D. J. Kettle

NEWS BULLETIN

ENTOMOLOGICAL SOCIETY OF QUEENSLAND

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Vol. 3 No. 1 February, 1975.

COVER DESIGN: Sybil Monteith

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NOMINATIONS FOR 1975 OFFICE BEARERS

The following nominations were received by the Secretary for the members of Council and the Publication Committee for 1975.

OFFICE	NOMINEES	PROPOSED	SECONDED
President	Mr. T. Passlow	Mr. T. McRae	Mr. H. Standfast
Senior Vice-President	Mr. R. Yule	Mr. R. Wylie	Mr. G.B. Monteith
Secretary	Mr. B. Cantrell	Mr. T. Passlow	Mr. T.M. McRae
Treasurer	Mr. R. Wylie	Mr. R. Yule	Mr. M. Bengston
Councillors	Dr. B. Doube	Mr. G.B. Monteith	Mr. J. Nolan
(3 positions)	Mr. G. Donnelly	Mr. R. Storey	Mr. B. Stone
	Mr. B. Kay	Mr. H. Standfast	Mr. T. Passlow
Convenor of Publication Committee	Dr. A. Bensink	Mr. G.B. Monteith	Mr. T. McRae
Members of Publication Committee (2)	Mr. I. Naumann	Dr. A. Bensink	Mr. R. Storey
	Mr. G.B. Monteith	Dr. A. Bensink	Mr. D. Hancock

REQUEST FOR INFORMATION ON THE BUTTERFLY Heteronympha merope merope

A request for information on the distribution of the butterfly Heteronympha merope merope has been received by the Bulletin from Ms. Kay Pearce of the Department of Genetics and Human Variation, La Trobe University, Bundoora, Victoria, 3083 She is working on geographic variation in the insect and would be pleased to hear from any member of the Society who could provide her with information. She is particularly interested in determining, as far as possible, the exact limits of the special distribution - positive records from extreme localities would be of great benefit.

GENERAL MEETING

Minutes of the General Meeting held in Room 402 of the Hartley-Teakle Building on Monday, 9th December, 1974.

Attendance: Mr. Monteith (President), Drs. Bengston, Drew, Marks, Reye, Rice, Wharton. Messrs. Cantrell, Coles, Cuckson, Donnelly, Ferguson, Franzen, Galloway, Hancock, Humphrey-Smith, Hunter, Lambkin, Libke, McRae, Malipatil, Spencer, Standfast, Storey, Swindley, Toop, Waladde, Webb, Yule, Zietek. Ms. Attwood, Edwards, Miller, Monteith, Youlton.

Visitors: Messrs. Giacca, Miller, Moire. Ms. Bengston, Bowden, Cilliers, Giacca, Giacca, Giacca (M), Libke, Lihou, Lockwood, Miller, Spencer, Webb.

Apologies: Prof. Kettle, Drs. Exley, Macqueen, Messrs. Naumann, Passlow, Tomley, White, Wylie. Ms. Burrows.

Minutes: Minutes of the November Meeting were circulated in Bulletin Vol. 2, No. 9. It was moved by Dr. Marks, Seconded Mr. McRae that the Minutes be taken as correct. CARRIED.

Elections: The following people, nominated at the November Meeting, were elected by show of hands:

Ordinary Membership: Mr. D. Franzen, Mr. A.F. Ollerenshaw

Country Membership: Miss M. Wyndham

NOMINATIONS: The following nominations for membership were tabled and will come up for election at the next General Meeting:

Country Membership: Mr. J. Winter
Forestry Department
Atherton, 4883.

Nom. G.B. Monteith
Sec. D.L. Hancock

CHANGES IN MEMBERSHIP STATUS:

1. Changes in Address

Mr. G.F. Daniels, 98 Harris St., Fairfield, N.S.W. 2165
Mr. S. Johnson, 74 Akonna St., Wynnum Central, Qld 4178
Mr. A.G. Orr, Currimundi Rd., Caloundra, Qld.

GENERAL BUSINESS:

1. Membership Dues. Members were referred to the details of new subscription rates published in Bulletin Vol. 2, No. 9.

2. Insect Export Legislation. The President referred members to the notice of motion on this matter which appeared in Bulletin Vol. 2, No. 9.

