of considerable interest, as it was from Bed 4 at Goldsworthy cutting that Prestwich obtained most of the fish remains of which a list is given in his paper on the Bagshot Sand.*

From Knap Hill the party proceeded to the common at Horsell Birch, where there is a large deposit of pebbles worked for road metal. This deposit has already been described in the PROCEEDINGS.†

A road across the common was then followed, and a fine section in Lower Bagshot Beds on the common, northward of Potter's Corner, was examined.

This completed the programme of the excursion, and the members were invited to the Director's house, where some specimens, including a tooth of a shark, from the beds passed through in sinking a well at Brookwood Asylum were exhibited. An excellent repast was provided by Mrs. Meeson, to which full justice was done. Before leaving, Mr. Monckton, on behalf of the members present, thanked Mr. Meeson for the trouble he had taken in arranging the excursion, and for acting as Director, and Mrs. Meeson for her kind hospitality. The party then returned to town by the 7.36 p.m. train.

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 See also "Record of Excursions," p. 286.

EXCURSION TO PETERBOROUGH.

SATURDAY, JULY 10TH, 1897.

Directors : A. N. LEEDS, F.G.S., AND A. S. WOODWARD,
 F.G.S.

Excursion Secretary : R. S. HERRIES, M.A., Sec. G.S.

(*Report by THE DIRECTORS.*)

THE object of this excursion was to examine the strata at the top of the Lower, and at the base of the Middle Oolites ; also to visit the private museum of Mr. Leeds, who has devoted many years to the collection and preservation of the fossil vertebrata of the

* *Quart. Journ. Geol. Soc.*, vol. iii, p. 390.

† *Proc. Geol. Assoc.*, vol. xi, p. 17.

Oxford Clay. The party left King's Cross at 10.15 a.m., arriving at noon at Peterborough, where carriages were in waiting.

By kind permission of the authorities of the Great Northern Railway, they proceeded, under the guidance of Mr. T. R. Johnson to a fossiliferous exposure of the Cornbrash in the Spital goods siding. While there, attention was directed to the remarkable persistence and uniform character of this thin marine stratum across England, as compared with the formations immediately above and below it. After a brief halt in the city, the party drove about two miles south to Fletton, where there are several large pits in the Oxford Clay worked for brick and tile manufacture. Considerable time was spent in one of the largest of these excavations, whence Mr. Leeds has obtained many fine specimens. The stratification of the clay by thin layers of more or less broken shells was noted, and many septaria were examined for better-preserved fossils. Mr. Leeds pointed out how the vertebrate skeletons occurred, spread over well-defined old floors in the clay, and could thus with care be recovered almost in their entirety. From Fletton the party drove two miles west to the classical section of Great Oolite in the railway cutting at St. Botolph's Bridge (Bottlebridge), where the intensely-hard, shelly limestone was found to be much obscured by vegetation. On the return to Peterborough some members visited the extensive pits in the Pleistocene gravels near the village of Woodstone, and late in the afternoon the whole party proceeded four miles eastwards to Eyebury, the residence of Mr. Leeds, where they were hospitably entertained by Mrs. Leeds.

Mr. Leeds' Museum now contains only his most recent discoveries, the greater part of the collection made by his brother (Mr. Charles E. Leeds) and himself during the past thirty years having been acquired by the British Museum (Natural History), where the principal specimens are exhibited. The members, however, had much to see, and were able to realise how prolific was the reptile and fish-life in the Oxfordian sea. Many of the species have not yet been fully studied, and it is thus not possible to compile a complete list of the forms represented; but the following table gives the information up to date:

LIST OF VERTEBRATA DISCOVERED BY MESSRS. LEEDS IN THE
OXFORD CLAY OF THE NEIGHBOURHOOD OF PETERBOROUGH.

REPTILIA.

DINOSAURIA.

Omosaurus durobrivensis, Hulke.

Ornithopsis leedsii, Hulke.

Sarcolestes leedsii, Lydekker.

Camptosaurus leedsii, Lydekker.

CROCODILIA.

Steneosaurus (various undetermined species).

Metriorhynchus (various undetermined species).

Suchodus durobrivensis, Lydekker.

ORNITHOSAURIA.

The bones of one individual.

SAUROPTERYGIA.

Murænosaurus plicatus (Phillips).

Murænosaurus platyclis, Seeley.

Murænosaurus veloclis, Seeley.

Cryptoclidus oxoniensis (Phillips).

Peloneustes philarchus (Seeley).

Pliosaurus ferox (Sauvage).

ICHTHYOPTERYGIA.

