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Mesozoic Insects of Queensland

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Part I.—Introduction and Coleoptera

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With 2 Plans, 1 Text-figure, and 7 Plates (67 figures)

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COLEOPTERA.

Mesozoic Insects of Queensland

Part 1.—Introduction and Coleoptera

INTRODUCTION

PREVIOUS GEOLOGICAL WORK.—The discovery of five elytra and some thoracic and abdominal fragments of fossil insects at Denmark Hill, Ipswich, in association with abundant fossil flora, was made in 1890 by Mr. T. H. Simmonds, and this was followed by the publication of some notes and drawings by Etheridge and Olliff* in 1908. One of the specimens was named *Mesostigmodera typica,* and, subsequently, four other specimens were named by Handlirsch† after seeing the drawings published by Etheridge and Olliff, his species being *Etheridgea australis, Ademosyne major, Ademosyne minor,* and *Pseudorhynchopora Olliffi.* The original drawings of the four specimens, however, were not well executed, and Handlirsch's descriptions, therefore, were based on somewhat unreliable data, while his own reproductions of the original drawings accentuated the errors by being indifferently drawn.

In 1899, nine years after Mr. Simmonds's operations, the writer undertook the further exploitation of the Denmark Hill beds specially for flora, and acting on some suggestions by Mr. Simmonds rediscovered the bed which now we know to be the bed from which he obtained his insect specimens, but in addition also located another one six inches thick a few feet higher up. It is from this small bed that nearly all the specimens recently found have been obtained. The details of the strata were then worked out, and the information published in a Bulletin in 1916,‡ which may be consulted for further information. Dr. Tillyard undertook their description, and seven new species were recorded, Handlirsch's *Pseudorhynchopora Olliffi* being renamed *Ademosyne Olliffi.*

QUARRYING OPERATIONS.—The position of the beds containing the fossil insects and the associated fossil flora is described and illustrated by a small scale plan and section, together with

* Mesozoic and Tertiary Insects of New South Wales (and Queensland). Mem. Geol. Surv. N.S.W. Palæontology No. 7, pp. 9-12, with 2 plates, 4to. Sydney. By Authority, 1890.

† Die Fossilen Insekten and die Phylogenie der regenten Formen von Anton Handlirsch. Leipzig, 1908, 4to, p. 1430, with Atlas of 91 plates (Engelmann.)

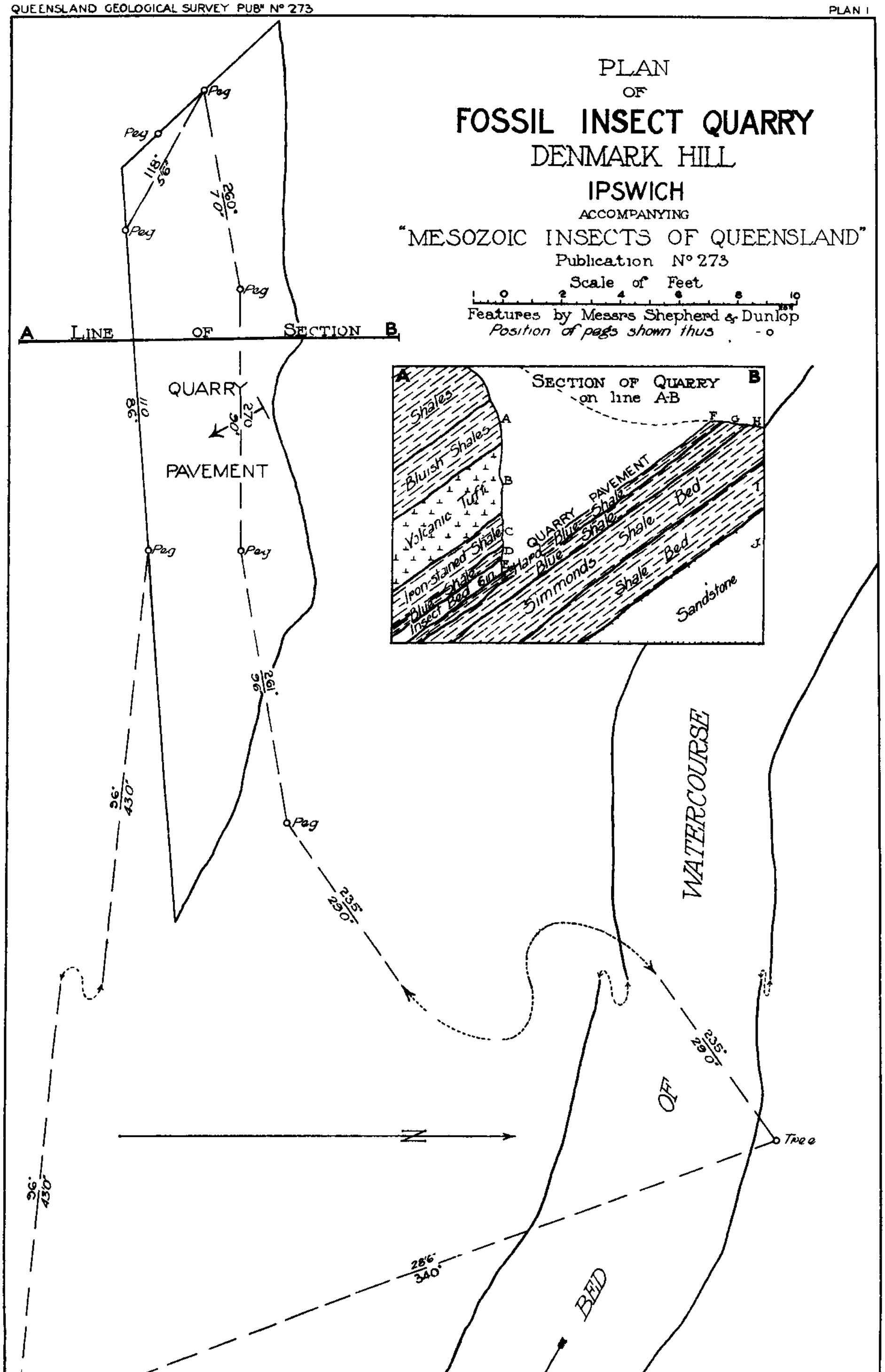
‡ Mesozoic and Tertiary Insects of Queensland and New South Wales. R. J. Tillyard and B. Dunstan. Queensland Geol. Surv. Pub. 253. Brisbane, by Auth. 1916, p. 47; 9 plates.

two whole plate photographs in the publication referred to above, and at the completion of the recent quarry work, steel pegs were driven at intervals into the pavement of the six-inch bed, and a plan made of their positions, survey connections being established with marked trees in the vicinity. The precipitous quarry face formed during the operations is on a Public Reserve and had to be demolished, and the floor is now covered by debris, but the positions of the pegs can easily be ascertained from the survey plan attached. *See* Plan (No. 1) of Quarry opposite.

A careful record has been made of the position of every square foot of shale removed, and the boxes in which the material is packed are all numbered, the object of the record being to determine whether rich and poor patches exist in the bed, and if so, whether their extension away from the quarry can be followed. The plan of these operations has not been reproduced because up to the present no reliable deductions can be made, but more material has to be operated upon and no doubt the trend of the rich portion of the bed will reveal itself later on, if such exists.

The six-inch bed of fine clay shale is perfectly adapted to the preservation of the delicate insect remains. Where the surface weathering of the bed has not been too severe, or where there are no disturbing cleavages across the bedding planes to allow percolation of water and deposition of clay between the fine laminæ of the shales, the material is very clean and may be split very finely and evenly with thin wedges and a light hammer. When the bed is deep-seated, *i.e.,* with a covering of other beds several feet thick, the shales do not so readily split and are inclined to break across the bedding planes. In consequence of this, the deeper deposits yield only a few fossil insects, and it is to the lateral extension, therefore, that attention should be given in future field operations. In one direction the sides of the quarry hill should be prospected, while in the opposite direction, beyond the adjacent alluvial area, the group of beds to which the six-inch band belongs is exposed on the slope of a hill and should also be examined.* (*See* Plan 2 facing page 8.) If the insects are not found in a preliminary search their absence is not to be assumed, experience showing that the finding of a productive bed may take some time, even when its existence is known. The genus *Ademosyne* is looked upon as the fossil "indicator," because once its occurrence has been established the bed in which it is found should be further tested for other forms.

* Recently examined and found to be fossiliferous, one specimen, *Ademosyne major,* being discovered. B. D.


PLAN
OF
FOSSIL INSECT QUARRY
DENMARK HILL
IPSWICH
ACCOMPANYING
"MESOZOIC INSECTS OF QUEENSLAND"
Publication Nº 273
Scale of Feet
Features by Messrs Shepherd & Dunlop
Position of pegs shown thus -o
SECTION OF QUARRY on line A-B
Shales
Bluish Shales
Volcanic Tuff
Iron-stained Shale
Blue Shale
Insect Bed 6in.
QUARRY PAVEMENT
Hard Blue Shale
Blue Shale
Simmonds Shale Bed
Shale Bed
Sandstone
A LINE OF SECTION B
QUARRY
PAVEMENT
Peg
Tree
WATERCOURSE
OF
BED
N

Once the position of a fossiliferous bed is established it may be found convenient to take out all the material, pack it into boxes, and operate on it under more favourable laboratory conditions.

Destruction of Insect Life.—The cause of the destruction of the insects has been a subject of much consideration, and there appears to be no geological parallel to the phenomenon, but an examination one summer evening of the hot springs at Einasleigh, towards Georgetown in Northern Queensland, gave the impression that the insect destruction at Denmark Hill must have taken place in the vicinity of hot springs. At these springs the edges of the pools were seen to be lined with myriads of wings and elytra, from which the fleshy portions were evidently removed by the hot bubbling water, while insect fragments floated about on the pools and then disappeared down the stream.

That the "boiling down" process was in operation in a hot spring at Denmark Hill is very evident from the character of the remains. Only a few specimens have been found with the elytra attached to the bodies, and invariably all appendages are missing, the legs and antennæ not even being recognisable in their disintegration and in their resemblance to, and admixture with, small twigs and plant remains. Thoraces and abdomina have been found, but mostly in such fragmentary pieces that they are useless for identification purposes. Wings, tegmina, and elytra evidently accumulated on the surface of the hot water pools or stream and ultimately drifted away to the deposits of fine silt in which they afterwards became embedded.

The seasonal conditions under which the small six-inch silt band was built up suggests that the occurrence took place during a Triassic summer. Although only insects capable of flight were destroyed, others must have existed at the time, but no trace can be found of their remains. Aquatic beetles were the predominating forms, and next to these cockroaches were the most abundant, all being destroyed in their flight across the heated waters. Where the fine mud was being deposited, or in its vicinity, numerous water fleas must have been present, as impressions of the shell-like carapaces of the little Ostracod, *Estheria mangaliensis*, are quite common with the insect fragments.

Plant Destruction and Fossilization.—That summer time was the season in which the fossil band was formed may be gauged by the fact that bush fires must have been prevailing

at the time, and fragments of charcoal, quite fresh and apparently unaltered, are to be seen bedded with the fossil insects and with a variety of fossil leaves, seeds, and fruits.

Some investigations carried out about Brisbane, where there is an extension of the Ipswich beds, indicates that large quantities of tuff were deposited at that time under violent volcanic conditions, and caused the destruction of all the pine and other trees then growing, some of which were crushed and entombed by the volcanic dust, others being partly reduced to charcoal or entirely burnt. The timber entirely enveloped by the tuff during the eruption has been preserved, and soluble silica, perhaps in the presence of heated water and derived from the volcanic material, has replaced the organic compounds forming the cells of the wood. The portions of the timber burnt have remained as charcoal, while the timber partly decayed and lying on the ground has not been silicified, but has become fossilized in a friable condition. These conditions prevail to a limited extent at Ipswich where small bands of volcanic tuffs are to be observed associated with the fossiliferous shales.

Another phenomenal occurrence at Denmark Hill is the siliceous replacement of tissue in the cell structure of the fossil fern *Thinnfeldia,* immediately above the fossil bed, an effect probably resulting from the heated water conditions. It is also remarkable that no other fossil fern amongst the many associated with *Thinnfeldia* has been observed silicified in this way.

Associated Fossil Flora.—The Ipswich Fossil Flora has been worked out by Dr. Walkom and the descriptions have been published in his "Mesozoic Floras of Queensland."*

The Denmark Hill plant fossils, of which a list was given in "Mesozoic Insects of Queensland," Pub. 253† have recently been examined more in detail, and the following is a list of the species obtained from the six-inch bed found while searching for the insects. The number of specimens found have been recorded, and the approximate percentages given below show the great preponderance of *Thinnfeldia* above all other plant species:—

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* Mesozoic Floras of Queensland, Part I., A. B. Walkom, B Sc, Queensland Geol. Surv. Pubs. 252, 257, and 259. Brisbane. By Auth. 1915 and 1917. 24 plates.

† *Ibid*

FOSSIL FLORA FROM INSECT BED.

Thinnfeldia odontopteroides, *Morris*	60%
Thinnfeldia Feistmanteli, *Johnston* Thinnfeldia lancifolia, *Morris* Thinnfeldia acuta, *Walkom*	10%
Stenopteris elongata, *Carruthers*	5%
Sphenopteris superba, *Shirley*	4%
Gymnospermous seeds, (Beania, &c.)	4%
Cladophlebis australis, *Morris* Cladophlebis Roylei, *Arber*	4%
Tæniopteris Tenison-Woodsi, *Eth. fil.*	2%
Ginkgo antartica, *Saporta* Ginkgo digitata, *Brongniart*	2%
Stachyopitys annularioides, *Shirley* Stachyopitys Simmondsi, *Shirley*	2%
Dictyophyllum rugosum, *L. & H.*	1%
Baiera Simmondsi, *Shirley* Baiera bidens, *Tenison-Woods* Pterophyllum multilineatum, *Shirley* Pterophyllum *cf* contiguum Calamostachys australis, *Shirley* Pseudoctenis sp.	(aggregate) 4%

FOSSIL FAUNA.

Estheria mangaliensis, *Jones*	2%
	100%

LABORATORY WORK.—In searching for fossil insects experience has shown that the failure to find specimens may be due simply to the absence of colour contrasts between the matrix and the impressions of the insects, the fine membranous wings specially being difficult to identify. Casual observation may reveal their presence, but most of the Ipswich specimens, some perfectly preserved, have been found only by close examination with a pocket lens of two-inch focus. Closer inspection requires a lens of one-inch focus, while for finer structures the use of a microscope is often an advantage.

Early morning or afternoon sunlight, in being at a low angle, is the best natural light in which to work, the shadows of the fossil impressions then being identified without unduly straining the eyes. A strong artificial light, such as a petrol lamp, set at an oblique angle and shaded, is better to work with than a dull natural light, but the light must be a bright one, otherwise the chances of missing specimens are much greater.

The wedges best adapted for delicately splitting the shale are about half an inch wide and an inch long, sections of a softened razor blade or table knife being very suitable, while for large blocks a small gad is a convenient tool. The hammer for splitting the large blocks should be about 1 lb. in weight, with a sharp edge at right angles to the handle, and for splitting the small pieces with the wedges, one of about 2 oz. with a rather short handle is found to be very convenient.

Cardboard trays with covers, 1½ inches square and ¼-inch deep, are sufficiently large for most of the specimens, the latter being cemented on to the bottom of the tray with a liquid glue, or on to square pieces of cardboard fitting the trays if their removal for microscopic examinations is required afterwards. Fastening the specimens with glue is desirable as delicate impressions are not injured by shaking, and no wrapping is required. Ipswich shale is very easily trimmed to shape with a sharp penknife, and specimens can be cut down to fit the trays and should be scraped sufficiently thin to prevent abrasion of the impression by the cover. If the insects in the trays are packed away in boxes they should be numbered both on the cover and on the bottom of the trays, to prevent confusion in working and labelling, and if packed away on their ends, which is convenient, they should also be numbered on the top edges.

The shale seldom yields a fossil impression without some portion of the counterpart remaining adhered to it, and this broken piece has to be removed, and then fastened by a liquid cement to the portion to which it belongs, two specimens thus being recovered—the obverse and reverse. Cutting away the attached portions of the counterpart is usually a very delicate operation, particularly if it is a membranous wing, and a very small, thin knifeblade or lancet is required for the operation. Small sections of the adhering piece, perhaps no larger than one-eighth of an inch square, are removed by cross-cutting, and each section is cemented into its proper place on the counterpart before the next piece is removed, otherwise there is the certainty of irregularity in the outline of the counterpart impression or of misplacement. The type specimen of *Mesogereon superba* used by Dr. Tillyard in illustrating that species had a long, thin shell-like piece covering the impression, which had to be cut away in small pieces, and the counterpart built up piece by piece. This counterpart (or reverse part) is now almost as perfect as the obverse specimen used as the type.

The laboratory work is conducted on a low table, and an apron is necessary in case a valuable chip flies off when splitting,

while immediately below the table the floor should be kept free from accumulated debris to further minimise the search after a missing fragment.

The upper portion of the six-inch band is more prolific than the lower, simply because the upper portion is easily split up into layers and has not the brittleness of the lower part. A piece of the shale one inch thick is made up of at least fifty laminæ, but 3/16-inch is about the average thickness of the pieces after being split, their liability to cross-fracture not allowing fine splitting. Consequently, the number of recovered fossils would represent about one-tenth of the number originally entombed.

Taking into consideration the thickness of the band, the area of the band so far revealed, the average number of fossils obtained from each square foot, and the estimated percentage not recovered, the number of insects entombed in about 15 square yards must have been several thousands. From this small area the species recovered number about 133, including those previously described, those herein described, and those about to be described by Dr. Tillyard in Part 2, and after making allowance for the probability of a number being male and female of the one species there must be at least 120 new winged insects revealed up to the present time.

No practical scheme has been devised to separate the laminæ into thinner portions and recover the insects remaining in the discarded shale. About 50 per cent. of the material is discarded in the splitting and sorting, while the other 50 per cent., consisting of very small pieces showing no impressions on their surfaces, is repacked in the boxes for finer splitting at some future time.

Geological Horizon.—In the examination of the Ipswich Coal Measures the palæontological work of Dr. Walkom on the fossil flora and that of Dr. Tillyard on the fossil insects have been of very great assistance towards establishing their geological horizon. The examination of the Coleoptera, however, has not been attended with such good results, as the observed characters of the fossilized portions of these insects, *i.e.*, the elytra, could not be compared with similar parts of beetles of the present day, for the reason that most of the families and genera of living forms are classified on structures which in fossil beetles are not usually preserved, or if preserved are in such a fragmentary condition as to be almost useless for correlation purposes.

A decided impression exists, as the result of numerous discussions and observations, that the horizon of the Ipswich beds is probably Upper Triassic, and Dr. Tillyard in his papers is very emphatic on the point, basing his opinion on palæo-entomological evidence. Nevertheless, it would not be wise to permanently adopt this horizon for the beds until more is known about the formations associated with them. The Mesozoic marine beds of Western Queensland and those of the Maryborough District, have yielded a great number and variety of undescribed marine shells which, with those already described, require to be examined by a specialist before that series is decided to be actually Cretaceous, the system now assigned to them, or whether portion only belongs to this system.

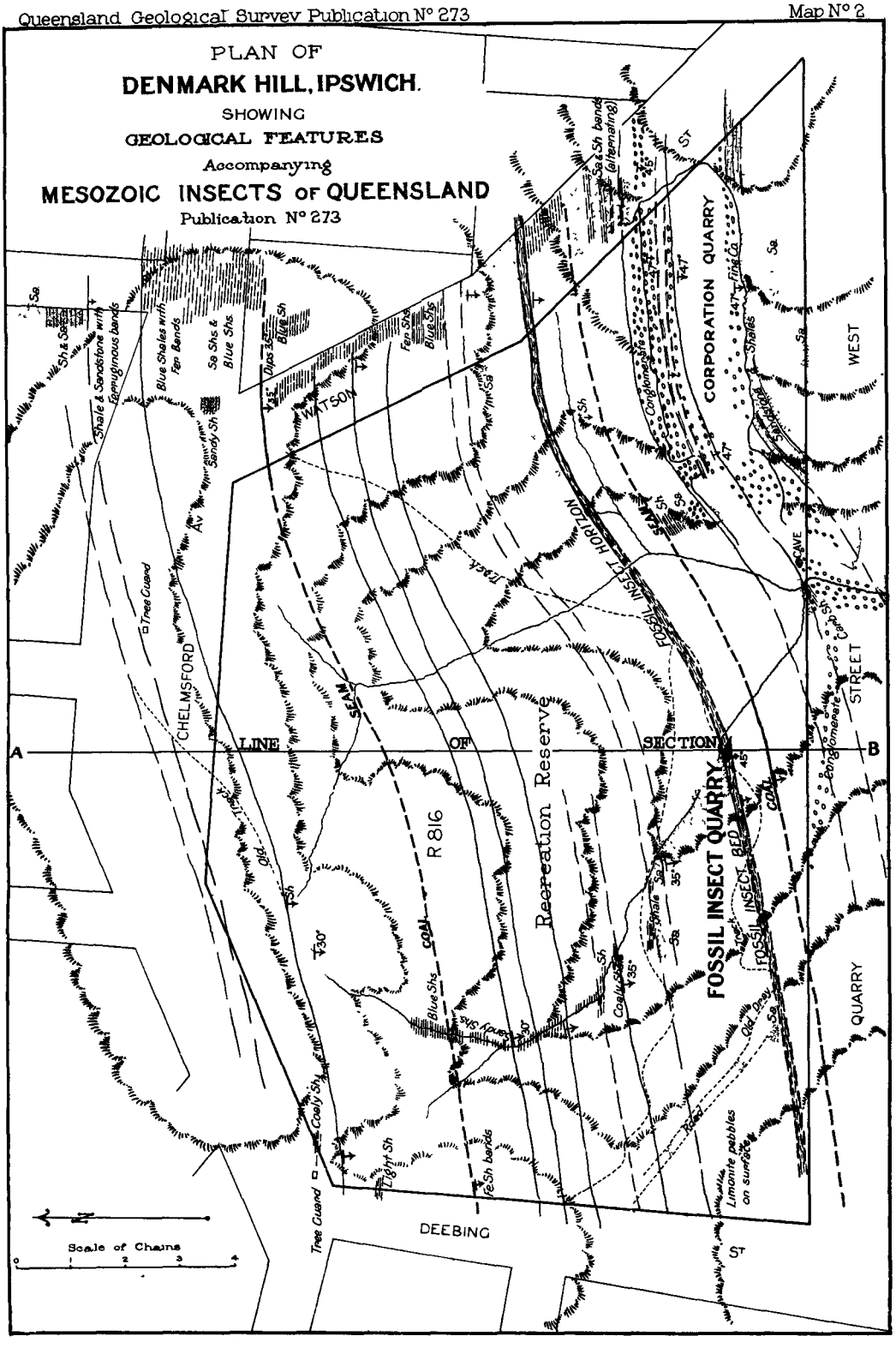
After the examination of the marine fauna the position of the thick Walloon Series, at present assigned to the diminutive Jurassic, can be considered, and as it is everywhere conformable with the marine beds above, what affects one also has some bearing on the other. If the evidence warrants their being placed lower down in the geological scale, the horizon of the Ipswich beds, which are conformable with the Walloon, will also require readjustment.

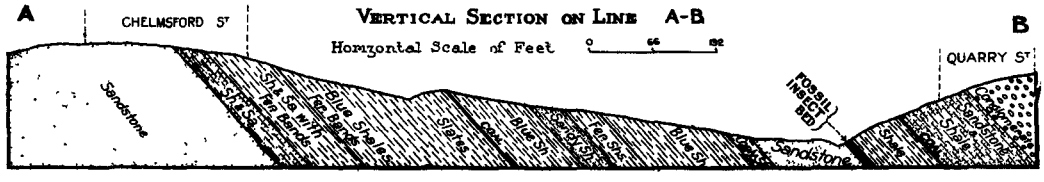
The first point to settle is the evidence on the marine life, and afterwards that of the flora and insects, so that before the age of the Ipswich Series is fixed permanently more work requires to be accomplished. In the meantime, however, we will retain the Ipswich Series, and their contained insect-bearing beds, as a formation in the Upper (?) Triassic System.

COLEOPTERA CLASSIFICATION.—The lack of evidence on which to compare fossils with recent forms of Coleoptera, referred to above, presents to a great extent researches being instituted on the phylogenic changes which these insects have undergone in geologic times. Scudder,* in discussing this defect in recent classification methods, stated that "It must be confessed, however, that amongst the fossils the Coleoptera are far less apt to have those characteristics of their structure which are seized upon for generic disassociation sufficiently preserved to warrant great certainty or insure exactitude, and that those orders which display wing neuration afford far better means of judgment, on account of the commonly better preserved remains of just those parts which are largely relied upon for generic discrimination."

* Tertiary Rhynchophorous Coleoptera. S. H. Scudder. U.S. Geol. Surv Mem. XXI, 1893, page 6.

PLAN OF
DENMARK HILL, IPSWICH.
SHOWING
GEOLOGICAL FEATURES
Accompanying
MESOZOIC INSECTS OF QUEENSLAND
Publication N° 273





Notwithstanding the richness in the details of the ornamentation of the fossil Coleoptera elytra, very little could be accomplished in placing the described genera and species into recognised families, so that the grouping, with two exceptions, is arbitrary. Objections to the classifying of the typed specimens into genera and species have been raised by some entomologists, while the suggestion has also been made that the specimens should be simply numbered. The rule followed, however, after due consideration of all aspects of the matter, is that which applies to fossil leaves in giving the forms both generic and specific names. No doubt a preliminary classification is best, which later investigators may modify or change entirely.

In the examination of the Denmark Hill fossils, special attention has been given to the macroscopic and microscopic descriptions of the form and ornamentation of the elytra, and as the fossils are embedded in a very fine matrix the examination resulted in some very minute structures being revealed.

In diagnosing the numerous types of elytra, the size may not be considered an important factor from a biological point of view, but experience in working out the numerous small forms of the six-inch band shows that size is unquestionably a very important aid in identification, and for this reason first consideration is given to the size of the elytra in the accompanying *Summary Table* on pages 73-75.

