

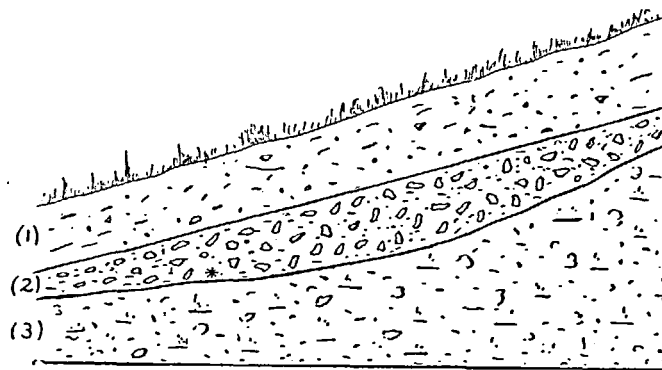
NOTE ON NON-MARINE MOLLUSCA OBTAINED FROM HOLOCENE  
AND PLEISTOCENE DEPOSITS AT BUCKLAND, DOVER.

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THE object of this note is to draw attention to two very interesting sections of Pleistocene and Holocene deposits, containing the remains of Mollusca, that overlie the Head or Rubble Drift at Barton Court Estate, Buckland, Dover, on the northern side of the valley of the River Dour. The deposits are at a height of about fifty feet above the

FIG. I.



1. Surface soil with few angular flints, 2 feet.
2. Dissolved out flints unworn, 9 in. to 1 ft. 6 in. : *Helix aspersa* extremely abundant. \* Roman pottery.
3. Chalk Rubble, 1 ft. to 2 ft. 6 in.

present river-bed, and probably 100 to 120 feet above O.D. Since contours of the hills contiguous to Government fortifications are not published, it is difficult to arrive at the exact level in reference to mean high-water mark.

The deposits are about a mile in a straight line from the nearest cliff, and about two miles from the mouth of Dover Harbour.

The estate is being rapidly developed for building purposes, and a new road, called Heathfield Avenue, has been made on the hill which terminates at Dover Castle. This road is partly made of the material on the spot, and in cutting a perpendicular face on its northern side the rubble drift deposit and overlying strata have been cut.

In the waste land between sections I and II living specimens of

*H. Cantiana*, *H. virgata* (two vars.), and a dark *H. aspersa* are very abundant. I found no *H. Carthusiana*.

The first section is at right angles to the new road, and runs with the slope of the hill: it exposes a hill-wash of a remarkable character.

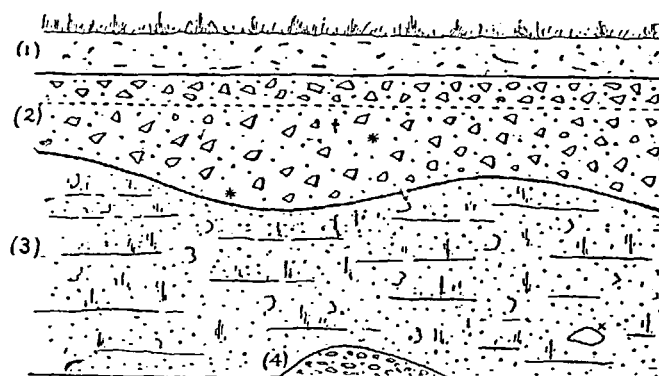
At the lower part *Helix aspersa* was exceedingly plentiful, from the youngest and most fragile shell to the massive adult specimen. Near the base of this deposit occurred a fragment of Roman tile. When these shells were living on the spot the flints must have been on the surface, for even the youngest shells are quite uninjured.

In this deposit occur:

- Vitrea cellaria*, Müll.
- „ *nitidula*, Drap.
- Pyramidula rotundata*, Müll.
- Helicella Itala*, Linn.
- „ *caperata*, Mont.
- „ *Cantiana*, Mont.
- „ *Carthusiana*, Müll.
- Hygromia hispida*, Linn.
- „ *rufescens*, Penn.
- Vallonia pulchella*, Müll. (1 specimen).
- Helix aspersa*, Müll.
- „ *nemoralis*, Linn.
- Cochlicopa lubrica*.
- Pupa muscorum*, Linn. (1 specimen).
- Clausilia laminata*, Mont. (1 specimen).

About 150 yards eastward another promontory has been cut away to form the road. Here for about 100 yards the face of the section may be generalized as follows:—

FIG. II.



