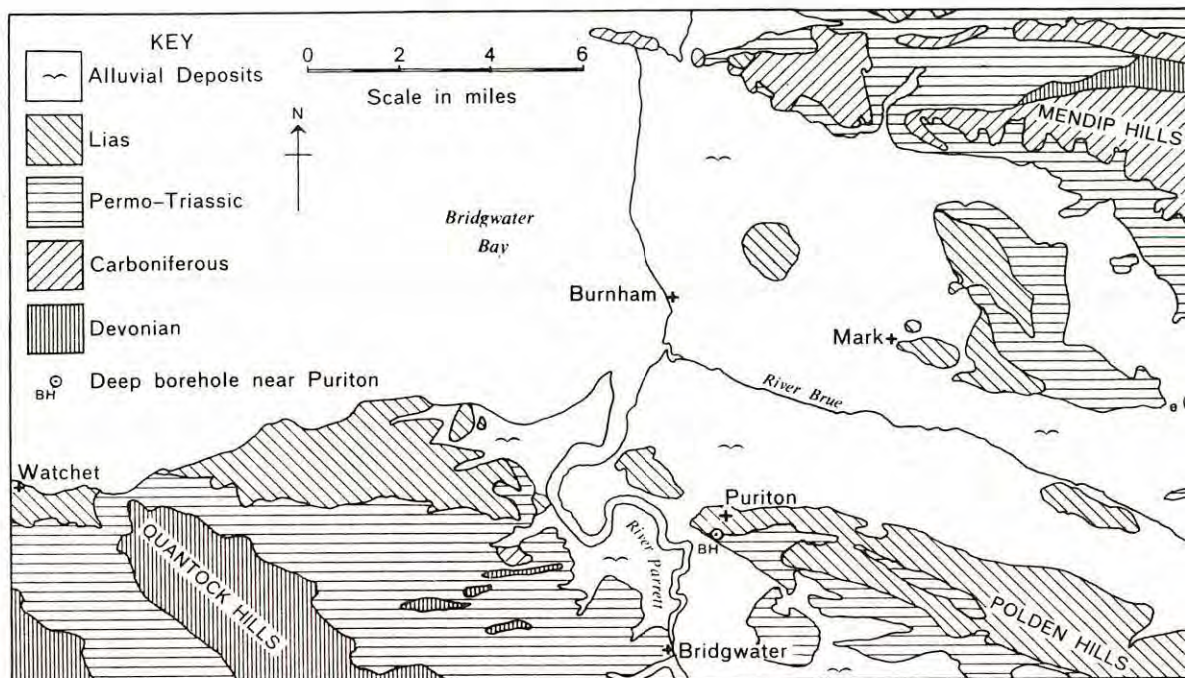


Fig. 2 SIMPLIFIED GEOLOGICAL MAP OF PART OF SOMERSET

breccias, sandstones and marls. Underlying the alluvial deposits of the Bridgwater-King's Sedgemoor area are Keuper marls, near the top of the New Red sequence. Northwards, the monotonously flat and low-lying alluvial parts of central Somerset are relieved only by the strong feature of the Polden Hills. This ridge, capped by the Lower Lias limestones and shales which succeed the New Red, presents a gentle dip slope to the north and a steeper scarp to the south. As Liassic strata are present beneath the levels and moors north of the Poldens, any borehole hoping to penetrate the full thickness of New Red rocks in this area would also have to pass through the overlying Lias, thus increasing costs.

Vivian's Boring and Exploration Co. Ltd., of Cumberland, were engaged to sink the borehole, and drilling commenced in December, 1909. Within 11 months over 2,000 ft. of New Red strata had been passed through without penetrating the Carboniferous, and operations ceased in November 1910. Although no coal-bearing strata were proved, the boring did demonstrate the presence of salt deposits, previously unknown in this part of England, and, thus, was not an outright failure from the economic viewpoint. The borehole proved small quantities of gypsum and anhydrite below the depth of 100' and rock salt or halite between 646' 6" and 719' 4" depth (see McMurtrie, 1911, p. 36).

Rock salt, which consists of sodium chloride together with smaller quantities of other substances, is fairly common in the Keuper Marl of this country. The Somerset salt deposits, like many of those from other parts of England, were red or reddish brown

in colour due to the presence of marl impurities. At Puriton, the saliferous beds were associated with red, green and chocolate-coloured marls, described by McMurtrie (1911), Ussher (1911) and Sherlock (1921).

The commercial extraction of rock salt relies upon its great solubility; it has been estimated that 1,000 gallons of ordinary water will take up about 28 cwt. of rock salt, and that the same volume of brine will yield about 21 cwt. of salt (Sherlock 1921). During the course of the drilling operations a continuous flow of brine was obtained for over eight months and hydrometer tests were carried out between July and November 1910 (McMurtrie 1911). Samples of brine were also subjected to analysis and found to compare very favourably with those from other salt producing areas (Sherlock 1921).

As the tests were promising from a commercial point of view, in 1911 Mr. Greenhill erected preliminary plant, adjacent to the deep boring (ST31914086), for the treatment of brine and production of salt. A second boring was begun in the same year at a site about 5 yards north-east from the first and this proved thicker salt beds than the deep boring. This second hole was the main one used for commercial extraction and brine was pumped from it to a large storage tank or reservoir, high on the hillside above the works, from which the brine was gravity fed into the salt pans for evaporation. The pans, filled with brine, were heated from below by coal fires, allowing water to be slowly driven off until the salt was precipitated and later collected. At Puriton there were three pans, two for the production of table salt, one for industrial salt. Table salt was produced by boiling the brine, artificially drying the product and then grinding it in a mill, while the more coarsely crystalline "broad" salt was obtained by slow evaporation of brine for about a fortnight. When the works first opened skilled salt makers were brought to Somerset from Stoke Prior in Worcestershire, where salt production has a long history. Between twenty and thirty people were employed at the works, including nine salt makers, four of whom were on the big industrial pan. Three shifts were worked and production went on round the clock, the night shift relying upon carbide for lighting. The industry was conveniently situated close to rail and road (Fig. 1) and both methods of transport were utilized in distributing the products. The salt was alleged to have been of excellent quality and was sent to Bristol and other places for domestic use and for use in the meat and fish curing industries. Waste products, in the form of scale, were deposited on the pans and mixed with "dirty salt", a product from salt drainings commonly discoloured by sooty matter. This mixture was sold for agricultural purposes and used as a fertilizer.

A third boring was sunk some 100 yards west of the previous two and this may have been that belonging to the adjoining cement works of the John Board Co., who are also on record as having worked the salt (Sherlock 1921). Brine was pumped from this well by means of an 8 h.p. petrol engine, but the boring was a failure because there was not a continuous supply of brine. A fourth boring in this vicinity was made west of the railway line but never used, while a fifth, sited close to the first and immediately adjacent to the Sedgemoor Drain bank, was put down to 500' depth.

The main, second, boring was abandoned in 1914 as a result of leakage in the lining tubes which caused a decrease in the brine's specific gravity. In this year the rights were sold to the Salt Union who ran the Puriton works for a short time but eventually closed it down as it was too small.

At the present time little is left of the industrial buildings which once occupied the area east of the cement works at Dunball. Remnants of plant can still be found (ST31914086) if careful search is made in the undergrowth to the north of the footpath which runs eastwards from the cement works along the edge of King's Sedgemoor Drain.

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