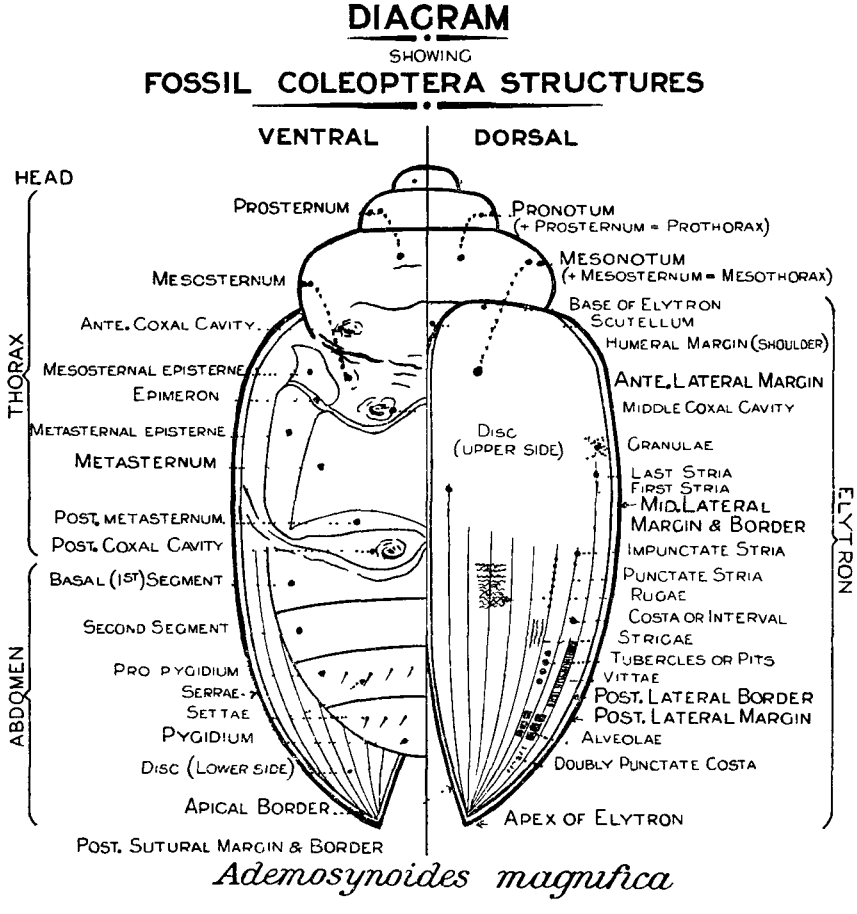
Form and Convexity can only be given approximately as both features are modified to some extent by the conditions under which the elytra have been embedded and preserved.

The diagram showing Coleoptera structures will facilitate the explanation of some of the terms used, and may be taken as a partial restoration of *Ademosynoides magnifica.*

Further searching no doubt will result in other types being revealed, and as more material will be made available sooner or later, the details of many obscure forms now in hand will be postponed for the present.

NOTE ON THE ILLUSTRATIONS.—The Figures illustrating the fossil insects described or referred to in the following pages are numbered from 1 to 67 respectively, and while plate numbers are also used for convenience and reference, every type or illustrated specimen has its distinctive figure number. An enlargement of one side of the specimen was usually found to be sufficient for descriptive purposes, but where the under (cast) and upper (mould) impressions vary in any way a drawing was made of

the whole of one of them and also a portion of the other, in addition to which a microscopic drawing was made of a small section of the surface of nearly all the specimens at a magnification of from 20 to 30 diameters, sometimes the centre of the disc being taken for the purpose, and occasionally a portion of the disc near one of the borders.



After due consideration was given to the best methods of illustration it was finally decided to make line drawings of all the types. Photographic methods produce some good effects where the surface convexity is low, but otherwise much detail remains obscured and would necessitate, in any case, some drawings being made to show details of structure, besides which

some specimens have to be examined at all angles and directions of lights to obtain the fine ornamental marking on them, and to illustrate this without a large number of exposures is quite beyond the power of a microscopic camera.

In making the drawings, which were executed by Mr. W. H. Reeve and myself, one operator worked on the outline and decided on the magnification, and this was checked and perhaps modified by the other operator. After agreeing to what should be produced, the rest of the structures were pencilled in with more or less detail, and after further checking and modifying, were finally inked in. There has been constant checking and altering all through the work, so that the drawings may be considered to be faithful representatives of the structures observed by two individuals working together. Even with the care exercised some of the ornamentation was found to be so delicate and shadowy that a difficulty was experienced in reproducing them, and in one or two instances the sculpture depicted in the drawings might be differently represented if examined by another observer.

Reference to the diagram showing Coleoptera Structures is made under Coleoptera Classification, and the Plan of the Quarry is referred to under Quarry Operations.

COLEOPTERA.

Fam. **HYDROPHILIDÆ.**

Genus ADEMOSYNE, Handlirsch.

Genotype *Ademosyne major,* Handlirsch.

A large number of specimens have been found in the fossil inspect quarry at Denmark Hill which appear to be closely related to the original forms of *Ademosyne* described in 1908 by Handlirsch,* while many others vary from those subsequently described by Tillyard.† To retain in the one genus all the recently discovered allied forms with their many variations in structure and form would require many modifications from the original type and would certainly be very confusing, so that the necessity arose of allotting to *Ademosyne* certain groups having similar characters, and placing other groups having different characters in other new genera.

In the *Ademosyne* groups the elytra of all forms herein described are now defined to be punctate-striate and costate,

* Die Fossilen Insekten. Handlirsch. Leipzig. 1908.

† Mesozoic and Tertiary Insects of Queensland, &c. Tillyard. Queensland Geol. Survey Pub. No. 253. Brisbane, 1916.

without any abnormally wide borders, while the number of costæ or intervals on the disc, together with size, shape, and other features form specific differences. The number of costæ or intervals varies from 8 to 11, with 9 generally present, and a variation in length of elytra between 1·8 mm. and 6·2 mm.

Included now in *Ademosyne* are *A. Olliffi* and *major* of Handlirsch, and *A. australiensis, congener, punctata* and *Cameroni* of Tillyard, together with nine new species. The species removed from *Ademosyne* and placed in the new genus *Ademosynoides* are *A. minor* of Handlirsch, and *A. obtusa* and *angusta* of Tillyard, in addition to five new species, while in a third genus, *Platycrossos* is placed *A. tumida,* Tillyard, and two other new species.

Thoracic characters are well-illustrated in *Ademosynoides magnifica* and indicate the Hydrophilidæ affinities of the genus. This species, however, is the only one found which shows at all clearly the body structures, so that no generalizations can be made. With more material available, and this will be forthcoming sooner or later, *Ademosynoides magnifica* (as a generic form) might be further separated from *Ademosyne major,* on account of the preserved, although obscure, thoracic impressions of the latter showing metasternal differences from the former.

ADEMOSYNE OLLIFFI, *Handlirsch.*

Fig. 9, plate 1.

Ademosyne Olliffi, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

Pseudorrhynchophora Olliffi, Handlirsch. Die Fossilen Insekten, Leipzig, 1908.

Rhynchophorous beetle, Etheridge and Olliff. Mem. Geol. Surv. N.S.W., Palæontology, No. 7. Sydney, 1890.

ELYTRON.—

SIZE.—*Length,* 1·8 mm.; *width,* 0·7 mm. (the smallest species of *Ademosyne*).

OUTLINE.—*Apex,* obtusely rounded; *base,* long, curvate; *sutural margin,* arcuate; *lateral margin,* slightly curvate from humerus to three-quarters of the length of disc, then arcuate to apex; *scutellary margin,* short; *humeral margin,* sub-angulate; *general outline,* elongate-ovate.

ORNAMENTATION.—*All borders* very narrow; *striæ,* not pronounced, faintly punctate, all irregularly converging to apex; *costæ,* 9, round, faintly crenulate laterally.

CONVEXITY.—Disc, rather low, slightly declivous along lateral margin.

ILLUSTRATIONS.—Fig. 9, plate 1 (Spec. 35 × 30) fairly represents the general outline of the elytron and the arrangement of the striæ. Fig. 9*a* (part of Spec. 35 × 50) shows the punctæ and the faintly crenulate striæ.

OBSERVATIONS.—This minute species is comparable with *Ademosynoides minor,* from which it differs in its striæ being punctate and in the disc being shorter and narrower. It also resembles *A. parva,* but the shape is not the same, the punctures are not so conspicuous, and the scutellary margin is much shorter.

TYPE.—Spec. S1 (Simmond's Coll.) PARATYPES.—Spec. 35. (Fig. 9, plate 1) cast (G.S.Q. Coll.); Spec. 115, B. D. Coll.

ADEMOSYNE PARVA, *sp. nov.*

Fig. 8, plate 1.

ELYTRON.—

SIZE.—*Length,* 2 mm.; *width,* 0·8 mm.

OUTLINE.—*Apex,* acute; *base,* nearly straight, somewhat short; *sutural margin,* arcuate from scutellary margin to apex; *lateral margin,* arcuate from humerus to apex; *scutellary margin,* long; *humeral margin,* obtusely sub-angulate; *general outline,* naviculate-ovate.

ORNAMENTATION.—*All borders,* narrow, the lateral one well-defined, all much narrower than costæ; *costæ,* 8 or 9, round, finely granulate, distinct and wide near sutural side; *striæ,* deep near sutural border, punctate, strongly so towards scutellary margin, some of the striæ converging to apex, others coalescing with lateral border.

CONVEXITY.—Somewhat high, very high near scutellary margin.

ILLUSTRATIONS.—Fig. 8, plate 1 (Spec. 312*a* × 30) shows the pronounced scutellary margin and the deeply punctate striæ near the sutural side. Fig. 8*a* (part of Spec. 312*a* × 50) is a section across the costæ and the more pronounced punctate-striæ.

OBSERVATIONS.—This *little* species has much in common with *A. intermedia,* from which it is distinguished in being smaller, narrower, and more finely tapered. It has also a decided scutellary margin, near which the striæ are deeply punctate. It differs from *A. Olliffi* in shape, size, costal arrangement and punctæ, and from *A. major* in coarseness of punctæ and size.

TYPE.—Spec. 312*a* (cast); Fig. 8, plate 1 (G.S.Q. Coll.); TYPE-COUNTERPART.—312*b* (mould). B. D. Coll.

ADEMOSYNE INTERMEDIA, *sp. nov.*

Fig. 2, plate 1.

ELYTRON.—

SIZE.—*Length,* 2·2 mm.; *width,* 1·1 mm.

OUTLINE.—*Apex,* obtuse; *base,* irregularly curvate, somewhat long; *sutural margin,* arcuate from apex to scutellary margin; *scutellary margin,* long, confluent with sutural margin; *lateral margin,* strongly arcuate from apex to humerus; *humeral margin,* round; *general outline,* wide-ovate, narrowing gently from middle to apex.

ORNAMENTATION.—*All borders* narrower than costæ and about equal to one another in width; *costæ,* 8, granulate, slightly carinate in places on apical half, otherwise round, nearly all equal in width, all uniformly converging to apex; *striæ,* deep, strongly punctate.

CONVEXITY.—*Disc,* uniformly high.

ILLUSTRATIONS.—Fig. 2. (Spec. 233*b* × 30) shows the round costæ on the middle portion merging into sub-carinate costæ towards the apex. Fig. 2*a* (part of Spec. 233*b* × 40) shows a section of some of the carinate costæ with deeply punctate striæ.

OBSERVATIONS.—*A. intermedia,* which is between *A. parva* and *major* in size, has nearly the shape and size of *A. lata,* but has different borders and costæ, and the striæ is punctate. With *Ademosynoides minor* and *A. brevis* it may also be compared, but differs from the former in being larger, proportionately wider, and in the striæ being punctate, while from *A. brevis* it differs in size, in the costæ being carinate, and in the striæ being deeply punctate. A comparison might also be made with *A. major,* from which it varies in size, shape, borders, and character of punctæ and costæ.

TYPE.—Spec. 233*b* (cast); Fig. 2, plate 1. (G.S.Q. Coll); TYPE-COUNTERPART.—Spec. 233*a* (mould). B. D. Coll.

ADEMOSYNE LATA, *sp. nov.*

Fig. 5, plate 1.

ELYTRON.—

SIZE.—*Length,* 2·2 mm.; *width,* 1.1 mm.

OUTLINE.—*Apex,* unknown; *base,* long, straight; *sutural margin,* strongly arcuate, *scutellary margin,* short (?), confluent with sutural margin; *humeral margin,* angulate, porrect, confluent with base and *lateral margin,* the latter gently arcuate; *general outline,* ovate.

ORNAMENTATION.—*Sutural border,* explanate, about half as wide as costæ; *lateral border,* as wide as sutural border near the middle of elytron, widening to a very pronounced humeral border; *costæ,* 9, somewhat explanate, smooth, equally wide about the middle, regularly converging to both apex and base; *striæ,* deep, narrow, generally impunctate, but finely punctate in places.

CONVEXITY.—*Disc,* moderately high, wide humeral border explanate.

ILLUSTRATIONS.—Fig. 5 (Spec. 132*a* × 30) shows the pronounced humeral area, the regular costæ and striæ, and the oval shape, while Fig. 5*a* (part of Spec. 132*a* × 50) is an enlargement showing the smooth costæ and the fine striæ.

OBSERVATIONS.—The development of the humerus in this small but *wide* species is only comparable with *Platycrossos tumidus* and *P. sub-tumidus,* from which it is distinguished by size, and by differences in the character of the costæ and borders.

TYPE.—Spec. 132*a* (mould); Fig. 5, plate 1. (G.S.Q. Coll); TYPE-COUNTERPART.—Spec. 132*b* (cast). B. D. Coll.

ADEMOSYNE MAJOR, *Handlirsch.*

Fig. 1, plate 1, and Fig. 12, plate 2.

Ademosyne major, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

Ademosyne major, Handlirsch. Die Fossilen Insekten. Leipzig, 1908.

Hydrophilidæ (?), Etheridge and Olliff. Mem. Geol. Surv. N.S.W.; Palæontology, No. 7. Sydney, 1890.

THORAX.—

METASTERNUM.—Depth about half the mean width; anterior margin slightly narrower than posterior, strongly sinuate

posterior to intermediate coxal cavities; posterior margin almost straight from side to side. METASTERNAL EPISTERNUM.—Extends the full length of metasternum; the sides converging almost to a point, posteriorly. EPIMERON.—Not observed. MESOSTERNAL EPISTERNUM.—Strongly arched anteriorly, apparently anastamosing with metasternal episternum. COXÆ.—Intermediate coxal cavities, apparently as far apart as half the width of metasternum at the posterior end. Posterior coxal cavities, apparently closer together than intermediate cavities. ORNAMENTATION.—Obscure.

ABDOMEN.—

SEGMENTS.—Basal segment longer on sides than at centre; 2nd, 3rd, and 4th nearly equal in length; pygidium longer; altogether forming a dome of which the height is equal to the diameter.

ELYTRON.—

SIZE.—*Length,* 2·6 mm.; *width,* 1 mm.

OUTLINE.—*Apex,* acutely rounded; *base,* short, slightly curvate, confluent with round *humeral margin,* the later merging into a moderately arcuate *lateral margin; scutellary margin,* long, forming an obtuse angle with base; merging into an arcuate *sutural margin; general outline,* uniform taper to apex from one-third the length from base.

ORNAMENTATION.—*Sutural border,* narrower than costæ; *scutellary border,* narrow; *lateral border,* very slightly narrower than sutural border; *costæ,* 8 or 9, round, granulate, wider on lateral than on sutural side; several converging to apex, a few joining lateral border, in some specimens one bifurcating near the humerus; *striæ,* deep, finely punctate at regular intervals.

CONVEXITY.—*Disc,* moderately high in type specimen, but varies.

ILLUSTRATIONS.—Fig. 1 (Spec. 36*a* × 30) shows the sutural margin too pronounced, and the number of costæ is incorrectly shown to be 10. Fig. 1*a* (part of Spec. 36*a* × 50) illustrates the distinct costæ and the deep but finely punctate striæ. Fig. 12 (Spec. S2) shows a trace of the base of one of the elytra, the impressions of the thorax and abdomen, and the extension of the elytra beyond the pygidium.

OBSERVATIONS.—The bifurcation of one of the costæ near the base is observed in a number of specimens, but the character is hardly sufficient for varietal distinction. Comparisons may be

made with *A. intermedia, A. brevis,* and *Ademosynoides obtusa,* from the first differing in the character of its borders, costæ and striæ, from the second in being much narrower and in the appearance of its costæ, while from the third, to which perhaps it comes nearest, it varies in having punctate striæ and a more decided scutellary margin. It is much smaller than *A. australiensis* and has not the apical arrangement of the costæ of that species, while from *Ademosynoides alternata* it is separated by differences in size, costal sculpture and striæ.

TYPE.—Spec. S2 (cast); Fig. 12, plate 2. (Simmond's Coll.) PARATYPE.—Spec. 36*a* (mould); Fig. 1, plate 1. (G.S.Q. Coll.) PARATYPE-COUNTERPART.—Spec. 36*b* (cast), paratype, Spec. 10 (B. D. Coll).

EX-PARATYPE.—Spec. 44, previously referred to this species, has now been assigned to *A. australiensis.*

ADEMOSYNE BREVIS, *sp. nov.*

Fig. 6, plate 1.

ELYTRON.—

SIZE.—*Length,* 2·6 mm.; *width,* 1·4 mm.

OUTLINE.—*Apex,* very obtusely rounded and incurved; *base,* long, irregular; *sutural* and *scutellary margins,* both nearly arcuate; *lateral margin,* arcuate from apex to humerus, but not so pronounced as sutural margin; *humeral margin,* round; *general outline,* piriform-ovate.

ORNAMENTATION.—*Sutural* and *scutellary borders,* narrow; *lateral border,* wider than sutural border on apical half, slightly wider towards *humeral border,* the latter still wider but rapidly disappearing where it joins the base; *costæ,* 9, round, granocrenulate, variable in width from one another, those near sutural side narrowest, those about the centre widest, each tapering both apically and basally; *striæ,* distinct, clearly punctate.

CONVEXITY.—Moderately and uniformly low, except at apex.

ILLUSTRATIONS.—Fig. 6 (Spec. 339*a* × 30) shows correctly the general arrangement of the borders, costæ and striæ, but does not well illustrate the apical declivity. Fig. 6*a* (part of Spec. 339*a* × 40) is a section showing the crenulations on the costæ crossing from one stria to another.

OBSERVATIONS.—The *short* piriform outline and the reflexed apex separate this species from all others. The size, striæ and sutural characters separate it from *A. lata,* and its shorter

outline, size, costæ and striæ from *A. intermedia*. Its differences from *A. major* have already been given in describing that species.

TYPES.—Spec. 339*a* (cast); Fig. 6, plate 1. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 339*b* (mould). B. D. Coll.

ADEMOSYNE CURVATA, *sp. nov.*

Fig. 7, plate 1.

ELYTRON.—

SIZE.—*Length,* 2·8 mm.; *width,* 1 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* long, curvate; *sutural* and *lateral margins,* both nearly arcuate, the former gently, the latter more pronounced; *scutellary margin* confluent with sutural margin, forms obtuse angle with base; *humeral margin,* round, confluent with the lateral margin and base; *general outline,* oblong-ovate, the sutural and lateral sides gently tapering from the middle of the disc to both apex and base.

ORNAMENTATION.—*All borders,* equally narrow, less in width than costæ and sharply defined; *costæ,* 8 (?), smooth, all nearly equal in width, all concentric with lateral border. At the apical end all curve around to join the sutural border at angles varying with their positions, some join at nearly right angles, others acuminately, while at the basal end six join the margin at about a right angle; two others nearer the sutural border join the scutellary border at an acute angle, and a short, doubtful, narrow one, tapering both ends (making the 9th), joins the sutural border very acutely; *striæ,* defined, with round, deep punctæ.

CONVEXITY.—Moderately low all over the disc.

ILLUSTRATIONS.—Fig. 7 (Spec. 274*a* × 30) shows the general curvature of the costæ and striæ, and Fig. 7*a* (part of Spec. 274*a* × 50) indicates the narrow border to be sharply defined and the punctures to be large and clearly separated from one another.

OBSERVATIONS.—This species resembles *Ademosynoides obtusa* in size, shape, and in having uniformly narrow borders, and has also a resemblance to *A. rugulosa* in the wrinkled appearance observed in some specimens. No other species has the concentrically *curvate* costæ, and no approach to this character of sculpture has been observed in other forms.

TYPE.—Spec. 274*a* (cast); Fig. 7, plate 1. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 274*b* (mould). B. D. Coll.

ADEMOSYNE AUSTRALIENSIS, *Tillyard.*

Fig. 3, plate 1.

Ademosyne australiensis, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length,* 3·4 mm.; *width,* 1·2 mm.

OUTLINE.—*Apex,* very bluntly rounded; *base,* straight, somewhat short; *sutural margin,* arcuate; *scutellary margin,* short, inconspicuous, forming obtuse angle with base; *humeral margin,* round, confluent with base and lateral margin; *lateral margin,* straight from humerus for two-thirds the length of disc, then arcuate to the round apex; *general outline,* elongate-ovate.

ORNAMENTATION.—*All borders,* somewhat narrow but variable, scutellary border in some specimens very narrow; *costæ,* 10, smooth, somewhat depressed, usually delicate, variable in width on all parts of the disc, all taper to the blunt apex but do not anastomose, and near the extremity all slightly bend towards the posterior sutural margin; *striæ,* defined, punctate.

CONVEXITY.—Generally high.

ILLUSTRATIONS.—Fig. 3 (Spec. 12*b* × 25) shows the irregularities of the costæ, their difference in width, individual variations, and apical curvature. Fig. 3*a* (part of Spec. 12*b* × 50) illustrates the rather flat, smooth costæ, and the closely set punctæ on the striæ.

OBSERVATIONS.—Differences in size and shape separate this form from *A. major,* and variations in costal sculpture separate it from *A. rugulosa* and *A. curvata.* It has some resemblance to *Ademosynoides alternata,* but that species has alternating costæ and impunctate striæ.

TYPE.—Spec. 12*b* (cast); Fig. 3, plate 1. PARATYPE.—Spec. 44. (G.S.Q. Coll.) TYPE-COUNTERPART.—Spec. 12*a* (mould). B. D. Coll.

ADEMOSYNE RAMO-COSTATA, *sp. nov.*

Fig. 4, plate 1.

ELYTRON.—

SIZE.—*Length,* 3·5 mm.; *width,* 1·4 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* very short, nearly straight; *sutural margin,* very gently arcuate from scutellary margin to apex; *scutellary margin,* very short; *lateral margin,*

strongly arcuate from apex to humeral margin, with which it is confluent; *humeral margin,* very long, nearly straight, forms obtuse angle with the short basal margin; *general outline,* widely tapered to apex from one-third the length from base.

ORNAMENTATION.—*Sutural border,* much narrower than adjacent costa; *lateral border,* somewhat wider than opposite sutural border, about equal in width to adjacent costa, confluent with pronounced humeral border; *costæ,* 10, round, smooth, six of equal width occupying two-thirds the distance across middle of disc from sutural margin, four others narrowing in width towards lateral margin. The six wide costæ slightly converge to the base, the four narrow ones joining with the long humeral border. Towards the base the fifth large central costa tapers off between the two adjacent costæ, the latter coalescing posteriorly to form a ramose structure. Other costæ meet posteriorly in the same manner but become somewhat evanescent near the apex; *striæ,* distinct, finely punctate.

CONVEXITY.—Generally high, in humeral area very high.

ILLUSTRATIONS.—Fig. 4 (Spec. 225 × 25) shows the symmetrically arranged costæ and the pronounced humeral margin. Fig. 4*a* (part of Spec. 225 × 40) represents a section where the costæ meets to form the ramose or "Y" branches, which, however, are nearer the sutural (right) margin than shown in the drawing.

OBSERVATIONS.—The *branching* costæ is a feature which separates the species from all other forms of *Ademosyne,* while from *Platycrossos tumidus* it is distinguished in size, shape, and convexity, and by the different shape of its borders.

TYPE.—Spec. 225 (cast); Fig. 4, plate 1. (G.S.Q. Coll.)

ADEMOSYNE RUGULOSA, *sp. nov.*

Fig. 10, plate 1.

ELYTRON.—

SIZE.—*Length,* 3·6–4·2 mm.; *width,* 1·3–1·4 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* short, irregularly curvate; *sutural margin,* gently arcuate; *lateral margin,* strongly arcuate; *humeral margin,* round; *scutellary margin,* short; *general outline,* oblong-ovate.

ORNAMENTATION.—*Sutural* and *lateral borders,* somewhat variable in width, but generally less than width of costæ;

scutellary and *humeral borders,* indistinct, but evidently narrow; *costæ,* 9 to 11, somewhat explanate, minutely granulate, finely rugose cross-wise, regularly disposed, mostly converging to apex, a few joining and converging to the posterior lateral border; *striæ,* well-defined, distinctly and finely punctate.

CONVEXITY.—Moderately high, rather pronounced apical declivity.

ILLUSTRATIONS.—Fig. 10 (Spec. 260*a* × 20) shows the general character of the disc sculpture and the bifurcation of the stria nearest to the lateral border. The borders in the figure are drawn slightly too narrow. Fig. 10*a* (part of Spec. 260*a* × 35) shows the grano-rugose, flattish costæ, and the defined punctures.

OBSERVATIONS.—This *wrinkled* species somewhat resembles *A. australiensis,* from which it differs in sculptural details, particularly in the costal convergence at the apex. The bifurcation of the stria near the humerus is a similar feature to that observed in some specimens of *A. major.*

TYPE.—Spec. 260*a* (cast); Fig. 10, plate 1. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 260*b* (mould). B. D. Coll.

ADEMOSYNE VITTAMARGINA, *sp. nov.*

Fig. 13, plate 2.

ELYTRON.—

SIZE.—*Length,* 4 mm.; *width,* 1·4 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* round; *sutural* margin, gently curvate; *lateral margin,* strongly arcuate; *humeral* and *scutellary margins* confluent with base, the former also confluent with lateral margin and the latter with sutural margin; *general outline,* elongate-ovate.