1. Surface soil, 1 foot to 18 inches.
2. Chalky marl with angular flints, 2 to 3 feet. \*\* Neolithic pottery.  
†† Neolithic flints.
3. Chalk marl and brickearth, 4 to 5 feet. \* Small pocket of shells.
4. Boss of Rubble Drift.

It is very evident that we are here dealing with a more complex series of deposits, the lower portions of which are older than those of the first section. The surface soil contains few shells. *Helicella virgata*, Da C., was the only one which I noticed.

The next stratum (2) is really a double one in point of date. The upper part contains *Helix aspersa* (though far less abundantly than the other section) and *Helicella Cantiana*, and is probably of the same age as the deposit No. 2 of Fig. I. Towards the middle and at the lower part, however, Neolithic flints and Neolithic pottery occurred. One specimen of *H. aspersa* was found at the lowest horizon of the Neolithic pottery.

The lowest stratum (3) is pre-Neolithic, and is of the character of brickearth in some places, and of chalky loam in others. In this bed, towards the lower part and just above the chalk rubble, the following shells were found:—

*Agriolimax agrestis*, Linn. 5 feet from surface.

*Helicigona arbustorum*, Linn. 5 ft. 6 in. and 6 ft. from surface.

*Pupa muscorum*, Linn. 5 ft. 6 in. from surface.

These and *Vallonia pulchella*, Müll., occurred sparingly through the upper part of this stratum.

This lowest deposit corresponds to other Pleistocene deposits in lithological and faunal characters, and is to my mind a loam such as at Chesilton, Portland Bill, Sangatte, and elsewhere occurs in seams in the angular and subangular Rubble Drift, which at this section overlies it.<sup>1</sup>

Reverting to Fig. II:—

*Helicella Cantiana* occurred at the upper part of (2).

*Agriolimax agrestis* throughout (2), but one specimen was found at a depth of 5 feet, well down in the Pleistocene loam.

*Pupa muscorum* was met with under and at the lower part of (2), at the upper part of (3), and a few specimens on the horizon of *Helicigona arbustorum*.

*Helicigona arbustorum* in (3) only, 5 ft. 6 in. and 6 feet from surface.

*Helix aspersa* occurred generally, but sparingly, throughout (2), one specimen on the horizon of the Neolithic pottery at the base of (2).

The complete list of the shells found in the two sections is as follows:—

SURFACE SOIL.	HOLOCENE.
<i>Helicella virgata</i> , Da C.	<i>Agriolimax agrestis</i> , Linn.
	<i>Vitrea cellaria</i> , Müll.
POST-ROMAN.	„ <i>nitidula</i> , Drap.
<i>Helicella Cantiana</i> , Mont.	„ <i>pura</i> , Ald. (1 specimen).
<i>Helix aspersa</i> , Müll.	

<sup>1</sup> Prestwich: Quart. Journ. Geol. Soc., vol. xlviii (1892), pp. 271, 277, 278; vol. xxi (1865), p. 410.

- HOLOCENE (*continued*).
- |   |   |
|---|---|
| <i>Vitrea nitida</i> , Müll. (1 specimen).        | <i>Pupa muscorum</i> , Linn. (abundant).            |
| <i>Helicella Itala</i> , Linn.                    | <i>Vertigo pygmaea</i> , Drap. (abundant).          |
| „ <i>caperata</i> , Mont.                         | <i>Clausilia bidentata</i> , Ström. (1 specimen).   |
| „ <i>Carthusiana</i> , Müll.                      |   |
| <i>Hygromia hispida</i> , Linn.                   | PLEISTOCENE.  |
| „ <i>rufescens</i> , Penn. (abundant).            | <i>Agriolimax agrestis</i> , Linn.                  |
| <i>Vallonia pulchella</i> , Müll. (abundant).     | <i>Hygromia hispida</i> , Linn.                     |
| <i>Helix aspersa</i> , Müll. (not very abundant). | <i>Vallonia pulchella</i> , Müll.                   |
| <i>Helix nemoralis</i> , Linn. (2 specimens).     | <i>Helicigona arbustorum</i> , Linn. (2 specimens). |
| <i>Cochlicopa lubrica</i> , Müll.                 | <i>Cochlicopa lubrica</i> , Müll. (1 specimen).     |
| <i>Cæcilianella acicula</i> , Müll.               | <i>Pupa muscorum</i> , Linn.                        |
| <i>Pupa cylindracea</i> , Da C.                   | „ <i>secale</i> , Drap. (1 specimen).               |

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