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# THE TASMANIAN NATURALIST

THE JOURNAL OF THE  
Tasmanian Field Naturalists' Club.

Vol. 1.

DECEMBER, 1907.

No. 3.

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## Some Implements of the Tasmanian Aborigines.

BY FRITZ NOETLING, M.A., Ph.D.

### THE MAGIC STONES.

Whenever an old camp is carefully examined, a number of more or less rounded stones, most of which are, however, in a broken and fragmentary condition, can be picked up. Complete specimens are very rare, and when in a preserved condition they exhibit quite peculiar features. Always one, but mostly the two, opposite flat sides show in the centre a rough slightly concave depression, produced by repeated blows. On closer examination, it will be seen that frequently the edge also shows strong traces of use. Little attention has so far been paid to these remarkable specimens, but numerous theories have been advanced as to their use. The most common view is that they served as hammer stones, and that the rough central depressions served as resting places for thumb and first finger when the stone was used. A simple experiment will prove that such a view is untenable, because it is impossible not only to get a sufficiently strong grip on the stone, but, also, most of them are too large and heavy to be properly manipulated if held in such a position. Apart from other reasons, it is evident that this theory must be dismissed as infeasible, but, then, the question arises for what purpose can they have been used? There is no doubt that a good deal of work has been spent in shaping these stones, and there is also no doubt that most of these laboriously-finished specimens were destroyed again, one should almost feel inclined to say in a vicious way. Though the breaking was probably frequently done by blows, numerous instances sug-

gest quite another way, namely, by heating in the fire and afterwards pouring water over them, which naturally resulted in the destruction of the specimen so treated. Before advancing the new theory suggested by these undeniable observations, it will be advisable to describe a few characteristic specimens. Fig. 1 and Fig. 1A is a fine specimen which was collected by Mrs. Olden-Laws, late of Woodlands, and kindly given to me. It is the largest specimen that has so far come to my notice, measuring 8 1/2 in. in length, 6 in. in width, 3 in. in thickness, and weighing 7 lb. 5 oz. avdp. Its shape is irregularly oval or elliptical, inasmuch as one side bulges out a little, thereby spoiling the regular oval form. The whole shape is unquestionably that of a boulder or pebble such as is produced by running water, and picked up in numbers in any creek or in the alluvial boulder beds. It is impossible to ascertain the nature of the rock without seriously damaging this beautiful specimen. As far as I can judge, it appears to be a quartzite or quartzitic sandstone of considerable hardness; a little cavernous, but of fine texture. The superficial colour is a light brown, but it is probable that this colour is due to weathering, and that the original colour was light yellow—at least, one side shows lighter spots of this colour. The whole surface, as far as it has not been affected by subsequent working, is remarkably smooth and polished. The above measurements prove that the original pebble was laterally compressed and the two flat sides show that they have been subjected to a considerable amount of work. One side,

which, for want of a better term, we may designate the upper side, shows a flatly concave rather rough depression of  $4\frac{1}{2}$  in. by 4 in. diameter. If a ruler is placed on the top, its deepest part is about  $\frac{1}{2}$  in. below the ruler's edge, but as it is fair to assume that the original surface was not absolutely flat, it is probable that a lenticular part of the pebble, measuring  $4\frac{1}{2}$  in. by 4 in., and having a greatest thickness of  $\frac{1}{2}$  in., has been removed. The surface is rough; but it is also unquestionable that the original roughness has been smoothed down by rubbing or grinding. The opposite lower side is slightly convex, and in its centre there is an irregularly shaped, very rough mark of about 2 in. diameter. This mark clearly shows that it has been produced by numerous blows applied to this part of the surface. The peripheral edge is rounded and smooth. Specimens 12, 2A, 2B, which I found near Kempton, is another type of this kind, though somewhat differing from the former. It had been broken into six pieces, and I succeeded in getting all of them but one, though they had been scattered over an area of about 100 square yards. When pasted together they proved to be the finest specimen that has so far come under my notice. It is almost completely circular, measuring 6 in. in diameter, but only  $2\frac{1}{2}$  in. in thickness; it is, therefore, strongly compressed. The weight is 5 lb. 8 oz. avdp. The rock is a coarsely-grained quartzitic sandstone of slightly pinkish colour, though in some parts this has been replaced by a whitish colour. The upper side is almost to its whole extent hollowed out, and therefore concave. As in its deepest part it has been hollowed out to a depth of  $\frac{1}{2}$  in., and as it is only fair to suppose that the original surface was the same as the convex lower side, we assume that a lenticular mass of stone of  $\frac{1}{2}$  in. thickness, measuring about  $5\frac{1}{2}$  in. in diameter, has been tediously removed by grinding. The peripheral edge is well rounded, but it seems that it has been considerably belaboured by heavy blows, whose traces are very conspicuous. The most common type is represented by Fig. 3. This specimen comes from the South Arm, and measures 5 in. in length,  $3\frac{1}{2}$  in. in width, and  $1\frac{1}{2}$  in. in thickness, weighing 2 lb. 1 oz. avdp. It is regularly oval in shape, though the two longitudinal sides are slightly flattened; it is rather compressed, but the upper and lower sides are slightly convex. The material is dark, rather finely crystalline Diabas. The upper side shows in the centre a deep rough depression of about  $\frac{1}{2}$  in. diameter, and around it the surface is nicely polished and smooth. Exactly opposite on the lower surface is another rough mark, though