ORNAMENTATION.—*All borders,* uniformly narrow, forming one unbroken vitta around the disc; *costæ,* 10, faintly perceptible (in type specimen), explanate, finely pustulate; *striæ,* faintly punctate. Spec. 293*a* (paratype) shows more pronounced costæ and striæ.

CONVEXITY.—Very low and somewhat irregular.

ILLUSTRATIONS.—Fig. 13 (Spec. 341*a* × 20) shows the faint ornamentation and the narrow straped border. Fig. 13*a* (part of Spec. 341*a* × 40) shows rather incorrectly the character of the minute pimples on the costæ. They are much more uniform than indicated, and also more delicate.

OBSERVATIONS.—The *band-like* uniformity and the narrowness of the borders are a feature of the species, which, with its faint sculpture and low convexity, separates it from all other forms of *Ademosyne*. Indeed, further research might reveal specimens showing that it should not be included in this genus at all.

TYPE.—Spec. 341*a* (cast); Fig. 13, plate 2. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 341*b* (mould). B. D. Coll.
PARATYPE.—Spec. 293*a* and 293*b*.

ADEMOSYNE CONGENER, *Tillyard.*

Fig. 16, plate 2.

Ademosyne congener, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length*, 4·5 mm.; *width*, 2·1 mm.

OUTLINE.—*Apex*, obtusely rounded; *base*, long, nearly straight; *sutural* and *lateral margins*, almost equally and strongly arcuate; *scutellary margin*, very short; *humeral margin*, sub-angulate; *general outline*, ovate, tapering from middle to both apex and base.

ORNAMENTATION.—*All borders*, somewhat narrow, regular; *costæ*, 9 or 10, round, nearly smooth, unequal in width, lateral costæ much wider than sutural, the latter slightly less than adjacent costæ, all evanescent towards the base, all converging and becoming more pronounced towards apex; *striæ*, finely punctate, deep near apex, almost imperceptible near base.

CONVEXITY.—Moderately high, apical declivity pronounced.

ILLUSTRATIONS.—Fig. 16 (Spec. 40 × 18) shows the general irregularity in the width of the costæ, and one irregular stria near humerus. It also shows an impression of what might be a wide basal border. Fig. 16*a* (part of Spec. 40 × 40) illustrates the rather flat costæ and the deep punctate striæ at the middle of the disc.

OBSERVATIONS.—This is a *kindred* species to *A. Cameroni*, which it resembles in costal arrangement, but differs in being much smaller. It also resembles *Ademosynoides abnormis* which, however, is impunctate. In size it is comparable with *A. punctata*, from which it differs in sculpture and in shape. Somewhat resembles *A. australiensis*, but is more tapering, wider in proportion, and the sculpture less pronounced.

TYPE.—Spec. 40 (cast); Fig. 16, plate 2. PARATYPES.—Specs. 41*b* (cast) and 42 (cast). (G.S.Q. Coll.) PARATYPE.—Spec. 41*a* (mould). B. D. Coll.

ADEMOSYNE PUNCTATA, *Tillyard.*

Fig. 15, plate 2.

Ademosyne punctata, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length,* 4–4·2 mm.; *width,* 1–1·3 mm.

OUTLINE.—*Apex,* acutely rounded; *base,* long, irregularly curvate; *sutural* and *lateral margins,* both gently arcuate; *general outline,* subulate-ovate.

ORNAMENTATION.—*Sutural* (*?*) *border* narrow at apex, becoming wider towards humeral border, with which it is confluent; *scutellary border* short, gradually widening and becoming confluent with a very wide and pronounced *basal border; humeral border,* small, confluent with basal border and with *lateral border,* the latter disappearing close to humerus, appearing again about the middle of the margin, and extending narrowly to apex; *striæ,* 8, shallow, distinctly punctate, all nearly equally spaced, converging to apex; *intervals,* flat, smooth (*?*), faintly punctate generally, more pronounced towards the base.

CONVEXITY.—Moderately high.

ILLUSTRATIONS.—Fig. 15 (Spec. 47*b* × 25) shows the pronounced punctate striæ alternating with the faintly punctate striæ. Fig. 15*a* (part of Spec. 47*b* × 50) gives further details of the arrangement of the punctæ.

OBSERVATIONS.—No other species of *Ademosyne* possess the doubly *punctate* structure. In its slender tapering form it has in this genus no parallel, but might be compared with *Ademosynoides attenuata* and the two species of *Tryoniopsis.*

TYPE.—Spec. 47*b* (cast); Fig. 15, plate 2. (G.S.Q. Coll.) TYPE-COUNTERPART.—Spec. 47*a* (mould). B. D. Coll.

ADEMOSYNE ADUNCA, *sp. nov.*

Fig. 14, plate 2.

ELYTRON.—

SIZE.—*Length,* 6 mm.; *width,* 2·2 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* long, irregularly

sinuate; *sutural* and *lateral margins,* both arcuate, the former more gently than the latter; *scutellary* (*?*) and *humeral* (*?*) *margins* each round, confluent with the base and adjacent margin; *general outline,* narrow-ovate.

ORNAMENTATION.—*Sutural* and *lateral borders,* each narrower than adjacent costa, the former merging into a wide scutellary border, the latter into a moderately wide humeral border, both *humeral* and *scutellary borders* merging into a wide irregular basal border; *costæ,* 10, very finely granulate, generally low, explanate towards base, both uniform in width and slightly converging towards the apex, which is reflexed; *striæ,* faint near base where one diverges at an acute angle towards humeral border, finely but distinctly punctate; *strigæ,* crosses reflexed apex at end of costæ rectangularly, and covers this part of the elytron.

CONVEXITY.—Moderately and uniformly low.

ILLUSTRATIONS.—Fig. 14 (Spec. 194*b* × 12) shows the arrangement of the striæ near the base and the strigose feature at the incurved apex. Fig. 14*a* (part of Spec. 194*b* × 25) illustrates the narrow flattish costæ and the finely punctate striæ.

OBSERVATIONS.—This species in having a *reflexed* apex is quite distinct from any of the other *Ademosyne* forms, but otherwise has many of the characters of this genus. It is comparable in length and in its punctæ with *A. Cameroni,* but is much more slender. *Ademosynoides abnormis* resembles it in size, shape, and border characters, the *striæ* of which, however, is impunctate.

TYPE.—Spec. 194*b* (cast); Fig. 14, plate 2. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 194*a* (mould). B. D. Coll.

ADEMOSYNE CAMERONI, *Tillyard.*

Fig. 11, plate 2.

Ademosyne Cameroni, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length,* 6·2 mm.; *width,* 3 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* very long, slightly curvate; *sutural* and *lateral margin,* equally and moderately arcuate from base to apex; *scutellary* (*?*) *margin,* confluent with

sutural margin, joins base at an acute angle; *humeral (?) margin,* round, confluent with lateral margin and base; *general outline,* triangulate-ovate.

ORNAMENTATION.—*Sutural* and *lateral borders,* equally narrow, the latter centrally striolate; *basal border,* very wide near scutellum, where it becomes suddenly narrow, not so wide near humerus, where it also becomes narrow and confluent with lateral border; *costæ,* 9, equal, round, converging towards the apex, explanate towards the base, smooth near base, rough near apex; *striæ,* finely and distinctly punctate, deep near apex, shallow towards base, one stria near the latter considerably bent.

CONVEXITY.—Low near base, becoming moderately high towards apex.

ILLUSTRATIONS.—Fig. 11 (Spec. 46*b* × 15) shows the uniform triangulate-ovate shape of the elytron, the distinct punctæ near the base, and the irregularity in the 5th stria. Fig. 11*a* (part of Spec. 46*b* × 25) illustrates the rotundity and roughness of the costæ, and the distinctly punctate striæ near the apex.

OBSERVATIONS.—This species closely resembles *Ademosynoides abnormis* in many characters, the difference being in size, shape and punctæ. Some parts of the sculpture in the two species are so much alike that some probability exists of the two forms being male and female of the one species, but more evidence is required. Although *A. congener* has some features common to the species, it is much smaller and the shape and parts of the sculpture are different.

TYPE.—Spec. 46*b* (cast); Fig. 11, plate 2. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 46*a* (mould). B. D. Coll.

Genus ADEMOSYNOIDES, gen. nov.

Genotype *Ademosynoides minor* (Handlirsch).

This new genus comprises eight species, in all of which the elytra are impunctate-striate, all except one have 9 or 10 costæ or intervals, and all have narrow or only moderately wide borders. Sizes of elytra vary from 2 mm. (*A. minor*) to 8·5 mm. (*A. magnifica*), while the shapes, as with *Ademosyne,* have considerable variation.

ADEMOSYNOIDES MINOR (Handlirsch).

Fig. 18, plate 2.

Ademosyne minor, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

Ademosyne minor, Handlirsch. Die Fossilen Insekten. Leipzig, 1908.

Hydrophilidæ (?), Etheridge and Olliff. Memoirs, Geol. Surv. N.S.W. Palæontology, No. 7. Sydney, 1890.

ELYTRON.—

SIZE.—*Length,* 2 mm.; *width,* 0·8 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* round; *sutural* and *lateral margins,* almost equally sinuate and confluent with base; *general outline,* oblong-ovate.

ORNAMENTATION.—*All borders,* equally narrow, less than width of costæ; *costæ,* 9, round, smooth, parallel and equal in width across the middle of disc, rapidly and uniformly tapers to apex from midway between middle and apex; *striæ,* impunctate, pronounced, except on basal quarter.

CONVEXITY.—High.

ILLUSTRATIONS.—Fig. 18 (Spec. 38*b* × 30) shows the evenness of the costæ, and the apical declivity, while Fig. 18*a* (part of Spec. 38*b* × 50) illustrates the distinct but impunctate striæ.

OBSERVATIONS.—This not uncommon species resembles *A. obtusa* in costal and marginal ornamentation and in the striæ being impunctate, but it is smaller, the shape is not the same, and the basal portion is quite different. Compared to *A. angusta* it is small and wide, and compared to *Ademosyne Olliffi* it is large and wide, the latter also having ill-defined punctate striæ.

TYPE.—Spec. S3 (cast), Simmond's Coll. PARATYPE.—Spec. 38*b* (cast); Fig. 18, plate 2. (G.S.Q. Coll.) PARATYPE-COUNTERPART.—Spec. 38*a* (mould). B. D. Coll.

ADEMOSYNOIDES OBTUSA (*Tillyard*).

Fig. 17, plate 2.

Ademosyne obtusa, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length,* 2·4 mm.; *width,* 1 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* long, nearly straight, confluent with a pronounced and round *humeral*

margin; lateral margin, moderately arcuate from humeral margin, with which it is confluent, to apex; *sutural margin,* as arcuate as lateral margin, confluent with *scutellary margin,* the latter forming an obtuse angle with the base; *general outline,* elongate-ovate.

ORNAMENTATION.—*All borders,* narrow, sutural more so than lateral, scutellary narrower than sutural, basal border as narrow as sutural and well-defined; *costæ,* 9, round, finely granulate, all of uniform width across the middle of disc, slightly tapering towards base, sharply tapering to apex; *striæ,* uniform, distinct, impunctate, one joining scutellary border and at the other end joining the posterior sutural border, all others reaching both apex and base.

CONVEXITY.—High (in type specimen), but varies.

ILLUSTRATIONS.—Fig. 17 (Spec. 9*b* × 30) shows the uniformity in shape and ornamentation. Fig. 17*a* (part of Spec. 9*b* × 50) illustrates the round, finely granulate costæ and the impunctate striæ, while irregularities are also shown to be present on the costæ close to the striæ.

OBSERVATIONS.—This species with the *obtuse* apical angle has some resemblance to *A. angusta,* but it has a much wider disc and the borders are different. It also may be compared to *A. alternata* and *Ademosyne australiensis,* but the outline and sculpture of both these forms are not the same.

TYPE.—Spec. 9*b* (cast); Fig. 17, plate 2. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 9*a* (mould). B. D. Coll.

ADEMOSYNOIDES ALTERNATA, *sp. nov.*

Fig. 19, plate 2.

ELYTRON.—

SIZE.—*Length,* 2·5 mm.; *width,* 1 mm.

OUTLINE.—*Apex,* somewhat obtusely rounded; *base,* round; *sutural margin,* moderately arcuate, confluent with long *scutellary margin* and base; *lateral margin,* confluent with basal margin, gently arcuate for three-quarters the length of disc from base, then slightly curved to apex; *general outline,* elongate-ovate.

ORNAMENTATION.—*Sutural border,* somewhat narrower than adjacent costæ and opposite lateral border, confluent with *apical border,* which has the same width; *scutellary border,* confluent

with sutural border, evanescent towards base; *lateral border,* as wide as adjacent costæ near middle of disc, gradually narrowing to join apical border, evanescent on humeral margin near base; *costæ,* 8, round, finely punctate, alternately high and low, nearly equal in width across the middle of disc, converging gently both to base and apex; *striæ,* distinct, impunctate.

CONVEXITY.—High, except on the basal quarter, where the disc is explanate.

ILLUSTRATIONS.—Fig. 19 (Spec. 149*a* × 30) shows the alternating and more or less arcuate costæ, the difference between the high and low costæ, however, being shown too conspicuously on the lateral portion. The figure also shows the flattened apex. Fig. 19*a* (part of Spec. 149*a* × 40) is a section taken from near the centre.

OBSERVATIONS.—In size the species is comparable with *A. obtusa,* and *Ademosyne curvata,* and in shape with *Ademosyne australiensis,* but its *alternating* costæ and depressed apical quarter are distinguishing characters.

TYPE.—Spec. 149*a* (cast); Fig. 19, plate 2. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 149*b* (mould). B. D. Coll.

ADEMOSYNOIDES STRIATELLA, *sp. nov.*

Fig. 26, plate 3.

ELYTRON.—

SIZE.—*Length,* 2·8 mm.; *width,* 1·1 mm.

OUTLINE.—*Apex,* very obtusely rounded; *base,* long, curvate; *sutural margin,* gently curvate, confluent with base and apex; *lateral margin,* moderately arcuate, confluent with base and apex; *scutellary* and *humeral margins,* confluent with other adjoining margins; *general outline,* elongate-ovate.

ORNAMENTATION.—*All borders,* very narrow, lateral one specially so; *costæ,* 9 or 10, somewhat explanate, finely granulate across middle of disc, all nearly equal in width, converging uniformly to base and towards apex. Close to the latter the costæ all anastamose abruptly, forming one very narrow, well-defined central costa, which extends to the apical margin; *striæ,* deep, impunctate, uniform with costæ towards base, the central stria and the second one on either side being short and in conformity with the costal complication near apex.

CONVEXITY.—Moderately low.

ILLUSTRATIONS.—Fig. 26 (Spec. 16*a* × 20) shows the general arrangement of the costæ. Fig. 26*a* (part of Spec. 16*a* × 35) represents a section taken across the centre of the disc near the apex, and illustrates the costal sculpture.

OBSERVATIONS.—The species somewhat resembles *A. obtusa* and *A. angusta* in shape and size, and the latter also in being impunctate, but the coalescing of the costæ and the *short striæ* thus produced is a very conspicuous feature. There is just the possibility that *A. striatella* and *A. angusta,* in being so much alike, are the male and female of the one species. The type specimen of the former was included with the latter originally, as a co-type, but later discoveries show that what was thought to be a sport was a persistent feature in a number of specimens.

TYPE.—Spec. 16*a* (cast); Fig. 26, plate 3. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 16*b* (mould). B. D. Coll.

ADEMOSYNOIDES ANGUSTA, *Tillyard.*

Fig. 20, plate 3.

Ademosyne angusta, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length,* 3 mm.; *width,* 1 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* irregular in type specimen, but round in others; *sutural* and *scutellary margins,* confluent, together curvate from base to apex; *lateral* and *humeral margins,* together moderately arcuate from base to apex; *general outline,* narrow-ovate.

ORNAMENTATION.—*Sutural* and *scutellary borders,* narrow; *lateral* and *humeral borders,* ill-defined, probably very narrow; *costæ,* 9 or 10, somewhat explanate, finely granulate, about the middle of disc nearly equal in width and parallel towards base, those on sutural half being parallel to one another, on lateral half convergent. Towards the base, where they are faint, those on lateral half slightly converge to apical extremity, others are nearly parallel with one another and coalesce with posterior sutural margin; *striæ,* deep, impunctate, evanescent towards apex.

CONVEXITY.—Low.

ILLUSTRATIONS.—Fig. 20 (Spec. 15*b* × 25) does not show a complete lateral margin, but in other specimens this is shown to be narrow. Fig. 20*a* (part of Spec. 15*b* × 50) illustrates the flattish costæ and the impunctate but distinct striæ.

OBSERVATIONS.—Comparisons may be made with *A. striatella* and *A. obtusa,* but this species is *narrower* and flatter, and the apical characters of the costæ are different from either. It has also resemblances to *Ademosyne major, Ademosyne curvata, A. minor,* and *A. alternata,* which see under their respective headings.

TYPE.—Spec. 15*b* (cast); Fig. 20, plate 3. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 15*a* (mould). B. D. Coll.
EX CO-TYPE.—Spec. 16*a,* 16*b,* is now the Type and Type-counterpart of *A. striatella.*

ADEMOSYNOIDES ABNORMIS, *sp. nov.*

Fig. 23, plate 3.

ELYTRON.—

SIZE.—*Length,* 6·2 mm.; *width,* 2·5 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* curvate; *sutural* and *lateral margins,* moderately curvate to apex from one-third the length of elytron from base; *humeral margin,* sub-angulated with lateral margin, confluent with base; *scutellary margin,* short, round, confluent with base and sutural margin; *general outline,* elongate-ovate.

ORNAMENTATION.—*Sutural* and *lateral borders,* narrow, singly striolate; *humeral border,* moderately narrow, confluent with lateral border and *basal border,* the latter very wide but narrowing towards scutellary border; *scutellary border,* wider than humeral border, confluent with wide basal border and narrow sutural border; *costæ,* 9, round, granulate, equal in width across middle of disc, uniformly tapering to apex, explanate towards base; *striæ,* impunctate, deep near apex, evanescent towards base, the 4th stria irregularly and suddenly diverging towards the 3rd before reaching the base.

CONVEXITY.—Moderately high.

ILLUSTRATIONS.—Fig. 23 (Spec. 243*a* × 15) shows the uniformity of the elytron both in shape and ornamentation, and Fig. 23*a* (part of Spec. 243*a* × 25) illustrates the regularly rounded costæ with the deep striæ.

OBSERVATIONS.—This *very large* species much resembles *Ademosyne Cameroni* and may be compared with *Ademosyne congener,* references to both of which are made under the heading of the former species.

TYPE.—Spec. 243*a* (cast); Fig. 23, plate 3. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 243*b* (mould). B. D. Coll.

ADEMOSYNOIDES MAGNIFICA, *sp. nov.*

Figs. 27, 28, plate 3.

THORAX.—

METASTERNUM.—Depth less than half the width; anterior margin slightly longer than the posterior, the former margin strongly sinuate behind coxal cavities; the posterior margin nearly straight, with the coxal piece adjacent to the metasternum distinct and narrow, although irregularly shaped; indistinct central suture joining anterior and posterior margins; surface of disc finely punctate generally, somewhat coarser punctæ on central anterior area.

METASTERNAL EPISTERNUM.—Sides nearly parallel, extends the full length of metasternum; finely punctate. EPIMERON, narrow and short, but distinct. MESOSTERNAL EPISTERNUM.—Outline quite pronounced, with a conspicuous projection towards contiguous coxa, surface finely granulate. COXÆ.—Intermediate coxæ as far apart as half the total width of metasternum; posterior coxal impressions apparently much closer together than the intermediate coxal impressions.

ABDOMEN.—

SEGMENTS.—Basal segment longer at the sides than at the centre; second segment shorter than basal, third and apical (propygidium and pygidium) equally longer than the basal and second; segments altogether forming a dome, whose diameter is about one and a-half times the length, and having a margin unbroken by indentations.

ELYTRON.—

SIZE.—*Length*, 8·5 mm.; *width*, 2·9 mm.

OUTLINE.—*Apex*, obtusely pointed; *base*, round; *sutural margin*, gently curvate; *lateral margin*, strongly curvate; *scutellary* and *humeral margins*, equally round and confluent with base and adjoining margins; *general outline*, elongate-ovate.

ORNAMENTATION.—*Sutural border*, as wide as adjacent costæ, somewhat pronounced; *lateral border*, narrow; *scutellary border*, wide, confluent with base and sutural border; *humeral border*, moderately narrow, confluent with base and lateral border; *costæ*, about 10, indistinct, explanate, finely granulate, narrower on sides than on centre, slightly converge from middle to base, convergence more pronounced from middle to apex; *striæ*, faint, impunctate.

CONVEXITY.—Moderately high.

ILLUSTRATIONS.—Figs. 27, 28 (Specs. 199*a*, 199*b* × 10) together form the most complete specimen yet discovered. After it was split in two the impressions were found to be covered by a film of matrix representing the interior of the body, on removing which the sculpturing was revealed. What is now shown in Fig. 27 (the cast) is a part of the under surface of the elytra and the ventral view of the body, while Fig. 28 (the mould) represents the impression of the upper surface of the elytron fitting on to the *right* side of Fig. 27. The section shown in Fig. 28*a* illustrates the character of the costæ and the well-defined impunctate striæ.

OBSERVATIONS.—This *splendid* species has much in common with *Polysitum punctatus* so far as the body characters are concerned, and no doubt exists about the resemblance of the two genera, so much so that at first it was thought necessary to remove it from *Ademosyne* and place it with *Polysitum*. This would cause confusion regarding some of the other species of *Ademosyne* and would necessitate a considerably amended diagnosis of the genus, which, in any case, will probably be necessary later on. The elytron somewhat resembles *A. abnormis*, but is proportionately narrower than that species, and the costæ is not round, neither are the striæ distinct nor deep.

TYPE AND COUNTERPART.—Specs. 199*a*, 199*b* (cast and mould); Figs. 27, 28, plate 3. (G.S.Q. Coll.)

Genus PLATYCROSSOS, gen. nov.

Genotype, *Platycrossos tumidus* (Tillyard).

There are a number of forms of elytra which have certain characters belonging to *Ademosyne* or *Ademosynoides*, such as defined striæ and costæ, but which, unlike those genera, have pronounced lateral or humeral borders, and *Platycrossos* has been created for their reception.

Three species have been placed in the genus, including the one previously described as *Ademosyne tumida*, Tillyard, all having a rather wide or very wide lateral border, and with or without a porrect or extended humeral area and border. The sizes vary from 2·9 mm. in length (as in *P. ligulatus*) to 6·2 mm. in length (as in *P. tumidus*), all three species being striate and all being more or less finely punctate. [Ety. *platys*, broad; *crossos*, a border.]

PLATYCROSSOS LIGULATUS, *gen. et sp. nov.*

Fig. 22, plate 3.

ELYTRON.—

SIZE.—*Length,* 2·9 mm.; *width,* 1·2 mm.

OUTLINE.—*Apex,* very obtusely pointed; *base,* long, slightly curvate; *sutural margin,* gently arcuate from scutellum to apex; *scutellary margin,* curvate, long, confluent with sutural margin and base; *lateral margin,* strongly curvate, rectangularly joins the sutural margin at apex; *humeral margin,* short, confluent with base and sutural margin; *general outline,* ovate.

ORNAMENTATION.—*Sutural border,* very narrow, widening along the scutellum, then merging into the *basal border,* the latter further widening and reaching its maximum width at the junction of the humeral border. The sides of the *humeral border* are parallel and far distant, and in merging into the *lateral border* the same width is maintained, which continues as far as the posterior margin, from thence becoming somewhat narrower to the apical point; *costæ,* 8 or 9, smooth, slightly raised, very faint, evanescent towards base; *striæ,* indistinct, with traces of punctæ.

CONVEXITY.—Generally high, between the posterior lateral border and the apex very high.

ILLUSTRATIONS.—Fig. 22 (Spec. 268*a* × 30) shows the parallel-sided strap-shaped lateral border, the obscure costæ and striæ, and the pronounced apical convexity. Fig. 22*a* (part of Spec. 268*a* × 45) is an enlarged section of the posterior lateral margin illustrating the wide border with its well-marked inside edge and the faint costæ and punctate-striæ.

OBSERVATIONS.—This form with the *strap-bound* elytra has the tumid appearance of the other species of this genus, but has not the porrect shoulders nor the pronounced costal development of *P. tumidus* and *P. sub-tumidus.*

TYPE.—Spec. 268*a* (cast); Fig. 22, plate 3. TYPE-COUNTERPART.—Spec. 268*b* (fragment). (G.S.Q. Coll.) PARA-TYPES.—Specs. 118*a–b*. (B. D. Coll.)

PLATYCROSSOS TUMIDUS (Tillyard).

Fig. 21, plate 3.

Ademosyne tumida, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length*, 6·2 mm.; *width*, 2·5 mm.

OUTLINE.—*Apex*, very obtusely rounded; *base*, very long, nearly straight; *sutural margin*, gently curvate; *scutellary margin*, evidently short, obtusely angulated with base and confluent with sutural margin; *humeral margin*, porrect, obtusely angulated with base, confluent with *lateral margin*, the latter strongly and uniformly curvate to junction of sutural margin at apex; *general outline*, ovate.

ORNAMENTATION.—*Sutural border*, evidently very narrow; *humeral border*, very wide, narrowing rapidly towards base, confluent with a very wide, explanate *lateral border*, the latter about equal in width to the costæ near the middle, and slightly narrowing at the posterior margin and around the apex; *costæ*, 9, finely granulate, somewhat explanate near base, round near apex. One short costa near centre of disc lies between two others which anastomose near apex; the ends of all costæ near apex being extended and faintly impressed across the wide apical border; *striæ*, faint near base, deep towards apex, in places punctate.

CONVEXITY.—Very high, with very marked apical declivity.

ILLUSTRATIONS.—Fig. 21 (Spec. 45*b* × 12) shows the tumid appearance of the elytra, the two branching or ramose costæ, and the wide lateral border. Fig. 21*a* (part of Spec. 45*b* × 25) illustrates a section of the costæ, and a portion of the striæ where the punctæ are present, and also where they have been obliterated—or have not existed.