Ophthalmosaurus icenicus, Seeley.

PISCES.

ELASMOBRANCHII.

Hybodus obtusus, Agassiz.

Asteracanthus ornatissimus, Agassiz.

Asteracanthus var. *flettonensis*, A. S. Woodward.

CHIMÆROIDEI.

Ischyodus egertoni, Buckland.

Ischyodus beaumonti, Egerton.

Pachymylus leedsi, A. S. Woodward.

Brachymylus altidens, A. S. Woodward.

TELEOSTOMI (ACTINOPTERYGII).

Lepidotus macrocheirus, Egerton.

Lepidotus latifrons, A. S. Woodward.

Lepidotus leedsi, A. S. Woodward.

Heterostrophus sp.

Mesturus leedsi, A. S. Woodward.

Caturus (various undetermined species).

Eurycormus egertoni (Egerton).

Osteorachis leedsi, A. S. Woodward.

Hypsocormus tenuirostris, A. S. Woodward.

Hypsocormus leedsi, A. S. Woodward.

Leedsia problematica, A. S. Woodward.

Many special memoirs have been published upon the Leeds Collection, and they are enumerated in the list appended to this report. They are too lengthy to be abstracted here, but brief references are made to them (by number) in the following summary of the principal features of the collection.

The land-reptiles (Dinosauria) are represented only by fragments, namely, some vertebræ, two pelves (3, 5), two femora (3, 4), one

piece of jaw (8), and some detached teeth. These are, however, of great interest, and the remains of *Ornithopsis* are of gigantic size. The Crocodiles *Steneosaurus* and *Metriorhynchus* (10) are represented by nearly complete skeletons of a truly marine type, with very large hind limbs, relatively small fore limbs; and *Metriorhynchus* is proved to have been destitute of dermal armour. *Suchodus*, with relatively large teeth, is known only by part of the head (6). The Pterodactyles, as might be expected from their mode of life, are scarcely known; but it is very curious that not a single fragment of a Chelonian has hitherto been discovered. The Sauropterygia, or allies of *Plesiosaurus*, predominate in the collection (1, 7, 9, 11-18), and there are skeletons of individuals of all ages, from the very young to the extremely old (14). The Ichthyopterygia are represented by an almost toothless ally of *Ichthyosaurus*, with comparatively broad and flexible paddles (*Ophthalmosaurus*, 2). Fish-remains are very abundant, and important as supplementing our knowledge of the Upper Jurassic fauna in the Lithographic Stone of Germany and France. Whereas the Continental fossils display the general contour of the various fishes embedded in very hard limestone, the specimens in the Leeds Collection were originally macerated and buried in soft clay, from which the different bones can be washed and examined separately. There are fine groups of teeth of *Hybodus* found in association with the jaws of this shark. There are also many still finer groups of the teeth named *Strophodus*, in undoubted association with the fin-spines named *Asteracanthus*, and the hooked head-spines named *Sphenonchus* (19). Chimæroids are known only by detached dental plates and fragments of spines (21). The ganoid fishes are most numerous and add much to our knowledge of the structure of the skull of these primitive types.

The specimens of *Lepidotus* (28), *Caturus* (24), and the Pycnodont *Mesturus* (23) are especially fine; and those of *Mesturus* have shed entirely new light on the interpretation of the Pycnodontidæ. There is only one form which cannot yet be approximately determined, namely, *Leedsia problematica* (25, 26), which is represented by gill-rakers, fin-rays sometimes five feet long, and other miscellaneous bones which have not been identified. Similar fossils occur in the Oxford Clay of N. France, and in the Kimeridge Clay of Dorsetshire, but there is no clue to their true nature.

The party drove back from Eyebury to Peterborough, returning to London by the 6.49 p.m. train, due at King's Cross at 8.30 p.m.

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EXCURSION TO BISHOP'S STORTFORD.

SATURDAY, JULY 17TH, 1897.

Director: A. IRVING, B.A., D.Sc. (LOND.), F.G.S.

Excursion Secretary: A. C. YOUNG, F.C.S.

(Report by THE DIRECTOR.)

THE members left Liverpool Street at 2.30 for Bishop's Stortford, where they were joined by the Director.

The object of the excursion was to study the Stratigraphy of the Upper Valley of the Stort, which includes the Senonian (“Chalk with Flints”), the Woolwich and Reading Beds, the London Clay, the Stratified Gravels, and the “Boulder-Clay,” with its many variations.

I. *The Chalk*.—The pre-Tertiary plane of abrasion of this
DECEMBER, 1897.]