It was moved by Mr. McRae, Seconded Mr. Hancock .... "That a letter of protest regarding the Insect Export Legislation be sent to the Minister for Science with copies to other individuals and organisations which Council considers should be informed of the action this Society has taken." CARRIED.

3. Appeal to Members: Dr. Marks asked any member of this Society who was also a member of Aust. Ent. Soc. and who had not returned that Society's questionnaire on the Insect Export Legislation, to let her know by 14th January whether or not this signified they approved of the Legislation.

Assurance was given that answers would be treated as confidential.

4. Unfinancial Members. Any members still unfinancial were asked to pay subscription arrears as soon as possible.

5. Office Bearers 1975. Members were asked to ensure that all nomination forms be returned to the Hon. Secretary by the end of February. A nomination form was included with the November News Bulletin. Additional copies are obtainable from the Hon. Secretary.

6. Presentation of School Science Contest Prizes. The President presented prizes to Ms. Lihou and Ms. Lockwood of Brisbane Girls Grammar School, Ms. P.H. Bowden of Pine Rivers State High School & Ms. M. Giacca of St. Joseph's State High School, Stanthorpe, for their winning exhibits in the 1974 School Science Contest.

Honorary Associate Membership of the Society for one year was also awarded to all prize winners.

MAIN BUSINESS

NOTES AND EXHIBITS

(1) THE HEART OF Plusia argentifera - OBSERVATIONS USING CINEPHOTOGRAPHY AND ELECTROPHYSIOLOGY

by M. J. Rice, Dept. of Entomology, University of Queensland

Direct observations on the normal action of the heart of an insect are difficult to make since the surface of the body is often more or less opaque. However, some insects at certain stages in their life history have a transparent cuticle and coloured haemolymph, so facilitating observation of the normal action of the heart in situ. One such insect is the final instar larva of Plusia argentifera Guen., which has a deep green coloured haemolymph and transparent dorsal cuticle, so making observation of the heart contractions very easy. Two such larvae were kindly provided by Mr. David Morgan.

One of the larvae was dissected in order to study the arrangement of its heart and associated muscles, the other larva was used for electrophysiological studies in which the electrocardiogram was monitored and correlated with the observed sequence of cardiac contractions. The same larva was also used for close-up cinephotography, in order to provide a colour film of insect heart action for teaching purposes - this was done with the skilful assistance of Mr. John Coker of the Photography Department. Observations on the living animal were confirmed and extended by making a frame-by-frame analysis of the film.

The heart chambers in the abdominal segments were observed to beat at a rate of 70 per minute at room temperature (27^0 C) and to increase in frequency when heated with a lamp. The most posterior chamber was found to be the pacemaker, initiating the waves of contraction that pass anteriorwards along the heart, as was well demonstrated by the film. There were no reversals of flow as are sometimes observed in other insects.

Plusia larvae are large enough to make physiological experiments relatively easy. The electrocardiogram of the posterior chamber of the heart was monitored and recorded with conventional electrophysiological apparatus. A fast, sharp peak of activity invariably preceeded the contraction of the chamber (systole) whilst a slow, rounded peak preceeded the expansion of the heart (diastole). These results demonstrate how the synchronised, antiphase activity of the cardiac and alary muscles leads to an efficient circulation of the blood. Activity in the cardiac muscles (fast peak) leads to a contraction of the heart and this pumps the blood forward whilst activity in the alary muscles (slow peak) leads to expansion of the heart, so drawing blood in from the body cavity and causing it to flow over the internal organs.

Whilst these observations are not entirely new or unique, they do provide a graphic demonstration of insect heart action correlated with electrical activity, admirably suited for teaching purposes.

(2) NECTAR FEEDING IN THE SIMULIIDAE

by D. Hunter, Dept. of Parasitology, University of Queensland.

Since Simuliids kept in the laboratory live only about 3 days unless supplied with sugar, investigations were undertaken to determine the source of sugar used by flies in the field. The discovery of pollen grains in the gut and crop of Austrosimulium bancrofti gave the first evidence for plant feeding, and since almost all of the internal pollen grains were from Myrtaceous plants a search for resting flies on Callistemon and Eucalyptus was begun. Resting flies were found on the red bottle brush (Callistemon viminalis) several species of Eucalyptus, on milkweed (Gomphocarpus) and sometimes in the grass near these plants. Using an anthrone solution kept at room temperature, fructose and fructose containing sugars were detected in these resting flies.