OBSERVATIONS.—This species is a conspicuous one on account of its *tumid* appearance, well-developed costæ, extreme fineness of punctæ, and wide lateral border. Resembles *P. sub-tumidus* in many ways, but that species is much smaller, has no punctate striæ or ramose costæ.

TYPE.—Spec. 45*b* (cast); Fig. 21, plate 3. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 45*a* (mould). B. D. Coll.

PLATYCROSSOS SUB-TUMIDUS, *sp. nov.*

ELYTRON.— Fig. 24, plate 3.

SIZE.—*Length*, 3 mm.; *width*, 1·6 mm.

OUTLINE.—*Apex*, very obtusely rounded; *base*, straight, almost as wide as maximum width of elytron; *sutural margin*,

strongly and uniformly curvate (almost arcuate) from base to the round apex, where it is confluent with *lateral margin,* the latter curvate from apex to posterior margin, then straight to humerus, where it joins base at almost a right angle; *general outline,* elongate-cupolate.

ORNAMENTATION.—*Sutural border,* not observed; *lateral border,* narrow near apex, rapidly widening anteriorly to the width of costæ and becoming parallel-sided with a faint median depression, towards humeral margin further widening to about one-quarter the length of the base where it junctions with an irregular but wide basal border; *costæ,* 10, round, equal in width, finely granulate. From middle to apex converging conformably with margins and lateral border, from middle to base all nearly parallel with one another, except the one adjacent to humeral border which converges rapidly to junction of humeral and basal borders; *striæ,* regular, gently curvate, finely punctate at intervals.

CONVEXITY.—Moderately high.

ILLUSTRATIONS.—Fig. 24 (Spec. 171 × 30) shows the large development of the lateral border, the long base, and the swollen disc. Fig. 24*a* (part of Spec. 171 × 50) is a section showing the punctate striæ and the uniformly round costæ.

OBSERVATIONS.—Closely resembles the elytron of *P. tumidus* in outline and rotundity, but is *subordinate* to it in size, while the costal arrangement is different. *Ademosyne lata* has somewhat similar costæ and also a porrect humerus, but varies from this species in size, striæ, and in the shape of the sutural border.

TYPE.—Spec. 171 (mould); Fig. 24, plate 3. (G.S.Q. Coll.)

Genus SIMMONDSIA, *gen. nov.*

Genotype, *Simmondsia sub-piriformis,* sp. nov.

This new genus is separable from all others in having the elytra very conspicuously ornamented with a number of longitudinal ridges and connecting cross-bars, and in having depressions or alveolæ in the squares formed by the intersection of the two sets of elevations. In the two species described below, the lateral and sutural borders are well-defined and narrow, and the long scutellary margin is a conspicuous feature. One of the species, *S. sub-piriformis,* resembles some species of *Ademosyne* in outline, and in this respect may also be compared to forms belonging to *Elaterites,* but the alveolate structure is sufficient for identification purposes.

The genus is named after Mr. J. H. Simmonds, whose explorations many years ago at Denmark Hill resulted in the finding of the first fossil insects in that locality.

SIMMONDSIA SUB-PIRIFORMIS, *gen. et sp. nov.*

Fig. 34, plate 4.

ELYTRON.—

SIZE.—*Length,* 3 mm.; *width,* 1·2 mm.

OUTLINE.—*Apex,* acutely round: *base,* short, slightly curvate; *humeral margin,* round, nearly as long as base, confluent with base and *lateral margin,* the latter strongly arcuate from humerus to apex; *sutural margin,* gently arcuate from apex to scutellary margin, confluent with the latter; *scutellary margin,* very long, greater than length of base, forming with the latter a rather obtuse angle; *general outline,* naviculate-ovate.

ORNAMENTATION.—*Sutural border,* somewhat narrow; *scutellary border,* very narrow; *lateral border,* wider than sutural; *humeral border,* wider than lateral, with which it is confluent; *costæ,* 8, very narrow, sharply defined, very regularly spaced, all converge to apex more or less regularly from about the middle of disc, while to base all converge irregularly; those near centre curvate in the basal quarter; one adjacent to lateral border bifurcating before reaching humeral border. An alveolate structure is produced by narrow bars crossing all costæ, the honey-combed effect being pronounced on the sutural side of the disc, and evanescent towards lateral side, apex and base.

CONVEXITY.—Moderately low.

ILLUSTRATIONS.—Fig. 34 (Spec. 135 × 30) shows rather too decidedly the alveolate cavities on the disc, which are not deep except in a few instances. Fig. 34*a* (part of Spec. 135 × 50) is a section showing costæ, cross-bars, and a few of the alveolæ with central scars or pits.

OBSERVATIONS.—The only species comparable with this *somewhat pear-shaped* species is *S. cylindrica,* which has a somewhat similar alveolate structure, but is distinguished from that species by its irregular and less pronounced costæ and cross-bars and by its somewhat naviculate outline. It has also some resemblance, in its disc sculpture, to *Mesothoris clathrata* and *Mesothoris tenuiclathrata.*

TYPE.—Spec. 135 (cast); Fig. 34, plate 4. (G.S.Q. Coll.)
PARATYPE.—Spec. 276 (cast). B. D. Coll.

SIMMONDSIA CYLINDRICA, *sp. nov.*

Fig. 29, plate 4.

ELYTRON.—

SIZE.—*Length,* 3 mm.; restored length 5 (?) mm.; *width,* 1·4 mm.

OUTLINE.—*Apex,* unknown; *base,* long, straight; *humeral margin,* short, curvate, confluent with base and *lateral margin,* the latter nearly straight; *scutellary margin,* straight, very long, greater than length of base, forms an obtuse angle with the latter; *sutural margin,* straight, very obtusely angulated with scutellary margin; *general outline,* cylindraceous.

ORNAMENTATION.—*All borders,* about equal in width to costæ; very narrow, sharply defined; *costæ,* 8, very narrow, subparallel, the fourth merging at scutellary-basal angle into oval hump, the eighth bifurcating near anterior lateral margin and becoming evanescent towards base; cross-bars formed between all costæ, those between the first three further apart than those on other parts of the disc, generally producing a deep grating with circular pits on the sutural side and a less pronounced and somewhat oblong grating on the central, lateral, and basal portions.

CONVEXITY.—Low on lateral three-quarters, depressed on sutural quarter.

ILLUSTRATIONS.—Fig. 29 (Spec. 87*a* × 20) shows the cylindraceous outline and the grating or latticed sculpturing of the disc, and Fig. 29*a* (part of Spec. 87*a* × 40) illustrates the elongated cavities, costæ and bars on the lateral half.

OBSERVATIONS.—This *cylinder-like* species has some resemblance to *Mesothoris grandis* in its disc ornamentation, but otherwise cannot be compared with that form. Its difference from *S. sub-piriformis* is given under the heading of that species.

TYPE.—Spec. 87*a* (cast); Fig. 29, plate 4. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 87*b* (mould). B. D. Coll.

Genus GRAMMOSITUM, *gen. nov.*

Genotype, *Grammositum bilineatus,* sp. nov.

The outline of the elytron of the only species of this genus so far discovered suggests affinities with *Ademosyne,* although no form of the latter has been observed with so blunt an apex. The general appearance of the disc, however, in being covered

with elongated granules, oriented longitudinally, and in having only two rows of striæ, warrants its separation from that genus. The long basal margin of the elytron and its somewhat extended humerus are other noticeable characters. [Ety. *gramme,* a line; *sitos,* a grain.]

GRAMMOSITUM BILINEATUS, *gen. et sp. nov.*

Fig. 35, plate 4.

ELYTRON.—

SIZE.—*Length,* 2·5 mm.; *width,* 0·8 mm.

OUTLINE.—*Apex,* wide, round; *base,* long, straight; *sutural* and *lateral margins,* almost equally and gently arcuate from base to the round apex; *humeral margin*(?) round, confluent with base and lateral margin; *general outline,* elongate-ovate.

ORNAMENTATION.—*Borders,* lateral, apical and sutural very narrow, together forming one continuous curve around disc from humerus to scutellum; *disc,* ornamented on the sutural half with two slightly curvate, obscurely punctate lines approximately parallel with one another and with the sutural margin, these lines evanescing towards both base and apex; *surface,* covered with elongate-ovate granules, with traces of a few irregular longitudinal striæ.

CONVEXITY.—Low.

ILLUSTRATIONS.—Fig. 35 (Spec. 136*a* × 30) shows the arrangement of the two ill-defined lines on the elongated oval disc, and Fig. 35*a* (part of Spec. 136*a* × 50) illustrates the details of the punctæ on the lines in association with the elongate-granular sculpture.

OBSERVATIONS.—No connection can be established between this form with the *two lines* and any others amongst all those discovered at Ipswich, and only one specimen so far has been found.

TYPE.—Spec. 136*a* (mould); Fig. 35, plate 4. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 136*b* (cast). B. D. Coll.

Genus SHEPHERDIA, *gen. nov.*

Genotype, *Shepherdia quadrivittata,* sp. nov.

The one species of this genus has a slight resemblance to some of the *Ademosyne* in form, but none of the latter have the

banded or vittate sculpture of the elytron. The fine cross-lining or strigose structure is also a unique feature amongst the Ipswich beetles. The genus is named after Mr. S. R. L. Shepherd who devoted considerable time and attention to the exploratory work at Ipswich, and who unearthed a number of the forms herein described.

SHEPHERDIA QUADRIVITTATA, *gen. et sp. nov.*

Fig. 32, plate 4.

ELYTRON.—

SIZE.—*Length,* 11 mm.; *width,* 3·4 mm.

OUTLINE.—*Apex,* acutely rounded; *base,* long, regularly curvate; *scutellary margin,* curvate, confluent with base; *sutural margin,* slightly arcuate, confluent with scutellary margin and with narrow *apical margin,* the latter confluent with lateral margin; *lateral margin,* moderately arcuate from apex to *humeral margin; general outline,* basal half cylindraceous, apical half elongate-coniform.

ORNAMENTATION.—*All borders,* equally narrow and, except humeral, all confluent with one another, an irregularity—possibly accidental—existing at the junction of the humeral with the lateral border; *vittæ,* 4, as narrow as the borders, explanate, evanescent towards base, the first one branching from posterior sutural border and extending obliquely towards middle of base, second one branching from apex and extending to humeral-basal border, third somewhat obscurely begins at apex and extends to humerus, fourth is parallel to lateral border, is somewhat obscure near apex, and extends to the junction of the lateral-humeral border. Another narrow vittate structure lies along the anterior sutural border, of which it might be portion; *disc,* surface laterally rugulose, and longitudinally strigose between vittæ, this finely wrinkled sculpture being evanescent near the apex and also over the basal portion.

CONVEXITY.—Low all over the surface of disc.

ILLUSTRATIONS.—Fig. 32 (Spec. 130*a* × 8) shows the general arrangement of the ornamentation, and Fig. 32*a* (part of Spec. 130*a* × 15) indicates the character of the finely wrinkled and streaked surface between three of the narrow strap-shaped bands.

OBSERVATIONS.—This *four-banded* species may be compared with forms belonging to *Tillyardiopsis* for general outline, but there the resemblance ceases. Otherwise, in its sculpture and size, together with its low convexity, there is no form of beetle found at Ipswich with which to compare it.

TYPE.—Spec. 130*a* (cast); Fig. 32, plate 4. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 130*b* (mould). B. D. Coll.

Genus POLYSITUM, *gen. nov.*

Genotype *Polysitum punctatus,* sp. nov.

This genus is instituted for the reception of two species having somewhat broadly ovate elytra. Undoubtedly, it is closely allied to *Ademosyne,* as shown by the preserved thoracic and abdominal structures, but the ornamentation of the elytra is quite different from the latter genus in being uniformly granulate instead of striate-costate. [Ety. *polys,* many; *sitos,* a grain.]

POLYSITUM PUNCTATUS, *gen. et sp. nov.*

Figs. 36, 37, plate 4.

THORAX.—

METASTERNUM.—Width, about double the average depth; *anterior margin,* slightly narrower than posterior margin with strongly sinuate depressions posterior to intermediate coxal cavities; *posterior margin,* curvate slightly from sides to centre, with coxal piece narrow and irregular; distinct central suture joining posterior and anterior margins; surface of disc finely and uniformly punctate.

METASTERNAL EPISTERNUM.—Sides nearly parallel, extending the full length of metasternum, and connected with coxal pieces posterior to metasternum; punctæ similar to those on metasternum. EPIMERON, indistinct, curved, narrow, and short. MESOSTERNAL EPISTERNUM on left side (of Fig. 37) rhomboidal, depressed but well-defined, on right side obliterated; punctæ as on metasternum. COXÆ.—Distance between intermediate coxal cavities apparently less than half the width of the metasternum, but definition not clear; posterior cavities apparently as far apart as intermediate cavities.

ABDOMEN.—

SEGMENTS.—Basal, second, and third segments equal to one another in length, the first two almost equal in width; pygidium

not well preserved but apparently the longest of the segments; the four segments together forming a dome without irregularities, the lateral diameter being about 1½ times that of the total length.

ELYTRON.—

SIZE.—*Length,* 6·9 mm.; *width,* 2·7 mm.

OUTLINE.—*Apex,* obtusely round; *base,* long, semicircular; *scutellary margin,* short, confluent with round base and with *sutural margin,* the latter straight as far as the middle, then slightly curvate to round apex; *lateral margin,* strongly arcuate from apex to *humeral margin,* with which it is confluent, the latter margin being confluent with the base; *general outline,* ovate, slightly more rotundate on lateral margin than on sutural.

ORNAMENTATION.—Surface of disc finely and uniformly punctate, without any other sculpture, and apparently with narrow lateral and sutural borders.

CONVEXITY.—Generally low, with a tendency to become moderately high in the humeral area.

ILLUSTRATIONS.—Fig. 37 (Spec. 153*b* × 12) shows the thoracic and abdominal features and the under surface of the lateral portions of the elytra. Fig. 36 (Spec. 153*a* × 12) illustrates the upper surface of the elytron corresponding with the right side of Fig. 37, of which Fig. 36*a* is an enlargement (× 40).

OBSERVATIONS.—This species with the *punctate* ornamentation has many thoracic and abdominal characters in common with *Ademosynoides magnifica* but in the shape and ornamentation of the elytra the two are quite dissimilar. The thoraces are almost identical and are considered to be very indicative of their Hydrophilidæ affinities. The coxal cavities are less pronounced (or perhaps not so well preserved) than in *A. magnifica,* and this remark would also apply to other thoracic structures. The abdomina are much alike, but the elytra do not project beyond the pygidium, which constitutes a very pronounced difference. The elytral characters, which are not those recognised as belonging to *Ademosyne* in being without borders, costæ, and striæ, resemble those of *Polysitum minutus,* from which they are distinguished in being punctate instead of granular and in having a less arcuate lateral margin, besides having minor differences in shape.

TYPE.—Spec. 153*b* (cast); Fig. 37, plate 4; TYPE-COUNTERPART.—153*a* (mould); Fig. 36, plate 4. (G.S.Q. Coll.)

POLYSITUM MINUTUS, *sp. nov.*

Fig. 25, plate 3

ELYTRON.—

SIZE.—*Length,* 2·2 mm.; *width,* 1·2 mm.

OUTLINE.—*Apex,* obtusely round; *base,* wide, slightly and irregularly curvate; *humeral margin,* obtusely angulated with base and *lateral margin,* the latter strongly arcuate to apex; *sutural margin,* gently arcuate from apex to scutellary margin, the latter round and confluent with sutural margin and base; *general outline,* ovate-cordate.

ORNAMENTATION.—*Borders* very indistinct, lateral, apical and sutural apparently narrow, basal and humeral wide; *vittæ,* few, indistinct, shallow, irregularly distributed over disc; *surface,* finely granulate.

CONVEXITY.—Moderately high all over disc.

ILLUSTRATIONS.—Fig. 25 (Spec. 336*a* × 30) shows the general outline of the elytron and its inornate surface, and Fig. 25*a* (part of Spec. 336*a* × 50) illustrates a portion of the finely granulate disc ornamented with two indistinct longitudinal strap-like impressions.

OBSERVATIONS.—This *very small* species is comparable with *P. punctatus* (which see for notes) and *Leioodes planum,* the latter somewhat resembling it in size and disc ornamentation, but differing from it in its borders and shape.

TYPE.—Spec. 336*a* (cast); Fig. 25, plate 3. TYPE-COUNTERPART.—Spec. 336*b* (mould). (G.S.Q. Coll.)

Fam. **TENEBRIONIDÆ** (?).

Genus ULOMITES, Tillyard.

Genotype, *Ulomites Willcoxi,* Tillyard.

Since the discovery of the genotype specimen only one other individual has been found, and that distorted, and no further details regarding generic characters have been brought to light.

The genus, according to Dr. Tillyard, "appears to be closely allied to the recent Australian genus *Uloma,* with which it agrees very closely in the sculpture and shape of the elytra." The distorted individual has been compressed laterally, but regularly, in which condition it bears so close a resemblance to

some forms of the Elateridæ that an opinion has been expressed that it should be placed in that family, but the type and the distorted specimen undoubtedly belong to the same species.

In comparison with other genera no difficulty is experienced in distinguishing it, with its large size, elongated shape, acuminated apex, and the very wide and pronounced costa adjacent to the lateral border.

ULOMITES WILLCOXI, *Tillyard.*

Fig. 33, plate 4.

Ulomites Willcoxi, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length,* 11 mm.; *width,* 3 mm.

OUTLINE.—*Apex,* acutely pointed; *base,* long, slightly curvate; *scutellary margin,* long, forms obtuse angle with base, confluent with *sutural margin,* the latter very gently arcuate to apical point; *lateral margin,* arcuate from base to middle, then gently curvate to *humeral margin,* with which it is confluent, the latter being sub-angulate at its junction with the base; *general outline,* basal two-thirds cylindraceous, apical one-third elongate-subconiform.

ORNAMENTATION.—*Scutellary border,* narrow-cuneate, the apex of which is confluent with the *sutural border,* the latter being narrow near scutellum, becoming gradually wider towards apex, where it is striolate; *lateral border,* very narrow but well defined on posterior margin and about the middle, evanescent both apically and basally; *costæ,* 8, faintly granulate, the first four of equal width near middle and slightly converging from base and becoming evanescent towards apex; 5th and 6th slightly wider and almost parallel near the middle of disc, coalescing and abruptly ending before reaching the apex, while at the other end before reaching the base it curves slightly towards humerus; 7th equal in width to and parallel with the 6th, and extending from basal humeral angle to the extreme posterior lateral margin and apex. All costæ except the 8th somewhat low, the 8th being wide, round, and prominent. *Striæ,* distinct, all punctate, one forming the inside edge of the sutural border, another traversing the large 8th costa from humeral margin to apical point, while the 4th, 5th, and 6th striæ form the boundary of the two short central costæ.

CONVEXITY.—Low, except on lateral side, where the 8th costa is prominently developed.

ILLUSTRATIONS.—Fig. 33 (Spec. 50*b* × 10) shows the cuneate scutellary piece, and the very wide punctate costæ on the lateral side. Fig. 33*a* (part of Spec 50*b* × 25) is a section showing the large costa, adjacent striæ, and the widely separated punctæ.

OBSERVATIONS.—This species has no parallel amongst those found at Ipswich, and is one of the exceedingly rare forms.

TYPE.—Spec. 50*b* (cast); Fig. 33, plate 4. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 50*a* (mould). B. D. Coll.

Fam. **ELATERIDÆ.**

Genus ELATERITES, Heer.

Dr. Tillyard's diagnosis of this genus is as follows:—"Elytron elongate, oval, tapering posteriorly, closely resembling that of the recent 'click' beetle, no definite sculpture visible except a slight roughness of the surface." This will require to be modified to some extent, as the two forms of elytra now included are either costate-strigose or granulate-fluctuose. *E. transversus* has well-marked narrow costæ, with transverse strigæ, and *E. subulatus* has the disc surface ornamented with transversely elongated granules arranged in fluctuose or wavy lines.

ELATERITES SUBULATUS, *sp. nov.*

Fig. 31, plate 4.

ELYTRON.—

SIZE.—*Length,* 4·3 mm.; *width,* 2 mm.

OUTLINE.—*Apex,* acute (?); *base,* round, very long; *sutural* and *lateral margins,* equally and moderately arcuate, respectively confluent with *scutellary* and *humeral margins,* both the latter being round and confluent with base; *general outline,* subulate.

ORNAMENTATION.—*Sutural* and *lateral borders,* moderately narrow, nearly equal in width, both confluent with *basal border,* which is somewhat irregular, and both parallel-sided; *disc,* surface sculpture minutely fluctuate-granulate without other ornamentation.

CONVEXITY.—High around basal portions, still more pronounced towards apex.

ILLUSTRATIONS.—Fig. 31 (Spec. 263*b* × 20) shows the apical half with the minute wavy structure, the basal half, however, being similarly ornamented. Fig. 31*a* (part of Spec. 263*b* × 50) illustrates the microscopic structure of the surface of the disc.

OBSERVATIONS.—This *awl-shaped* form of elytron has some resemblance to the elytra of *Etheridgea australis* in its outline, but no other species has the same disc granulation except perhaps *Grammositum bilineatus,* which, however, has the granules elongated longitudinally, while in this species they are mostly elongated laterally.

TYPE.—Spec. 263*b* (cast); Fig. 31, plate 4. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 263*a* (mould). B. D. Coll.

ELATERITES TRANSVERSUS, *sp. nov.*

Fig. 30, plate 4.

ELYTRON.—

SIZE.—*Length,* 6·5 mm.; *width,* 2·7 mm.

OUTLINE.—*Apex,* acutely rounded; *base,* very long, slightly curvate; *humeral margin,* round, confluent with base and *lateral margin,* the latter moderately arcuate to apex; *scutellary margin,* obtusely sub angulated with base and *lateral margin,* the latter moderately curvate to apex; *general outline,* subulate-ovate.

ORNAMENTATION.—*Basal border,* wide, irregular, confluent with the somewhat wide and round *humeral border,* the latter confluent with the moderately narrow *lateral border; sutural border,* moderately narrow, becoming evanescent towards the apex; *costæ,* 5, very narrow, carinate, irregularly spaced from one another, and all irregularly converging from base to apex. The two central and wide intercostal spaces are punctate-striate, the striæ converging towards apex, before reaching which they develop into subsidiary costæ, altogether making, in the apical quarter, about 9 low, converging, evanescent costæ; surface of intercostal spaces transversely rugulose, portions being covered with a *pile* having elongate-clathrate depressions.

CONVEXITY.—Basal half of disc is moderately high, apical half very high.

ILLUSTRATIONS.—Fig. 30 (Spec. 159*b* × 12) shows the abnormally high convexity of the central portion of the apical quarter, and also shows the general arrangement of the costal and transversely rugose sculpturing. Fig. 30*a* (part of Spec. 159*b* × 25) illustrates the character of the rugæ between the striæ, and of the pile covering this structure.

OBSERVATIONS.—This *transversely* wrinkled species has no resemblance to any other form so far as sculpture is concerned, but is comparable with *E. subulatus* in shape and borders.

TYPE.—Spec. 159A (cast); Fig. 30, plate 4. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 159*a* (mould). B. D. Coll.

Genus ELATERIUM, Westwood.

Handlirsch has a number of forms of elytra placed in this genus, but offers no diagnosis of their general characteristics. The forms now included, admittedly on doubtful grounds, are *E. bipunctatum* and *E. punctomarginum*, both having somewhat elongated discs with parallel costæ, the former also having double lines of punctate striæ, and the latter a very wide lateral border centrally ornamented with minute groups of punctæ. All the species are quite unlike any of the other forms found at Ipswich.

ELATERIUM PUNCTOMARGINUM, *sp. nov.*

Fig. 43, plate 5.

ELYTRON.—

SIZE.—*Length*, 7 mm.; *width*, 2·2 mm.

OUTLINE.—*Apex*, acutely pointed; *base*, unknown; *sutural* and *lateral margins*, straight near middle, arcuate towards apex; *general outline*, cylindraceous about middle of elytron, subconiform towards apex.

ORNAMENTATION.—*Sutural* (?) *border*, uniformly narrow to apical point; *lateral* (?) *border*, parallel-sided, three times the width of sutural border, extends without narrowing to the apex where it anastamoses with sutural border, deeply grooved along inside edge and pitted along centre, each of the pits consisting of a group of small punctæ; *disc*, covered with nine pitted equidistant striæ, parallel with one another about the middle, and converging evanescently to apex, the pits being composed of a number of punctæ and of smaller size than those along the centre of the lateral border.

CONVEXITY.—Moderately and uniformly high.

ILLUSTRATIONS.—Fig. 43 (Spec. 200*b* × 12) shows the cylindraceous middle portion of the elytron, the sub-coniform apex, and the pitted border. Fig. 43*a* (part of Spec. 200*b* × 25) is a section of the posterior area showing the large groups of punctæ on the border, the adjacent deep groove, and the smaller groups of punctæ on the surface of the disc.

OBSERVATIONS.—The species is quite distinct from any other in disc and border sculpture, but its general structure suggests its belonging to the Elateridæ. It is different from *E. bipunctatum* in its wide *punctate border* and its disc ornamentation, besides being more decidedly cylindraceous.

TYPE.—Spec. 200*b* (cast); Fig. 43, plate 5. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 200*a* (mould). B. D. Coll.

ELATERIUM BIPUNCTATUM, *sp. nov.*

Fig. 46, plate 5.

ELYTRON.—

SIZE.—*Length,* 4·4 mm.; *width,* 1·4 mm.

OUTLINE.—*Apex,* acutely pointed; *base,* unknown; *sutural* and *lateral margins,* arcuate, the latter the more pronounced of the two; *general outline,* naviculate.

ORNAMENTATION.—*Sutural border,* narrow from the scutellum (?) to apex; *lateral border,* wider than sutural, rather wide near humerus (?), narrower towards middle and apex; *costæ,* 8, narrow, carinate, nearly parallel, nearly equidistant, slightly converging both towards base and apex from middle, in the latter case some of the costæ joining posterior sutural and lateral margins and not quite reaching the apex; intervals, wide, with two lines of punctæ, some of the lines in places being indistinct and evanescent.

