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ORIGINAL ARTICLES.

I.—ON THE DISCOVERY OF A NEW AND VERY PERFECT ARACHNIDE
FROM THE IRONSTONE OF THE DUDLEY COAL-FIELD.¹

By HENRY WOODWARD, F.G.S., F.Z.S.,
of the British Museum.

(PLATE XI.)

THE "Pennystone Ironstone" Nodules of the Coalbrook-dale Coal-field have long been celebrated for their fossil contents yielding, when split open, impressions of Fern-leaves, fruits of *Lepidodendron*, King-crabs, and the more rare remains of Insects.

Nor have the similar concretions of the Dudley, Manchester, and Glasgow Coal-fields proved less productive; whilst the recent investigations of Messrs. Meek and Worthen in the Coal-measures of Grundy Co., Illinois, U.S., have brought to light an even larger series of new and interesting forms.

A short time since I was favoured by receiving from E. Hollier, Esq., of Dudley, a series of these nodules containing examples of *Bellinurus trilobitoides*, and one specimen, which proved upon examination to be a most beautiful and perfect insect inclosed in the centre of a nodule of clay Ironstone, which, happily, had split at exactly the right spot, and, what is not a little singular, has exposed two entire views—one of the upper or dorsal surface (Plate XI. Fig. 1), the other of the under and ventral aspect (Plate XI. Fig. 2)—of the very same insect, each view being as nearly perfect as it is possible to conceive.

Turning to "Buckland's Bridgewater Treatise," I at once identified Mr. Hollier's beautiful specimen with an insect figured on pl. 46", fig. 2, from the Pennystone Ironstone of Coalbrook-dale. Dr. Buckland makes the following remarks upon (fig. 2), and upon another specimen (fig. 1), with which latter, however, the fossil under consideration has nothing to do.

"Figs. 1 and 2 belong to the family *Curculionidæ*, of which the Diamond-beetle is a familiar example. They were discovered by Mr. Wm. Anstice in nodules of Ironstone from the Coal-formation of Coalbrook-dale.

¹ Communicated to the British Association (Section C.), Edinburgh, August 8th, 1871.

"Fig. 2. (writes Dr. Buckland) Mr. Samouelle considers this extinct fossil species to approach most nearly to the *Brachycerus apterus* of Africa."

Dr. Buckland then proceeds (vol. ii., p. 76), to give a minute description of the fossil, which, from its imperfectly preserved state, had been mistaken for a *Curculio*, and concludes by naming it *Curculioides Prestvicii*, in honour of Joseph Prestwich, Esq., F.R.S., the Geological historian of the Coalbrook-dale Coal-field (see Trans. Geol. Soc., 1840, second series, vol. v., p. 413), and the present President of the Geological Society of London.

An examination of the very perfect specimen found by Mr. Hollier shows it to be an Arachnide, and not a Coleopterous insect at all; the dorsal surface (only a fragment of which is seen in Mr. Anstice's specimen), being quite perfect in Mr. Hollier's example, shows at once that it is not furnished with elytra, as supposed by Mr. Samouelle, whilst the insect, as a whole, is divided into cephalothorax and abdomen, as in spiders, instead of into three parts, head, thorax, and abdomen, as in beetles. Four pairs of ambulatory legs and a pair of palpi are preserved. The dorsal surface of the abdomen is ornamented with numerous smooth rounded tubercles, the largest of which are arranged in five principal lines, the median one forming pentagonal groups of tubercular ornaments down the centre of the body.

There is evidence of nine somites on the dorsal, but only seven are visible on the ventral aspect, the others being probably concealed beneath the broad basal joints of the posterior pair of limbs. The ventral surface is destitute of ornamentation, but is marked by about six pairs of stomata or tracheæ placed in a linear series down each side.

The dorsal surface of the cephalothorax is very tumid, and its centre is marked posteriorly by two, and centrally by three raised lobes covered with minute tubercles; the front of the head is somewhat prolonged, so as to form a rostrum. The lateral border is deeply indented, forming three rounded lobes on each side, which are finely granulated on their surface. The legs are also seen to be minutely scabrous on their upper surface.

The posterior border of the abdomen bears four short stout spines, two on either side the ultimate segment, which bears on its ventral aspect the efferent orifice.

The cephalothorax on its ventral aspect is much indented, and exhibits the very broad basal joints of the last pair of appendages, and the wedge-shaped basal joints of the three anterior pairs of ambulatory limbs.

The palpi appear to be long, slender, and, so far as we can judge, not chelate, as in *Thelyphonus*, although their extremities may have been furnished with spines, as in the genus *Phrynus*, with which latter it appears to be more nearly comparable. I have not been able to detect the ocelli.

I propose to name this new and interesting type of "false-scorpions" *Eophrynus Prestvicii*, the genus *Curculioides* being re-

tained for *C. Ansticii*, which there is good reason to believe may belong to the *Rhynchophora*, although I have not as yet obtained a sight of the original specimen figured by Dr. Buckland.

The subjoined is a list, so far as I have been able to gather them, of the Palæozoic insects :

ARACHNIDA.—I. *Scorpionidæ*.

1. *Microlabis Sternbergi*, Corda, Coal M. Bohemia.
2. *Cyclophthalmus senior*, Corda, do. do.
3. *Mazonia Woodiana*, M. & W. Coal M. Illinois.
4. *Eoscorpium carbonarius*, M. & W. do. do.

II. *False-Scorpions*.

5. *Architarbus rotundatus*, Scudder Coal M. Illinois.
6. *Eophrynus Prestvicii*, gen. nov., Coal M. Coalbrook-dale and Dudley.

