

Club Officers - September 30, 1966 to September 30, 1967

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CLUB HANDBOOKS

Check List of North Queensland Orchids	75c
Check List of North Queensland Ferns	10c
Edible Plants in North Queensland	20c
List of Birds Occuring in North Queensland	20c
Marketable Fish of the Cairns Sea	10c
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Some Bird Notes

Several reports confirm that the English house sparrow is now established over a wide area of North Queensland. Round about December, 1965, single birds, pairs, and parties of up to 15 or more were seen at Redlynch and North Cairns, at Babinda, Mareeba and even in the dry sparsely settled Mt. Carbine district. During January a party of up to 6 sparrows breakfasted daily for more than a fortnight on seed of a casuarina tree at Edge Hill, pecking the seeds from the cones on the tree. Since then, in this garden, sparrows have been seen only occasionally.

Mr. Ben Constable reports: "The red-breasted welcome swallow has a habit of flying around at night. At Babinda and Cairns I have seen them repeatedly flying around the lights and catching insects up till very late at night. They are not birds that have been disturbed from their roost, but are definitely feeding on the insects attracted by the light."

A further note from Mr. Constable compares the masked plovers' manner of feeding with that of the gulls, when they flutter their feet in the puddles of muddy water on the mud flats to make the small marine life come to the surface for more oxygen. The plover takes "two paces forward and tap, tap, tap, tap, with one foot - this is usually followed by a quick grab at some insect. . . . The plover disturbs (the insects) in some way by this foot-tapping and is right there with the ready bill when they move."

THE LITTLE NATIVE BEE

In 1937 a mate and I were chasing gold out on Oakey Creek, twenty-odd miles south of Maytown. We had a bough shed built for our dining room, and a table made from a sheet of bark. The little native bees were plentiful around our table all day so, as the weather was cool, we put some clean frying fat out for them every day on two tin lids on the table.

One morning I was cooking a batch of bread in the camp-oven and the bees were very thick, each flying off with two little balls of fat. My mate and I were writing letters on our bark table and we happened to notice that one bee had only one large black leg - the leg on which they pack the ball of pollen or fat or whatever they are collecting. Now of course this bee became the centre of interest. Would it put a double issue on the one leg, or would it just take the one ball of fat? The bee put the usual sized ball of fat on the one leg and rolled up another the same size and carried it in its mouth!

Stanley H. Boyd.

EDITORIAL

Almost five months have passed since our last Journal appeared - extremely busy and somewhat worrying months for the Club's officers and active members. However, well-attended meetings and field days have been thoroughly enjoyed. Outstanding among the illustrated talks presented at meetings were those by Mr. Len Brass, describing his work as botanist with the Archbold Expeditions to New Guinea, and by Mr. Charles Tanner, discussing reptiles and particularly the wide colour variations which occur within species of snakes. In addition, a more specialized but much appreciated lecture was given us by Dr. Scholander, leader of the "Alpha Helix" scientific research team, his special study being the Mangrove. Field days have ranged from dry mineral areas, to rain forest, to sea coast. At each, one or two native trees have been planted - an infinitesimal gesture in Nature's vastness, but worthwhile nevertheless.

Annual Meeting. At the Annual Meeting in September, all office bearers were re-elected. The President took heart from the fact that town membership has increased, and from these town members future officers must come. Country membership has fallen slightly as the Club's financial position has made it necessary to inquire after some long overdue subscriptions. Further, it has been reluctantly decided that the Country Members' Subscription should be increased from \$1.50 to \$2. Here it may be explained that from the regular annual subscriptions of all members, our Club's ordinary running costs are met, the Journal and other Club publications are printed, and postage is paid to maintain contact with country members and to send the Journal (either free or on an exchange basis) to many other Clubs. Universities and Institutes in Australia and overseas. The fledgling University of Papua-New Guinea library is now added to this list.

Orchid Check List. Our revised Check List of N. Q. Orchids has been highly commended by botanists and orchid specialists. It is selling well, and in time the cost of its printing (\$182) may be recouped - allowing more frequent issue of the Journal.

Flecker Herbarium Appeal. No satisfactory outcome has yet resulted from approaches made to Lands Department and other authorities to secure a piece of land on which to build a permanent home for the Flecker Herbarium. However the Committee has been encouraged by the evident appreciation shown of the value to Cairns of this fine collection of N. Q. plants. Negotiations and fundraising efforts will continue. For a full account of donations received and of the functions held to date, see supplementary sheet. The Committee's sincere thanks go to all who have contributed in any way, while the hope is expressed that a great deal more support is yet to come. It is certainly needed.

Send for your decorative Wildlife Car Transfer. This will identify you to fellow naturalists anywhere in Australia.

Price: 20cents, plus postage.

THE IMPORTANCE OF TYLOPHORA CREBRIFLORA,

A REPRESENTATIVE OF THE NORTH QUEENSLAND FLORA

By E. Gellert and R. Rudzats,
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Wollongong University College,
The University of New South Wales,
Wollongong, N.S.W.