CONVEXITY.—Central portion high, somewhat declivous at the sides and apex.

ILLUSTRATIONS.—Fig. 46 (Spec. 292*a* × 20) shows the general arrangement of the costæ and punctate intervals, and the slight variations in the width of the borders. Fig. 46*a* (part of Spec. 292*a* × 40) illustrates the narrow costæ and the somewhat irregular double line of punctæ.

OBSERVATIONS.—The shape and punctures resemble other forms in this family, but otherwise the species is quite unlike any other so far unearthed in the Denmark Hill Quarry. Reference is made to its slight resemblance to *E. punctomarginum* under the heading of that species.

TYPE.—Spec. 292*a* (cast); Fig. 46, plate 5. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 292*b* (mould). B. D. Coll.

Fam. **DERMESTIDÆ** (?).

Genus REEVEANA *gen. nov.*

Genotype *Reeveana minor,* sp. nov.

Three species are included in this new genus, all characterised by simplicity of ornamentation. They all have rather wide lateral borders, and all are more or less tapered apically from near the base, the shape of the elytra being either cuneate or subulate. *R. major* is concentrically marked, *R. intermedia* is marked only parallel to the sides, while *R. minor* is inornate. In shape and border design this genus is comparable with *Simmondsia,* but its disc ornamentation is a distinguishing feature. The genus is named in honour of Mr. W. H. Reeve of the Geological Survey, who has been associated with the author in the making of the numerous drawings of the fossil elytra.

REEVEANA MAJOR, *gen. et sp. nov.*

Fig. 38, plate 5.

ELYTRON.—

SIZE.—*Length,* 5·4 mm.; *width,* 1·9 mm.

OUTLINE.—*Apex,* unknown; *base,* wide, round; *humeral* (?) and *scutellary margins,* round, confluent with base; *sutural* and *lateral margins,* uniformly and gently curvate from base to posterior margin; *general outline,* subulate-ovate.

ORNAMENTATION.—*Basal, scutellary,* and *sutural* (?) *borders* confluent,and equally narrow; *humeral* and *lateral* (?) *borders,* confluent and equally wide, with a deep groove on the inside edge; *disc,* ornamented with two faint, complete and concentric vittæ, which begin near base, curve around apical quarter and return to base, a third short vittæ beginning near scutellum and coalescing with sutural border about middle; surface of disc otherwise smooth.

CONVEXITY.—Borders explanate, well-defined; disc, somewhat low, evenly rounded.

ILLUSTRATIONS.—Fig. 38 (Spec. 251*a* × 15) shows the arrangement of the concentric straps on the disc and the character of the borders. Fig. 38*a* (part of Spec. 251*a* × 40) is a section across the narrow border showing its well-defined inside edge and the adjacent portion of the disc.

OBSERVATIONS.—This *large* species has been placed in the Dermestidæ at the suggestion of Mr. H. J. Carter, the Coleopterist of Sydney, who considers it has affinities to this family. It somewhat resembles *R. intermedia* in outline and border structure, but varies from that form in ornamentation and size.

TYPE.—Spec. 251*a* (cast); Fig. 38, plate 5. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 251*b* (mould). B.D. Coll.

REEVEANA INTERMEDIA, *sp. nov.*

Fig. 45, plate 5.

ELYTRON.—

SIZE.—*Length,* 3·6 m.m.; *width,* 1·4 mm.

OUTLINE.—*Apex,* unknown; *base,* wide, slightly curvate; *humeral and scutellary margins,* equally round, each merging into base and contiguous margin; *sutural margin,* nearly straight; *lateral margin,* moderately arcuate; *general outline,* cuneate-ovate.

ORNAMENTATION.—*Basal, humeral* and *lateral borders,* equally narrow and well-defined; *scutellary border,* wide and striolate; *sutural border,* slightly wider than lateral; *all borders,* well-defined; *striæ,* 4, the one near to and parallel with the sutural border being faint; three others, also faint, are parallel with lateral border; and a median one, very faint, exists on the basal half; *surface,* smooth.

CONVEXITY.—Low.

ILLUSTRATIONS.—Fig. 45 (Spec. 201*b* × 15) shows the subcuneate form of the elytron, the well-defined borders, and the evanescent striæ. Fig. 45*a* (part of Spec. 201*b* × 40) is an enlargement showing the narrow lateral border and two of the indistinct striæ.

OBSERVATIONS.—The only form resembling *R. intermedia* is *R. major,* concerning which some notes are given under the heading of that species. Both elytra have obscure ornamentation, which might be natural or the result of *post mortem* disfigurement.

TYPE.—Spec. 201*b* (cast); Fig. 45, plate 5. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 201*a* (mould). B. D. Coll.

REEVEANA MINOR, *sp. nov.*

Fig. 42, plate 5.

ELYTRON.—

SIZE.—*Length,* 3 mm.; *width,* 1 mm.

OUTLINE.—*Apex,* acutely pointed; *base,* wide, curvate; *humeral margin,* round, confluent with base and *lateral margin,* the latter gently arcuate to apex; *scutellary margin,* very long, sub-angulated with base and confluent with *sutural margin,* the latter moderately arcuate to base; *general outline,* subulate-ovate.

ORNAMENTATION.—*Basal, humeral* and *lateral borders,* all equally wide and confluent, the last mentioned being narrower near apex; *scutellary border,* narrow except where joining wide basal border, confluent with narrow *sutural border,* the latter uniform to apex; *disc,* inornate, lævigate, except at apex where traces of rugæ are observed.

CONVEXITY.—Borders explanate, disc uniformly and gently rotundate.

ILLUSTRATIONS.—Fig. 42 (Spec. 297*a* × 30) shows the uniformity in the awl-shaped outline and the absence of ornamentation on the disc. Fig. 42*a* (part of Spec. 297*b* × 50) illustrates the apical point where the wide lateral border merges into the narrow sutural one.

OBSERVATIONS.—This *small* species somewhat resembles *R. major* in shape and borders, but differs from it in ornamentation, size, and convexity. The species may also be compared with *Tillyardiopsis granulata,* but the differences are conspicuous in regard to size, shape, and borders.

TYPE.—Spec. 297*a* (cast); Fig. 42, plate 5. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 297*b* (mould). B. D. Coll.

Genus TRYONIOPSIS, *gen. nov.*

Genotype *Tryoniopsis punctata,* sp. nov.

The explanate and attenuated form of this genus is its principal feature. The borders are narrow but well-defined, the costæ are low and the striæ shallow, the basal portions being wide and the apical portion tapered. The genus is distinguished from both *Ademosyne* and *Ademosynoides* in the elytron being attenuated, in having a low convexity, and in the borders being very narrow and sharply defined. *Ademosyne punctata* closely approaches *Tryoniopsis* in outline, and there is just the possibility that it should be included in this genus. The genus is named in honour of Mr. H. Tryon, entomologist, who kindly assisted the author in many ways in the preparation of this paper.

TRYONIOPSIS PUNCTATA, *sp. nov.*

Fig. 65, plate 7.

ELYTRON.—

SIZE.—Length, 6 mm.; width, 2·1 mm.

OUTLINE.—*Apex,* acutely rounded; *base,* short (?), round (?); *sutural margin,* gently arcuate; *lateral margin,* moderately arcuate; *humeral margin,* apparently straight and sub-angulated with base and lateral margin; *general outline,* gently tapered from middle to base, rapidly tapered from middle to apex.

ORNAMENTATION.—*Sutural* and *marginal borders,* very narrow but sharply defined; *costæ,* 10, sub-explanate, laterally rugulose, across the middle of disc unequal to one another in width, one short costa adjacent to scutellary margin, one evanescent and indistinct costa adjacent to lateral border, all others converging towards apex, some of which join lateral border near apex, all either straight or slightly curvate; *striæ,* shallow, finely punctate.

CONVEXITY.—Low, slightly elevated near humeral margin.

ILLUSTRATIONS.—Fig. 65 (Spec. 250*a* × 12) shows the tapering feature of the elytron, the faint converging costæ, and the sharply defined borders. Fig. 65*a* (Spec. 250*a* × 25) illustrates the faintly punctate striæ and the finely wrinkled costæ.

OBSERVATIONS.—The species is comparable with *U. Willcoxi* in the shape of the apical half and somewhat in the shape of the humeral area, from which it varies, however, in costal characters and in its small size. It resembles *Tryoniopsis granulata* in its attenuated outline and converging costæ, but the basal portion is quite different in shape and the striæ are punctate.

TYPE.—Spec. 250*a* (cast); Fig. 65, plate 7. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 250*b* (mould). B. D. Coll.

TRYONIOPSIS GRANULATA, *sp. nov.*

Fig. 59, plate 7.

ELYTRON.—

SIZE.—*Length,* 5·7 mm.; *width,* 1·8 mm., but the dimensions are variable.

OUTLINE.—*Apex,* acutely rounded; *base,* short, slightly curvate; *sutural (?) margin* slightly curvate from apex to scutellary margin; *scutellary (?) margin,* long, confluent with both base and sutural margin, *lateral margin,* gently curvate from humeral margin to apex, with a slightly more pronounced curve close to apex; *humeral (?) margin,* very long, pronounced, confluent with base, very obtusely angulate with lateral margin, *general outline,* the margins gently taper to apex from one quarter the length from base, and from the same position a rapid taper to base.

ORNAMENTATION.— *Sutural border,* narrow, distinct; *lateral border,* slightly wider than sutural, has median stria on posterior portion: *humeral border,* narrow, confluent with base, obtusely angulate with lateral border; *costæ,* 10, smooth, explanate, somewhat unequal in width across disc at one-third the length from base, from which position all costæ regularly converge both to apex and base; *striæ,* impunctate, very faint near apex, very deep on basal quarter.

CONVEXITY.—Low, almost explanate.

ILLUSTRATIONS.—Fig. 59 (Spec. 161*a* × 15) shows the deep striæ on the basal quarter and the faint striæ near the apex. Fig. 59*a* (part of Spec. 161*a* × 25) is a section near the apex illustrating the impunctate striæ and the dividing striæ on the border.

OBSERVATIONS.—The outline of this species, taken in conjunction with its gently converging and explanate costæ, separates it from all forms of *Ademosyne,* of which, perhaps, *Ademosyne punctata* comes nearest to it in shape and convexity. It closely resembles *T. punctata* in size, shape, and borders, but that species is found to be, after examining a number of specimens, persistently punctate.

TYPE.—Spec. 161*a* (cast); Fig. 59, plate 7. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 161*b* (mould). B. D. Coll.

Fam. **BUPRESTIDÆ** (?).

Genus LOBITES, *gen. nov.*

Genotype, *Lobites tuberculatus,* sp. nov.

This genus has been established for the reception of three pod-shaped elytra very probably belonging to the *Buprestidæ.* All the elytra have a bisinuate lateral margin and a very arcuate sutural margin. *L. tuberculatus* is the smallest species, and has well-marked lines of tubercles. *L. granulatus* is inornate, except for fine granulations, and *L. trivittatus,* the largest species, is ornamented with three simple narrow longitudinal bands. *Mesostigmodera* is the only other genus with which to compare *Lobites,* but size and ornamentation are distinguishing characters. [Ety.: *lobos,* a pod.]

LOBITES TRIVITTATUS, *gen. et sp. nov.*

Fig. 44, plate 5.

ELYTRON.—

SIZE.—*Length,* 12·5 mm.; *width,* 3·4 mm.

OUTLINE.—*Apex,* acutely pointed; *base,* curvate, somewhat short; *sutural margin,* moderately arcuate from obtuse basal-scutellary angle to apex; *humeral margin,* round (?) and confluent with base and *lateral margin,* the latter nearly straight for two-thirds the length of elytron from the base, then moderately arcuate to apex; *general outline,* sub-cylindraceous for two-thirds the length from base, then sub-coniform to apex.

ORNAMENTATION.—*Sutural border,* wide from base to apex with minute serræ between middle and apical end; *lateral border,* very narrow from base to apex; *disc,* ornamented with three narrow micro-granulate and somewhat irregular vittæ that

divide the disc into four longitudinal and sub-equal sections. The two outside vittæ become evanescent towards the base, converge and anastamose on the apical quarter and join sutural border near apical point, the central vittæ starting from base and vanishing on apical quarter; *surface* finely granulate. *Note.*—In the illustration of this species the type specimen is shown disfigured by cracks.

CONVEXITY.—Moderately low.

ILLUSTRATIONS.—Fig. 44 (Spec. 164*a* × 8) shows the three irregular strap-shaped lines on the disc, together with other details of structure. Fig. 44*a* (part of Spec. 164*a* × 25) is a section across two of the vittæ.

OBSERVATIONS.—In shape and size this *three-banded* species resembles *Mesostigmodera typica*, but the borders, convexity, and ornamentation are quite different. In shape, but not in size or sculpture, it somewhat resembles *L. tuberculatus*, and in common with that species has an incision on the disc.

TYPE.—Spec. 164*a* (cast); Fig. 44, plate 5. (G.S.Q. Coll.)
TYPE-COUNTERPART.—164*b* (mould). B.D. Coll.

LOBITES TUBERCULATUS, *sp. nov.*

Fig. 41, plate 5.

ELYTRON.—

SIZE.—*Length*, 5·8 mm.; *width*, 1·8 mm.

OUTLINE.—*Apex*, obtusely pointed; *base*, somewhat short, curvate; *sutural* and *scutellary margins*, together moderately arcuate, the latter confluent with the base; *humeral margin*, subangulated with base and *lateral margin*, the latter bisinuate to the middle with the apical one-third strongly arcuate; *general outline*, fabiform.

ORNAMENTATION.—*Scutellary border*, moderately wide and pronounced; *sutural border*, confluent with scutellary border and becoming narrow towards apex; *lateral border*, very narrow on basal half, widening on posterior margin and then narrowing to apex; *disc*, ornamented with four irregular and inequidistant lines of tubercles, which begin at base, become evanescent towards apex, and divide the disc into five longitudinal sections, intertubercular spaces being occupied by a varying number of lines of fine granulations. An incision is present on a line of tubercles at about the centre of the disc and is about half the width of the disc in length.

CONVEXITY.—Somewhat high, with a protuberant ridge on humeral area which becomes evanescent on basal quarter.

ILLUSTRATIONS.—Fig. 41 (Spec. 342*a* × 15) shows the bean-shaped outline, the humeral protuberance, and the general design of the sculpture. Fig. 41*a* (part of Spec. 342*a* × 25) illustrates the closely compact tubercules on two of the lines, and also the granulated lines on the interstices.

OBSERVATIONS.—The fabiform outline of the elytron, taken in conjunction with the *tuberculated* and granulated surface lines, are means of distinguishing the species from other forms. It has a somewhat similar shape to *L. trivittatus* and *L. granulatus*, but differs from both in its characteristic ornamentation. It may also be compared with *Mesothoris clathrata* and *M. tenuiclathrata* in general appearance, but its microscopic structure is a distinguishing feature.

TYPE.—Spec. 342*a* (cast); Fig. 41, plate 5. TYPE-COUNTERPART.—Spec. 342*b* (fragment of mould). (G.S.Q. Coll.)

LOBITES GRANULATUS *sp. nov.*

Fig. 40, plate 5.

ELYTRON.—

SIZE.—*Length*, 8·3 mm.; *width*, 3 mm.

OUTLINE.—*Apex*, unknown; *base*, somewhat short, slightly curvate; *sutural* and *scutellary margins*, together arcuate from base to posterior margin; *humeral margin*, sub-angulated with base and *lateral margin*, the latter bisinuate; *general outline*, fabiform.

ORNAMENTATION.—*Sutural* and *scutellary borders*, probably narrow; *lateral* and *humeral borders*, moderately wide, the former wide near middle and narrowing towards apex; *disc*, surface irregularly and coarsely granulate with two long, evanescent and irregular lines of punctæ (?) obliquely crossing middle, and a third one near anterior sutural border, all three sub-equidistant and sub-parallel; on the punctate line nearest the lateral border, and about the middle, an incision or a very short deeply-punctate stria is to be observed, and is associated with some adjacent irregularity which might be accidental.

CONVEXITY.—Moderately high.

ILLUSTRATIONS.—Fig. 40 (Spec. 183*b* × 10) is a general view showing the shape and surface markings of the elytron, while Fig. 40*a* (part of Spec. 183*b* × 25) is a section showing an enlargement of the surface sculpture.

OBSERVATIONS.—The only form resembling this *granulated* species is the somewhat similarly shaped *L. tuberculatus,* which has the incision on the disc common to this genus but the surface ornamentation quite different. It may be compared with *Polysitum punctatus* and *Tillyardiopsis granulata* in its ornamentation, but otherwise there is no resemblance to either of these species.

TYPE.—Spec. 183*b* (mould); Fig. 40, plate 5. (G.S.Q. Coll.).
TYPE-COUNTERPART.—Spec. 183*a* (cast). B. D. Coll.

Genus MESOSTIGMODERA, Handlirsch.

Genotype, *Mesostigmodera typica,* E. & O.

MESOSTIGMODERA TYPICA.

Fig. 39, plate 5.

Mesostigmodera typica, Tillyard. Mesozoic and Tertiary Insects of Queensland, &c. Queensland Geol, Surv. Pub. No. 253. Brisbane, 1916.

Mesostigmodera typica, Handlirsch. Die Fossilen Insekten. Leipzic, 1908.

Mesostigmodera typica, Etheridge and Olliff. Mem. Geol. Surv. N.S.W. Palæontology, No. 7. Sydney, 1890.

ELYTRON.—

SIZE.—*Length,* 15 mm.; *width,* 4·8 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* wide, curvate; *humeral* and *scutellary margins,* subangulate; *sutural margin,* gently arcuate; *lateral margin,* nearly straight for two-thirds the length from base, then strongly arcuate to apex; *general outline,* sub-cylindraceous for two-thirds the length from base, then sub-coniform to apex.

ORNAMENTATION.—*Sutural border,* wide, striate near apex; *lateral border,* narrower than sutural (in some specimens very clearly defined), has a deep groove on inside margin and is ornamented with very fine closely-set tubercles; *disc,* covered with about seventeen rows of pits, the diameter of the pits being 0·2 mm. and separated from one another by a distance somewhat greater than their diameter, pits in adjacent rows sometimes opposite, more frequently alternating. Pits on the *cast* (inside

surface) are sharply defined and annular, with a central core more or less irregular; on the *mould* (top surface) a large number of pits are present and, sometimes, faint impressions of the pits are exposed on the opposite side.

CONVEXITY.—Moderately high.

ILLUSTRATIONS.—Fig. 39 (Specimen 61*a* × 8) shows the cylindraceous form of the elytron, also the parallel and sinuous rows of pits on the under surface (the cast); Fig. 39*a* (part of Specimen 61*a* × 12) is a section of the under surface showing the pits and cores, the latter being made up of fasciculate punctæ; Fig. 39*b* (part of Spec. 61*b* × 15) illustrates the upper surface of the elytron and shows the punctæ uniformly distributed, and not fasciculate as on the lower surface. Evidently the punctæ exposed on the top surface converge in bunches through to the lower surface and there form the pits.

OBSERVATIONS.—The specimen herein figured and the geno type of Etheridge and Olliff* vary in their border details, but not sufficiently for varietal distinction. The lateral border of the present figured specimen is not clearly defined and may be hidden by the matrix, but in the genotype it is quite pronounced.

The drawings by Etheridge and Olliff in their Memoir, as stated by Tillyard, "have been reversed in reproduction, and Fig. 1 (the mould) should have shown the external sculpture represented in Fig. 3, while Fig. 2 (the convex counterpart or cast) should have shown the internal impression."

Further examinations of the genotype indicate that even Fig. 3 is not quite correct, as the large circular impressions thereon shown might be particles of matrix dragged away from bunches of punctæ on the under surface and therefore would not be a true representation of the top surface sculpture. Certainly, on the top surface in the present figured specimen no impressions of pits are to be observed.

Compared with *Lobites* this genus has some resemblance in shape, but variations exist in ornamentation and in border details, and there is an absence of the incision on the disc.

TYPE.—Specs. S5*a*, S5*b* (Simmonds Collection). PARATYPES. —Specs. 61*a*, 61*b* (cast and mould). Fig. 39, plate 5. G.S.Q. Coll.

* Mesozoic and Tertiary Insects of N.S.W. (and Q'land). Mem. Geol. Surv. N.S.W., Palæontology No. 7. Sydney, 1890. Plate 2, Figs. 1-3.

Fam. **CERAMBYCIDÆ.**

Genus MESOTHORIS (Tillyard).

Genotype, *Mesothoris clathrata* (Tillyard).

Since the original specimen, the genotype, was discovered several years ago, a number of individuals have been unearthed, enabling a somewhat better conception being formed of the character of this much discussed genus. In the original description Tillyard states that "it resembles the recent Australian genus *Thoris* in the shape and sculpture of the elytra, which are marked all over with definite *alveolæ* separated by longitudinal and transverse ridges," and lately it has been suggested that *Mesothoris clathrata* should now be included in the recent genus *Omma,* one of the Cupedidæ, in view of the close resemblance of the two elytra to one another. An examination of a specimen of *Omma Stanleyi* in the possession of Mr. Froggatt, Entomologist, Department of Agriculture, Sydney, indicates that a decided likeness exists in regard to the form of the elytron, and also in the appearance of the individual alveolæ ornamenting it, but there the resemblance ceases.

The elytron of *O. Stanleyi* is made up of five well-marked longitudinal divisions, each separated from the other by a narrow but distinct ridge, each division being subdivided by a somewhat depressed zig-zag line, making in all ten subdivisions, with a row of alveolæ filling each subdivision. In *Mesothoris clathrata* the ridges are not present, and the number of alveolæ in one row is only about half that in a row on the disc of *O. Stanleyi,* although the number of rows is about the same. The main difference, however, is in the design of the ten longitudinal subdivisions in *O. Stanleyi,* of which the two adjacent to the lateral margin form a concentric band or border around the posterior margin to the apex, into which all the other eight subdivisions, which are all parallel to one another and to the straight sutural margin, join without any convergence. In *M. clathrata* no such wide border or marginal band is present.

Another recently discovered species, *M. grandis,* somewhat like *M. clathrata,* has the thorax and abdomen attached. These portions of the body do not resemble similar parts in *O. Stanleyi,* neither do they resemble those of the recent *Thoris,* so that the fossil form appears to have no affinity for either genus. Nevertheless, it is not desirable to alter the generic name for the present as more material has to be split and examined, and fresh discoveries are anticipated.

The genus now includes four species, all having somewhat elongated pod-shaped elytra, with sutural borders very narrow, a humeral area angulated and prominent, and a more or less alveolate disc. *M. grandis* has large elongated alveolæ, *M. clathrata* and *M. quadripartita* has smaller and somewhat oval or round alveolæ, while *M. tenui-clathrata* has very small, irregular and indistinct alveolæ.

In comparison with other genera, the alveolate structure is similar to that on the elytra of *Simmondsia,* but the differences between the two genera are in form, size, alveolæ and scutellary border details. In its elongated shape it somewhat resembles *Lobites,* but that genus has no alveolate elytra, and the ornamentation otherwise is dissimilar.

MESOTHORIS CLATHRATA (Tillyard).

Fig. 51, plate 6.

Mesothoris clathrata, Tillyard. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

ELYTRON.—

SIZE.—*Length,* 8 (restored ? 10) mm.; *width,* 2·5 mm.

OUTLINE.—*Apex,* obtusely blunt; *base,* evidently short; *sutural margin,* gently arcuate; *lateral margin,* moderately arcuate; *general outline,* elongate-ovate, from middle of disc gently tapered both towards base and the rounded apex.

ORNAMENTATION.—*Sutural and lateral borders,* moderately narrow; *disc,* has nine wide longitudinal ridges, with equally wide intersecting cross-ridges, the spaces between the crossed ridges forming oval or square alveolæ depressions or pits, and having a diameter equal in width to that of the ridges, the latter containing from three to five punctæ, which in the type specimens, however, are mostly obscured.

ILLUSTRATIONS.—Fig. 51, plate 6 (Spec. 48*b* × 10) shows the general arrangement of the alveolæ, and Fig. 51*a* (part of Spec. 48*b* × 30) illustrates the alveolæ and ridges, and the obscured punctæ.

OBSERVATIONS.—*M. clathrata* is between *M. quadripartita* and *M. grandis* in the size of the elytron and also in the size of the individual alveolæ. It differs from *M. tenuiclathrata* in having much larger lattice-like structure and the longitudinal and cross ridges much less numerous.

TYPE.—Spec. 48*b* (cast); Fig. 51, plate 6. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 48*a* (mould). B. D. Coll. Ex
PARATYPE.—Spec. 51*a-b* (now *M. quadripartita* paratype).

MESOTHORIS QUADRIPARTITA, *sp. nov.*

Fig. 50, plate 6.

ELYTRON.—

SIZE.—*Length,* 8 mm.; *width,* 2·3 mm.

OUTLINE.—*Apex,* acutely rounded; *base,* wide, curvate; *scutellary margin,* sub-angulated with base and *sutural margin,* the latter strongly arcuate to apex; *humeral margin,* round, confluent with base and *lateral margin,* the latter slightly incurvate to apex; *general outline,* sub-lobiform.

ORNAMENTATION.—*Sutural border,* very narrow, well-defined; *lateral border,* narrow near base, rapidly widening near humeral-lateral margin, gradually narrowing towards apex; *disc,* covered with a lattice-like structure made up of about fifteen rows of round, oval, and oblong pits or depressions, the sides of the pits being formed by the more or less defined longitudinal ridges and cross ridges, the disc being divided into four somewhat unequal sections separated from one another by lines of slight elevation. The first line is parallel to the arcuated sutural border, and extends from about the middle of base to the apex; the second line begins at humerus, is strongly curvate to the middle of disc, and then converges towards apex; the third line is close to the second at humerus, diverges to the middle of the disc, then converges towards apex; all lines being evanescent on apical quarter.

CONVEXITY.—Moderately high generally, but declivous on lateral margin close to humeral area.

