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## THE SILURIAN TRILOBITE *LICHAS AUSTRALIS*.

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(Plate V.)

In the year 1876, McCoy (3) described the Trilobite *Lichas australis* from two distinct but incomplete cephalons from the "junction of Woori Yallock and Yarra (Stewart's Station)." In the succeeding 63 years occasional cephalons of this species have been collected, and also pygidia, which, because no other species of Victorian *Lichas* has been known, have been surmised to belong to *Lichas australis*. A complete carapace from Syme's Quarry, Killara, presented by Mrs. Robert Bowie, of Killara, to the National Museum, has now proved that surmise to be correct, and has made possible a full description of the species.

Order **OPISTHOPARIA** Beecher

Family **LICHADIDAE** Corda

Genus **LICHAS** Dalman

McCoy's description is as follows:

"Width across glabella and middle of anterior lateral lobes,  $\frac{5}{8}$ ths of the length of the head, including neck-segment; middle portion of glabella tumid, broadly rounded in front, rather narrowed in the middle by the regular inward curvature of the anterior segmental furrows; anterior segmental lobes ovate, tumid; cheeks very tumid in an oblique line from the small eyes to the neck-segment, which is strongly marked and separated from base of glabella by a wide sulcus; surface covered by coarse unequal granulation of conical spinose tubercles; three conspicuous tubercles in sulcus at base of glabella. Length of head, 5 lines."

A supplementary description based on the complete carapace is given below.

Carapace ovate in outline, thin, tuberculate. Large cephalon and pygidium. Cephalon semi-circular. Neck-segment conspicuously wider than base of glabella. Free cheeks diminutive, apparently bearing genal spines. Eyes small and set on pedicels which contact with the antero-lateral corners of the fixed cheeks. Visual surface unknown. Pedicels high, more or less rounded in cross-section, tuberculate. When the cephalon is viewed from above, the pedicels are seen projecting at an angle of 45 degrees with the glabella. The posterior margin of the cephalon forms a straight line.

Thorax of eleven segments. A little longer than pygidium. Axial lobe wide, strongly arched. Pleura flat, tuberculate, produced into long spines.

Draws in a little at posterior end to accommodate itself to width of axial lobe of pygidium. Spines longer than pleurae proper; gradually tapering; directed slightly backwards and descending fairly steeply from the level of the pleural lobes, as in *Lichas palmata* Barrande.

Pygidium sub-semi-circular, tuberculate. Axial lobe elevated; conspicuously narrower than axial lobe of thorax; occupies about three-quarters of length of pygidium. Width fairly even until posterior end where it fades out in a broad V-shape. Annulations cross lobe transversely, those nearer the thorax being strong but those at the posterior end difficult to trace. Tubercles follow the annulations. Lateral lobes flat or lightly convex; each traversed by two prominent ribs, which make an angle of approximately 45 degrees with the axial lobe. Above, between, and below these ribs are faint ridges surmounted by tubercles. The pygidium has six short, stout spines, four being prolongations of the pleural ribs, and two projecting immediately below the axial lobe. The four lateral spines are directed backwards so as to make a more acute angle with the axial lobe than do the ribs.

Measurements of complete carapace: Length (including pygidial spines), 30 mm.; width (including pleural spines), 26 mm.

Apart from the structure of the cephalon, interesting and significant specializations in *Lichas australis* are noticeable in the tuberculate surface of the carapace, the spines which project from the lateral margins, and the elevation of the eyes on pedicels. The nature of the pleurae would allow a considerable degree of enrolment. All these characters have survival-value. The elevation of the eyes suggests a benthic habitat. The Lichadidae and the Odontopleuridae are the most specialized among the Opisthoparia. The high specialization, however, indicates a phylogerontic stage.