Poisonous plants have always been of vital interest to primary producers, it is therefore not surprising to find that State and Commonwealth gazettes have devoted considerable space to reports of this nature. The initial effort of investigating plants poisonous to stock culminated, at the end of the 1939-45 war, in the establishment of a Phytochemical Survey of Australian Plants, i.e. the commencement in this country of the methodical investigation of plant products and the exploration in more or less detail of the physiological activity attributed to different species. The credit for this important development is primarily due to Drs. L.J. Webb and J.R. Price, both of C.S.I.R.O.

The flora of Queensland is of special interest as it is one of the best sources of tropical and sub-tropical vegetation in Australia. This flora has provided probably the largest portion of Australian plant material for chemical and pharmacological investigation.

As we are mainly interested in the alkaloidal content of plants we investigated some of the plant species in the families of Lauraceae and Asclepiadaceae; e.g. the genus Cryptocarya, resp. the genus Tylophora. The alkaloids present in Cryptocarya species vary greatly in their chemical structures. Among them the highly toxic and vesicant alkaloid, cryptopleurine, is probably the most interesting. The elucidation of the structure of this alkaloid as a phenanthroquinolizidine derivative opened the way to the elucidation by Indian chemists of the structures of tylophorine and related alkaloids from T. asthmatica, showing that they structurally belong to the related phenanthroindolizidine group of compounds. The structural similarity of cryptopleurine with the latter alkaloids and the claims associated with their use in India as drugs prompted us to investigate some species of the genus Tylophora present in Australia.

The pharmacological activity of plants of the Asclepiadaceae family was ascribed by early investigators mainly to non-alkaloidal material, e.g. saponins and cardiac glycosides, as only some of the genera contained alkaloids. Maiden (1) was probably the first who drew attention to the possibility that Australian Tylophora species might contain alkaloids similar to those isolated from the same genus elsewhere. In fact, the Australian Phytochemical Survey of Queensland Plants (2) reported the presence of alkaloids in several species.

Our investigation centred on T. crebriflora S.T.Blake, designated originally as T. floribunda Benth. The change of the botanical name was due to the previous assignment of the latter name to a different Japanese species. The original botanical description was made on the basis of a specimen found at Mt. Warning, however T. crebriflora has since been found at several locations in North Queensland, the most important source being the Atherton Tableland. Our sample for the initial investigation was collected at Wongabel. The plant is a slender vine (Figure 1) which most often trails along the ground though sometimes it climbs shrubs or even small trees. The lower part of the stem is corky and broken parts of the fresh material exude (W.T.Jones, personal communication) a mustard coloured latex which affects the eyes and has a burning effect on contact with the skin. The leaves, which are variable in shape (from oblongcordate to ovatecordate) and in size (7-12 cm long and 2-10 cm wide), are green on top and paler underneath.



Figure 1. Tylophora crebriflora vine (air-dried)

During the original investigation of T. crebriflora we isolated two alkaloids: tylophorine, which was identical with one of the alkaloids obtained from T. asthmatica, and tylocrebrine, $C_{24}H_{27}NO_4$, a new phenanthro-indolizidine alkaloid. We also suspected the presence of several more alkaloids which might be isolated from extraction of larger plant samples. This assumption has since been verified by Dr.V.Rao in the U.S.A. We expected that in comparison with similar compounds the physiological activity of tylocrebrine would show diminished toxicity and enhanced antitumour activity due to the differences in chemical structure. Our findings appear to bear out this hypothesis.

Tylocrebrine (Figure 2) was submitted for an exhaustive preclinical testing schedule to the Cancer Chemotherapy National Service Center of The National Institutes of Health in the United States of America. The results obtained against the L1210 lymphoid leukaemia test system indicated a very significant increase in survival time of mice (3). These experiments were then followed up by further preclinical toxicological and pharmacological tests in other systems, in other animals, and in tissue cultures, eventually reaching the stage of clinical trials in cooperating U.S. hospitals on human sufferers.

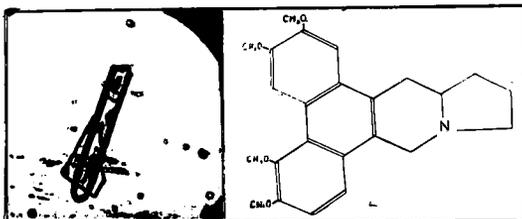


Figure 2. Left: Crystals of tylocrebrine. Magnification 600X.
Right: Structure of tylocrebrine.

As yet no final evaluation could be made concerning the therapeutic value of tylocrebrine, therefore the drug cannot be released for general use at this stage. We hope however that tylocrebrine will soon be available as a drug to fight leukaemia. If so, then one rather rare member of the North Queensland flora will be credited with a major contribution towards solving the problem of cancer. Consequently, the likelihood of obtaining new drugs with activity of this type from Australian plant material establishes, apart from any other considerations, the importance of preservation of the native flora for chemical and pharmacological investigation.