ILLUSTRATIONS.—Fig. 50 (Spec. 349*a* × 12) shows the four longitudinal sections into which the elytron is divided, and the elevated lines which separate them. Fig. 50*a* (part of Spec. 349*b* × 40) illustrates the clathrate or lattice-like structure of the surface, and also a small circular elevation or core in the centre of many of the depressions.

OBSERVATIONS.—*M. quadripartita* has many characters in common with *M. clathrata,* but the smaller size and greater number of the alveolæ and the division of the disc into four sections longitudinally are distinguishing characters.

TYPE.—Spec. 349*a* (cast); Fig. 50, plate 6. PARATYPE.—Spec. 51*a-b*. (G.S.Q. Coll.) TYPE-COUNTERPART.—Spec. 349*b* (mould). B. D. Coll.

MESOTHORIS TENUICLATHRATA, *sp nov.*

Fig. 49, plate 6.

ELYTRON.—

SIZE.—*Length,* 6·8 mm.; *width,* 2·3 mm.

OUTLINE.—*Apex,* acute, probably round; *base,* round, moderately long; *sutural* and *scutellary margins,* together strongly arcuate from base to apex; *lateral margin,* moderately arcuate from apex to *humeral margin,* the latter slightly porrect and confluent with the base; *general outline,* elongate-ovate.

ORNAMENTATION.—*Sutural border,* hardly perceptible, but very narrow; *lateral border,* wide near middle, narrowing towards apex, evanescent on humerus, distinctly grooved on inside margin; *disc,* covered with about 15 ill-defined longitudinal rows of obscure depressions or pits, the elevations between adjacent pits producing a sub-clathrate appearance.

CONVEXITY.—Uniformly and moderately high, except at humeral angle, where a protuberance on the disc produces a declivity near the adjacent border.

ILLUSTRATIONS.—Fig. 49 (Spec. 313*a* × 12) shows the general appearance of the elytron, and also the arcuate or bow-shaped lateral border. Fig. 49*a* (part of Spec. 313*a* × 40) illustrates the small clathræ formed by the longitudinal bars and the subordinate cross-pieces.

OBSERVATIONS.—This species with the *small lattice-like* structure resembles *M. clathrata* in many ways, but the sculpture is less pronounced, the size is smaller, the apex is differently shaped, and the clathrate depressions are very diminutive.

TYPE.—Spec. 313*a* (cast); Fig. 49, plate 6. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 313*b* (mould). B. D. Coll.

MESOTHORIS GRANDIS, *sp. nov.*

Fig. 48, plate 6.

THORAX.—

METATHORAX.—Impression imperfect, but sufficient to indicate the depth to be somewhat less than the width, the posterior margin to be arcuate, and the ornamentation finely granulate.

ABDOMEN.—

SEGMENTS.—Made up of five pieces: 1st, somewhat arcuate, slightly longer on sides and centre, width being about six times the length; 2nd, somewhat shorter and straighter than 1st, longer on sides than centre; 3rd, straight, same length as 2nd, sides

and centre of equal length; 4th, somewhat similar to 3rd; pygidium equal in length to the combined length of 2nd, 3rd, and 4th segments; apex elliptical; the whole forming a dome whose length is about one and a-half times the diameter and which has a slight lateral constriction on the suture between 1st and 2nd segments; all segments coarsely granulate, some faintly ridged parallel to sutures; pygidium moderately and uniformly convex.

ELYTRON.—

SIZE.—*Length,* 13 (?) *mm.; width,* 3·1 mm.

OUTLINE.—*Apex,* unknown; *base,* unknown; *sutural margin,* incomplete; *lateral margin,* apical and basal portions missing, from middle to posterior margin strongly arcuate, from middle to anterior margin strongly incurvate; *general outline,* apparently lobiform.

ORNAMENTATION.—*Sutural-scutellary border* (incomplete), confluent, somewhat narrow, well-defined; *lateral border,* same width as sutural, well-defined; *disc,* covered with about ten narrow longitudinal costæ, with subordinate cross-bars somewhat wider than costæ, the shape of the alveolæ between the ridges varying between oval and oblong. On the scutellary area one of the costæ is short, and on the lateral side a few become evanescent, but ornamentation is generally distinct, the alveolate structure being deep, well-marked and regular.

CONVEXITY.—Somewhat high generally, declivous near lateral-humeral border.

ILLUSTRATIONS.—Fig. 48 (Spec. 54*a* × 8) shows the ornamentation of elytron and body, and also some elytral impressions on the metanotum. Fig. 48*a* (part of Spec. 54*a* × 20) is a section of the surface of one of the segments, and Fig. 48*b* (part of Spec. 54*a* × 25) shows the alveolate character of the disc.

OBSERVATIONS.—In comparison with *M. clathrata,* this species is a much longer and larger form, although somewhat similar in shape. It has also elongated and larger alveolæ, while the longitudinal costæ on the disc is relatively narrow.

TYPE.—Spec. 54*a* (cast); Fig. 48, plate 6. (G.S.Q. Coll.). TYPE-COUNTERPART (Frag.).—Spec. 54*b* (mould), B. D. Coll.

Genus WILLCOXIA, gen. nov.

Genotype *Willcoxia magnopunctata,* sp. nov.

Only one specimen of this genus, *W. magnopunctata,* has been found. The sculpture of the elytra is very distinct, the

design in no way resembling that of any other of the Ipswich beetles, the lateral border being quite pronounced and wide, and the disc surface ornamented with shallow circular pits varying much in size and arranged in both parallel and obliquely connecting rows.

The genus has some resemblance to *Tillyardiopsis* in the elytron being pitted, but the arrangement of the punctæ is different and the shape is not the same. The elytron is somewhat like that of *Mesothoris* in outline, particularly in the shape of the apical and posterior lateral margins, and also in the extreme narrowness of the sutural borders, but otherwise there is no likeness.

The genus is named in honour of Mr. W. T. Willcox, who assisted in opening up the quarry many years ago and who found many of the type specimens.

WILLCOXIA MAGNOPUNCTATA, *gen. et sp. nov.*

Fig. 47, plate 6.

ELYTRON.—

SIZE.—*Length,* 10 mm. (?); *width,* 3·4 mm.

OUTLINE.—*Apex,* acute; *base,* long, curvate; *scutellary margin,* round, confluent with base and *sutural margin,* the latter moderately arcuate with apex; *humeral margin,* sub-angulated with base and *lateral* (?) *margin,* the latter moderately arcuate to posterior margin, then slightly incurvate to apex; *general outline,* basal half sub-cylindraceous, apical half sub-coniform.

ORNAMENTATION.—*Sutural border,* hardly perceptible, evidently very narrow; *lateral border,* rather wide, sides parallel with slight convergence on the incurved margin near apex; *disc,* ornamented with three longitudinal and two oblique double rows of large distantly-spaced pits, one extending from scutellary-basal margin towards apex, and approximately parallel to sutural margin, a second one extending from the base along the centre of disc towards the apex, a third row, made up of indistinct pits on one side of a deep stria, extending from humeral area towards apex, all three lines converging apically from about the middle, and all more or less evanescent on apical quarter. Another short double row of pits branches from the central row in the basal quarter and joins the sutural row about the middle of disc, a second similarly oblique and short row branching from central row about the middle, and

connecting with the sutural line on posterior area; other large and small pits are indiscriminately scattered over the surface but all, whether in rows or not, become evanescent near lateral border and towards apex.

CONVEXITY.—Moderately high, somewhat uniform.

ILLUSTRATIONS.—Fig. 47 (Spec. 261*a* × 10) shows the details of the complex design of the disc ornamentation. Fig. 47*a* (part of Spec. 261*a* × 25) is a section of the disc showing the coalescence of the central oblique rows of pits with the longitudinal row near sutural border.

OBSERVATIONS.—No other species resembles this one in shape or in th *large-pitted* design of the ornamentation, although species of *Mesothoris* and *Mesostigmodera* may be compared to it in the character of the pits.

TYPE.—Specimen 261*a* (cast); Fig. 47, plate 6. (G.S.Q. Coll.) TYPE-COUNTERPART.—Spec. 261*b* (mould). B. D. Coll.

Fam. **CURCULIONIDÆ** (?).

Genus TILLYARDIOPSIS, gen. nov.

Genotype *Tillyardiopsis tuberculata,* sp. nov.

All the species of this genus are conspicuous in having somewhat naviculate elytra, comparatively narrow sutural borders, and very wide lateral and humeral borders. The surfaces of the elytra are observed to be either granulate or tuberculate, and all have either a short deep longitudinal incision or a short line of close deep punctæ on the middle of the lateral half of the disc.

The genus is comparable with *Etheridgea* in ornamentation, but all the species have much larger elytra than that genus and their border details are different. *Tillyardiopsis* in some respects is comparable with *Elaterites,* but the outline, and size and border details are distinguishing features. The genus is separable from *Ademosyne* and *Platycrossos* in the elytra not being costate or striate, and from *Reeveana* in the variation in size, border details, and ornamentation.

The genus is named in honour of Dr. Tillyard, whose enthusiasm has been a great stimulating influence in the palæontological investigations on the fossil insect occurrences at Denmark Hill.

TILLYARDIOPSIS TUBERCULATA, *gen. et sp. nov.*

Fig. 57, plate 7.

ELYTRON.—

SIZE.—*Length,* 7 mm.; *width,* 2·7 mm.

OUTLINE.—*Apex,* unknown; *base,* long, curvate; *scutellary margin,* round, confluent with base and sutural margin; *humeral margin,* round, confluent with base and lateral margin; *sutural margin,* moderately arcuate from scutellum; *lateral margin,* moderately curvate from humerus; *general outline,* naviculate.

ORNAMENTATION.—*Basal border,* somewhat narrow near scutellary border, into which it merges; much enlarged on humeral side, so much so that the inside edge extends from the scutellary-basal junction directly and obliquely to a position on the lateral border about one-fifth the length of the elytron from the base, and forming a large basal-humeral triangular area; *lateral border,* very wide, edges very slightly converging towards apex; *sutural border,* same width as scutellary border in its narrowest part, and somewhat narrower than lateral border, a thick line forming its outside edge from base to posterior margin, with a tuberculated line forming its inside edge; *disc,* ornamented with at least eleven equidistant rows of variously sized tubercles, each of which converge from the basal quarter to apex, and with each tubercle approximately equidistant from one another, that is about equal to the distance between each line. On the lateral portion of the disc, close to the middle, a short line of acuminated elevations are present, the counterparts of which on the "cast" specimen show as deep pits; surface sculpture becomes evanescent towards the base on the lateral side, and also on the apical quarter.

CONVEXITY.—Borders all explanate, disc uniformly and moderately high.

ILLUSTRATIONS.—Fig. 57 (Spec. 133*a* × 12) shows the character of the borders, the arrangement of the tubercles and the short line of pimples on the lateral half of the disc. Fig. 57*a* (part of Spec. 133*a* × 25) shows the somewhat irregular size of the tubercles and their arrangement.

TYPE.—Spec. 133*a* (mould); Fig. 57, plate 7. (G.S.Q. Coll.).
TYPE-COUNTERPART.—Spec. 133*b* (cast). B. D. Coll.

OBSERVATIONS.—The size and shape of the elytron are comparable with those of the other two species of this genus, but the ornamentation is quite different in being regularly tuberculate, its border details being quite distinct.

TILLYARDIOPSIS GRANULATA, *sp. nov.*

Fig. 56, plate 7.

ELYTRON.—

SIZE.—*Length,* 6·8 mm.; *width,* 2·6 mm.

OUTLINE.—*Apex,* obtusely pointed; *base,* long, nearly straight; *scutellary margin,* sub-angulated with base and *sutural margin,* the latter moderately arcuate to apex; *humeral margin,* sub-angulated with base and *lateral margin,* the latter nearly straight from base to middle, then strongly arcuate to apex; *general outline,* naviculate.

ORNAMENTATION.—*Basal border,* wide, merging into wide *scutellary border,* this becoming narrow and merging into narrow *sutural border,* the latter being very narrow at apex; *humeral border,* wider than basal, becoming slightly narrower as it merges into *lateral border,* the latter very gradually diminishing in width to the apex, where it joins the narrow sutural border; *all borders,* well-defined; *disc,* generally granulate, rugulose near apex; well-defined incision on the middle of lateral half; three broken closely-parallel lines obliquely crossing from humerus to about the centre of disc.

CONVEXITY.—All borders explanate, disc uniformly and moderately high.

ILLUSTRATIONS.—Fig. 56 (Spec. 289*a* × 12) shows the general shape, wide borders, and incision on the disc. The three broken lines on the disc might be impressions accidently produced by a plant fragment. Fig. 56*a* (part of Spec. 289*a* × 50) is a section across the apical portion where the surface is both granulate and rugulose.

OBSERVATIONS.—In outline this *granulated* species may be compared with some of the forms of *Ademosyne,* differing, however, in size, ornamentation and borders. *Reeveana minor* somewhat resembles it in shape and borders, but size, ornamentation and the presence of the incision of the disc are distinguishing features. *Lobites granulatus* has features in common with it, but varies in size and border arrangements. The species is separated from *T. tuberculata* and *T. variotubercula* by the marked differences in its disc sculpture.

TYPE.—Spec. 289*a* (cast); Fig. 56, plate 7. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 289*b* (mould). B. D. Coll.

TILLYARDIOPSIS VARIOTUBERCULA, *sp. nov.*

Fig. 58, plate 7.

ELYTRON.—

SIZE.—*Length,* 6·5 mm.; *width,* 2·5 mm.

OUTLINE.—*Apex,* unknown; *base,* long, irregularly curvate; *scutellary margin,* round, confluent with base and *sutural margin,* the latter moderately curvate towards apex; *humeral margin,* round, confluent with base and sub-angulated with *lateral margin,* the latter wide and parallel-sided on posterior margin, not distinguishable on other portions; *general outline,* naviculate.

ORNAMENTATION.—*Basal border,* wide, irregular, merging into indefinite *scutellary* and *humeral borders; sutural border,* very narrow on anterior margin, gradually widening towards posterior margin, where it is wide and striate, and equal in width to posterior *lateral border; disc,* covered by lines or rows of tubercles arranged somewhat irregularly between the base and the middle of disc, where the number of rows is about 16, but converging and anastamosing towards the apex, where the number is about 9, the tubercles varying much in size and distance from one another. A short deeply punctate stria is present near the middle of the lateral half of the disc.

CONVEXITY.—The sutural border near apex is rounded, while the preserved portion of the lateral border is explanate; surface of disc moderately and uniformly high and quite distinct from borders.

ILLUSTRATIONS.—Fig. 58 (Spec. 66*a* × 12) shows the general arrangement of the tubercles, and Fig. 58*a* (part of Spec. 66*a* × 25) is a portion of the disc surface illustrating the arrangement and variation in the size of the tubercles.

OBSERVATIONS.—The species has several features in common with *T. tuberculata,* particularly in shape and size, but the design of tubercle ornamentation is quite different, besides which there is a wide *variation in the size of the tubercles,* its specific character.

TYPE.—Spec. 66*a* (cast); Fig. 58, plate 7. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 66*b* (mould). B. D. Coll.

Genus ETHERIDGEA.

Genotype, *Etheridgea australis,* Handlirsch.

ETHERIDGEA AUSTRALIS, *Handlirsch.*

Fig. 60, plate 7.

Etheridgea australis, Tillyard. Mesozoic and Tertiary Insects of Queensland, &c. Queensland Geol. Surv. Pub. No. 253. Brisbane, 1916.

Etheridgea australis, Handlirsch. Die Fossilen Insekten. Leipzig, 1908.

Glochinorrhynchus (*?*), Etheridge and Olliff. Mem. Geol. Surv. N.S.W. Palæontology, No. 7. Sydney, 1890.

ELYTRON.—

SIZE.—*Length,* 3·6 mm.; *width,* 1·4 mm.

OUTLINE.—*Apex,* obtusely pointed (?); *base,* unknown; *sutural margin,* nearly straight; *lateral margin,* curvate; *general outline,* not defined on account of distortion, but probably cuneate or elongate-piriform.

ORNAMENTATION.—*Sutural border,* narrow, defined; *lateral border,* narrow and defined where exposed; *disc,* covered with tubercles varying in size, prominence, and in their distance from one another, and arranged in thirteen rows.

CONVEXITY.—Probably high.

ILLUSTRATIONS.—Fig. 60 (Spec. S4 × 20) shows the crumpled elytron, the longitudinal lines of which represent distortion marks. Fig. 60*a* (part of Spec. S4 × 40) is a section showing the irregularity in the size of the tubercles.

OBSERVATIONS.—The original drawing by Etheridge and Olliff is incorrectly shown to be the left elytron, the type specimen being the right elytron. No other specimen approaches this form in appearance, the nearest being *Tillyardiopsis tuberculata,* which, however, has a different design in the tubercular ornamentation, and is much larger.

TYPE.—Spec. S4 (cast); Simmond's collection. (Fig. 60, plate 7.)

Fam. **DASCILLIDÆ** (?).

Genus LEIOODES, *gen. nov.*

Genotype, *Leioodes planum,* sp. nov.

The two species in this genus are very small individuals, the elytron of one, *L. pygmæum,* being only 1·2 mm. in length and, therefore, the smallest fossil so far discovered in the Ipswich quarry. In both species the disc of the elytron is somewhat high, and with very little ornamentation—only faint lines being

observable—and in shape both are very regularly arcuate on the lateral margins. *L. planum* has the prothorax preserved and, like the elytra, is only faintly ornamented. The genus is comparable with *Apheloodes,* from which it varies in the shape of both elytra and prothorax, and in the character of the disc ornamentation.

That the fossils actually belong to the Coleoptera is open to doubt, and some forms in the Heteroptera, particularly the Pentatomidæ, much resemble the genus in its appearance. [Ety.: *leios,* smooth; *oodes,* oval.]

LEIOODES PYGMÆUM, *gen. et. sp. nov.*

Fig. 52, plate 6.

ELYTRON.—

SIZE.—Length, 1·2 mm.; *width,* 0·4 mm.

OUTLINE.—*Apex,* acutely pointed; *base,* equal in length to the full width of elytron; *scutellary margin,* round, very small; *humeral margin,* angulated, very small; *sutural margin,* straight from apex to base; *lateral margin,* uniformly and moderately arcuate from apex to base; *general outline,* subcuneate.

ORNAMENTATION.—Borders on margins very narrow or absent; disc irregularly and faintly ornamented with a few short striolæ, otherwise lævigate.

CONVEXITY.—High generally, near apex and posterior margin very high.

ILLUSTRATIONS.—Fig. 52 (Spec. 287*a* × 30) shows the inornate appearance of the elytra, and Fig. 52*a* (part of Spec. 287*a* × 50) is a section of the disc illustrating the faint evanescent striolæ.

OBSERVATIONS.—This *little* species is comparable with *L. planum,* under which some notes are given on differences and resemblances.

TYPE.—Spec. 287*a* (cast); Fig. 52, plate 6. (G.S.Q. Coll.)
TYPE-COUNTERPART.—Spec. 287*b* (mould). B. D. Coll.

LEIOODES PLANUM, *sp. nov.*

Fig. 53, plate 6.

PRONOTUM.—

OUTLINE.—*Anterior margin,* slightly curvate, half the length of posterior margin, the distance between the two margins being about equal to the length of the anterior margin; *posterior*

margin, slightly curvate opposite each elytron; *lateral margin,* curving and converging from posterior angle to anterior margin with which it is obtusely angulated; *general outline,* truncate-coniform.

ORNAMENTATION.—Two faint sutural lines cross centre and suggest the disc having equal basal, middle and anterior divisions; disc faintly granulate, and faint vittate impressions suggest its being in four oblique divisions somewhat parallel to lateral border and converging to central line.

ELYTRON.—

SIZE.—*Length,* 1·8 mm.; *width,* 0·6.

OUTLINE.—*Apex,* acutely round; *base,* wide, slightly curvate; *sutural margin,* straight; *lateral margin,* moderately arcuate; *humeral* and *scutellary angles,* each nearly rectangular; *general outline,* sub-cuneate.

ORNAMENTATION.—*Sutural border,* evidently very narrow; *lateral border,* narrow, somewhat irregular, extending to apex; *disc,* smooth, with impressions of three faint, granulate, equidistant vittæ, evidently concentric with lateral border and coinciding with similar vittæ on pronotum.

CONVEXITY.—Elytra generally low on sutural portions and moderately high on lateral and apical areas, the disc of the pronotum being explanate centrally and high laterally in conformity with the elytra, the pronotum and elytra together forming a moderately high, smooth, egg-shaped body.

ILLUSTRATIONS.—Fig. 53 (Spec. 348*a* × 30) shows the generally *plain* dorsal surface of the individual with its narrow lateral borders and its almost imperceptible vittate markings.

OBSERVATIONS.—This species resembles *L. pygmæum* in some of its elytral characters, but is larger, longer in proportion, and different in its sculptural details. Comparable with *Apheloodes rugosum* and *A. obliquum* in size and somewhat in shape, but quite distinct in all other respects.

TYPE.—Spec. 348*a* (cast); Fig. 53, plate 6. (G.S.Q. Coll.).
TYPE-COUNTERPART.—Spec. 348*b* (mould). B. D. Coll.

Genus APHELOODES, *gen. nov.*

Genotype *Apheloodes obliquum* sp. nov.

The species of this minute genus commonly occur at Ipswich, but the elytra are invariably found attached to the thorax.

Probably the connecting integument is less perishable than in most of the other beetles, but if detached elytra were also to be seen it would add to the assurance that these small forms, like *Leioodes,* do not belong to the Heteroptera. [Ety.: *apheles,* simple; *oodes,* oval.]

APHELOODES RUGOSUM, *gen. et sp. nov.*

Fig. 55, plate 6.

PRONOTUM.—

OUTLINE.—Somewhat obscure, but apparently lunate, the convex portion forming the anterior lateral margin, and the concave portion the posterior margin.

ORNAMENTATION.—Profusely rugose along very irregular short lines approximately parallel to the margins, with rugulose-granulate sculpturing between rugæ.

ELYTRON.—

SIZE.—*Length,* 1·8 mm.; *width,* 0·6 mm.

OUTLINE.—*Base,* somewhat obscure, apparently curvate; *sutural margin,* straight; *lateral margin,* moderately arcuate; *scutellary margin,* obscure; *humeral margin,* apparently round and confluent with both base and lateral margin; *general outline,* cordate-ovate (of the two elytra), the *apex* being broadly round.

ORNAMENTATION.—*All borders,* obscure; *disc,* in centre of areas smooth, but towards lateral, basal and apical portions, rugæ are present and somewhat parallel to margins, with rugulose structure between rugæ in the same areas. The suture between elytra very marked on basal third, faint or evanescent about middle, short and well-marked on apical quarter, and apparently absent on apical point.

CONVEXITY.—Moderately low.

ILLUSTRATION.—Fig. 55 (Spec. 236*a* × 30) shows the simple egg-shaped form of the body as a whole; also the rugæ and rugulæ on the surface of the elytra and pronotum.

OBSERVATIONS.—The form of this species, as in the case of *A. obliquum,* is somewhat obscure, and its state of preservation is far from being good. Although quite a number of specimens have been examined, all have the same *wrinkled* and the partly-destroyed surface ornamentation, which suggests the presence of an exceedingly delicate and fragile tegument. It differs from *A. obliquum* in not having oblique straight lines

on the elytra, and from *Leioodes planum* in outline and in the absence of a definite lateral border, also in many details of surface ornamentation.

TYPE.—Spec. 236*a* (cast); Fig. 55, plate 6. (G.S.Q. Coll.).
TYPE-COUNTERPART.—Spec. 236*b* (mould). B. D. Coll.

APHELOODES OBLIQUUM, *sp. nov.*

Fig. 54, plate 6.

PRONOTUM.—

OUTLINE.—Somewhat obscure, apparently truncate-coniform, with a lateral-posterior extension conforming with a round humeral margin.

ORNAMENTATION.—Striate irregularly, the lines curving and converging anteriorly from lateral margins to centre of disc, with interlineal rugulæ.

ELYTRON.—

SIZE.—*Length,* 2·0 mm.; *width,* 0·6 mm.

OUTLINE.—*Base,* short, straight; *humeral margin,* large, curvate, conformable with base and lateral margin, the latter moderately arcuate to apex; *scutellary margin,* absent (?); *sutural margin* straight from base to apex; *general outline,* elongate-cordate (*i.e.,* of the two elytra together) with a narrow round apex.

ORNAMENTATION.—*Lateral border,* very narrow; *other borders,* not observed; *disc,* ornamented with two oblique striæ, one starting from humeral-basal margin and joining sutural margin at basal quarter, the other beginning at the humeral-lateral margin and joining sutural margin at apical quarter, striæ being distinct but very narrow and shallow; other portion of surface irregularly rugose, and apparently a *post-mortem* effect.

CONVEXITY.—Moderately low.

ILLUSTRATION.—Fig. 54 (Spec. 143*a* × 30) shows the rugose character of the pronotum, the oblique striæ and the general fusiform-ovate shape of the body as a whole.

OBSERVATIONS.—This *obliquely* striated species like *A. rugosum,* is an obscure form and the remarks under the heading of that species would also apply in this case.

TYPE.—Spec. 143*a* (cast); Fig. 54, plate 6. (G.S.Q. Coll.).
TYPE-COUNTERPART.—Spec. 143*b* (mould). B. D. Coll.

Summary Table (Ipswich Fossil Coleoptera).

ELYTRAL CHARACTERS.

