# THE NORTH QUEENSLAND NATURALIST

## CAIRNS


Journal of

NORTH QUEENSLAND NATURALIST CLUB

Founder, Presd. The late Dr. HUGO FLECKER.


**OBJECTS — The Furtherance of the Study of the various branches of Natural History and the Preservation of Our Heritage of Indigenous Fauna and Flora.**


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**"Each Author is responsible for the opinions and facts expressed in his or her article".**


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# JERBOA RATS AND MICE

I wonder how many bush people have seen a jerboa rat or a jerboa mouse, or even know of their existence here ?

The one and only jerboa mouse that I ever saw was at Quaamaa, South Coast, N.S.W. It was on our dairy farm there, when I was 4 years old. I was standing near an old decayed tree stump, when, from a hole in the ground where a root had rotted away, the image of a fairy-like kangaroo emerged. After taking five or six hops it sat up and sniffed the air suspiciously. I had frozen into immobility, so, after a careful scouting, it must have concluded that I was harmless.

When, later, I told some of my own age group about the little creature no bigger than a mouse that hopped like a kangaroo, I was laughed to scorn.

"Garn", said one, "there ain't any animal like that!"

Many years later, here at Ingleburn, I came in contact with the jerboa rat. In this case also, it was just a brief glimpse on my part and a hasty retreat on the part of the rats.

On one side of the fowl run at the bottom of our block, I built a small fowl house and paved the floor with bricks to raise it above water level during heavy rain. After a time I noticed that tunnels had been excavated under the bricks and in some cases extended outside the shed into the main fowl run. I could follow the course of the tunnels because holes to the surface had been made at intervals between the bricks and outside where they extended into the yard. These were evidently made for ventilation or observation, perhaps both. Looking down into them I often caught glimpses of shadowy forms and gleaming eyes.

Going down one evening later than usual, in bright moonlight, to shut the fowl-house door, I came upon a group of about six of these rats. They were on the short grass under the clothes-line but were the next instant hurtling in all directions, in leaps easily three feet high and much farther along the ground.

Not long after this happened we had a heavy flood, the water rose above the bricks, and these interesting creatures were not seen around here any more.

V. C. JAGGERS.

# LAPORTEA, THE STINGING TREES

R. G. GILLIS and A. S. WRIGHT

(Contribution from Australian Defence Scientific Service, Department of Supply, Defence Standards Laboratories, Maribyrnong, Victoria.)

The genus **Laportea** has a long history and an unenviable reputation as one of the worst of the **Urticaceae**, a family containing many stinging plants. Generally three Australian species are listed : **L.gigas**, the giant stinging-tree which can grow to more than 100 feet in suitable positions; **L. photiniphylla**, the shiny-leaf stinging tree not so tall as **L.gigas**; and L. **moroides**, "Gympie bush". (Fig. 1) a tall shrub with leaves generally having more "hairs" than the other species; it has the reputation of being the worst stinger in the family. Everist (1) also distinguishes **L. cordifolia**, the "stinging bush". There are related species in other countries. Ito (2) refers to **L. pterostigma** which is found in South Formosa and has the local name "chiao-jeu-kou", which he translates as "man-biting-dog". He also mentions **L. crenulata** which is found in Eastern India. Keele and Armstrong record a fatal stinging by **L. condata** in New Guinea, and another fatal stinging by the related **Urtica ferox** (Maori name "onga onga") occurred in North Island, New Zealand at Christmas 1961, when a youth died after being stung while pig shooting at night near Dannevirke.

**FIG. 1 — Laportea moroides — Iron Range, N.Q.**

A serious accident happened in June 1961 in the Blue Mountains west of Sydney, N.S.W. (3). Mr. Bernard Peach, an experienced bushwalker, stumbled through a patch of **Laportea** in poor visibility while coming down Guouogang Pit, a steep ravine on the side of Mt. Guouogang. He was seriously disabled and unable to proceed, but was easily found by a search party; as a good bushwalker should, he had kept to his planned route which others knew.

Mr. Peach reported that the leaves which stung him were purple. This aroused some curiosity, and a party returned to the spot to investigate. It turned out that Guouogang Pit contains a dense pocket of rain forest and the sting was indeed caused by second growth **L. gigas** which had a fungus on its leaves that caused the unusual colour. Specimens were identified at the Royal Botanic Gardens, Sydney, by Mr. Anderson and his staff.

