

NOTES ON THE OCCURRENCE OF GASTRIOCERAS AT  
THE IRWIN RIVER COAL-FIELD, W.A.  
AND A COMPARISON WITH THE SO-CALLED PARALEGOCERAS  
FROM LETTI, DUTCH EAST INDIES.

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[With Plates XI - XIII and Text Figures.]

[Read before the Royal Society of N. S. Wales, December 6, 1922.]

THE late R. Etheridge Jnr. described a large ammonoid<sup>1</sup> found by the Geological Survey of West Australia in the Irwin River Coal-field, under the name of *Gastrioceras Jacksoni*, in the year 1907.

In a recent examination of the Irwin River Coal-field by Dr. W. G. Woolnough, and a still later reconnaissance by Mr. A. Gibb Maitland and Professor David in the same area, it was ascertained that the horizon for *Gastrioceras* as estimated by Dr. Woolnough was some 1600 feet above the basal tillites of the field, and over 5000 feet below the horizon of the Irwin River Coal Measures. Diamond drill bores last year proved that marine strata with numerous *Aviculopecten* etc. overlies these coal measures and are therefore probably the equivalent of the Upper Marine series of the Hunter River district. The Irwin coal measures in this case become the probable equivalents of the Greta Coal Measures of New South Wales. Hence the horizon for *Gastrioceras* is far down in the equivalent of the Lower Marine series of the Hunter River district. It is therefore a matter of great stratigraphical importance to determine the approximate horizon of this *Gastrioceras* of the Irwin Coal-field in reference to its place in the Tethyan fauna of the Dutch East Indies; and as the

<sup>1</sup> Bull. Geol. Surv. W. Austr., No. 27, p. 36, pl. 9, f. 1-3.



approximate age of these Malay Archipelago strata is known, as tested by Northern Hemisphere standards of geological chronology, such a determination will help considerably to the more accurate placing in geological time of the Lower Marine series of Eastern Australia.

At the Irwin River Coal-field the *Gastrioceras* occurs in extraordinary numbers, the individual specimens almost touch one another, and form a bed of clayey limestone only about 6 inches in thickness. Stratigraphically therefore it is a remarkably useful horizon for field mapping. Already Dr. Woolnough has traced these beds in the field for a distance of over 20 miles.

The largest specimen collected is fragmentary, but is portion of the last whorl 6·2 inches in width, 3·25 in depth and indicates a diameter of about 12·5 inches for the complete individual.

While some considerable time may be needed in order to elaborate the taxonomy of these forms (obviously a very important work as geological classification depends so much on higher forms like the Cephalopods) we think it of importance at once to place on record the fact of the great similarity, if not the absolute identity of *Gastrioceras Jacksoni*, Etheridge, from the Irwin River Coal-field, and *Paralegoceras sundaicum*, Haniel, from the Island of Letti.<sup>1</sup>

For comparison of these forms we publish two suture lines, (figs. 2, 3), of *Gastrioceras Jacksoni*, and (fig. 1) the repro-

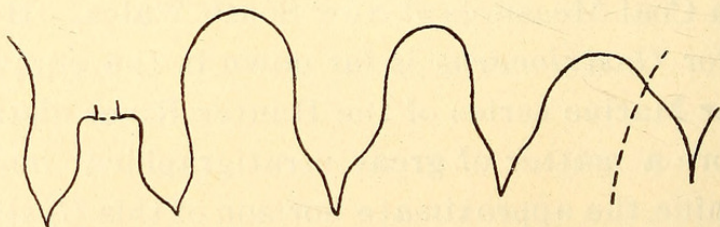
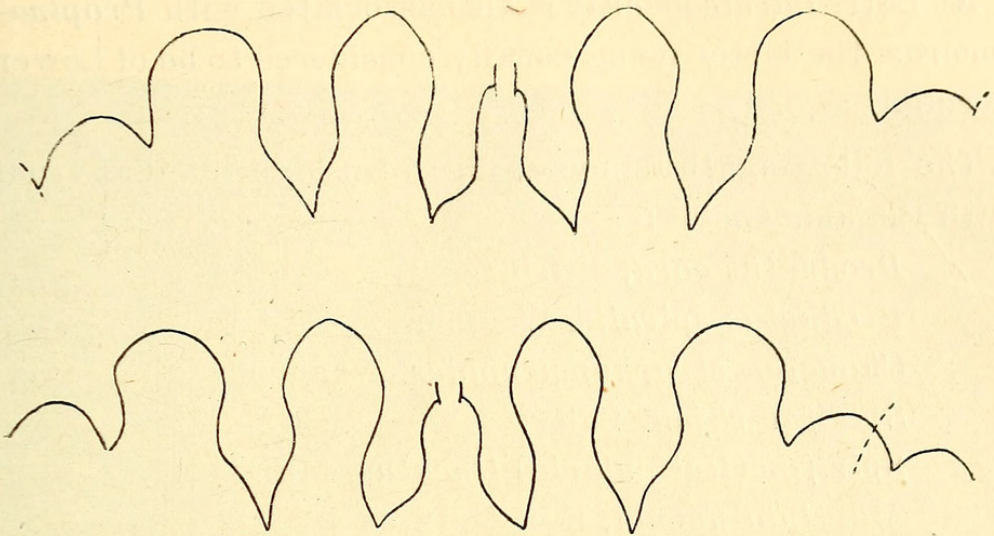