Name.	Publication No. 273.			Size.		Shape.				Ornamental			Borders.	
Genera and Species.	Figure.	Plate.	Type N°	Length m.m.	Width m.m	General Outline.	Base.	Apex.	Convexity.	Costæ.	Striæ.	General Surface.	Sutural.	Lateral.
ELYTRON—PUNCTATE-STRIATE, WITHOUT WIDE BORDERS, 8 TO 10 COSTÆ.														
			S. 1.											
Ademosyne Olliffi	9	1	35	1·8	0·7	Long-ovate	Curvate	Obtuse	Rather low	8, round	Faint-punctate	Crenulate	V. narrow	V. narrow
„ parva	8	1	312	2 0	0 8	Nav.-ovate	Nr. straight	Acute	Rather high	8 or 9	Punctate	Granulate	Narrow	Narrow
„ intermedia	2	1	233	2 2	1·1	Wide-ovate	Curvate	Obtuse	High	8 sub-carinate	Deep-punctate	Granulate	Narrow	Narrow
„ lata	5	1	132	2·2	1·1	Ovate	Straight	?	Mod. high	9, nearly flat	Deep-fine-punctate	Smooth	Mod.-wide	Mod.-wide
			S. 2.											
„ major	1 & 12	1 & 2	36	2 6	1 0	Tapered	Curvate	Acute	Mod. high	8 or 9, round	Deep-fine-punctate	Granulate	Narrow	Narrow
„ brevis	6	1	339	2·6	1·4	Piri-ovate	Irregular	Obtuse	Mod. low	9, round	Punctate	Grano-cren.	Narrow	Wide
„ curvata	7	1	274	2·8	1·0	Oblong-ovate	Curvate	Obtuse	Mod. low	(?) 8, equally wide	Deep-punctate	Smooth	Narrow	Narrow
„ australiensis	3	1	12	3 4	1·2	Long-ovate	Straight	Blunt	Gen. high	10, depressed	Punctate	Smooth	Mod. narrow	Mod. narrow
„ ramo-costata	4	1	225	3 5	1·4	Tapered	Straight	Pointed	High	10, round	Fine-punctate	Smooth	Narrow	Mod. narrow
„ rugulosa	10	1	260	3·6-4·2	1·3-4	Long-ovate	Curvate	Pointed	Mod. high	9-11, flattish	Fine-punctate	Granulate	Mod. narrow	Mod. narrow
„ vittamargina	13	2	341	4·0	1·4	Long-ovate	Round	Pointed	V. low	10, flat	Punctate	Pustulate	Narrow	Narrow
„ congener	16	2	40	4-5	2·1	Ovate	Nr. straight	Round	Mod. high	9-10, round	Fine-punctate	Smooth	Mod. narrow	Mod. narrow
„ punctata	15	2	47	4-4 2	1-1·2	Subulate-ovate	Curvate	Round	Mod. high	9, flat	Shallow-punctate	Smooth	Narrow	Narrow
„ adunca	14	2	194	6 0	2·2	Nav.-ovate	Sinuate	Pointed	Mod. low	10, low	Fine-punctate	Granulate	Narrow	Narrow
„ Cameroni	11	2	46	6 2	3 0	Ovate	Curvate	Pointed	Rather high	9, round	Punctate	Smooth nr. base	Narrow	Narrow
ELYTRON—IMPUNCTATE-STRIATE, NAR. OR MOD. WIDE BORDERS, 9 TO 11 COSTÆ.														
			S. 3.											
Ademosynoides minor	18	2	38	2·0	0 1	Oblong-ovate	Round	Pointed	High	9, round	Impunctate	Smooth	Narrow	Narrow
„ striatella	26	2	16	2·2	1·1	Long-ovate	Curvate	Round	High	9-10, flattish	Impunctate	Granulate	V. narrow	V. narrow
„ obtusa	17	2	9	2·4	1 0	Long-ovate	Nr. straight	Pointed	High	9, round	Impunctate	Granulate	Narrow	Narrow
„ alternata	19	2	149	2 5	1·0	Long-ovate	Round	Round	High	8, alternating	Impunctate	F.-granulate	Mod. narrow	Mod. narrow
„ angusta	20	3	15	3·0	1·0	Nav.-ovate	Round	Pointed	Low	9-10, flattish	Impunctate	Granulate	Narrow	Narrow
„ attenuata	25	3	161	5·7	1·8	Double-taper	Curvate	Round	V. low	10, flat	Impunctate	Smooth	Narrow	Mod. narrow
„ abnormis	23	3	243	6·2	2·5	Long-ovate	Curvate	Pointed	Mod. high	9, round (in part)	Impunctate	Granulate	Narrow	Narrow
„ magnifica	27, 28	3	199	8·5	2 9	Long-ovate	Round	Pointed	Mod. high	(?) 10, flat	Impunctate	Granulate	Mod. wide	Narrow
ELYTRON—COSTATE, STRIATE, PUNCTATE, WIDE BORDERS.														
Platycrossos ligulatus	22	3	268	2·9	1·2	Ovate	Curvate	Pointed	High	8-9, faint	Punctate (?)	Smooth	V. narrow	V. wide
„ sub-tumidus	24	3	171	3·0	1·6	Cupolate	Straight	Round	Mod. high	10, round	Punctate	F. granulate	?	V. wide
„ tumidus	21	3	45	7·5	2·9	Ovate	Nr. straight	Round	V. high	9, round nr. base	Punctate (in part	Granulate	V. narrow	V. wide
ELYTRON—ALVEOLATE, LONGITUDINALLY RIDGED AND CROSS-BARRED.														
Simmondsia sub-piriformis	34	4	135	3·0	1·2	Nav.-ovate	Curvate	Round	Mod. low	8 costæ, narrow with cross-bars ; alveolate			Narrow	Mod. wide
„ cylindrica	29	4	87	5·0?	1 4	Cylindraceous	Straight	?	Low	8 costæ, narrow with cross-bars ; alveolate			V. narrow	V. narrow
ELYTRON—ELONGATE-GRANULATE.														
Grammositum bilineatus	35	4	136	2·5	0 8	Long-ovate	Straight	Round	Low	2 striæ, punctate, surface granulate			V. narrow	V. narrow
ELYTRON—DISC VITTATE.														
Shepherdia quadrivittata	32	4	130	11·0	3 4	Long-coniform	Curvate	Round	Low	4 longitudinal vittæ, surface rugulose			Narrow	Narrow
ELYTRON—UNIFORMLY GRANULATE.														
Polysitum minutus	59	7	336	2 2	1 2	Ovate-cordate	Curvate	Obtuse	Mod. high	Irregularly vittate, granulate			Indistinct	Indistinct
„ punctatus	36, 37	4	153	6 9	2 7	Ovate	Curvate	Round	Low	Surface uniformly punctate			Narrow	Narrow
ELYTRON—CYLINDRACEOUS, COSTATE, PUNCTATE-STRIATE, LARGE SIZE.														
Ulomites Willcoxi	33	4	50	11·0	3·0	Cylindraceous	Acute	Curvate	Low	8 costæ, 1 very large, punctate striæ			Narrow	V. narrow

SUMMARY TABLE (IPSWICH FOSSIL COLEOPTERA)—*continued.*

Name.	Publication No. 273.			Size.		Shape.				Ornamentation.	Borders.	
Genera and Species.	Figure.	Plate.	Type No.	Length m.m.	Width m.m.	General Outline.	Base.	Apex.	Convexity.		Sutural.	Lateral.
ELYTRON—COSTATE, RUGULOSE, GRANULATE, ELONGATE, MOD.-NAR. BORDERS.												
Elaterites subulatus	31	4	263	4·3	2·0	Subulate	Acute ?	Round	High	Surface wavy	Mod. narrow	Mod. narrow
„ transversus	30	4	159	6·5	2·7	Sub-ovate	Acute	Curvate	High	5 very narrow costæ ; rugulose	Mod. nar. ?	Mod. nar. ?
ELYTRON—PUNCTATE-STRIATE, ELONGATE, COSTÆ PARALLEL.												
Elaterium bipunctatum	46	5	292	4·4	1·4	Naviculate	Acute	?	High	8 narrow costæ, doubly punctate striæ	Narrow	Mod. narrow
„ punctomarginum	43	5	200	7·0	2·2	Cylindraceous	Acute	?	Mod. high	9 pitted striæ, row of pits on lat. border	Narrow	Wide
ELYTRON—FAINTLY ORNAMENTED, TAPERED, MOD.-WIDE LAT. BORDERS.												
Reeveana major	38	5	251	5·4?	1·9	Sub-ovate	?	Round	Low	2 concentric vittæ, surface smooth	Narrow	Wide
„ intermedia	45	5	201	3·6	1·4	Cuneate	?	Curvate	Low	4 faint striæ, surface smooth	Mod. wide	Narrow
„ minor	42	5	297	3·0	1·0	Sub-ovate	Acute	Curvate	Round	Rugæ traces, surface smooth	Narrow	Wide
ELYTRON—ALTERNATE, STRIATE, COSTATE, NARROW BORDERS.												
Tryoniopsis punctata	65	7	250A	6·0	2·1	Attenuated	Acute	Round	Low	10 low costæ, striæ punctate	V. narrow	V. narrow
„ granulata	59	7	161A	5·7	1·8	Attenuated	Acute	Curved	Low	10 low costæ, striæ impunctate	Narrow	Narrow
ELYTRON—POD-SHAPED, BISINUATE LAT. MARGIN, ARCUATE SUT. MARGIN.												
Lobites tuberculatus	41	5	342	5·8	1·8	Fabiform	Obtuse	Curvate	Mod. high	4 tuberculated rows	Mod. narrow	Mod. narrow
„ granulatus	40	5	183	8·3	3·0	Fabiform	?	Curvate	Mod. high	3 tuberculated rows	? Narrow	Mod. wide
„ trivittatus	44	5	164	12·5	3·4	Cylindraceous	Acute	Curvate	Mod. low	3 vittæ, finely granulate surface	Wide	V. narrow
ELYTRON—ELONGATE-CYLINDRACEOUS, PITTED IN ROWS, LARGE SIZE.												
Mesostigmodera typica	39	5	S. 5. 61	15·0	4·8	Cylindraceous	Pointed	Curvate	Mod. high	17 pitted rows	Wide	Mod. narrow
ELYTRON—ELONGATE OR POD-SHAPED, ALVEOLATE OR CLATHRATE, V. NAR. SUT. BORDER, LARGE SIZE.												
Mesothoris tenuiclathrata	49	6	313	6·8	2·3	Long-ovate	Round ?	Round	Mod. high	(?) 14 obscure rows, sub-clathrate	V. narrow	Mod. wide
„ quadripartita	50	6	349	8·0	2·3	Sub-lobiform	Blunt	Curvate	Mod. high	4 longitudinal sections, alveolate	Narrow	Mod. wide
„ clathrata	51	6	48	(10·0)	2·5	Long-ovate	Blunt	?	..	9 costæ and cross-bars, alveolate	Mod. narrow	Mod. narrow
„ grandis	48	6	54	13 ?	3·1	Lobiform ?	?	?	Mod. high	10 narrow costæ and cross-bars, alveolate	Mod. narrow	Mod. narrow
ELYTRON—ELONGATE, PARALLEL AND OBLIQUE ROWS OF PITS, LARGE SIZE.												
Willcoxia magnopunctata	47	6	261	10 ?	3·4	Cylindraceous	Acute	Curvate	Mod. high	3 longitudinal, and 2 oblique rows of pits	V. narrow	Mod. wide
ELYTRON—BOAT-SHAPED, NAR. SUT. BORDER, VERY WIDE LAT. BORDER, TUBERCULATE OR GRANULATE, LARGE SIZE.												
Tillyardiopsis variotubercula	58	7	66	6·5	2·5	Naviculate	?	Curvate	Mod. high	9 to 16 rows of variable tubercles	Mod. wide	Wide ?
„ granulata	56	7	289	6·8	2·6	Naviculate	Blunt	Straight	Mod. high	Surface *rugulose-granulate*	Narrow	Mod. wide
„ tuberculata	57	7	133	7·0	2·7	Naviculate	?	Curvate	Mod. high	11 tuberculated rows	Wide	V. wide
ELYTRON—MANY ROWS OF TUBERCLES, SMALL SIZE.												
Etheridgea australis	60	7	34	3·6	1·4	Cuneate ?	Obtuse ?	?	High ?	13 rows of variable tubercles	Narrow	Narrow
ELYTRON—VERY FAINTLY ORNAMENTED WITH LINES OR VITTÆ, V. NAR. BORDERS, V. SMALL SIZE.												
Leioodes pygmaeum	52	6	287	1·2	0·4	Sub-cuneate	Acute	Straight	High	Surface faintly streaked	Narrow ?	Narrow ?
„ planum	53	6	348	1·8	0·6	Sub-cuneate	Blunt	Curvate	Mod. high	3 faint granulate vittæ	Narrow ?	Narrow
ELYTRON—RUGOSE LINES CONCENTRIC WITH LAT. BORDERS, SOMETIMES WITH TWO OBLIQUE LINES.												
Apheloodes rugosum	55	6	236	1·8	0·6	Semi-cordate	Blunt	?	Low	Surface rugose and rugulose	Narrow ?	Wide ?
„ obliquum	54	6	143	2·0	0·6	Semi-cordate	Blunt	Straight	Mod. low	2 oblique striæ, wide apart	V. narrow	V. narrow

PLATE 1.

Fig. 1. Ademosyne major *Handlirsch* (mould)
(36a. L.2·6. W.I. × 30; Fig. 1a × 50).
(See page 15).

Fig. 2. ,, intermedia *sp. nov.* (cast)
(233b. L.2·2. W.1·1 × 30; Fig. 2a × 40).
(See page 14).

Fig. 3. ,, australiensis *Tillyard* (cast)
(12b. L.3·4. W.1·2 × 25; Fig. 3a × 50).
(See page 19).

Fig. 4. ,, ramocostata *sp. nov.* (cast)
(225. L.3·5. W.1·4 × 25; Fig. 4a × 40).
(See page 19)

Fig. 5. ,, lata *sp. nov.* (mould)
(132a. L.2·2. W.1·1 × 30; Fig. 5a × 50).
(See page 15).

Fig. 6. ,, brevis *sp. nov.* (cast)
(339a. L.2·6. W.1·4 × 30; Fig. 6a × 40).
(See page 17).

Fig. 7. ,, curvata *sp. nov.* (cast)
(274a. L.2·8. W.1. × 30; Fig. 7a × 50).
(See page 18).

Fig. 8. ,, parva *sp. nov.* (cast)
(312a. L.2. W.0·8 × 30; Fig. 8a × 50).
(See page 13).

Fig. 9. ,, Olliffi (*Handlirsch*) (cast)
(35. L.1·8. W.0·7 × 30; Fig. 9a × 50).
(See page 12).

Fig. 10. ,, rugulosa *sp. nov.* (cast)
(260a. L.4. W.1·4 × 20; Fig. 10a × 35).
(See page 20).

Fig. 10B. ,, rugulosa *sp. nov.* (cast)
(299a in part, × 20).

NOTE.—Vertical marks indicating actual size on Plate 1 are 0·1 too large.

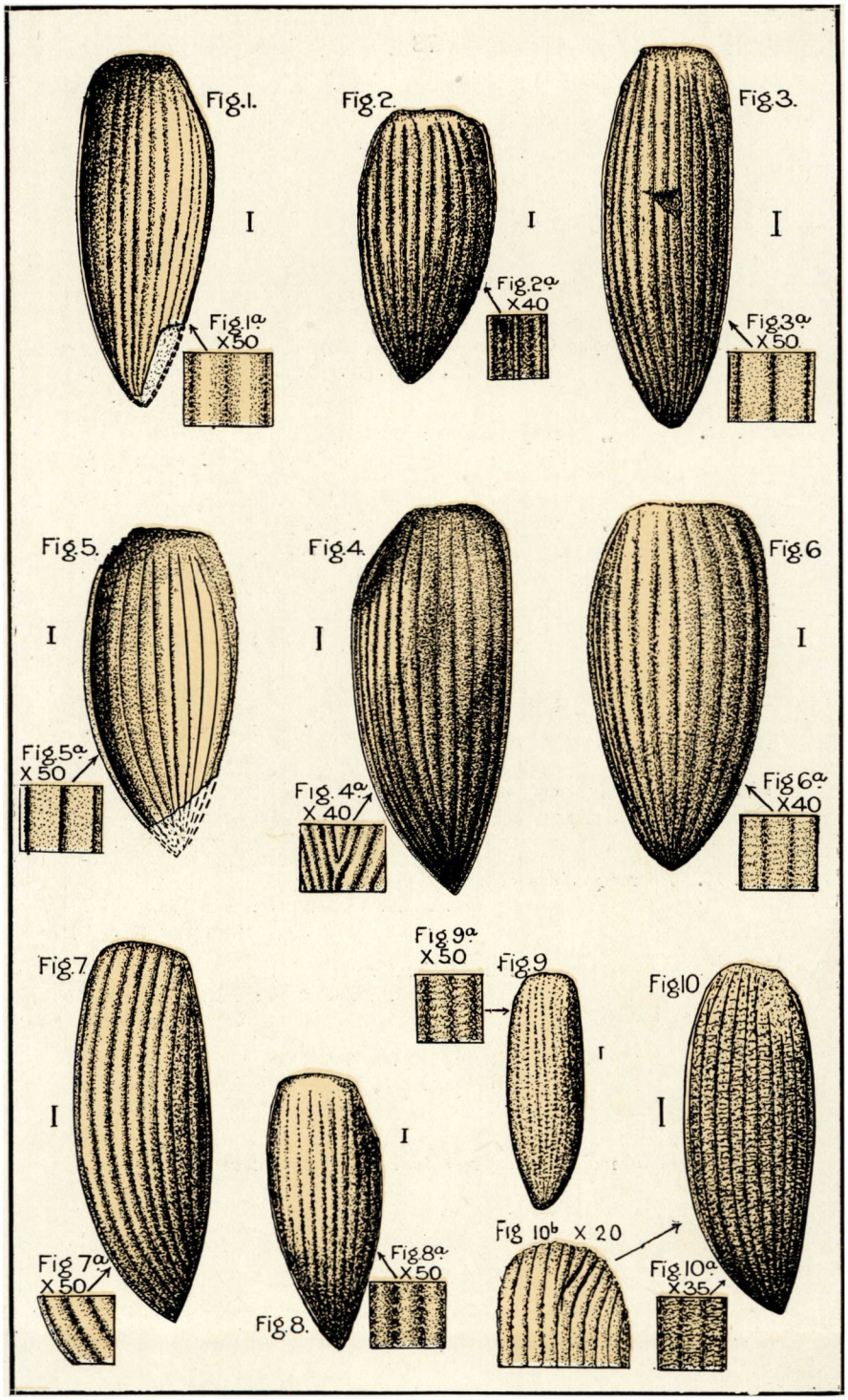


Fig.1.
Fig.1a X50
Fig.2.
Fig.2a X40
Fig.3.
Fig.3a X50
Fig.5.
Fig.5a X50
Fig.4.
Fig.4a X40
Fig.6
Fig.6a X40
Fig.7.
Fig.7a X50
Fig.8.
Fig.8a X50
Fig.9a X50
Fig.9
Fig.10
Fig 10b X 20
Fig.10a X35

PLATE 2.

Fig. 11. Ademosyne Cameroni *Tillyard* (cast)
(46b. L.6·2. W.3 × 15; Fig. 11a × 25).
(See page 24).

Fig. 12. „ major *Handlirsch* (cast)
(S2. L.4. W. 2·4 × 15).
(See page 15).

Fig. 13. „ vittamargina *sp. nov.* (cast)
(341a. L.4. W.1·4 × 20; Fig. 13a × 40).
(See page 21).

Fig. 14. „ adunca *sp. nov.* (cast)
(194b. L.6. W.2·2 × 12; Fig. 14a × 25).
(See page 23).

Fig. 15. „ punctata *Tillyard* (cast)
(47b. L.4. W.1·2 × 25; Fig. 15a × 50).
(See page 23).

Fig. 16. „ congener *Tillyard* (cast)
(40. L.4·2. W.2·1 × 18; Fig. 16a × 40).
(See page 22).

Fig. 17. Ademosynoides obtusa (*Tillyard*) (cast)
(9b. L.2·4. W.1 × 30; Fig. 17a × 50).
(See page 26).

Fig. 18. „ minor (*Handlirsch*) (cast)
(38b. L.2. W.0·8 × 30; Fig. 18a × 50).
(See page 26).

Fig. 19. „ alternata *sp. nov.* (cast)
(149a. L.2·5. W.1 × 30; Fig. 19a × 40).
(See page 27).

NOTE.—Vertical marks indicating actual size on Plate 2 are 0·1 too large.

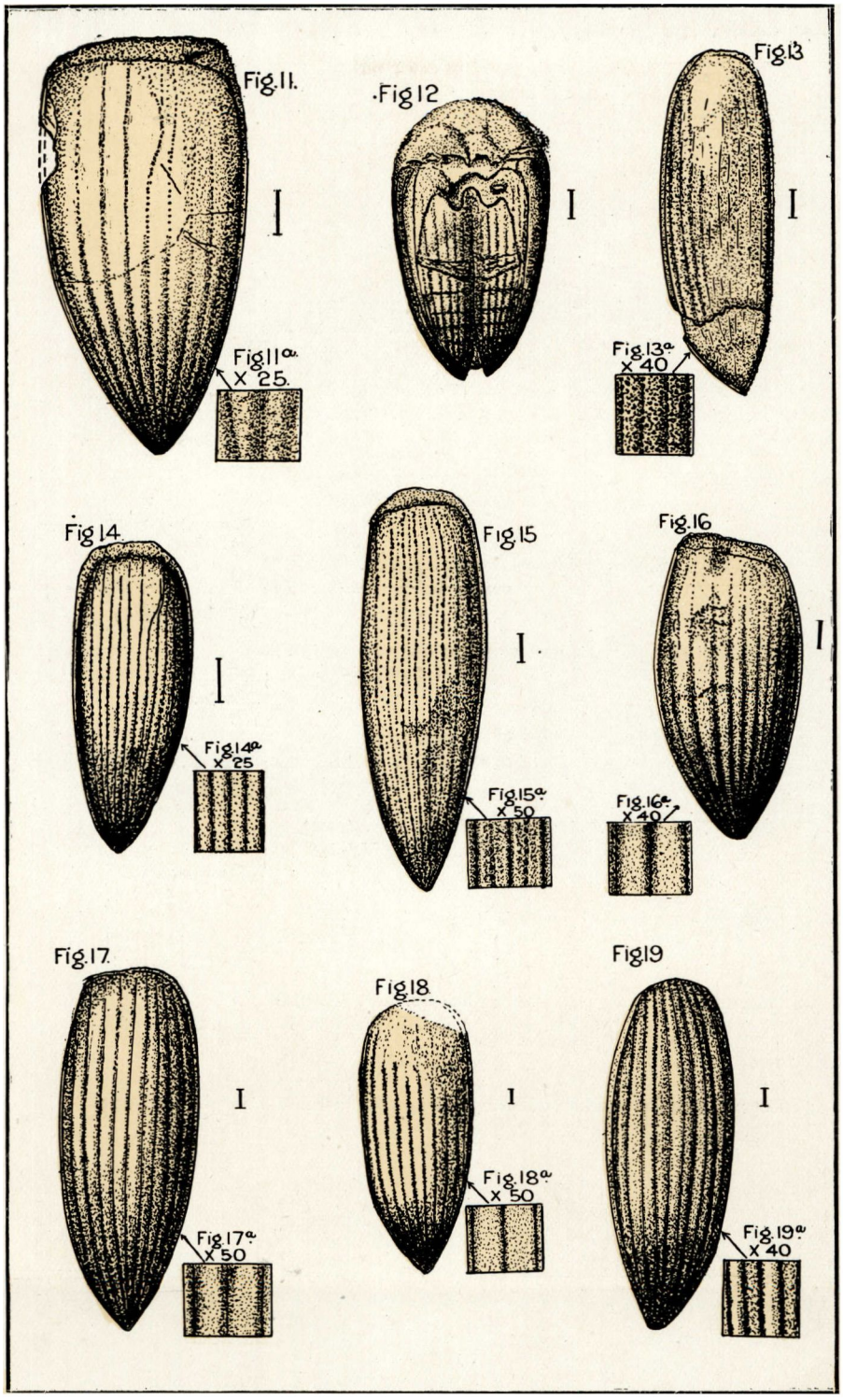


Fig.11.
Fig.11a. x 25.
Fig.12
Fig.13
Fig.13a. x 40
Fig.14.
Fig.14a. x 25
Fig.15
Fig.15a. x 50
Fig.16
Fig.16a. x 40
Fig.17.
Fig.17a. x 50
Fig.18
Fig.18a. x 50
Fig.19
Fig.19a. x 40

PLATE 3.

Fig. 20. Ademosynoides angusta (*Tillyard*) (cast)
(15b. L.3. W.1 × 25; Fig. 20a × 50).
(See page 29).

Fig. 21. Platycrossos tumidus (*Tillyard*) (cast)
(45b. L.6·2. W.2·5 × 12; Fig. 21a × 25).
(See page 34).

Fig. 22. ,, ligulatus *sp. nov.* (cast)
(268a. L.2·9. W.1·2 × 30; Fig. 22a × 45).
(See page 33).

Fig. 23. Ademosynoides abnormis *sp. nov.* (cast)
(243a. L.6·2. W.2·5 × 15; Fig. 23a × 25).
(See page 30).

Fig. 24. Platycrossos sub-tumidus *sp. nov.* (mould)
(171. L.3. W.1·6 × 30; Fig. 24a × 50).
(See page 34).

Fig. 25. Polysitum minutus *sp. nov.* (cast)
(336a. L.2·2. W.1·2 × 30; Fig. 25a × 50).
(See page 42).

Fig. 26. Ademosynoides striatella *sp. nov.* (cast)
(16a. L.2·8. W.1·1 × 20; Fig. 26a × 35).
(See page 28).

Fig. 27. ,, magnifica *sp. nov.* (cast)
(199a. Elytron, L.8·5. W.2·9 × 10).
(See page 31).

Fig. 28. ,, magnifica *sp. nov.* (mould)
(199b. Elytron, L.8·5. W.2·9 × 10; Fig. 28a × 25).

NOTE.—Vertical marks indicating actual size on Plate 3 are 0·1 too large.