not quite as well defined. The peripheral edge is rounded, but the two longitudinal sides show distinctly that it has been flattened off, and marks of blows are also visible at either end, on the shorter sides. A similar specimen is figured in Fig. 4. This has been found at Shene (Portville), and it measures 7 in. by  $4\frac{1}{2}$  in., the thickness being barely  $\frac{1}{2}$  in. The weight is 2 lb. 13 oz. avdp. The shape is irregularly oval, and it is unquestionably that of a flat pebble that had been picked up in the nearest creek. The material is Diabas, the black crystals of augite, contrasting sharply against the greyish green ground mass. The upper side has apparently been smoothed, and in the centre is a deep, rough depression, measuring about 1 in. in diameter. No such depression exists on the opposite or lower side, which represents the unaltered original surface of the pebble. The difference in the smoothness of the upper and lower side is very marked; the lower side shows that smoothness so peculiar to water-worn pebbles, but on the upper side it has disappeared, and been replaced by a surface showing numerous fine streaks or scratches, all running in the same direction, such as are produced by a rubbing or grinding action. The most peculiar and perhaps the most interesting type is reproduced in Fig. 5. This has been found on the famous camp at the Old Beach by Mr. Anthony. It is an oval pebble of Diabas, measuring 5 in. in length,  $3\frac{1}{2}$  in. in width, but only  $1\frac{1}{2}$  in. in thickness, and weighing 1 lb. 8 oz. avdp. Both the upper and lower sides are flat, but while the lower side is rather rough, probably owing to weathering, the upper side has been most elaborately polished and ground. The grinding has even been extended to the peripheral part, and a fine edge has been produced. When held in favourable light, three rough marks can be seen crossing obliquely; it is probable that these are parts of the original surface, which have been preserved during the grinding. The specimen is well preserved, except for a large fragment broken off from the margin. The above are only a few of the specimens I have examined, but they serve as good illustrations of the types met with, and we are now able to draw a few general conclusions. Every one of the specimens that has come under examination proves by its general shape that it was originally an ordinary water-worn pebble, such as may be picked up in any stream or alluvial boulder-bed. It was certainly essential that such a pebble should be flat—that is to say, that width and breadth exceeded the thickness, inasmuch as pebbles of this type are always naturally of an elliptical or round shape. It appears that the general outline was more of a secondary

character. This compressed shape speaks rather against the use as a hammer-stone, as it can easily be proved by experiment that one of the more globular boulders would serve this purpose much better than a flat specimen, as it rests much better in the hand than the latter. The size was also immaterial. The largest specimen hitherto found measures 8½ in. in length and weighed 7½ lb. 5 oz.; but there are numerous specimens which are much smaller; apparently the most procurable size was about 5 to 6 inches in length. These flat pebbles had their naturally-smooth surface improved by polishing. As to that there cannot be the slightest doubt. Perhaps this view might be questioned with regard to specimens Fig. 1, Fig. 3, and Fig. 4, though the traces of polishing are very conspicuous in Fig. 4; but there cannot be the slightest doubt that the specimens Fig. 2 and Fig. 5 have been subjected to a considerable amount of grinding and polishing. In specimen Fig. 2 the upper surface has been deeply hollowed out and afterwards carefully smoothed by polishing; the same applies to specimen Fig. 1. It is probable that these depressions have been produced by a prolonged grinding action by means of another pebble, because it does not seem very likely that such evenly concave surfaces could be produced by hammering and subsequent polishing. In this case the surface would be rougher and more uneven. This can also be proved by experiment. Let anyone take two ordinary Diabas pebbles, using one as a hammer-stone, and a rough spot showing the repeated blows will soon be produced. But the process of smoothing and polishing this rough mark will be very imperfect. On the other hand, if the two pebbles are ground against each other, and assisting this process by the use of sand, a nice, smooth surface can be produced. The best proof that these stones have been treated by grinding and polishing is given by specimen Fig. 5. A smooth surface, seen in this specimen, can only be produced by scraping or grinding. As scraping is out of the question, on account of the hardness of the rock, the only possible way to produce this feature is by grinding and polishing. That the art of grinding was, therefore, not wholly unknown to the Tasmanian aborigines may be taken as granted, but it is equally certain that they never applied it in the manufacture of their stone implements (Eolithes and Archaeolithes), but only used it for the production of the specimens here described. This is a very remarkable fact, giving rise to a considerable amount of reflection. If the aborigines knew the art of grinding, and the specimens here described leave no doubt that they did, how is it, then,

that they did not apply it in the manufacture of their tools? It seems fairly certain that the grinding and polishing was done in order to improve on the appearance of those already smooth water-worn pebbles. But, then, why did they not subject the chipped archaeolithes to a similar subsequent treatment? They knew that they could improve, and materially alter the ordinary pebbles, and from our way of reasoning, we should think that it would have been the most natural thing to treat the roughly-chipped knives and choppers in a similar way. But that the aborigines did not do it is an absolute fact, and this shows, in my opinion, a perfect absence of a progressive mind. They were incapable of thinking further than their forefathers did, and this lack of inventive genius, so essential to the progress of mankind, is most probably the true reason of the extermination of their race. We may now raise the question, for what purpose did these remarkable stones serve? Their shape proves that a considerable amount of labour has been bestowed on them. If we consider the long time it would take to produce a specimen like Fig. 2, we are bound to assume that these stones must have played an important role in the life of the aborigines. But what their object really was is unfortunately a matter of conjecture. As I stated above, very few complete specimens are found; by far the majority are broken, and even the complete specimens are generally a little damaged by fragments being broken off. This seemingly insignificant observation is, however, of the greatest importance; if we bear in mind that so much labour has been spent in their production, it is impossible to assume that these stones were accidentally destroyed. Even the primitive Tasmanian aborigines knew the value of labour, and to assume that they were so careless as to allow one of their treasures—and stones that were shaped by many a laborious day of hard grinding—must represent treasures—being accidentally destroyed is highly improbable. It is more probable to suppose that these stones were purposely destroyed. In examining the broken and fragmentary specimens we notice another curious fact; it is certain that some of the specimens were broken by smashing them; a fine specimen I found on Hope Beach shows traces of an almost savage desire to destroy it by blows. A fine specimen from Rokby, which has been kindly given to me by Mr. Chipman, has an edge which has been severely treated by blows, but the hardness of the rock, a finely-grained quartzite or quartzitic sandstone, withstood these attacks, and, though the



1



1A



2



2A

STONE IMPLEMENTS OF TASMANIAN ABORIGINES, showing that the original inhabitants of the Island understood the art of grinding stones. Probably associated with religious ceremonies.