References:

- (1) MAIDEN, J.H. - Australasian Assoc. for Adv. Science 6, 37 (1895)
- (2) WEBB, L.J. - a, Guide to the Medicinal and Poisonous Plants of Queensland. C.S.I.R. Bull. No. 232 (1948)
b, Australian Phytochemical Survey.
Part I, C.S.I.R.O. Bull. No. 241 (1949)
Part II, C.S.I.R.O. Bull. No. 268 (1952)
- (3) GELLERT, E. and HUDZATS, R. - J. Med. Chem. 7, 361 (1964).

Disembowelled Toads Near Water

The Toad, *Bufo marinus*, introduced into Queensland in the 1930's to help combat the cane beetle, has now extended his range down the eastern seaboard of Australia and, in N. Q. at least, inland over the Dividing Range. This rapid spread was due principally to the fact that *Bufo* is armed with poison glands which protect him from predators. With this immunity from attack plus a high reproduction rate, he is ousting native toads and frogs, thus upsetting the balance of nature, and bids fair to become one of our major pests.

It is interesting to note, therefore, that he has at least one natural enemy in this country. I have often found dead bodies of *Bufo* close to water and always mutilated in the same manner: i. e. by the belly being opened and the intestines partly removed. Clearly whatever killed and disembowelled *Bufo* was after the contents of the stomach or perhaps certain of the organs for food and, as this always happens near water, suspicion falls on the water rat.

This suspicion is supported by the fact that my wife has several times recovered long defunct bodies of *Bufo* from the "innards" of our washing machine which we afterwards found was the home of a white tailed rat - presumably a water rat. The water rat has a white or partly white tail, and our non-paying boarder was known to bath in the residual water of the washing machine reservoir and obviously took the toads in with him. So it is a fair assumption to say that the White-tailed Water Rat is the killer.

However, this is conjecture and I would like to receive more information on the subject. If verified it would show again how Nature is always striving to maintain a balance and I suppose given enough time, *Bufo* would eventually be brought under control.

A. J. Cassels.

Observation by J. James at Tinaroo Creek, Feb., 1966.

Rat with white-tipped tail, thick fur, about the size of a domestic rat, head much shorter and "blunter" (nose not elongated), four chisel teeth in front.

This rat was seen to bite a piece out of the underside of a toad and to place portion of the toad's insides in its mouth with its front paws. James killed this rat, then dissected the toad with pocket knife to discover that heart and liver only had been removed.

The rat, although white tailed, did not conform to the usual white tailed rat in general appearance. As this specimen was male, James was unable to determine if it were marsupial.

This observation could explain the common sight of freshly disembowelled toads near water.

S. F. St. Cloud.

NATURE NOTES FROM THE PENINSULA

The year 1902 was a drought year up in Cape York Peninsula. On Merluna, the station where I was working, the Chinese gardener had an acre of bananas growing. The wallabies jumped the fence at night to get something green, and in a few nights they stripped every stalk, then ate the centres down to ground level, and they chewed down into the stumps as far as their thin snouts would reach. Of course they always got away before daybreak. These hollowed out stumps each held an eggcup full of water and, as the lagoon from which we drew our household supplies went dry, the wallabies came round during the night to drink. We, meanwhile, had to pack and cart water on a sleigh from lagoons a mile away.

It was the custom of a flock of Squatter Pigeons to walk between the station buildings on their way to the lagoon for their daily drink. They were never molested, and continued their gentle "coo-coo" as they walked down to drink. Squatter pigeons always walk to water from their feeding ground, but once they have had their fill, they fly up and around into a dead tree. Later, after taking observations, they plane down to commence feeding, and preening their feathers. This flock of pigeons located the banana stumps and every day they were able to get a drink of juice as clear as rain water, until the storm rains came along and relieved the situation for all.

Stanley H. Boyd.

SNAKE SERVICE

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In November last year a picnic party spent the day at Double Bridge on the Black Mountain road near Kuranda. During the morning the children spied a snake curled round a high tree and slowly making its way up towards a clump of ferns growing on a branch near the top. It crawled round and round the tree making little headway on the rough bark. Later the party heard a crash and found that the snake had fallen, either accidentally or on purpose, to a much lower tree. It then crawled across to the near branch of another tree and so drew near ground level. One of the party brought it over and it proved to be a carpet snake 7 feet long and about 7 inches in girth. Its markings were very bright and fresh and the snake was so docile one wondered if it had just shed its skin or was sick. Here another member of the party leaned over and picked out three scrub ticks which were embedded in the scales of the snake near its mouth. The snake was then placed gently on the ground and it slowly glided away, this time by-passing the tree, and headed down the grassy slope to the creek.

Irene Mears.