In the laboratory, recently-emerged A bancrofti were placed with flowers of several plant species and a positive anthrone reaction was obtained only with flies exposed to flowers of Callistemon viminales, Eucalyptus (3 species) and Gomphocarpus. No reactions were found with flies given Casuarina, Lantana, grass or clover suggesting that A. bancrofti prefers only certain flowers as nectar sources.

(3) SOME INTERESTING RECENT MOSQUITO RECORDS FROM NORTHERN TERRITORY AND QUEENSLAND

by E.N. Marks, Dept. of Entomology, University of Queensland.

Although the Australian mosquito fauna is well known, three new species have been recognised within the last 4 months and some interesting locality records obtained.
Northern Territory: Mr. N. Rajapaksa, Entomologist, Department of Public Health, Darwin, has sent for confirmation of identification specimens collected by his staff, including:

Anopheles subpictus, Darwin, males and females found dead in sundry aircraft flying Surabaya-Denpasar (Bali)-Koepang-Darwin. This species does not occur in Australia. It is found in New Guinea but apparently is not common there. It is a common species in the Malayan region, breeding mainly near the coast in brackish pools. These flights leave Surabaya at 6 a.m. or 7 a.m. and it seems likely that the mosquitoes enter the aircraft there at night while it is being prepared for the flight. (Specimen exhibited)

Aedes vigilax, Alice Springs, man biting, 14.x.1974, W. Douglas. Adults of this salt marsh species, which is common near Darwin, are probably frequently brought in to Alice Springs by land or air transport, though this is the first record from there. The only inland locality where A. vigilax is known to have established itself is Mildura where it is associated with a brackish lake receiving irrigation run-off. It would be interesting to know whether there are now conditions suitable to maintain a population at Alice Springs.

Culex (Lophoceraomyia) 'sp. No. 155' and Uranotaenia 'sp. No. 156', Marrara Swamp, Darwin 3.ix. 74, adults reared from larvae from small leafy pools in fern-melaleuca forest, P.I. Whelan. I have not seen the Culex before but it might be present in early N.T. Collections by G.F. Hill and F.H. Taylor now in the School of Public Health and Tropical Medicine, Sydney. The Uranotaenia is close to a common species, U. nivipes, and I collected adults of both species in N.T. in 1973 without recognising the new one as distinct.

Queensland: Mosquitoes from the Blackdown Tableland. I visited this area with the Queensland Naturalists' Club in September 1974. Less is known about the distribution of mosquitoes in central Queensland away from the coast than for most other parts of the state so all records were of interest.

The Blackdown Tableland, 47 km S.W. of Dingo, is a sandstone plateau rising to 900m above sea-level, where the Shotover, Expedition and Dawson Ranges converge at their northern ends. There are steep escarpments and running streams (tributaries of the Dawson River) with deep gorges sheltering palms, ferns and treeferns. A good Forestry road gives access to the top of the plateau. There are moves afoot to have the escarpment, gorges and some other more scenic parts of this State Forest made a National Park. Club members killed several large cane toads near the forestry camp on Mimosa Creek and did not see any elsewhere. I discussed this with Mr. E.E. Adams of Edungalba who has collected beetles in Central Queensland for many years and has seen the depletion of ground beetle species since the cane toads arrived. He emphasised the urgency for ground beetle collections to be made at Blackdown Tableland before the toads eliminate species there.

Conditions were too cool for adult mosquitoes to be active (only one, Aedes notoscriptus, was taken biting). Eight species were collected as larvae, mainly near the headwaters of streams:

From side channels with some grass: Anopheles corethroides, Culex pseudomelanoconia.

From leafy rock pools: Anopheles annulipes, Aedes alboannulatus, Aedes notoscriptus, Aedes rubrithorax, Aedes subbasalis.

All these species occur near Brisbane; all except Anopheles corethroides range to Victoria; and all except Aedes alboannulatus (for which this may be the northernmost record) occur on the Atherton Tableland.