1 and 1A—Boulder or Pebble Implement,  $8\frac{1}{2}$  inches in length, curiously shaped, found by Mrs. Oldmeadow.

2 and 2A—Quartzitic Sandstone,  $6\frac{1}{2}$  inches in diameter, found near Kempton.



2B



3



4



5

STONE IMPLEMENTS OF TASMANIAN ABORIGINES, showing that the original inhabitants of the Island understood the art of grinding stones. Probably associated with religious ceremonies.

2B—Quartzitic Sandstone,  $1\frac{1}{2}$  in diameter, found near Kempton.

3—5 inches in length Crystalline Diabas, found at South Arm.

4—7 inches long, made out of a flat pebble, found at Pontville.

5—Peculiar Oval Pebble, found at the famous Old Beach Camp by Mr. Anthony.

specimen has been badly damaged, it could not be broken. There is hardly any specimen which has come under my notice that more clearly proves the two facts—(a) Careful production by grinding the two flat surfaces with the two rough central depressions; (b) subsequent attempt of destruction by means of blows. In other specimens it is, however, impossible to assume that they were smashed and broken by blows. The specimen, notably Fig. 2, shows no traces that they have been subjected to such rough treatment. The fractures are clean and even, and this suggests only one way of destruction, namely, by fire. The specimens were heated first, and afterwards water was poured over them, and this must naturally result in a partial or total destruction. This view is borne out by a further observation. Some of the diabase pebbles exhibit peculiarly curved faces of fracture, such as would result when flakes by means of heating and sudden cooling are splintered off, but which could not be produced if the flakes had been broken off by blows. We know now that these laboriously manufactured stones were purposely destroyed, either by means of blows or by heating and sudden cooling, and this fact at once limits our range of speculation. It is a well-known fact that lower races often produce laboriously worked articles and destroy them afterwards if such articles are connected with their primitive notion of religion. It is therefore very probable that the specimens here described were in some sort of a way connected with the religious or superstitious ideas of the Tasmanian aborigines. What their ideas were, whether they were omens, good or bad, or in some way connected with the worship of the souls of their deceased relations, I am unable to say, but it is unquestionable that this theory easily accounts for otherwise irreconcilable facts, viz., a tedious production and subsequent intentional destruction. I may now mention another most interesting fact. Among the archaeological implements of Europe, in particular France and England, similar specimens, though pretty rare, have been found. The French called them "mortiers" (mortar), and it has been assumed that they served for grinding the red ochre primitive man was in the habit of using. It seems very doubtful that so much labour should be bestowed on the production of articles for which any fairly smooth slab of stone would have served just as well, if not better. Sir John Evans figures in his fundamental work on the stone implements of Great Britain, page 238, numerous specimens

of this type, and he assumes them to be hammer-stones, though he has apparently some doubts as to the correctness of his view. However that may be, and I think I have sufficiently proved that these specimens cannot be hammer-stones, the remarkable fact remains that specimens of the type here described are characteristic of the archaeological industry, and have been found in Europe, as well as in Tasmania. If my theory as to their use by the Tasmanian aborigines be correct, and so far there seems to be very little doubt, this would shed a peculiar light on the customs of archaeological man in Europe. If the implements used are the same, if the religious notions are the same, is it too improbable an assumption that the Tasmanian aborigines were the last remains of a race which during archaeological times—that is to say, previous to the advent of the great ice floes—inhabited Europe? The above was already written and ready to go to press when I happened to look up Bouwrick's "Daily Life and Origin of the Tasmanians," where on page 193, I found the following important remarks:—"When the Quaker missionaries, Messrs. Backhouse and Walker, were visiting the remnant of the tribes carried to Flinders Island, Bass Strait, they saw a poor old Inbra busy in placing together "sundry "flat stones" marked variously with black and red lines. These, she explained to the strangers, were her country people absent from her. One, a larger stone than the rest, represented a fat black woman far away. . . . It is just possible that the Tasmanian was in that way communing with the spirits of her friends lost in the black war. Unwilling to refer to them as dead, she spoke of them as 'plenty long way.' . . . I have not heard of any flat round stones like some found in Ireland, Denmark, and Caithness, having a slight depression in the centre on both sides, as of a thumb-mark, unless those noticed by these two friends on Flinders Island were so." The observations of Messrs. Backhouse and Walker, who may most probably have overlooked the rough depressions in the centre, prove conclusively that the theory above advanced is correct. In fact, the remark concerning the larger stone representing a "fat black woman" proves that these stones were connected with "absent" (dead) individuals, indicating a very crude form of worship of the souls of deceased relatives. This view also accounts for their frequent occurrence, though it still leaves the fact why these stones were intentionally destroyed unexplained.

## Annual Meeting.

The annual meeting of the club was held in the Masonic Hall on Thursday evening, September 26, Mr. S. Clemes presiding.

The following new members were elected:—Rev. H. B. Atkinson (of Evandale), Messrs. W. A. Weymouth, G. J. Williams, and A. O. Green (of Hobart).

Exhibition of Specimens.—A "hand-fish," of the genus *Antennarius*, was forwarded by Mr. A. E. Brent, having been taken in the Derwent. Mr. A. M. Lea exhibited two cases of walking-stick insects, praying mantis, grasshoppers, crickets, and earwigs, and made interesting remarks on them. Mr. W. N. Atkins showed a collection of land shells, and Mr. E. A. Elliott a Japanese painting of a hawk.

A discussion took place as to the adoption of a badge by the club, the platypus and native tiger being considered. But this matter was referred to the committee for decision.

The annual report was read and adopted. This showed that during three years the membership of the club had amounted to over 90 members. The meetings and excursions had been well attended, and much useful work done. A journal had been started, and other publications issued.