Subsequent investigation showed that **Laportea** is not uncommon in north-east-facing gullies in the mountains of New South Wales. There is a patch of **L. gigas** at Burning Palms in the National Park south of Sydney, and another at Mt. Keira near Wollongong. There was once a good specimen in the Sydney Botanic Gardens. It was reluctantly removed after a lot of trouble with schoolboys.

In all species the leaves are covered with stiff spines or 'hairs'. These are of two types, one short and stout and the other with a bulb on the base and a long hollow shaft (Fig. 2). The tip is closed off and the bulb contains the active material in solution. When it contacts the skin the tip is broken

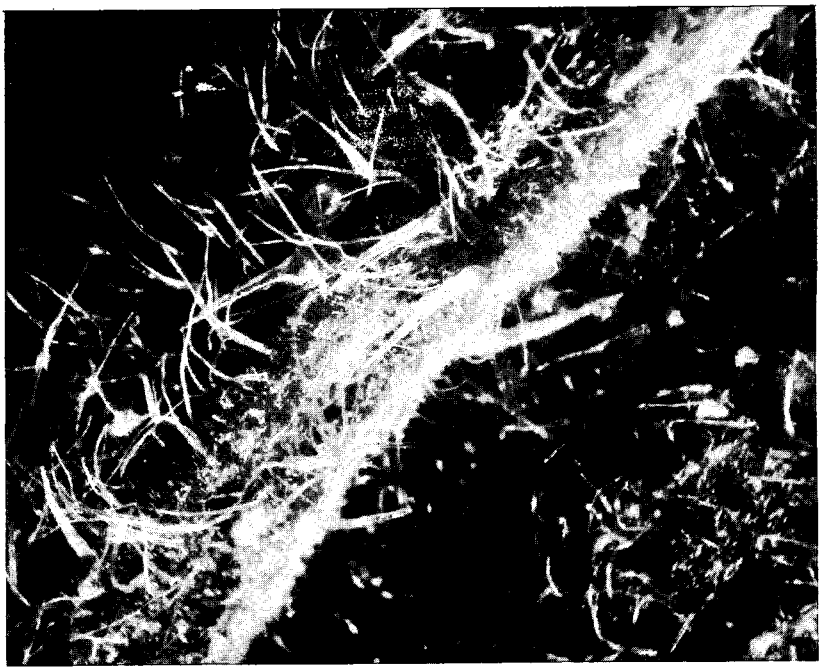

**FIG. 2 — Close up of "hairs" on L. gigas.**

and becomes effectively a hypodermic needle ready to perform a subcutaneous injection. The spines are amorphous silica, and this has been confirmed at D.S.L. by chemical analysis and X-ray diffraction.

The active principle causing the sting is frequently stated to be formic acid. This assertion is based on the work of Petrie (4) who demonstrated the presence of both the free acid and its salts. It is unlikely that the formic acid could produce so severe or so prolonged a pain on subcutaneous injection. Dry specimens of **Laportea** in the Brisbane Herbarium which could hardly now contain formic acid, are still active although 60 years old. Petrie worked on whole leaves, and because he overlooked the presence of nitrates, his material balances were misleading and his estimates of formic and acetic acids are unreliable.

Biochemists working on the problem have demonstrated by biological and pharmacological methods the presence of substances with activities like those of acetylcholine, histamine and/or 5-hydroxytryptamine. These three substances all cause intense pain, swelling and inflammation on subcutaneous injection, and are reported to be present in many insect stings (5). Using biological techniques, Lindigkeit and Jung (6) and Robertson and Macfarlane (7) have shown the presence in **Laportes** of substances having all three kinds of activity. This is in general agreement with the work of Collier and Cheshire on **Urtica dioica** (8), of Emmelin and Feldberg on **U. urens** (9) and of Pilgrim on **U. ferox** (10).

However both Lindigkeit and Jung (6) and Robertson and Macfarlane (7) consider that the real stinging principle is an unidentified material. This they have established by either blocking the effects of the acetylcholine and histamine or by removing them from hair extracts. The active agent does not appear to be an enzyme, glucoside, protein or alkaloid. It has a molecular weight of 1000 or more, is soluble in ether, and is stable to boiling water for 10 minutes but boiling in hydrochloric acid for one hour abolishes its activity. Robertson and Macfarlane suggest that it could be a polysaccharide but this has not been confirmed in any way.

