

Further Notes on the Burtle Sand-beds of Somerset

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with an Appendix by

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INTRODUCTION

IN 1937 we published some observations on the composition, distribution, and the mammalian and molluscan contents of the Burtle sand-beds in mid-Somerset.¹ Since that time various other discoveries of mammalian and molluscan remains have been made and these are embodied in the present paper. We have also included an Appendix by Mr. A. Santer Kennard, A.L.S., on some non-marine mollusca found at Othery and Shapwick. In addition are some notes on shells found at one or two other places in the neighbourhood, though not from the Burtle beds.

During the early part of the war as many as a dozen men were digging sand and filling sand-bags at Greylake Quarry No. 1. In the rush it is feared that bones were broken up and carted away. How much valuable material has been lost in this way, it is impossible to estimate.

A large additional area of Burtle sand has been noticed since the publication of our previous paper between Summer-close Drove and Rhyne Drove in Catcott Heath, half a mile w. of Brickyard Farm. (Somerset 6-in. Ordnance Map, Sheet LI, N.E.)

THE MAMMALIAN REMAINS

Two new animals, Hyæna and Wolf, are added to the list previously given. In addition there are further remains of Urus and Fallow Deer. These are described below.

¹ *Proc. Som. Arch. & Nat. Hist. Soc.*, lxxxiii (1937), 171-95.

Hyæna (*Hyæna crocuta*, Erxleben): The lower mandible of this animal was found in Greylake Quarry No. 1 in July 1938. It is somewhat imperfect, the hinder part (coronoid, condyle, etc.) being broken away on the left side. The right ramus has the following teeth in place, M1, PM4 and PM3, and the socket for PM2. The full length of the tooth-row is 90 mm., the length of the jaw (condyle to tip), 193 mm. The height of the vertical part (coronoid to angle) is 92 mm., the depth of the horizontal part behind M1 is 52.5 mm., and in front of PM3, 37 mm. The left ramus possesses M1, PM4, 3 and 2, with a length of tooth-row of 90 mm. PM2 is large and has a small anterior cusp. PM3 has a strong anterior ridge extending upwards from the cingulum. In both jaws the carnassial, M1, is 32 mm. in length and has a bi-tuberculate cusp or talon with oblique ridge passing to the posterior part of the blade of the tooth.

Wolf (*Canis sp.*): Part of the left ramus of the mandible of a wolf was found in Greylake Quarry No. 1 in 1938. It contains two well-worn teeth, M1 and PM4. The carnassial, M1, measures 27.3×10.8 mm.: the depth of the jaw behind this tooth is 28 mm. The jaw is thinner and the teeth are smaller than in fossil jaws of wolf (*Canis lupus*, L.) from Windy Knoll Fissure, near Castleton, Derbyshire; Creswell Caves, Derbyshire; Langwith Cave, Notts; Torbryan Cave, Devonshire. Two left carnassials in jaw fragments from Windy Knoll measure 30.5×13 mm. and 32×13.5 mm. A right carnassial from Church-Hole Cave, Creswell, measures 31×14 mm. Others from Pin Hole Cave, Creswell, are, left, 29×11 mm.; right, 29×11 mm.; and right, 30×12 mm., with depths behind the carnassial of 32, 31 and 30.5 mm. respectively. Four left carnassials in jaw fragments from Torbryan Cave measure, 32×12 mm.; 31.5×12.5 mm.; 31×13 mm.; and 31×12 mm. In one jaw the depth behind the tooth is 31.5 mm. On the whole the teeth in these fossil jaws, with the exception of the Greylake specimen, are larger than in those of recent animals given by G. S. Miller.² The following are taken from this work: Lower carnassial, *Canis lupus lupus*, L.: Sweden, 30.4×12.2 mm.; Northern Sweden, 28.0×11.2 mm.; Russia, 27.4×11.0 mm.; Italy, near Sassello, Liguria, 29.6×11.8 mm. *Canis lupus signatus*, Cabrera: Spain, near Seville, 27.0×10.8 mm.; Prov. Burgos, 30.6×12.2 mm. and 28.0×11.8 mm.

Urus (*Bos primigenius*, Boj.): A perfect right metatarsal of this animal was met in Greylake Quarry No. 1 in 1940. The full length of the bone is 295 mm.; the width at the proximal end is 78 mm.; at the distal end, 80 mm.; the mid-shaft diameter is 48 mm. On the front of the bone the groove for the extensor tendon is very distinct towards the lower end. With the above were also found an imperfect left humerus, and parts of a radius and ulna of large

² Brit. Mus., *Catalogue of Mammalia of Western Europe*, 1912, p. 317 Table.

size. The maximum width of the condyles of the humerus is 114 mm.