The balance-sheet showed a credit balance of 6s 8d.

The following office-bearers were elected:—Chairman, Mr. L. Rodway; vice-chairman, Mr. A. L. Butler; hon. editor "*Tasmanian Naturalist*," Mr. A. M. Lea; hon. treasurer, Mr. R. A. Black; hon. secretary, Mr. E. A. Elliott, and assistant secretary, Mr. E. S. Anthony; committee, Mr. S. Clemes, Dr. F. Noetling, Messrs. W. C. Cato, J. H. Gould, F. L. Brownell, and Clive E. Lord.

The chairman (Mr. Clemes) then gave a presidential address, entitled "Ideals of a Field Naturalists' Club." He said the main point of it lay in the first word, "field." The club existed for affording opportunities to go out of doors, and, under the instruction of experts, learn about nature from nature itself. It was not possible for anyone to become a specialist in more than one subject; yet if a person began to take an interest in one subject he would soon find that it brought him somewhat in contact with other branches which made up natural history.

A general discussion followed, the members endorsing the chairman's remarks.

The meeting closed with the usual *conversazione*.

## October Meeting.

A monthly meeting of the club was held at the Masonic Hall on October 31. Mr. L. Rodway occupied the chair, and there was a large attendance.

Professor T. W. Kirk, Biologist to the New Zealand Department of Agriculture, was introduced by the chairman as being a visitor to Hobart and a leading scientist in New Zealand.

The secretary read a letter from the new curator of the Museum (Mr. Robert Hall), in which the wish was expressed that members would assist in building up the Museum.

The following nine members were elected:—Misses O. Barnard and N. McKay; Messrs. C. Harrison, F. Heywood, L. Dechauneux, A. J. Taylor, W. E. Masters, A. J. Honey, and A. E. Russell. This brings the club's total membership up to over 100.

The exhibition of specimens was as follows:— Fern impressions from the Sandfly coal measures, by E. S. Anthony;

nest and eggs of summer bird, by A. L. Butler; case of lady birds, by A. M. Lea; and photos of cuckoos (taken by Mr. Kinane, of Melbourne), by E. A. Elliott; and book of pressed ferns of New Zealand, by J. W. Tarleton.

Mr. L. Rodway, Government Botanist, then gave information as to the collection of plants and how to preserve them when collected. He advised members to collect only in dry weather, otherwise the plants would become mildewed. In mounting them it was best to have sheets of paper of a regular or uniform size. They may be gummed on to these sheets, though with most plants it was better to fasten them with small tags of sheet lead passed through the paper and bent over. Full data should be written on the papers with all specimens.

Mr. A. L. Butler showed how to blow eggs through only one small hole on the side. In this way the egg was not disfigured at all. Different kinds of drills,

blow pipes, and other apparatus were shown, and practical demonstrations were given on two starlings' eggs, which operations were successfully and quickly done.

Mr. A. M. Lea (Government Entomologist) also showed how to set out and mount butterflies, moths, and other in-

sects. The wings of the former were stretched out and fastened down with little strips of paper, the legs were put into proper position, and kept in place with many pins, which could be taken away when the specimen dried.

The meeting then resolved itself into a conversazione.

## November Meeting.

The monthly meeting was held on the 28th of this month at the Masonic Hall. The chairman (Mr. L. Rodway) presided, and there was an excellent attendance.

The following new members were elected:—Messrs. G. W. Smith (Oxford University) and C. J. Large; as juniors, Masters E. Lines and Claude Bryan.

Exhibition of Specimens.—Mrs. H. L. Roberts showed a fine stuffed specimen of the wedge-tailed eagle (*Uroaetus audax*), also eggs of several kinds of pheasants, and of the Californian quail, laid by her birds at Beaumaris. Mr. A. L. Butler showed a skin of the blue-banded parrakeet, and also its eggs, and three sets of eggs of the white-fronted chat (*Epthianura albifrons*), showing great difference in markings. Mr. Rodway exhibited and described a fungus disease on a specimen of *Bassioea cinerea*. Mr. E. A. Elliott showed a stuffed young cormorant (*Phalacrocorax leucogaster*) and several sets of eggs of the same kind, taken at Bruny Island; also eggs of wedge-tailed eagle, forwarded him by Mr. J. W. Mellor, of South Australia. Mr. F. L. Brownell showed some peculiar geological specimens from the Briseis tin mines. Mr. G. W. Smith exhibited some photos of the cor-

morants' rookery at Bruny Island, and Mr. Clive E. Lord also some photos of this rookery and some others of a wedge-tailed eagle's nest near Hobart.

In the unavoidable absence of Mr. A. M. Lea (Government Entomologist), a paper by him was read by the secretary on "A New and Remarkable Genus of Blind Beetles from Australia and Tasmania, of the Family Trichopterygidae," which will be found elsewhere in this issue.

Mr. Clive E. Lord read an interesting account of the recent camp-out at Ford Bay, Bruny Island, and which also appears in this issue.

Mr. G. W. Smith, of the Oxford University, who has been sent by that institution to Tasmania to work up a report on the freshwater crustacea of this island, gave a most interesting account of some of these animals, illustrating his remarks with sketches on a blackboard. It is anticipated that an article by Mr. Smith, embracing the subject matter of his remarks at the meeting, will appear in the next issue of the "Tasmanian Naturalist."

The usual conversazione closed a very enjoyable meeting.

## Note on a Tasmanian Fern.—*Cystopteris Fragilis* Bern.

BY L. RODWAY (Government Botanist).

This fern, so rare with us, has once more been gathered. Mr. T. B. Moore, who justly stands in the front as a keen observer, recently found it in the neighbourhood of the Franklin Range. Only once before in the present generation has it been gathered, namely, by W. D. Weston, of Launceston, who met with it a few years ago in the vicinity of Middlesex Plains. Previous to that the only

record of its existence in Tasmania is that of Gunn, who discovered it near Lake St. Clair. The distribution of this delicate fern is very extensive, but chiefly in the northern hemisphere. It has not yet been found on the mainland of Australia, but has been gathered in many localities in New Zealand. In South America it grows along the whole length of the Andes as far south as Chili.