At Defence Standards Laboratories, our interest in the problem was first kindled by the Australian Army authorities in Queensland, and later by the North Queensland Logging Association. We have spent much time trying to confirm the presence of acetylcholine, histamine or hydroxytryptamine by purely chemical and non-biological methods. Our results so far indicate that the active constituents are not precisely these compounds, but could be related to them. In any case, they are low molecular weight substances, non-volatile and reasonably stable to heat.

One previously unreported observation we have made is that the leaves and leaf stems contain nitrate, which was isolated and identified as potassium nitrate. The content varies according to the soil type and season, but as much as 0.7 per cent has been found. **Laportea** leaves would therefore be toxic to stock (if they could eat them without going mad with pain from the sting) because nitrate is reduced to nitrite in the rumen and causes methaemoglobinaemia. In this way nitrate-containing weeds have often caused havoc with sheep.

The literature contains an extensive list of suggested treatments for **Laportea** sting, none of which seems to have any scientific basis. Suggestions range from rubbing on the sap from directly beneath **Laportea** bark or the juice of cunjevoi (**Alocasia macrorhiza**), to covering the sting area with sticking plaster and ripping it off again. This last has some justification as a means of removing broken spines from the skin — they undoubtedly add to the irritation. Regrettably, no really satisfactory treatment can be recommended at present, either scientific or empiric.

There are several points of interest in the literature which merit further investigation. Ito (2) quotes a passage from the "Gardeners' Chronicle" which asserts that stinging trees give warning of their presence by a disagreeable odour. This has not been our experience but deserves further ex-

amination. The dried leaves when powdered have a strong sternutatory (sneeze-producing) effect.

The chemists at Defence Standards Laboratories who have been working on **Laportea** and related problems intend to continue their studies. It is hoped that by combining some of the newer techniques for separating very small quantities of pure compounds with a recent method of assaying pain-production (11), a successful identification of the active constituents can be made.

This paper is published by permission of the Chief Scientist, Australian Defence Scientific Service, Department of Supply, Melbourne, Victoria, Australia.

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## BUDGERIGAR SURVEY.

In connection with a research project investigating adaption of birds to the desert environment, I am making a survey of nomadic behaviour of the Budgerigar.

I would like to ask the help of any member who has personal records or knows of literature records of either — (a) breeding congresses of these birds, i.e., more or less high density breeding associations surrounded mainly by areas of little or no breeding, or (b) large non-breeding flocks as occasionally seen at waterholes, in flight, etc.

I am aware of the time and effort required to search through personal records, but please do not hesitate to write, no matter how insignificant your information may seem. Each item is important in itself, as the sum total of many records may give clearer understanding of the pattern of movement as a whole in this species.

**ERIC LINDGREN, Dept. of Zoology, University of W.A., Nedlands, W.A.**

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## AUSTRALIA AND NEW ZEALAND ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE.

The 39th Congress of ANZAAS will be held during the period of the 16th - 20th January, 1967. The host Institution will be the University of Melbourne. For any further information, write to Mr. L. Mann, ANZAAS, C/- University of Melbourne, Parkville, N.2., Victoria.

# FLECKER HERBARIUM APPEAL

As you may know, the North Queensland Naturalists' Club was founded in Cairns in 1932 by the late Doctor Hugo Flecker, a prominent radiologist in North Queensland, and an eminent naturalist.

Dr. Flecker continued as President of the Club until his death, and under his guidance contact was established and maintained with many similar organisations in many countries throughout the world.

However his greatest achievement for the Club was the establishment of an Herbarium, now known as the Flecker Herbarium. This fine botanical record of North Queensland flora, built up by the Doctor and his associates, contains over fourteen thousand classified specimens. The value to naturalists of this world-known collection will be readily recognised.

Since Dr. Flecker's death the Herbarium has been maintained by our members but at present it lacks a qualified custodian. A Queensland botanist, Mr. Leonard Brass, a member of the Advisory Board of the Archbold Expeditions of the American Museum of Natural History, plans to return to Australia in June of this year when he will live in Cairns and take charge of, and perhaps add to, the Flecker Herbarium.

