

A GRAVEL DEPOSIT ON BLEADON HILL, MENDIP, SOMERSET

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The deposit occurs in the Shiplate embayment, between the spurs of Hellenge Hill and Loxton Hill on the southern side of Bleadon Hill, ST 349573 (Fig. 23). The origin of this embayment is not known, but its existence in Triassic time is indicated by the presence of Dolomitic Conglomerate and Keuper Marl in the lower part of the hollow up to about the 100 ft. contour (Old Series 1 in. Map). Surface fragments of Dolomitic Conglomerate also occur above the 200 ft. contour as at ST 354573. Keuper Marl has been proved immediately to the south and east of the gravels at about 270 ft. and probably underlies the deposit.

The gravel outcrop occurs on the western side of the embayment at approximately 270 ft. O.D., where it forms an east-west ridge, approximately 20 ft. in height. The depression upslope of the ridge forms part of a dry valley system, the main course of which runs southwards as a deeper valley, approximately 450 ft. to the east of the deposit. The ridge has a gentle northern slope but a steeper southern slope. The crest of the ridge has a fairly constant surface height from the indefinite boundary of the gravels with solid rock on the western end to the eastern end where it falls away in a steep slope.

The deposit is poorly exposed except at its south-eastern corner in what appears to be an old gravel working, generally obscured by blackthorn. Apart from this, badgers have exposed gravelly sand and left large sand heaps near the entrance to the setts.

The gravel exposure can be summarised as follows (layers 1-4 being exposed in temporary pit A in 1959—Plate 6):

7. A poorly sorted horizon of sub-rounded calcreted gravel and cobbles up to 6 in. in length. The cobbles consist exclusively of Carboniferous Limestone. Thickness about 2 ft.
6. Approximately 2 ft. of fine sub-rounded calcreted gravel ($\frac{1}{4}$ in.— $\frac{3}{4}$ in. maximum lengths) and with some cobbles up to 3 in. in length. The material is predominantly Carboniferous Limestone, but some very weathered yellowish calcareous rock may represent Triassic material or be a partially de-calcified limestone. Rare quartz and calcite pebbles are recorded.
5. Between the base of the exposure and the irregular boundary with horizon 6, is 18 in. of calcreted sub-rounded gravel and cobbles, generally 2 in.—4 in. in length but also occurring up to 9 in.
4. Coarse sub-rounded calcreted gravel and cobbles up to 12 in. in size.

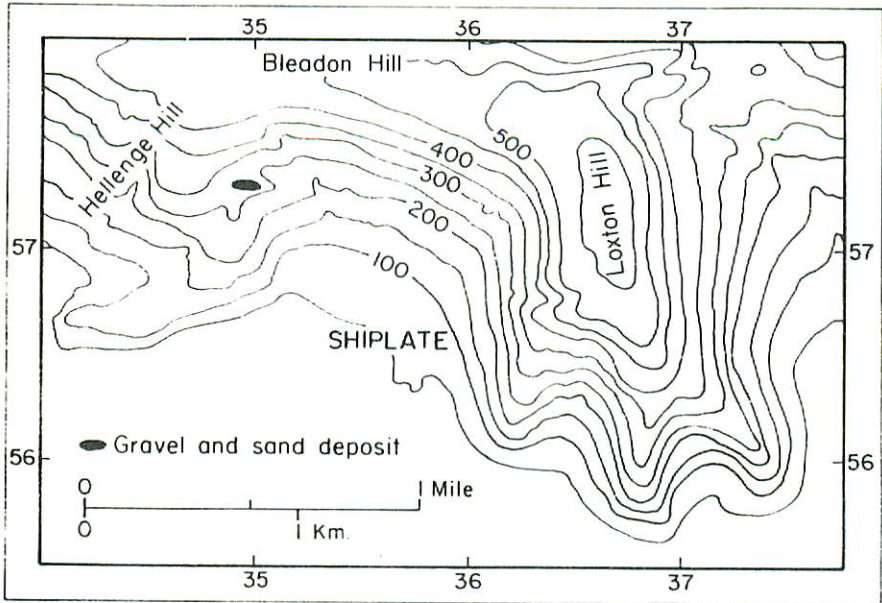


Figure 23. Location. Based on Ordnance Survey. Crown copyright reserved.