In South Africa it occurs on many mountains at a considerable altitude. In the north it has a very wide range from the Arctic regions south, but where it spreads to warmer parts it retreats to the mountain tops, where it is found as far south as Mexico, West Indies, Abyssinia, and the Himalayas. On the Himalayas it ascends to an altitude of 16,000 feet. It is a small, delicate plant, finding its home for preference in the crevices of rocks. Of a tufted habit, it makes a pretty little greenhouse fern. The leaves vary considerably in shape, and many species or varieties, according to the bias of students, have been made of it. The leaves seldom reach six inches in length, and are divided into primary and usually secondary pinnae, the ultimate divisions being bordered by lobes or acute teeth. The sporangia are of the true polypodiaceous type, namely, stalked with a well-developed vertical annulus. The sporangia are arranged in little round sori on the back of the ultimate segments at some distance from the margin, and arise from the end of a lateral vein. In the young state the sorus is protected by a delicate membrane or indusium that arises below it, and for some time appears as a cup or concave cover opening above. As the sorus matures that membrane is bent back, and is commonly completely hidden. The sporangia arise with the indusium from the surface layer of the leaf, but as development proceeds they are borne on to the base of the indusium itself, and appear as attached to that organ instead of to the leaf. This is important as a distinguishing mark, dividing *Cystopteris* from *Divalia*. The appearance of the young indusium has gained for the plant the popular name of Bladder Fern.



CYTOPTERIS FRAGILIS BERN.

## Notes on a Tasmanian Eucalyptus.

(*E. Gunnii* of J. D. Hooker.)

BY L. RODWAY (Government Botanist).

In the year 1844 Sir Joseph Hooker described in the "London Journal of Botany" a eucalypt, and named it "*Eucalyptus gunnii*." In his great work, "*Flora Tasmaniae*," published about the same time, also appears a description of the tree, accompanied with a very re-

liable plate. The plant described was from Tasmanian material, and accurately represents the tree so common in some parts of our Midlands, from Mount Field to Ironstone Range, and known locally as the cider gum. Like most other eucalypts, the tree varies, and it is a



EUCALYPTUS GUNNII H.

matter of individual opinion how far the name shall cover varieties, and where another name shall be used. Botanists have long given up the idea of immutability, and recognise that except in favoured cases a specific name is only a convenient but arbitrary appellation for a poorly circumscribed group of varying forms. Biologists, in order to avoid confusion, describe a particular being under a certain name. That form, whether well or ill chosen, becomes for all time the type bearing that name, and all related forms are compared with it. The cider gum of Tasmania is the type form of "Eucalyptus gunnii" of Hooker. Any persons who endeavour to shift this mark commit an offence against the laws of botanical nomenclature. They not only rob the first person of his little bit of sponsorial conceit, but raise up confusion in the work to be done by subsequent students. There has been no botanist so great that by his ipse dixit he could, with certainty, change a name. Von Mueller, great as he was, failed in most instances where he tried it. He tried it in 1860 with Hooker's "Eucalyptus gunnii," only to bear the unfortunate result that to-day few Australian botanists refer to the same form when they use the name, and men, when they send orders to Australia for seed of "Eucalyp-

tus gunnii" sometimes get what they want, but they generally do not. The typical tree has a smooth, white bark; alternate, stalked, oblong, equal-sided leaves of rather thick texture, seldom or never pointed. Flowers are small, shortly-stalked, and three together in axillary umbels. The operculum varies from shortly hemispheric to nearly conical. The fruit is small oblong to hemispheric, about two to three lines diameter, with a thin rim, and sunk capsule. Even Hooker was guilty of an error. We have a tree common on lowlands closely related to cider gum. It has somewhat different bark and leaves, more flowers in the umbel, different fruit, all different in degree, but not essentially. Hooker described this as "Eucalyptus acervula of Sieber, which it certainly is not. Mueller, recognising the error Hooker had made tried to remedy it by making a worse one. He suppressed the name "acervula," and adopted the plant so described as the type form of "Eucalyptus gunnii" Hooker. It appears as such in his "Eucalyptographia," with a little bit of the original form appearing as an interesting variety. The plate which appears in this number is a photograph of a sprig of the type plant. It is not a very good specimen, but was the best available. The piece with broad pale leaves is the juvenile condition of the plant

## Excursions.

On Saturday, October 5, the first excursion of the session was held, the object of study being botany, and the leader Mr. H. Rodway, who took the party to Bellerive and thence along the Rokeby-road. After walking about a mile a large low-lying piece of ground was met with, and here were found many flourishing shrubs, and in spring it looks quite gay with the following plants:—*Baeckia diffusa*, *Aotia villosa*, *Pimelia litifolia*, *Leucopogon ericoides*, *Epacris impressa*, several *acacias*, and many other kinds. Club moss was also found growing freely.

A botanical and ornithological excursion to Mount Direction per motor launch was held on October 19, the leaders being Messrs. L. Rodway and A. L. Butler. A good number of members attended. Unfortunately the locality did not prove to be a good one for either branch, and the time available was too short to enable those present to reach a better hunting ground. The chief item

in the bird line was a large nest in a eucalypt, which was probably that of a goshawk, as this bird was seen flying high overhead with something in its claw. Wedge-tailed eagles had a nest near the summit of this mountain for many years, and the Stewarts, of Risdon Ferry, have said they had been there for 30 years. Young birds were reared for the last time in 1906. The tree they built in was an exceedingly hard one to climb, and few, if any, ever reached the nest. The tree blew down in July or August of this year, and scattered the nest amongst the scrub.