From leaf axils of sword grass (Gahnia sieberiana) in a small perched swamp with allum-like vegetation: Tripteroides 'sp. No. 153'. This is the first record of Tripteroides from Gahnia in Australia though two species of Aedes are known from it in coastal areas. Gahnia has sharp edged leaves and is unpleasant to collect from but these plants were softer or less sharp than usual. This Tripteroides may have been missed elsewhere because the host plant was avoided, or may be restricted to the Blackdown Tableland as some plants apparently are.

(4) CHLORDIMEFORM PHYTOTOXICITY IN COLE CROPS

by J. R. Hargreaves, D.P.I., Redland Bay.

In our article in the News Bulletin 2(6) August, 1974, we mentioned a marginal chlorosis of cabbage leaves which we had found on chlordimeform 0.05% a.i. treatments at Redland Bay, during field screening for regulants of Heliothis armigera and Spodoptera litura.

We had initially believed that cultivar characters may have been responsible for the symptoms on 'Olympic' cabbages but we are now more of the opinion that root uptake of leached chlordimeform may be quite significant in inducing phytotoxic symptoms.

We had found pronounced chlorosis, in glasshouse studies of 'Ace High' cabbages in 2 gallon buckets, by applying 2 litres of chlordimeform 0.05% to the soil surface, weekly. A second glasshouse trial used 'Snowball Y' cauliflowers by virtue of their increased sensitivity to moybdenum. 300 mls chlordimeform 0.05% a.i. was applied weekly to the soil surface for five weeks on one set of cauliflowers; a second set was treated once only. The plants were allowed to recover. Growth inhibition occurred on all chlordimeform treated plants.

TREATMENT	Mean Plant Weight (grms.)	Mean Leaf No. per plant	Mean Leaf Length (cms.)	% Leaves Bleached
No treatment	555.2 (wet) 48.9 (dry)	35	30.9	0.0
300mls chlordimeform 0.05% weekly x 5	24.2 2.2	13	11.0	96.1
300mls chlordimeform 0.05% weekly x 1	211.7 18.5	22	21.3	24.7

All plants treated with chlordimeform showed positive diphenylamine sulphate reaction indicating nitrate accumulation. Control leaves showed negative reactions. The soil pH of the 300mls x 5 chlorphenamidine treatments was remarkably constant in spite of the addition of routine side dressings of acid forming fertiliser which decreased the pH of other treatments.

Seeds of tomatoes, ('strobelee') cucumbers ('Marketer') and cauliflowers ('Speedy') were sown in the soil from the buckets 14 days after completion of the trial. Chlorosis was marked on the cotyledon of all plant types, especially the cauliflowers. The first proper leaf of these plants showed far more positive symptons.

It is of interest to note that both tomatoes, cucumbers and cauliflowers are sensitive to molybdenum and applications of foliar molybdenum is a routine practice in the Redlands area.

Further pot (6") trials with cauliflowers showed yield differences after applications of chlordimeform 0.05% wash to the soil. Five applications of chlordimeform were applied on a once weekly basis.

TREATMENT	Mean Plant Weight (grms) wet	dry	Mean Leaf No. per plant	Mean Leaf Length/Plant (cms)	% Total Leaves with Symptoms
None	141.5	13.1	19.8	18.1	0.0%
30mls/week/plant	102.9	9.1	19.8	16.6	80.7%
70mls/week/plant	27.6	2.9	14.7	12.7	96.5%
100mls/week/plant	16.3	1.8	14.3	10.6	96.5%
150mls/week/plant	20.3	2.3	11.8	9.2	97.9%

The soil of the pots was left for 14 days before re-sowing, cucumbers showed chlorosis but watermelons ('candy red'), rockmelons ('Hales Best') did not. Both cabbage ('Hybrid 205') and cauliflowers ('Speedy') did snow chlorosis but cauliflowers were more severely affected. Little chlorosis of the cotyledons occurred in the higher rates of chlordimeform but all treatments showed marginal leaf chlorosis with the development of the 1st proper leaf.

No soil pH differences were noted in the treated soil, 6.8 being a general value which was maintained even in the control pots over the duration of the trial.

A reference to formamidine hydrolysis of the herbicide diuron is mentioned in Klingman (1969) Chlorphenamidine (Chlordimeform) belongs to the formamidine group and we were curious if the symptoms of diuron used as a post-emergent herbicide on cabbage at our 0,05% a.i. rates rather than the herbicide rates, pre-emergent, may parallel those of chlorphenamidine. The symptoms we induced were certainly totally different with three rates of 0.05% a.i. diuron than with similar rates of chlordimeform.