We are, however, faced with a problem. The Herbarium is at present housed in portion of a temporary wartime building, the property of the Cairns Harbour Board. Impending development plans for the site on which the building stands envisage its early demolition. Therefore we must acquire new premises to house the Herbarium specimens and records.

We are endeavouring to acquire a small area of ground as a special lease at a low rental and to purchase for removal to the site, or to build, a small building adequate for our present needs.

Unfortunately we have insufficient funds to finance this proposal.

Our intention is to seek financial support from business houses (mostly old established firms) in Cairns and other North Queensland towns for what is, in effect, a project to preserve a valuable asset to the area. Our initial financial requirement is estimated as two thousand Australian dollars (£1,000 Australian.)

We take the liberty of also appealing to the many kindred organizations and other institutions who receive this journal, and who are in a position to do so, to assist us in this very worthwhile project — the preservation of the valuable material contained within the Flecker Herbarium. Your help would be greatly appreciated.

Contributions, which will be acknowledged in future issues of the North Queensland Naturalist, should be forwarded to the Treasurer, North Queensland Naturalists' Club, Box 991. P.O., Cairns, Queensland, Australia and marked 'Herbarium Building Fund'.

A. J. CASSELS, President.

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## BOOK REVIEW.

**AUSTRALIAN NATURE TRAIL, by Vincent Serventy. Georgian House.**

In America visitors to national parks have specially marked trails on which to walk. Along these are informative labels which tell something of the animals, plants and other features of the area. Occasionally only numbers are used and the visitor is given a booklet at the beginning of the trail which has the information printed against the appropriate numbers.

Vincent Serventy's "Australian Nature Trail" is a similar guide. Starting from the sea and then moving to the bush and the desert, it describes the highlights of the animals and plants of these regions. Black and white illustrations amplify the text.

The chapters have been chosen from some of the outstanding natural history features seen by Vincent Serventy in over twenty years of study in various parts of Australia.

# THE GROUND HORNET

When the Wet Season sets in up in Cape York Peninsula, a thick-set Black Hornet digs a tunnel in the ground at an angle of 45 degrees. The earth is scratched out and, when the caterpillar has been put in and the egg deposited, the earth is scratched back in again.

There is also a long thin black-red ground Hornet, native of the Batavia River, that works differently. This one sinks a vertical shaft. First of all it selects a spot, then it picks up a few small pebbles, flies out a few inches and drops them out of the way. Then the sinking commences and at short quick intervals it flies out and showers the dirt about six inches from the hole. This hole is put down three quarters of an inch and big enough to put a lead pencil down it. From there, there is a narrow waist put in, just large enough for the Hornet to sink on down to more than an inch; a round chamber is dug down under. The hole is quite vertical and all dirt is carried and scattered as the Hornet is on the wing.

Digging completed, the Hornet hunts around, selects a small pebble and drops it down into the hole to fit nicely in the narrow waist. It then flies onto a dry twig and has a great clean-up.

Away it goes zig-zagging over the green grass and leaves till a nice sized caterpillar is sighted. Immediately the caterpillar drops down from the blade of grass or leaf onto the ground; it has smelt danger. But the Hornet is too quick. It drops down on it and puts in its sting and the caterpillar ceases to wriggle.

Now the hard work begins. The caterpillar is heavier than the hornet. The hornet straddles its kill and snigs and carries it to the nearest tree, takes it up a few feet and planes down, carrying the kill to the foot of the next tree or stump. That goes on until it is close to home, when it snigs the carcase to the top of the hole. It is all bustle now. It goes down, picks the pebble out of the waist, flies out and dumps it. Then the caterpillar is put on the brink of the hole, the hornet goes down into the chamber, turns, comes up head first and snigs the carcass down.

A few minutes go by. Then it comes up, puts another small pebble in the waist of the hole, drops in several smaller pebbles, and puts a large flat pebble on top, then a few showers of earth and the job is completed. The hornet then flies right away.

STANLEY H. BOYD.

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## ORCHID CHECK LIST.

Our latest check list of North Queensland Orchids, revised by Mr. A. Dockrill, is now ready for the printers. Place your order now.

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## POT POURRI.

A few weeks ago a small dragon was brought in to one of our members. It has since been identified as a Boyd's Forest Dragon — quite a rare species. The dragon was found in scrub near Babinda.