A geological excursion to Sandy Bay was held on November 16, with Dr. F. Noeting as leader. The cliffs on the roadside were first examined, and a clear account of their formation was given by the leader. Collectors obtained fossil specimens of leaf impressions, etc., from the sedimentary deposits here. A visit was also paid to One Tree Point, where the strata of volcanic and sedimentary

rocks were examined, and clearly explained by Dr. Noetling. Numerous questions were replied to by the leader, and members expressed themselves as well pleased with the information imparted. This excursion was highly successful.

A general collecting outing was held at South Arm on November 30 per motor

launch. Members separated immediately on landing, some dredged a small lagoon for entomostraca; others collected plants or insects, while a few went over to the rocks towards the Derwent lighthouse and found some little penguins nesting. The locality, however, was not a good collecting one, though the trip proved most enjoyable.

## The Bandicoot.

BY P. LOCKWOOD, F.L.S. (N.S.W.)

During my short but very profitable stay of fifteen months in the Patersonia district—which is situated on the Scottsdale-road, at the foot of Mount Arthur, and about 17 miles from Lannceston—I became interested in the pouched mammals found in that locality, and none seemed more interesting to me than the bandicoot. The bandicoot belongs to the order Marsupialia and the genus *Perameles*, of which Tasmania possesses two species only—*Perameles obesula* and *Perameles gunni*—but there are about a dozen different species ranging over Australia and adjacent islands. They are nocturnal in their habits, though one little *obesula*, which had lost his tail by some means or other, always came about my house for the scraps in the daytime, and would occasionally quarrel with the cat. The pouch is situated on the abdominal surface of the body of the female, and opens backwards, which is the reverse of what we find in other marsupials. The young are produced in an imperfect state of development. At birth these imperfectly developed creatures are transferred by the mother to her teats, which are situated within the pouch, and there they remain until able to take care of themselves. Of course, these undeveloped little ones cannot suck by themselves, and nature has accordingly provided that their wants can be supplied. Special muscles surround the milk glands of the female, which by a spontaneous contraction compress the glands, and thus force the milk down the throats of the helpless young. While they differ in bodily form, all have long and pig-like snouts, but the length of the ears is variable. The three middle toes of the forefoot are almost equal in length, and furnished with strong, curved claws. In the hind-foot there is a clawless first toe; the second and third digits have flat, twisted nails, the fourth exceeding all the rest in length, and carrying a stout pointed

claw, and the fifth similar, but smaller. The tail is tapering, and may be clothed with short hair, or almost bare. From personal experience I have found the tail somewhat brittle. Having caught an *obesula* (male) once by the tail, he gave one struggle, and left about a quarter of the appendage in my hand. Of our two species, *Perameles obesula* is the most common about this district; he is a brownish-grey animal, with coarse, bristly hair, while *Perameles gunni*—named after Mr. Gunn, a Tasmanian naturalist, who found the first specimen—is a very pretty little creature, with stripes across the lower part of the back, and divided in the middle by a dark line. The fur is of a much finer quality than the *obesula* possesses. It is very amusing to watch the bandicoots after sundown. I have seen them swarm out round the local school in this district and cake thrown away by the children, who bring their dinners to school, and many a good specimen I have caught in a box-trap during their evening picnic. They are fond of household scraps, though their bush diet consists of beetles, worms, grubs, and roots. For a nest they roll up most rapidly with their snout dried leaves, grass, and bits of sticks. Occasionally I have observed a bandicoot make a burrow similar to a rabbit, dig out the earth with wonderful rapidity, and then roll in the collected materials for a nest, though my experience has been that they more often sleep in hollow logs. I found it impossible to keep these little animals in a domestic state; they seem specially adapted for the roaming bush life which they follow. One little *gunni*, scarcely half-grown, appeared to thrive fairly well, sleeping in my study for the greater part of the day, only wakening for a little milk: in the evening the little chap was all alive, hopping about the house, apparently quite happy, but

it lacked something which nature had provided for these lowly creatures—the burrowing in the earth. I often accompanied my little pet out in the open, and it was most pleasing to observe the wonderful adaptability with which its pig-like snout would be forced under the earth. I was very sorry to find that after a week or two my poor gumi grew duller and weaker, and one morning the little one was found to be quite lifeless; he is now in a case of Tasmanian mammals in the Launceston Museum. Some little time after I had the pleasure of receiving a present of two very tiny little gumi, which had not been clothed very long, the mother having got into one of those barbarous spring traps which country boys are so fond of setting, and thus torturing many innocent lives. All that was possible was done for these "baby bandies," but they pined away, and also form case specimens in

the Launceston Museum. I am sure my friends of the Tasmanian Naturalists' Club will agree with me in saying that we can learn many a valuable lesson from such lowly creatures of our forest, so should pledge ourselves to protect our native fauna in every possible way, and put down very firmly the cowardly cruelty that our poor dumb friends have to suffer from the wanton hands of thoughtless persons. When we learn to study the wonderful life and habits of the lower creatures we can reciprocate the sentiments of the poetess—

I wish you could have seen them there:  
It did my spirit good  
To see the small things God had made  
Thus eating in the wood.

I hope later on to forward a few more remarks on other little animals I had the pleasure of becoming acquainted with.

## Camp-out of the Tasmanian Field Naturalists on Bruny Island.

BY OLIVE E. LORD.