3. Fine sub-rounded calcreted gravel.
2. Medium sub-rounded calcreted gravel.
1. Fine to medium sub-rounded calcreted gravel.

The deposit has an observed dip of 35° N.E. The significance of this dip is not yet clear; it may indicate a depositional or displacement dip.

At the eastern end of the deposit, gravel is occasionally exposed through a thin veneer of top soil. Pit B, dug at the mouth of a badger sett, showed the following section:

	<i>Depth</i>
6. Dark brown topsoil over reddish brown loam containing rounded and sub-rounded Carboniferous Limestone $\frac{1}{2}$ in.-4 in. in diameter and some yellow dolomite.	0 in.-16 in.
5. Reddish brown (5 YR 4/4) loam, a few rotting fragments of calcreted sand.	16 in.-24 in.
4. Buff (10 YR 6/3-6/4) calcreted sand of medium grain in 3-4 layers with ripple casts at the base.	24 in.-28 in.
3. Buff medium sand with pinker (5 YR 5/3) finer-grained lamellae.	28 in.-44 in.
2. Reddish brown (5 YR—2.5 YR 5/4) gritty sandy clay loam with sub-rounded black limestone, dolomitized limestone and dolomite	44 in.-50 in.
1. Brownish red (2.5 YR 5/4) siltstone with an irregular greenish-grey calcareous band (Keuper Marl).	50 in.-62 in.

In a second hole this "marly" layer was proved to be at least 24 in. thick.

The field relationship between the two described sections suggests that the sand and marl extend beneath the gravel deposit. Pit A was dug in an attempt to confirm this but increasing calcerection of the gravels made it impractical to complete the hole. However, marl was found in a number of auger holes and pits made round the eastern and southern margin of the gravel ridge. Hence, continuity of gravel, sand and marl has not been proved but it is certainly indicated.

Sand fractions collection from the badger setts, probably layer 3 and 4 of Pit B, have been confirmed by sieving to be medium to very fine grade (dominantly 0.63-0.063 mm). Microscopically, the coarser grains are well rounded and generally frosted. The finer and non-frosted grains are often angular and some are acicular. The following heavy minerals have been identified in the sand fraction by Mr. E. Griffiths: Iron Pyrites, Magnetite, Haematite, Muscovite, Apatite, Tourmaline, Zircon, Almandine Garnet, Galena, Dolomite, Epidote, Sphene, Ilmenite, Leucoxene.

Plate 6 shows the varying grade of the gravels and the indefinite boundaries of the individual horizons described in Pit A. Fine grade matrix is absent but the pebbles are calcerected where they come in contact. The dominantly Carboniferous Limestone gravels are seen to have some degree of rounding with sharp edges entirely absent. Hence, whatever the origin of the fragments, they have suffered some water attrition before deposition. The presence of ripple casts and laminae recorded in Pit B implies water deposition. It is not possible from the nature of these features to determine more precisely the conditions under which they formed.

ORIGIN OF THE DEPOSIT

There are two likely ages for the deposit, Rhaetic or Quaternary.