Reference: Klingman, G.C. (1969). 'Weed control as a Science'. John Wiley & Sons.

(5) A TECHNIQUE FOR THE RECOVERY OF BITING MIDGE LARVAE FROM SAND SAMPLES

by E. J. Reye, Dept. of Entomology, University of Queensland

The task of recovering immature stages of biting midges floated out of sand samples by syrup has been made easier by the following means:

1. The surface area of the syrup is reduced by pouring the sand suspended in syrup, into a cylinder 40cm high and 8.9cm diameter.

2. After some 30 minutes have been allowed for settling, the surface froth is removed to a sieve by means of a spoon, the lip of which has the same curvature as the cylinder.

3. A hollow metal cone 8.5cm diameter, 9cm high is then pushed point down into the syrup until nearly immersed, so that the surface area of the syrup is further reduced as it is displaced to the sides.

4. Further depression of the cone causes the surface layer to flow into it from all sides, drawing off the top 1cm of the column (as it was before the cone was introduced). This is a volume of some 25ml.

5. A second dip of the cone is usually enough to remove all the larvae from the syrup.

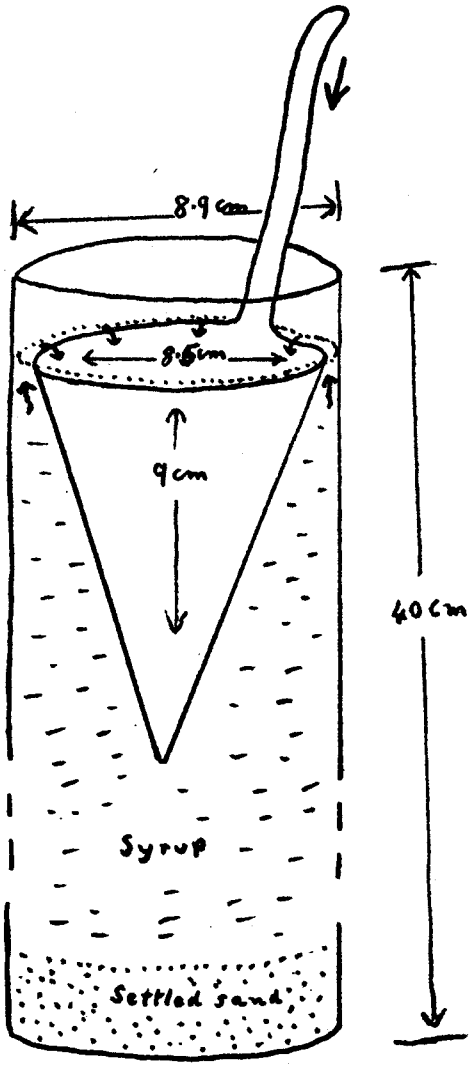
6. The syrup withdrawn by the cone is poured directly from cone to sieve and washed in the usual manner.

This method has the following advantages:

(i) The equipment is cheap and light
(ii) No electricity or compressed air being required samples can be treated in the field.
(iii) The amount of syrup to be sieved is relatively small so can be done on smaller sieves and with less water.
(iv) The rate of recovery of syrup for re-use is very good - by saturating 950ml sand samples with water and suspending in a mixture of sugar and syrup (sugar 500gm, syrup to 1.2 litres) the initial volume of syrup can be recovered.

The cylinders were made from lengths of $3\frac{1}{2}$ in. O.D. PVC drainpipe with wall thickness of about 1/16". Each was plugged at the lower end with a tapered bung 2 in. thick cut from styrene foam. The cone was formed from sheet aluminium about 1mm thick, the joint and apex being finished with plastic filler. The present set of six cylinders and one cone make a convenient unit; since it takes about 30 min to set up, the first one has settled by the time the last is poured.

fig 1



(6) AN INTERESTING GRASSHOPPER FROM ARNHEMLAND, NORTHERN TERRITORY

by R. I. Storey, Dept. of Entomology, University of Queensland

In September, 1973, an interesting Article by Calaby and Key appeared in the Journal of Australian Entomological Society (Vol. 12:161-164) on the rediscovery of a large brightly coloured orange and blue grasshopper from Western Arnhem Land - Petasida ephippigera White, also known as Leichhardt's grasshopper because it was observed and noted by him on his epic journey of exploration in the N. T. in the early 1800's. According to Calaby and Key, by the turn of the Century only 5 specimens were known, after which it was not collected again until the early 1970's, with numerous individuals from several localities in the North of the Northern Territory (and one from the Canberra dump) turning up.