Fallow Deer (*Dama cf. dama*, L.): In June 1939, several antlers, in fragments, were found in Greylake Quarry No. 1. Three or four of these are of interest as they have portions of skull attached, showing they were not shed. In 1940, another nearly complete antler was found in the same quarry.

THE NON-MARINE MOLLUSCA

As mentioned in our previous paper, land and fresh-water shells are exceedingly common in the debris in some of the sand-quarries. Many were collected by us on visits to the quarries, but owing to some uncertainty as to their age, except in two instances, these were not described. We have since collected further specimens and gone over the old material. Some of the examples are undoubtedly old, while others are of comparatively recent date.

From Greylake Quarry No. 1 we have the following old shells: Land: *Pomatias elegans* (Müll.) 2; *Oxychilus cellarium* (Müll.) 1; *Ena obscura* (Müll.) 1; *Gonyodiscus rotundatus* (Müll.) 3; *Cepæa nemoralis* (L.) 1; *C. hortensis* (Müll.) 1. Fresh-water: *Lymnæa peregra* (Müll.) 4; *L. palustris* (Müll.) 12; *L. truncatula* (Müll.) 5; *Planorbis coreus* (L.) 5; *Planorbis planorbis* (L.) 5; *P. vortex* (L.) 17; *Bithynia tentaculata* (L.) 2; and *Valvata piscinalis* (Müll.) 1.

Corbicula fluminalis (Müll.) and the land shell *Cerneuella lineata* (Oliv.) were recorded from this quarry in 1937.

From Greylake Quarry No. 2 are the following species: Land: *Trochulus hispidus* (L.) 1; Fresh-water: *Lymnæa peregra* (Müll.) 1; and *L. palustris* (Müll.) 1, all old.

Corbicula fluminalis (Müll.) was recorded from here in our previous report.

From Sand Batch No. 5 (Shapwick Heath) are the following fresh-water species: *Lymnæa peregra* (Müll.) 6; *L. palustris* (Müll.) 1; and *Bithynia tentaculata* (L.) 2. Other species collected at Shapwick are dealt with by Mr. A. S. Kennard (see Appendix).

Sand Batch No. 6 (Brickyard Farm) yielded old shells of *Bithynia tentaculata* (L.) 1, and *Sphærium corneum* (L.) 1.

From Sand Batch No. 7 (Canada Farm) we have *Bithynia tentaculata* (L.) 1, and *Lymnæa peregra* (Müll.) 4.

Of the above series of old shells probably the most interesting is *Pomatias elegans* (Müll.). This species inhabits dry calcareous situations, and, according to Swanton,³ is widely distributed in the

³ *Mollusca of Somerset*, 1912, p. 57.

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northern part of the county of Somerset, being common amongst limestone rocks at Cheddar, Axbridge, Wells and other places. It abhors damp situations. *Ena obscura* (Müll.) frequents similar places to *Pomatias elegans*.

Among the series of non-marine shells of which the age is doubtful, but probably Holocene, are some sixteen fresh-water forms collected by one of us (A. B.) in 1939, from the Sedgemoor main drain dredgings. The species are as follows: *Lymnæa stagnalis* (L.) 10; *L. palustris* (Müll.) 3; *L. peregra* (Müll.) 12; *L. auricularia* (L.) 18; *Planorbis planorbis* (L.) 28; *P. vortex* (L.) 1; *P. contortus* (L.) 1; *Physa fontinalis* (L.) 1; *Bithynia tentaculata* (L.) 20; *B. leachi* (Shep.) 2; *Valvata piscinalis* (Müll.) 4; *Theodoxus fluviatilis* (L.) var. *trifasciata* Colbeau, 17; *Sphærium corneum* (L.) 13 valves; *Pisidium amnicum* (Müll.) 6 valves; and *Pisidium* sp. 4 valves. Some of the shells listed above are bleached white, while others are peat-stained. These Sedgemoor shells are from the drainage of the Rivers Cary and Parret, south of the Polden Hills. With the exception of *Theodoxus fluviatilis* (L.), they are all more or less common forms in the rhines of the Somerset levels. *Theodoxus fluviatilis* is a local species, occurring frequently on stones in canals and streams in the county. It has been recorded by Swanton⁴ from the River Brue, near Glastonbury, the River Yeo, at Yeovil, and from Bridgwater.