1. *Rhaetic*

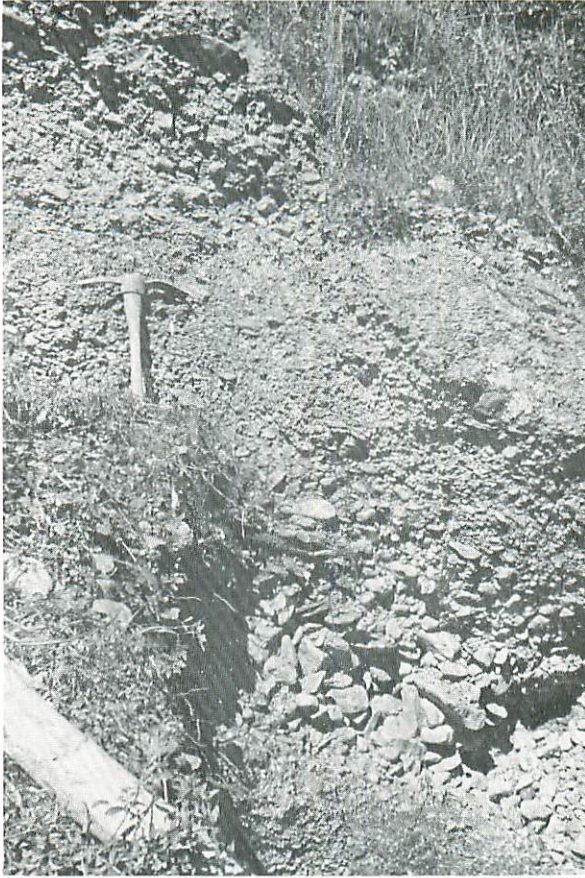
As the deposit rests on Keuper Marl, it is possible that it is a basal Rhaetic conglomerate, similar to that exposed at Butcombe. However, nowhere else has a Rhaetic conglomerate resting on sand been described. Samples of the sands were examined in 1960 by Dr. H. Ivimey-Cook of the Institute of Geological Sciences, who found a few microfauna and suggested they could be Liassic in age. Further examination of the sands at Bristol University has not yielded microfauna. However, Jurassic and Cretaceous foraminiferids have been found in the sands under Pleistocene gravels in the Court Hill and Tickenham Hill cols near Clevedon (Hawkins in prep.).

2. *Quaternary*

There are two possibilities:

Abandoned Marine Beach

The altitude of the deposit is similar to the marine platform



Photograph D. C. Findlay.

Plate 6. Section in Pit A and the gravel exposure, 1959.

between 200 and 300 ft., discussed by Trueman (1938). The similarity of the pebble type, almost exclusively Carboniferous Limestone, suggests a localised source area consistent with that of a bay bar. However, in a marine beach there is normally a greater degree of sorting and rounding than seen in the gravel or sand deposits. No fauna has been found, but this could be the result of solution and reprecipitation forming the calcrete which cements the gravel and cobble fraction.

Glacial

With the recent evidence of the extension of Bristol Channel Ice to eastern Mendip (Hawkins and Kellaway, 1971 and Kellaway, 1971) the possibility of the deposit being associated with a glacial advance can no longer be ignored.

There are two possible glacial origins, deposition by a marginal sub-glacial stream, or as a beach of a pro-glacial lake.

With a marginal sub-glacial stream, it is probable that the rock types would be more variable than the almost exclusively Carboniferous Limestone seen in the gravel deposit, compared with the included Pennant Sandstone, Keuper Marl and Chert of the deposits at Court Hill (Hawkins and Kellaway, 1971).

However, the height is consistent with the outlet cols in the region which would have acted as overflow channels from a pro-glacial lake occupying the Somerset levels, the Chard Gap, 295 ft. O.D., Wincanton Gap, 280 ft. O.D. and the Longburton Gap, 280 ft. O.D.

The unsorted and sub-rounded nature of the gravels is more characteristic of a lake origin rather than a true marine beach. A similar sequence of poorly sorted gravels and cobbles with a dip of 37° overlying sands, has been observed in the Court Hill col.

The origin and age of the deposits is still uncertain. In view of the recent finds of glacial deposits in the region and the general similarity to those of the Failand Ridge, it is suggested that they may be of fluvio-glacial origin. Great care must therefore be taken in placing these, and many other deposits, into archaeological context.

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