Fig. 1. Suture line of *Paralegoceras sundaicum*, Haniel, *op. cit.*, p. 164.

<sup>1</sup> Jaar. van het Mij. in Nederland Oost-Indie, 1914, Part 1, pp. 163 - 165, pl. xvii.





Figs. 2 and 3. Suture lines of *Gastrioceras Jacksoni*.

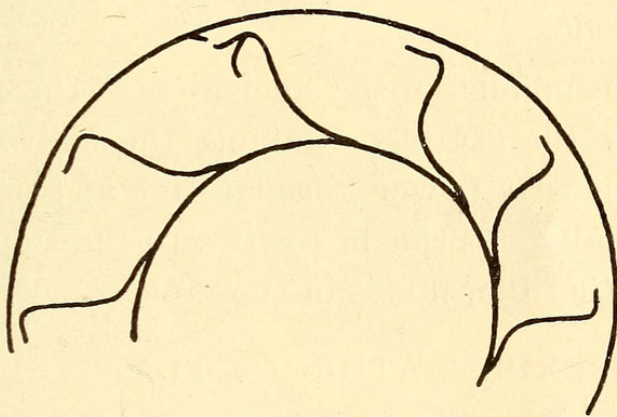


Fig. 4. Portion of fifth whorl of *Gastrioceras Jacksoni* showing the sphenal collars.

[Collected by Dr. W. G. Woolnough].

duction of Dr. Haniel's delineation of the suture line of his *Paralegoceras sundaicum*. At Letti the *Paralegoceras* is stated to be associated with *Agathiceras sundaicum* related to *A. Suessi* from the Sosio limestone of Sicily and *A. uralicum*, Karpinsky, in the Artinsk formation, as well as *A. cisonense*, Smith, from the upper coal measures of Texas. It may be added that *A. micromphalum* is not uncommon both in the Upper and Lower Marine beds of the Hunter and Illawarra coal fields, being specially abundant in the Lower Marine series.



At Letti *Paralegoceras* is also associated with *Propinacoceras*, the latter being usually considered to be of Lower Permian Age.

The following Brachiopods are also associated at Letti with the ammonoids:—

*Productus cora*, d'Orb.

*Productus spiralis*, Waagen

*Chonetes strophomenoides*, Waagen

*Spirifer rajah*, Salter

*Spirifer (Reticularia) lineatus*, Martin

*Martinia nucula*, Rothpletz

*Retzia radialis*, Phill., (var. *grandicosta*, Dav.)

*Notothyris*

*Dielasma*

The present opinion of the geologists of the Dutch East Indies is that the strata containing the above fossils are of Permian, mostly Lower Permian, age and that they are stratigraphically superior in position to the Upper Carboniferous *Fusulina* limestones of the same region.

#### EXPLANATION OF PLATES.

##### PLATE XI.

*Gastrioceras Jacksoni*, Eth. fil. Specimen showing umbilical region and form of lateral lobes and saddles.

##### PLATE XII.

*Gastrioceras Jacksoni*, Eth. fil. Specimen shown in Plate XI. Showing suture line and general appearance of septal surface. (See text figures 2 and 3).

##### PLATE XIII.

*Gastrioceras Jacksoni*, Eth. fil. Ventral aspect of large individual showing suture lines.

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Dun, William Sutherland and David, Tannatt William Edgeworth. 1922. "Notes on the occurrence of *Grastrioceras*, at the Irwin River coal-field, W.A., and a comparison with the so-called *Paralegoceras* from Letti, Dutch East Indies." *Journal and proceedings of the Royal Society of New South Wales* 56, 249–252.  
<https://doi.org/10.5962/p.359831>.

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