It was decided to hold the November camp of the club at Ford Bay, Bruny Island. This bay is on the channel side of the island, a little to the north of the isthmus between North and South Bruny. A landing was made on Saturday, the 9th, and by the time darkness had fallen the tents were pitched and everything was ship-shape. After tea plans were discussed, and we then turned in to have a happy time with the mosquitoes, which were very plentiful. Early on Sunday morning we were ready to start. Some of the party went to the Lagoons, others to Adventure Bay or Cape Frederick Henry, etc. The lagoons were situated about three miles from our camp, and consist of one large and numerous small ones. Some distance from the lagoons, and over a sandhill, is Adventure Bay, where there is a very fine beach; but, as there had not been any rough weather for some time, few shells were found. Whilst walking along the beach two dead seals were noticed. Adventure Bay is terminated at the north by a headland, and then cliffs extend for miles, the most easterly point being called Cape Frederick Henry. In these cliffs a cormorants' rookery was discovered, but after several attempts it was considered impossible to get down to the nests without ropes, so it was decided

to wait till next day, when these could be procured. Whilst watching the cormorant—a large sea-eagle was observed flying along the shore. On the way back to camp one of the party visited the sandhills and discovered a rookery of penguins, these birds having their nests in burrows in the sandhills. From the ears of one of the penguins some small ticks were obtained, both ears being quite filled with them. On Monday some of the party went fishing, and some went along the isthmus; but the chief event was a visit paid by some of the members to the cormorants' rookery. The cliffs at the rookery are perhaps 650ft. high, and are fairly easy to descend to within about 200ft. of the water, but after that they are practically perpendicular. Hundreds of cormorants were observed on their nests, which extend for about a mile along the cliffs, and are built of pig-weed and grass on the ledges at the foot. The birds were the large pied cormorant—*Phalacrocorax leucogaster*—and evidently their nesting season was a little earlier than the date of our arrival, as most of the nests had young ones in them. After descending us far as possible by scrambling down the rocks, one of the party was lowered to the rookery with some ropes brought for that pur-

pose. This was done only after a good deal of time had been spent in attending to the necessary precautions against accidents. Despite the lateness of the season, several clutches of eggs were procured. It was astonishing to find how quickly the time passed whilst exploring the rookeries, and, though they were only reached in part, when we had collected some specimens it was time to return to camp. Besides the cormorants, many gulls, gannets,

and terns were observed, also a few penguins, oyster-catchers, dotterels, etc., whilst further inland the most common birds appeared to be swifts, parakeets, honey-eaters of several species, diamond birds, tree and wood swallows, wrens, and several species of cuckoos. The chief kinds of fish caught were flathead, varied with an occasional cod, skate, or dogfish. On Tuesday morning we returned to Hobart, which was reached as the Post Office clock was striking 9.

## On a New and Remarkable Genus of Blind Beetles from Australia and Tasmania of the Family Trichopterygidae.

BY ARTHUR M. LEA.

Recently, having occasion to identify a species of the family Trichopterygidae, from King Island, I carefully examined Matthew's monograph of that family, and one of the genera figured struck me instantly as being familiar. This genus, *Limulodes*,\* is remarkable in that its only (at least then known) member has no eyes or wings, that its mouth parts are concealed, and that the intercoxal process of its prosternum is very wide, and produced backwards on to the metasternum, with its hinder apex bilobed. On examining my collection of the family, I found that at least four species (possibly five, of which, however, one is represented by a unique specimen) agreed in all these remarkable features, and that their outlines were very much the same as those of *Limulodes*. They all evidently belong to one genus, but this genus differs from *Limulodes*, although evidently very close to it, in

having the antennae more than nine-jointed and of different shape, and the abdomen entirely covered by the elytra.† All the species occur in ants' nests,‡ and all appear to be quite common, although on account of their exceedingly small size they are readily overlooked. I have taken them in the nests of at least five kinds of ants (usually under stones), and in West Australia, New South Wales, and Tasmania.

I have very great pleasure in dedicating the genus (certainly the most interesting one known to me from Tasmania) to our chairman, Mr. Leonard Rodway.

‡As also does *Limulodes paradoxus*.

†In several specimens of one species the tip of the abdomen is exposed, but this was probably due to improper treatment.

\*Plate 16 and plate 23, fig. 13.

### *Rodwayia*, n. g.

Head small, widely transverse, immersed in prothorax, its outline continuous with outline of that segment, mouth parts concealed, eyes wanting, antennae thin; first joint stout, concealed by head; second stout, outline slightly dilated towards base, longer than wide, the length of three following joints combined; third thin, very little longer than wide; fourth the width of, but slightly longer than, third; fifth subequal in length with fourth; third to fifth parallel-sided; sixth slightly shorter than fifth, and slightly dilated to apex; seventh shorter than sixth, and slightly more dilated;

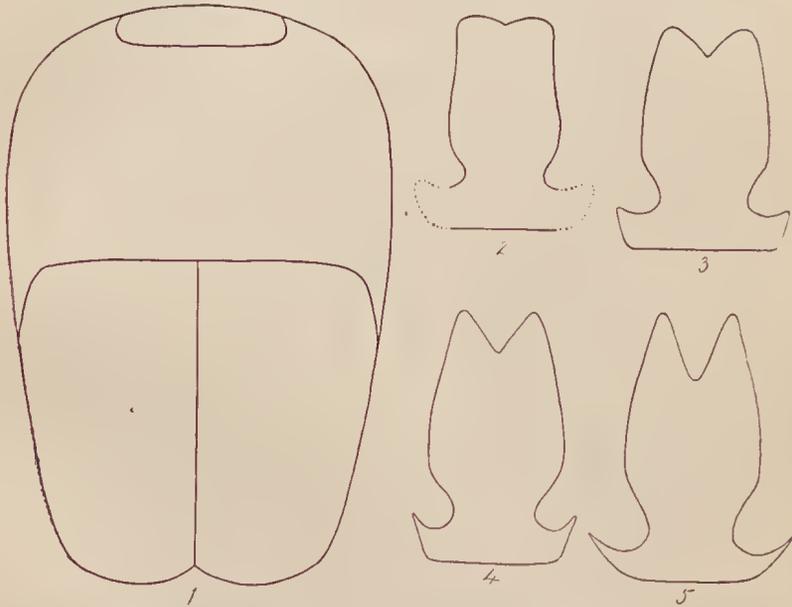
eighth subtriangular, and forming smallest and basal joint of club; ninth transverse, wider than eighth, apex rounded; tenth subpyriform, the length of three preceding joints combined. Prothorax very large, regularly convex, sides rounded, base truncate, but posterior angles produced, and embracing elytra. Scutellum absent.\* Elytra small, narrower than, and outline continuous with that of prothorax. Prosternum with the sides produced downwards like flaps; intercoxal process very wide, produced backwards over metasternum, hinder apex bilobed; abdomen entirely conceal-

ed from above; legs entirely concealed from above; two basal joints of tarsi small, third elongate.