In November 1934, Mr. H. E. Balch, F.S.A., of Wells, submitted to one of the writers (J. W. J.) a collection of bleached Holocene land and fresh-water shells from the peat at Axbridge Reservoir. These comprised the following species: *Pomatias elegans* (Müll.) 10; *Cepæa nemoralis* (L.) 4; *C. hortensis* (Müll.) 5; *Petasina fulva* (Müll.) 1; *Oxychilus cellarium* (Müll.) 4; *Retinella nitidula* (Drap.) 9; *Zonitoides nitidus* (Müll.) 2; *Gonyodiscus rotundatus* (Müll.) 17; *Trochulus hispidus* (L.) 8; *Vortex lapicida* (L.) fragment; *Clausilia rugosa* (Drap.) 1; *Marpessa laminata* (Mont.) 2; *Zua lubrica* (Müll.) 1; *Lymnæa stagnalis* (L.) 2; *L. palustris* (Müll.) 5; *L. peregra* (Müll.) 4; *L. truncatula* (Müll.) 4; *Planorbis contortus* (L.) 2; *Succinea elegans* (Risso) 5; *Bithynia tentaculata* (L.) 11; *Valvata piscinalis* (Müll.) 7; and *Pisidium* sp. 2 valves. The above are species of general distribution in the county, and the land-forms as *Pomatias elegans* (Müll.) and *Vortex lapicida* (L.) are doubtless derived from the limestone uplands of the Mendips.

⁴ *Op. cit.*, 58-9.

APPENDIX

NOTES ON MOLLUSCA FROM THE BURTLE BEDS OF
OTHERY AND SHAPWICKBY A. S. KENNARD, A.L.S., F.G.S., GEOLOGICAL SURVEY
AND MUSEUM

Recently the Rev. J. Fowler, M.A., F.G.S., of Sherborne, in re-arranging Sherborne School museum, noted a tray labelled 'Shelly Sand, Othery, Sedgemoor,' and realizing its importance he kindly forwarded it for examination and report. It was clearly fluviatile material and had been washed through a fine sieve and yielded twelve species of non-marine mollusca, viz.—

- Bithynia tentaculata* (Linné).
Valvata cf. *piscinalis* (Müller).
Lymnæa peregra (Müller).
 „ *palustris* (Müller).
Planorbarius corneus (Linné).
Planorbis planorbis (Linné).
 „ *leucostoma* (Millet).
Corbicula fluminalis (Müller).
Pisidium amnicum (Müller).
 „ *astartoides* (Sandburger).
 „ *sp.*

All the examples are small, this feature being due to the sorting action of the stream that deposited the sand, and this stream was clearly a quick-flowing one. It is clearly a Pleistocene deposit and probably early, for *Pisidium astartoides* is not known from any deposit later than Crayford, and hitherto has not been detected in England except in the Thames river system. It is known, however, from the Cromerian of West Runton, Norfolk, and the Pliocene Norwich Crag, so it is probably a case of the 'imperfection of the Geological Record'. The examples of *Valvata piscinalis* are of great interest. They are identical with the form from the Cromerian of West Runton and the older part of the High Terrace of the Thames at Swanscombe, and have been identified by Continental authorities as *andreana* Menzel, described from the German Pleistocene. This form is very different from the high-spined *antiqua* Morris so abundant in the latest stage of the Thames High Terrace and at Grays, as well as the form that is found in the Pleistocene of Crayford and which the late Dr. A. C. Johansen always maintained was specifically distinct from the living form. *Corbicula fluminalis* is also of importance, for it occurs

as a derivative in the marine facies of the Burtle Beds.⁵ The Rev. J. Fowler made a special excursion to Othery to locate the deposit, but failed. From a sample of sand sent me two species of non-marine mollusca were obtained, viz.—*Pomatias elegans* (Müller) and *Bithynia tentaculata* (Linné), as well as several species of marine shells already recorded by Dr. Arthur Bulleid and Dr. J. Wilfrid Jackson.

Some years ago, Mr. A. G. Davis, F.G.S., kindly gave me a series of shells that had been collected at Shapwick by Mr. J. E. Clark, F.G.S. This yielded six species of non-marine mollusca, viz.—

- Hydrobia ventrosa* (Montagu).
- Bithynia tentaculata* (Linné).
- Valvata cristata* (Müller).
- Lymnæa peregra* (Müller).
- „ *palustris* (Müller).
- Trochulus striolatus* (C. Pfeiffer).

Two marine forms were also present:—*Peringia ulvæ* (Penn.) and *Cardium edule*, Linné.

The fresh-water forms are all dwarfed and the probability is that brackish water conditions are indicated.

It is evident that under the alluvium of Sedgemoor there are shell patches of fairly early Pleistocene fluviatile beds, and it is from similar now destroyed beds that the terrestrial relics of the marine Burtle Beds, such as bones and shells, were derived.

⁵ *Proc. Som. Arch. & Nat. Hist. Soc.*, lxxxiii (1937), 188.