On a recent trip to the Northern Territory just completed, I was fortunate enough thanks to Mr. Tom Weir and Mr. Tim Angeles of the Dept. of Agriculture and Stock in Darwin, to spend four days collecting insects in this little sampled area. The building of a new sealed highway from Darwin to the East Alligator River to service uranium mines in the area, should remove any remnants of inaccessability of the area, now a mere 4 hour drive from down-town Darwin.

On this trip, amongst other things, I was able to collect five specimens of Petasida at a site which since the recent CSIRO Survey of the area was completed, is now known as Petasida Camp, located a few miles from the mining settlement of Koongarra. It is a sandstone outcrop along a stream with numerous small shrubs and a few scattered trees. The 5 specimens - 3 adults & 2 nymphs, plus 5 other adults were collected on a small aromatic shrub, 1-2 meters tall, Pityrodia jamesii (Fam. Dicrastylidaceae). About a dozen of these plants were found at this locality with as many as 4 adults on 1 bush. They were very sluggish, showing little ability to fly, merely fluttering to the ground and hopping feebly towards cover.

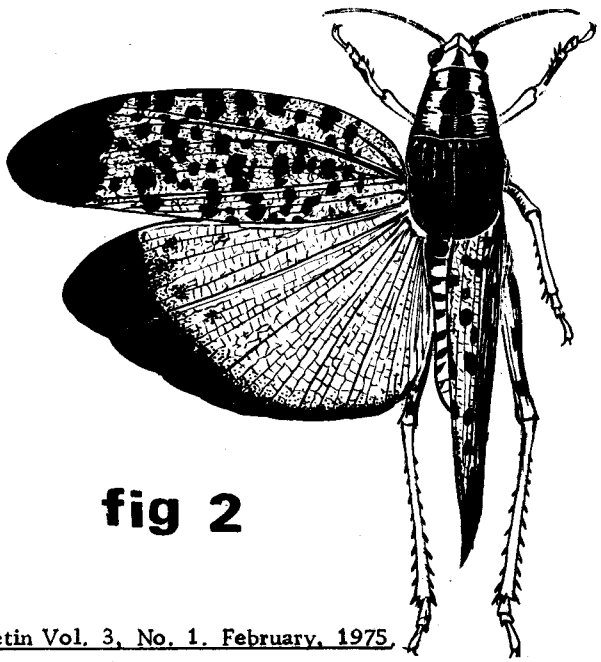


fig 2

The Petasida were placed in a container with moist tissues and branches of the host plant. Back in Darwin, the beasts were offered the Labiate Hysis sauvenis, on which they have been known to feed, however little feeding was observed. During their return trip to Brisbane the 2 nymphs m moulted into 2 very reduced adults.

(Exhibited were five live specimens (Fig. 2), a map showing the collection site, a copy of Leichhardts journey with accompanying illustration, and Callaby and Key's 1973 article).

(7) Alcidion cereicola, A NEW ARGENTINIAN CERAMBYCID FOR BIOCONTROL OF HARRISIA CACTUS

by G.P. Donnelly, Lands Department, Sherwood.

The cerambycid Alcidion cereicola Fisher, was originally collected by A.P. Dodd from Cereus sp. It was first collected from Eriocereus spp. in 1972 by Zimmerman & Fidalgo. In 1973 adults reared from E. martinii and F. guelichii were identified as Alcidion cereicola Fisher.

A. cerelicola has been reared from Cerus sp., C. vilidus, Stetsonia sp., Echinopsis schaferi, Cleistocactus sp., Monvillea spegazinni, E. martinii and E. guelichii/bomplandii, all members of the sub-tribe Cereanae of the family Cactaceae.

It has been collected over nearly all of Northern Argentina and although not collected in the Paraguayan Chaco, it is likely to also occur there.