Another noteworthy feature of the species under discussion is its possession of eleven thoracic segments. Typically, the genus has (as McCoy points out) ten segments. Barrande's Bohemian species also have eleven segments, which number appears to be characteristic of them (1). Among the trilobites, as well as in other groups, there is a strong Bohemian element present in the Victorian Silurian fauna. Barrande's Bohemian species *Phacops feeundus* (in the slightly different form described by McCoy) is very abundant in the Victorian Yeringian.

Specific affinities.—McCoy (3) compared the present species with *Lichas haueri* Barrande, which occurs in Etages F and G of Bohemia. *Lichas australis* is altogether a smaller form than *L. haueri*. In addition to the lobar differences between these species mentioned by McCoy, the nature of the eye-pedicels and the occurrence of three instead of two prominent tubercles in the sulcus at the base of the glabella appear to be established divergences. The thorax of *L. haueri* was not known to Barrande. The pygidium of *L. australis* is

much shorter than that of Barrande's species, the central lobe is longer in proportion and is not produced into a median rib; the pleural ribs are not flat and wide but rounded and high; and the spines in which they terminate are stouter. *L. haueri* has no ridges between the lateral ribs.

*Horizon*.—Yeringian (Upper Silurian or Siluro-Devonian).

*Localities*.—Junction of Woori Yallock Creek and Yarra River; Syme's Tunnel, Killara; Syme's Quarry, Killara; Syme's Homestead, Killara; Warburton Road, Killara (a little east of turn-off to Killara Railway Station). All these localities are proximate to one another. Apropos of the last-named locality, it is worthy of note that in 1913 Dr. J. S. Green presented a complete but distorted trilobite collected at this place to the Museum. It was at that time determined as *Odontopleura* sp., and was later recorded as such (2), but it must now be referred to *L. australis*. A pygidium of *L. australis* has been collected from the same locality, the published reference to which is "between Killara and Woori Yallock" (2).

*Associates*.—The following trilobites are associated with *Lichas australis*: *Calymene blumenbachi* (Brongniart), *Cheirurus sternbergi* (Boeck), *Cyphaspis* sp., *Dalmanites meridianus* (Etheridge and Mitchell), *Odontopleura jenkinsi* Eth. and Mitch., *O. rattei* Eth. and Mitch., *Phacops crosslei* Eth. and Mitch., *P. fecundus* McCoy non Barrande, *P. latigenalis* Eth. and Mitch., *P. serratus* Foerste.

The writer wishes to thank Mr. L. S. G. Butler for the photograph of the trilobite described.

#### REFERENCES

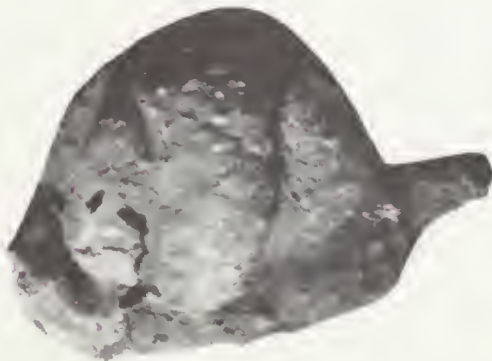
1. Barrande, J. "Système Silurien du Centre de la Bohême." Prager, Paris, 1852.
2. Gill, E. D. Yeringian Trilobites, Vict. Nat., Vol. LIV, Feb., 1938, pp. 167-71, 4 figs.
3. McCoy, F. Prodrum of the Palaeontology of Victoria, Decade III, p. 18, pl. 12, fig. 11. Geol. Surv. Vict., 1876.

#### DESCRIPTION OF PLATE V

1. *Lichas australis* McCoy,  $\times 4$  approx. Complete carapace from Syme's Quarry, Killara. Reg. No. 14,087.
2. *L. australis*. Cephalon showing eye pedicel from Syme's Tunnel, Killara; magnified. Reg. No. 14,088.



1. Complete carapace, Syme's Quarry, Killara,  $\times 4$ .



2. Cephalon showing eye pedicel, Syme's Tunnel, Killara.  
(Magnified.)

*Lichas australis* McCoy; a Silurian Trilobite.