III. *Araneidæ*.

7. *Aranea*, sp. Coal M. Bohemia.
8. *Protolycosa anthracophila*, Rœmer, Coal M. Silesia.

MYRIAPODA.

9. *Xylobius sigillaria*, Dawson, Coal M. Glasgow, Huddersfield, and Nova Scotia.
10. *Euphoberia armigera*, M. & W. Coal M. Illinois, U.S., and Nova Scotia.
11. " *Brownii*, H. W. do. Glasgow.
12. " *major*, M. & W. do. Illinois, U.S.
13. " *anthrax*, Salt, sp. (?) do. Coalbrook-dale.

COLLEOPTERA.

14. *Curculioides Ansticii*, Buckl., Coal M. Coalbrook-dale.
15. *Scarabeus*, sp. do. Saarbruck (a fossil fruit! Rœmer).
16. *Proxites Germari*, F. Gold. do. do.

ORTHOPTERA.

- (*Blattidæ*)
17. *Blattina primæva*, F. Gold. Coal M. Saarbruck.
 - " 18. " *Lebachensis* " do. do.
 - " 19. " *gracilis* " do. do.
 - " 20. " *anaglyptica*, Germar. do. Westphalia.
 - " 21. " *anthracophila* " do. do.
 - " 22. " *didyma* " do. do.
 - " 23. " *flabellata* " do. do.

(*Locustidæ*) 24. *Gryllaeris lithanthraca*, F. Gold. do. Saarbruck.

- (*Termitidæ*)
25. *Termes Heerii*, " do. do.
 - " 26. " *formosus* " do. do.
 - " 27. " *Decheni* " do. do.
 - " 28. " *affinis* " do. do.
 - " 29. *Aceridites* sp. Germar. do. Westphalia.

LEPIDOPTERA?

30. *Tinea* sp. Fabr. Coal M.

NEUROPTERA.

31. *Dictyonera anthracophila*, F. Gold. Coal M. Saarbruck.
32. " *Humboldtiana*, do. do. do.
33. " *libelluloides*, do. do. do.
34. *Miamia Bronsoni*, Dana. do. M. Grundy Co. Illinois.
35. " *Danzæ*, Scudder do. do. do.
36. " *Chrestotes lapidea*, " do. do. do.
37. *Mantis* ? " do. do. do.
38. *Mylæris anthracophila* " do. do. do.
39. *Megathentomum pustulatum* " do. do. do.
40. *Euphemerites simplex* " do. do. do.
41. " *gigas* " do. do. do.
42. " *affinis* " do. do. do.
43. *Haplophlebiium Barnesii* " do. Cape Breton.
44. *Corydalis Brongniarti*, Mantell do. Coalbrook-dale.

DEVONIAN.

1. *Platphemera antiqua* Scudder Devonian New Brunswick.
2. *Homothetus fossilis* " do. do.
3. *Lithentomum Harttii* " do. do.

DEVONIAN—continued.

4. <i>Xenoneura antiquorum</i>	Seudder	Devonian	New Brunswick.
5. <i>Gerephemera simplex</i>	”	do.	do.
6. <i>Dyscritus vetustus</i>	”	do.	do.
7. <i>Archimulaeris acadicus</i>	”	do.	do.
1. <i>Eugereon Baeckingii</i> ,	Dohrn,	Permian,	Birkenfeld.
Arachnida	8	
Myriapoda	5	
Coleoptera	3	
Orthoptera	13	
?? Lepidoptera	1	
Neuroptera	14	
		44	Coal-measures.
		7	Devonian.
		1	Permian.

Total Number of Palæozoic Insects ... 52

EXPLANATION OF PLATE XI.

FIG. 1. Upper side of } *Eophrynus (Curculioides) Prestoicii*, Buckl., sp., enlarged.
 FIG. 2. Under “ ” }
 From the Ironstone of the Coal-measures, Dudley. Length of specimen 14 lines, greatest breadth of abdomen 8 lines.
 (Drawn from the original specimen in the Cabinet of E. Hollier, Esq., Dudley.)

II.—ON “WANTS” IN IRONSTONE SEAMS¹ AND THEIR CONNECTION WITH FAULTS.

By ROBERT L. JACK, F.G.S.,
 of the Geological Survey of Scotland.

OF all the “troubles” that afflict the Ironstone miner, few are more perplexing than those known as “wants.” It sometimes happens that in the course of the working a “face” is being carried forward into the ironstone seam, when the miner finds that he has taken out what is apparently the last piece of “stone,” and looks with astonishment at “the blaise where the stone should be.”

The ironstone seam has not thinned out, for it is found that it continues of its normal thickness up to the face, where it abruptly ends. There is no fault, or step, for the miner, carrying on his working, finds that in a dozen feet or so the ironstone “takes on again” as abruptly as it ended off, and may observe that he has had one and the same shale bed all the way for his floor. The roof has simply settled down upon the floor, and the ironstone which should have come between them *is not*. Such wants are generally found to take the shape of long stripes, inclosed by lines nearly parallel, and about as straight as lines of fault usually are.

The task before us is to explain why there should be long gaps in strata which without doubt were laid down continuously. The obvious commercial importance of such wants, and the perplexity which seems to prevail regarding their geological origin, lead me to offer the following observations.

As a matter of fact, wants have hitherto been observed for the most part (and perhaps exclusively) in districts where the strata are much

¹ Only clay-band and black-band Ironstones interstratified with Carboniferous rocks are here referred to.