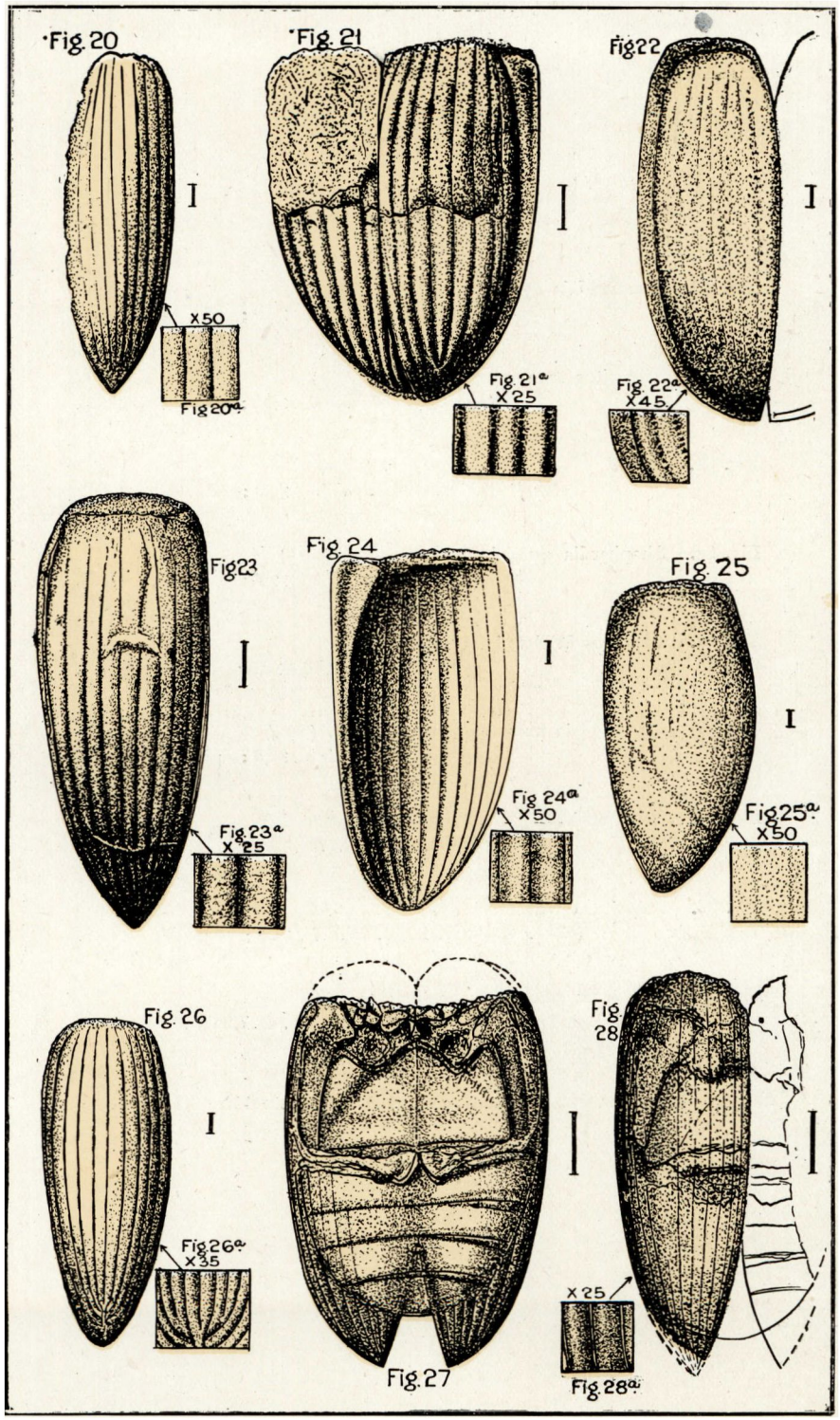


Fig. 20
x50
Fig 20a
Fig. 21
Fig 21a
X 25
Fig22
Fig. 22a
X45
Fig23
Fig.23a
X 25
Fig. 24
Fig 24a
x50
Fig. 25
Fig25a
x50
Fig. 26
Fig26a
x35
Fig. 27
Fig
28
x25
Fig 28a

PLATE 4.

Fig. 29. Simmondsia cylindrica *sp. nov.* (cast)
(87a. L.3. W.1·4 × 20; Fig. 29a × 40).
(See page 37).

Fig. 30. Elaterites transversus *sp. nov.* (cast)
(159b. L.6·5. W.2·7 × 12; Fig. 30a × 25).
(See page 45).

Fig. 31. ,, subulatus *sp. nov.* (cast)
(263b. L.4·3. W.2. × 20; Fig. 31a × 50).
(See page 44).

Fig. 32. Shepherdia quadrivittata *sp. nov.* (cast)
(130a. L.11. W.3·4 × 8; Fig. 32a × 15).
(See page 39).

Fig. 33. Ulomites Willcoxi *Tillyard* (cast)
(50b. L.11. W.3 × 10; Fig. 33a × 25).
(See page 43).

Fig. 34. Simmondsia sub-piriformis *sp. nov.* (cast)
(135. L.3. W.1·2 × 30; Fig. 34a × 50).
(See page 36).

Fig. 35. Grammositum bilineatus *sp. nov.* (mould)
(136a. L.2·5. W.8 × 30; Fig. 35a × 50).
(See page 38).

Fig. 36. Polysitum punctatus *sp. nov.* (mould)
(153a. Elytron, L.6·9. W.2·7 × 12; Fig. 36a × 40).
(See page 40).

Fig. 37. Polysitum punctatus *sp. nov.* (cast)
(153b. L.7, W.5·5; × 12.)

NOTE.—Vertical marks indicating actual size on Plate 4 are 0·1 too large.

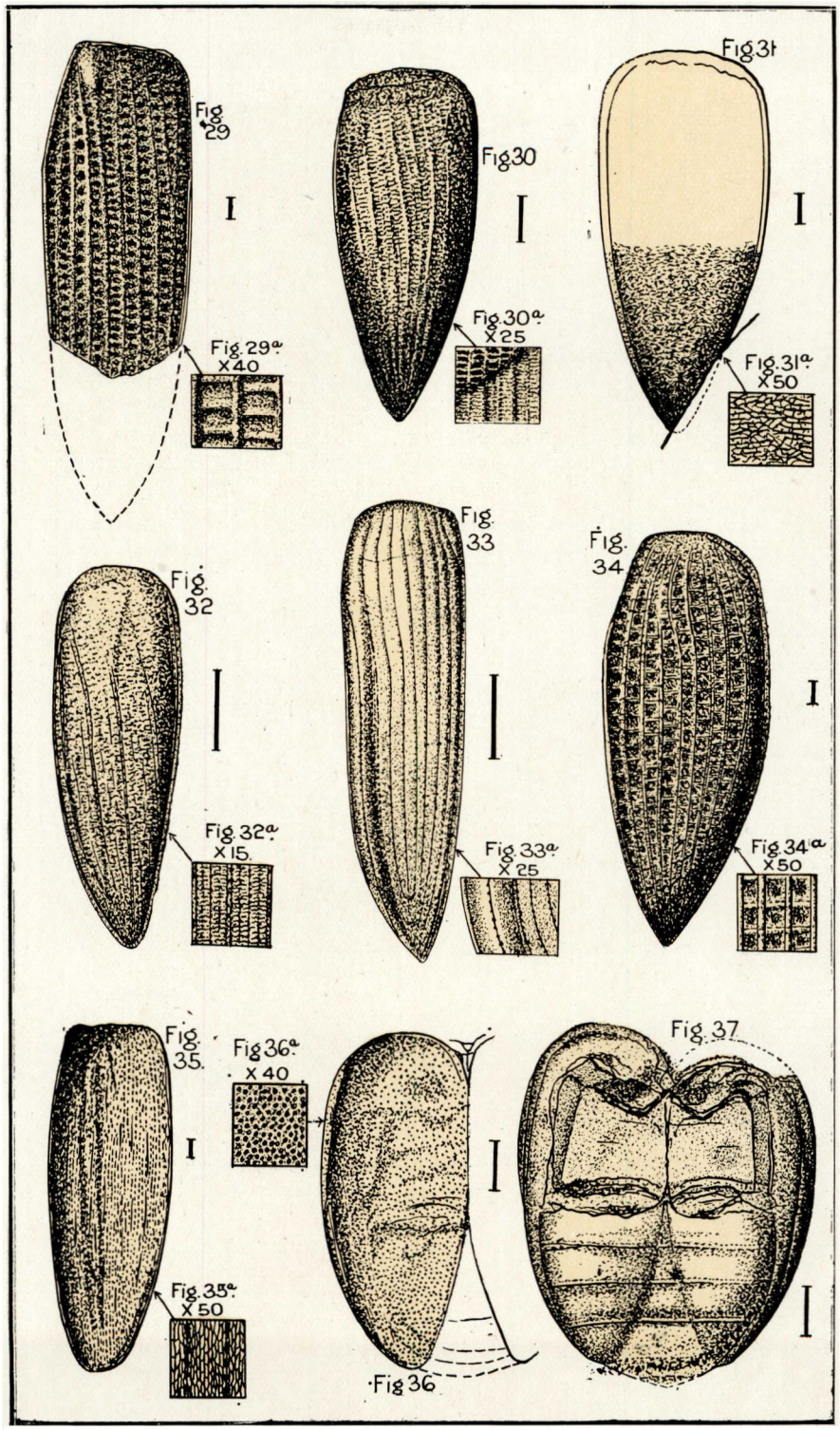


Fig. 29
Fig. 29a X40
Fig. 30
Fig. 30a X25
Fig. 31
Fig. 31a X50
Fig. 32
Fig. 32a X15
Fig. 33
Fig. 33a X25
Fig. 34
Fig. 34a X50
Fig. 35
Fig. 35a X50
Fig. 36a X40
Fig. 36
Fig. 37

PLATE 5.

Fig. 38. Reeveana major *sp. nov.* (cast)
(251a. L.5·4. W.1·9 × 15 ; Fig. 38a × 40)
(See page 48).

Fig. 39. Messostigmodera typica. *E. & O.* (cast and mould)
(61a, 61b. L.15. W.4·8 × 8 ; Fig. 39a × 12 ; Fig. 39b × 15).
(See page 56).

Fig. 40. Lobites granulatus *sp. nov.* (mould)
(183b. L.8·3. W.3 × 10 ; Fig. 40a × 25).
(See page 55).

Fig. 41. ,, tuberculatus *sp. nov.* (cast)
(342a. L.5·8. W.1·8 × 15 ; Fig. 41a × 25).
(See page 54).

Fig. 42. Reeveana minor *sp. nov.* (cast)
(297a. L.3. W.1. × 30 ; Fig. 42a × 50).
(See page 50).

Fig. 43. Elaterium punctomarginum *sp. nov.* (cast)
(200b. L.7. W.2·2 × 12 ; Fig. 43a × 25).
(See page 46).

Fig. 44. Lobites trivittatus *sp. nov.* (cast)
(164a. L.12·5. W.3·4 × 8 ; Fig. 44a × 25).
(See page 53).

Fig. 45. Reeveana intermedia *sp. nov.* (cast)
(201b. L.3·6. W.1·4 × 15 ; Fig. 45a × 40).
(See page 49).

Fig. 46. Elaterium bipunctatum *sp. nov.* (cast)
(292a. L.4 4. W.1·4 × 20 ; Fig. 46a × 40)
(See page 47).

NOTE.—Vertical marks indicating actual size on Plate 5 are 0 1 too large.

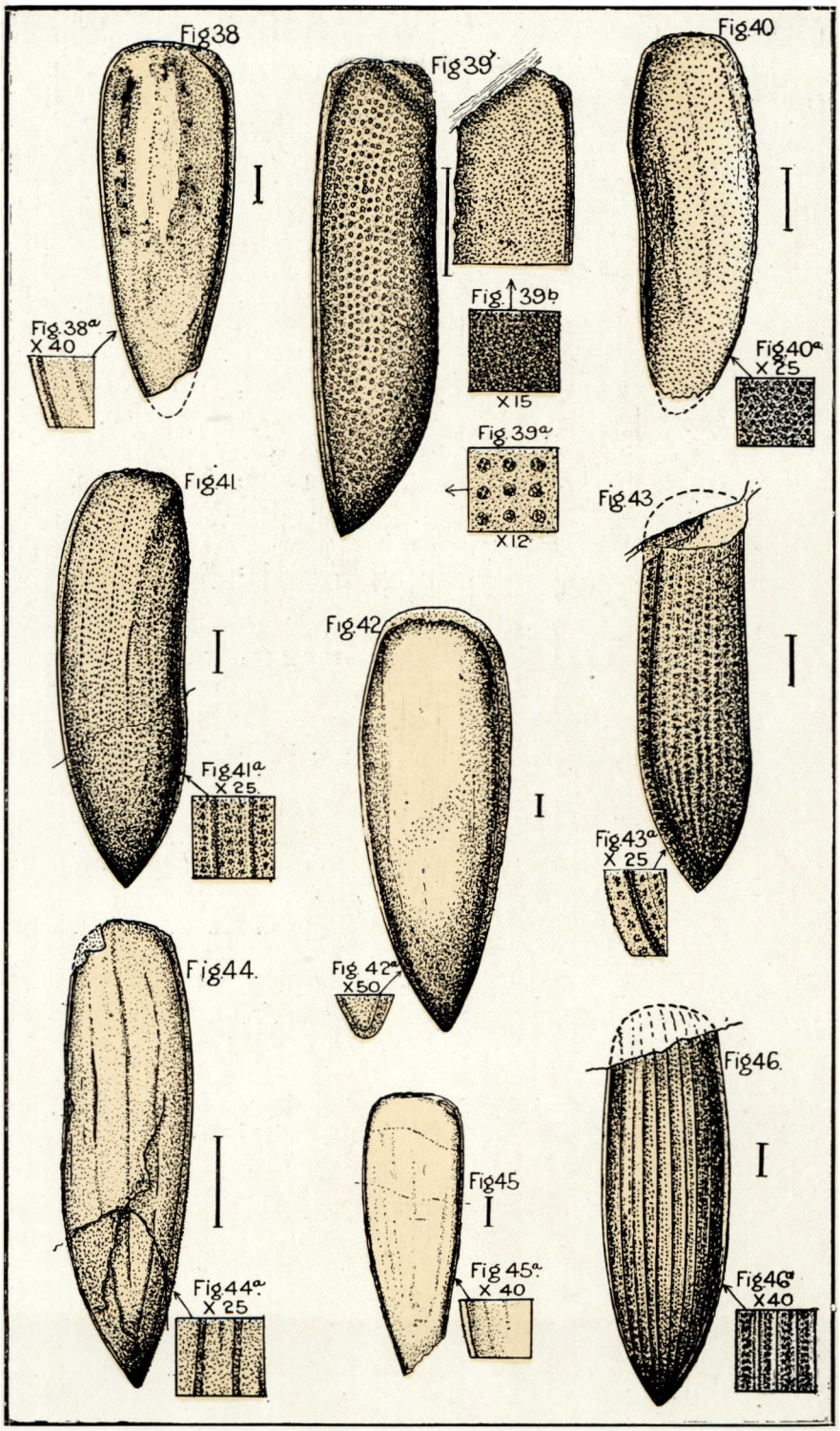


Fig38
Fig38a X40
Fig39
Fig39b X15
Fig39a X12
Fig40
Fig40a X25
Fig41
Fig41a X25
Fig42
Fig42a X50
Fig43
Fig43a X25
Fig44
Fig44a X25
Fig45
Fig45a X40
Fig46
Fig46a X40

PLATE 6.

Fig. 47. Willcoxia magnopunctata *sp. nov.* (cast)
(261a. L.10. W.3·4 × 10; Fig. 47a × 25).
(See page 63).

Fig. 48. Mesothoris grandis *sp. nov.* (cast)
(54a. L.13. W.3·1 × 8; Fig. 48a × 20; Fig. 48b × 25).
(See page 61).

Fig. 49. ,, tenuiclathrata *sp. nov.* (cast)
(313a. L.6·8. W.2·3 × 12; Fig. 49a × 40).
(See page 61).

Fig. 50. ,, quadripartita *sp. nov.* (cast)
(349a. L.8. W.2·3 × 12; Fig. 50a × 40).
(See page 60).

Fig. 51. ,, clathrata *Tillyard* (cast)
(48b. L.8. W.2·5 × 10; Fig. 51a × 30).
(See page 59).

Fig. 52. Leioodes pygmæum *sp. nov.* (cast)
(287a. L.1·2. W.0·4. × 30; Fig. 52a × 50).
(See page 69).

Fig. 53. ,, planum *sp. nov.* (cast)
(348a. L.2·1. W.1·2 × 30).
(See page 69).

Fig. 54. Apheloodes obliquum *sp. nov.* (cast)
(143a. L.2. W.1·2 × 30).
(See page 72).

Fig. 55. ,, rugosum *sp. nov.* (cast)
(236a. L.2·5. W.1·2 × 30).
(See page 71).

NOTE.—Vertical marks showing actual size on Plate 6 are 0 1 too large, with the exception of Figs. 53 and 55, which are 0·2 too large.

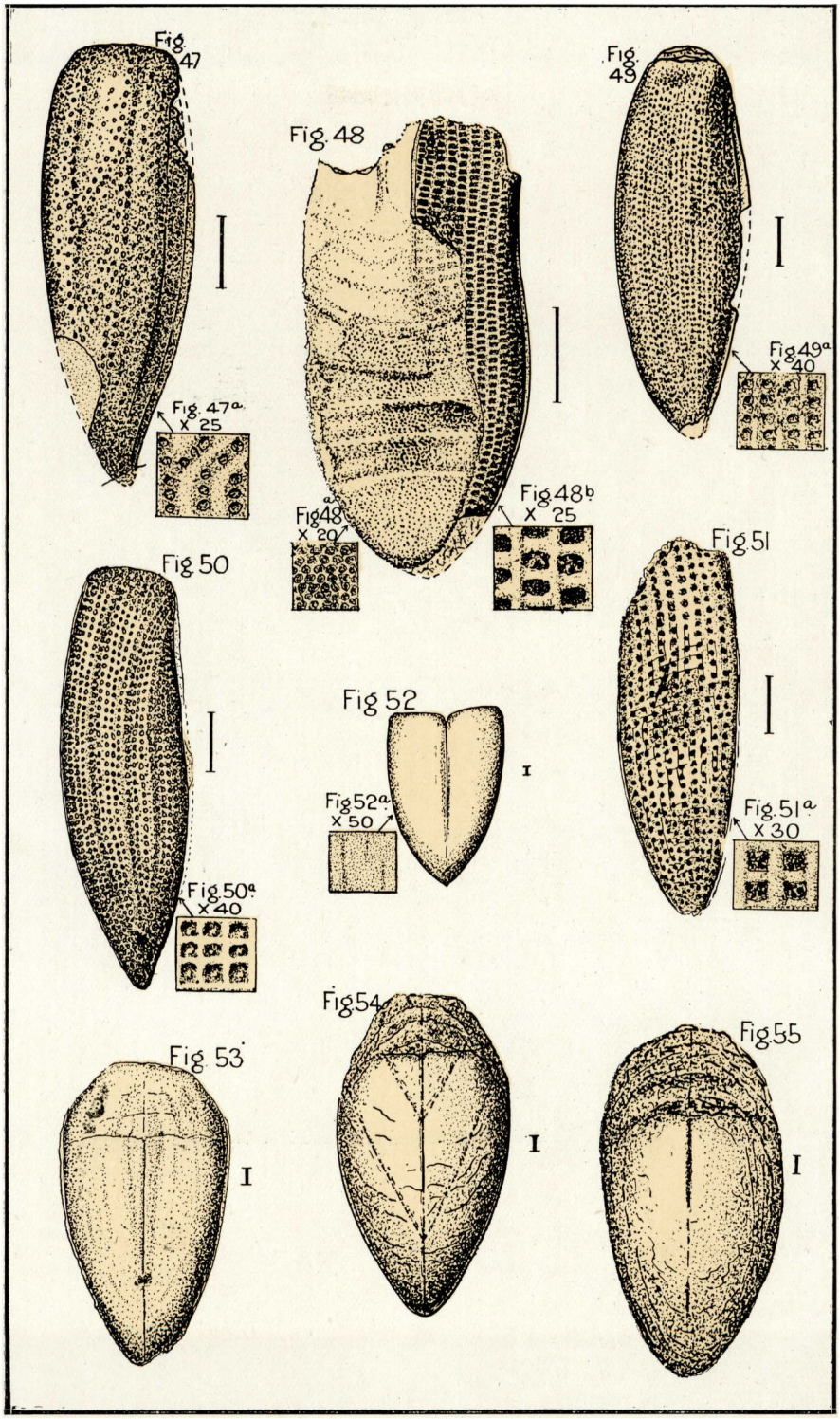


Fig. 47
Fig. 47a x 25
Fig. 48
Fig. 48a x 20
Fig. 48b x 25
Fig. 49
Fig. 49a x 40
Fig. 50
Fig. 50a x 40
Fig. 51
Fig. 51a x 30
Fig. 52
Fig. 52a x 50
Fig. 53
Fig. 54
Fig. 55

PLATE 7.

Fig. 56. Tillyardiopsis granulata *sp. nov.* (cast)
(289a. L.6·8. W.2·6 × 12; Fig. 56a × 50).
(See page 66).

Fig. 57. „ tuberculata *sp. nov.* (mould)
(133a. L.7. W.2·7 × 12; Fig. 57a × 25).
(See page 65).

Fig. 58. „ variotubercula *sp. nov.* (cast)
(66a. L.6·5. W.2·5 × 12; Fig. 58a × 25).
(See page 67).

Fig. 59. Tryoniopsis granulata *sp. nov.* (cast)
(161a. L.5·7. W.1·8 × 15; Fig. 59a × 25).
(See page 52).

Fig. 60. Etheridgea australis *Handlirsch*
(S.4. L.3·6. W.1·4 × 20; Fig. 60a × 40).
(See page 68).

Fig. 61. Insect Fragments (350. L.8·5 × 6).

Fig. 62. „ „ (352. L.4·5 × 10).

Fig. 63. „ „ (353. L.5 × 5).

Fig. 64. „ „ (354. L.8 × 5).

Fig. 65. Tryoniopsis punctata *sp. nov.* (cast)
(250a. L.6. W.2·1 × 12; Fig. 65a × 25).
(See page 51).

Fig. 66. Insect Fragments (355. L.3 × 12).

Fig. 67. „ „ (356. L.7 × 6).

NOTE.—Vertical marks indicating actual size on Plate 7 are 0·1 too large.

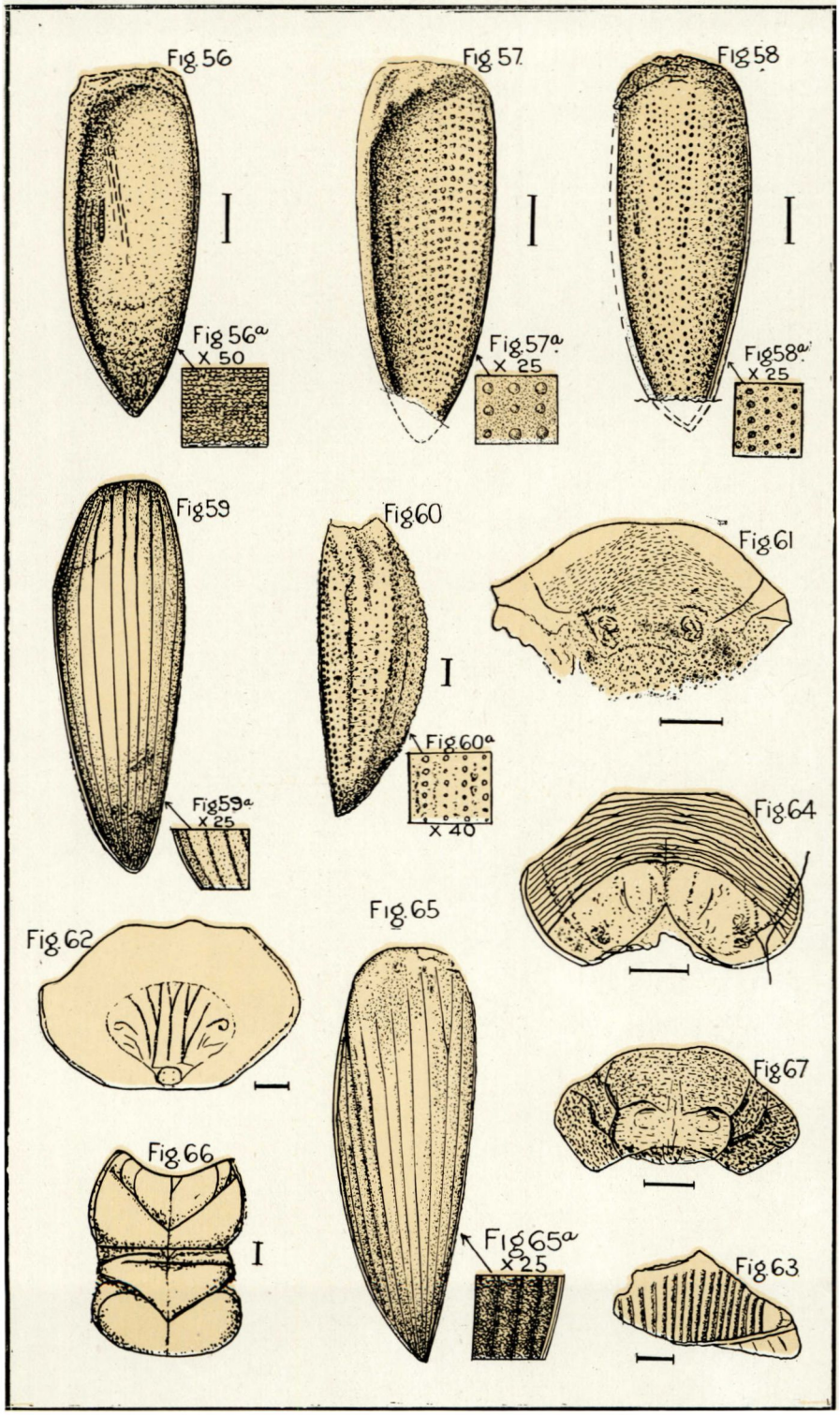


Fig. 56
Fig 56a
X 50
Fig 57
Fig 57a
X 25
Fig 58
Fig 58a
X 25
Fig 59
Fig 59a
X 25
Fig 60
Fig 60a
X 40
Fig 61
Fig 64
Fig 65
Fig 62
Fig 67
Fig 66
Fig 65a
X 25
Fig 63