To examine all parts carefully would need very careful dissection, and as the head of the largest species before me is less than one two-hundredth part of an inch in length, I have been unable to properly dissect it; the antennae may really be eleven-jointed; but if so, the joint I am unable to see must be concealed by the overlapping portion of the head. The genus, however, is so remarkably distinct by the characters, which are readily observed under the microscope without dissection, that no confusion is likely to arise from this cause. I am unable to count the segments of the abdomen. The outer margins (seen when the lower surface is examined) appear to be formed of a thin, continuous flap,

of which that portion formed by the prothorax is the deepest, and that by the head is the finest. The prolongation backwards of the hind angles of the prothorax is much more apparent from the under than the upper surface. The intercoxal process of the mesosternum is wide, and more parallel-sided than in the figure 0 given of *Limulodes*; the middle coxae are also wider, larger, and more distant. Both the process and coxae however, are entirely concealed by the overlapping prosternal process.

\*In Matthew's main figure on plate 16 the scutellum appears as being absent, but on plate 23, fig. 13, a distinct scutellum is shown, and in the generic description it is said to be "brevisimum, latissimum, triangulare."



1—Outline of *Rodwayia Minuta*. 2—Intercoxal Process of Prosternum of *R. Ovata*. 3—Of *R. Occidentalis*. 4—Of *R. Orientalis*. 5—Of *R. Minuta*.

*Rodwayia Ovata*, n. sp.

Pale reddish castaneous, appendages and tip of abdomen paler, closely covered with short sericeous pubescence.

Head about twice as wide as long. Prothorax very large, almost half total length, rather strongly convex, sides feebly rounded, except towards the apex, where they are strongly rounded; length of sides almost equal to greatest width. Elytra at the base narrower than, and clasped by base of, prothorax, sides

gently decreasing in width from base to near apex, apices widely and separately rounded. Intercoxal process of prosternum slightly produced on to metasternum and entirely concealing middle of mesosternum; apices widely rounded, apex of abdomen notched. Femora wide; length  $\frac{5}{8}$  mm.

Hab.—Tasmania: Hobart; in nests of a fairly large black stingless ant under stones (over 40 specimens were taken

from one nest). The outline is almost perfectly oval. In this and all the other species the derm is shining, but somewhat obscured by the pubescence, and this being partially absent from the intercoxal process of the prosternum that portion appears to be highly polished. All the species are remarkably similar in general appearance, differing, except as to the apices of the prosternal process, in little more than size, slightly in colour, and in one species in colour of pubescence. The sculpture of the prothorax and elytra is so obscured by the clothing that it cannot be satisfactorily

seen, but it appears in all the species to consist of dense punctures arranged transversely or at right angles to the disposition of the clothing. In fact, from some directions there appear to be numerous fine ridges, behind which are placed the punctures, the ridges being more or less parallel with each other, or slightly undulating. The back of the head also, when removed from the prothorax, appears to be similarly sculptured. The under surface in all the species appears to have fine, but more or less concealed, punctures.

*Rodwayia Occidentalis, n. sp.*

Reddish castaneous; prothorax (especially at base) somewhat darker than elytra; abdomen and appendages paler than elytra. Closely covered with short sericeous pubescence.

Head scarcely twice as wide as long. Prothorax (in proportion) slightly larger, and with more strongly rounded sides than in ovata; the elytra with sides rather more rapidly diminishing in width to apex, and hind apex of intercoxal process of prosternum more deeply incised. Abdomen apparently composed of six

segments, its apex widely and obtusely notched. Femora wide and compressed, dilated in the middle posteriorly; tibiae rather thin, apparently parallel-sided. Length,  $\frac{2}{3}$  mm.

Hab.—W. Australia; Swan River; in nests of a fairly large stingless "sugar" ant under stones.

Although the colour is not very dark, it is darker than that of any other species here described, and the prothorax often appears to be faintly infuscated in the middle.

*Rodwayia Orientalis, n. sp.*

Pale reddish castaneous, appendages still paler. Closely covered with short sericeous pubescence.

Outlines much as in occidentalis. Notch at hind apex of prosternal process deeper than in occidentalis, and much deeper than in ovata. Abdomen obtusely notched at apex. Femora wide and compressed. Length,  $\frac{2}{3}$  mm.

Hab.—N.S. Wales; Sydney; Tasmania; Launceston. In nests of the same small ant that harbours the following species;

in the nests of a very minute red ant, and in those of a rather small "green-head" stinging ant; all under stones.

In one specimen the maxillary palpi are not concealed, and in shape appear like the figure E, given of *Limulodes*. But this specimen is broken, and in others the palpi are apparently invisible. On the elytra, especially towards the base, there usually appears, in some lights, a bluish or greenish upalescence; but this may be due to the clothing.

*Rodwayia Minuta, n. sp.*

Very pale reddish castaneous; appendages paler. Closely covered with short whitish pubescence; paler than in all the preceding species.

Outlines almost exactly as in ovata. Hind apices of prosternal process more acutely produced than in all the preceding species, and its sides rather less inflated. Abdomen apparently not notched at apex, and rather more densely pubescent than in the other species. Femora wider than in the other species. Length,  $\frac{2}{3}$  mm.

Hab.—Tasmania; Hobart, Launceston, Sheffield. Common in nests of a small black ant (*Colobopsis Gasseri* Fab), under stones.

This is the shortest beetle yet described from Australia and Tasmania, but its total bulk is slightly greater than that of *Ptilium Sinsoni*; buterto the shortest described species. There are, however, several considerably smaller species of the family in my collection.



THE  
TASMANIAN FIELD NATURALISTS' CLUB.



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