A. cereicola has undergone host testing procedures, as set out by the Commonwealth Department of Health, at Tucuman in N.W. Argentina by Dr. R. Cruttwell and A.P. Fidalgo of the Commonwealth Institute of Biological control.

Slight stem damage was done by adults to one plant of those tested of Cucurbita, Dalhia and Portulaca, A young corn cob was also slightly damaged by one adult. No damage from oviposition or attempted oviposition was seen. Substantial adult feeding and oviposition occurred on Pereskia pflantzii (Cactaceae). All plants of E. martinii were extensively damaged and substained heavy oviposition. The slight feeding damage of the four plants was not considered significant as it was not repeated in further tests and there were no attempts at oviposition.

As a result of these tests the introduction into Queensland of A. cereicola was recommended. This was approved by Commonwealth Quarantine Authorities. Stocks of Alcidion are being bred in the Quarantine Insectary at Sherwood.

Biology. Adults lay up to 280 eggs at the rate of 3 or 4 per night. Eggs are large and are inserted deep into the plant tissue, the female using both mandibles and ovipositor to make the hole. Egg development is 6-7 days. On hatching the larvae feed within the plant tissue. Several may be present in the same stem without any apparent intraspecific competition. Larval attack is usually followed by tissue rot. Larval development is from 30-40 days. Larvae are easily reared on the meridic diet of Harley and Willson as used for Plagiohammus spinnipennis from Lantana. Pupal development takes 10 days. Teneral adults do not become mature sexually for some 7-14 days. During this period they feed actively on host stem tissue. Mating occurs when adults mature and oviposition occurs soon afterwards. Adults may live up to 3 months.

(8) NEW FRUIT FLY RECORDS FROM CAPE YORK

by D. L. Hancock (University of Queensland) and R. A. I. Drew (D. P. I., Indooroopilly)

The purpose of this note is to record the presence in North Queensland of these species of fruit fly, new for the state, all from the far north of Cape York Peninsula. They were captured recently by Mr. G. B. Monteith during a fruit-fly trapping programme throughout the peninsula, in connection with a joint Biological Resources Study project.

The first of these Dacus (Strumeta) frauenfeldi is a serious pest of tropical fruits in Papua-New Guinea, and bears the common name of Exotic Mango Fly. Seven specimens were taken in CUE lure traps, at several sites in the Lockerbie-rainforests, near the very tip of Cape York. This species has the potential to be a major pest of tropical and deciduous fruits in Australia. Rainforest occurs in isolated patches along the eastern part of Cape York peninsula, and it is thought that Dacus frauenfeldi is at present confined to the northernmost patch.

Dacus frauenfeldi has previously been recorded from Micronesia, Indonesia, Malaya, Papua-New Guinea, New Britain, New Ireland, Lihir Island, Bougainville Island and the British Solomon Islands. Distribution records indicate that it has spread to Micronesia and Asian areas from the South Pacific.

This occurrence, together with those of Dacus (Strumeta) tryoni (Froggatt) - the Queensland Fruit Fly and Dacus (Strumeta) neohameralis Hardy in Papua, serve to underline the quarantine threat posed to Australia's fruit industries by small boat traffic in the north. The Oriental Fruit Fly Dacus (Strumeta) dorsalis (Hendel) and the melon fly Dacus (Zeugodacus) cucurbitae Coquillett have now been established in Papua New Guinea from further north and have potential to be major problems within Australia.

The other two records are both of species described from, and previously only recorded from the Northern Territory. They are Dacus (Strumeta) temuifascia and Dacus (Daculus) decuitans, both described by the late Dr. Alan May in 1965. Dacus tenuifascia was trapped at sites on the Jardine and Wenlock rivers, between Coen and the tip of Cape York, whereas Dacus decuitans was trapped in open forest sites near Bamaga and further south at the Wenlock and Lucher rivers, again north of Coen. Dacus tenuifascia was taken in CUE lure traps,, Dacus decuitans in ME lure traps.

The recording of these two species from Queensland now leaves only one species described from Australia that has not been recorded from the state. This is another Northern Territory species - Dacus (Strumeta) aquilonis, a close relative of Dacus tryoni and probably the latter's replacement in the Northern Territory.

(The Three species newly recorded from Queensland were exhibited, together with examples of the traps used in the trapping programme).

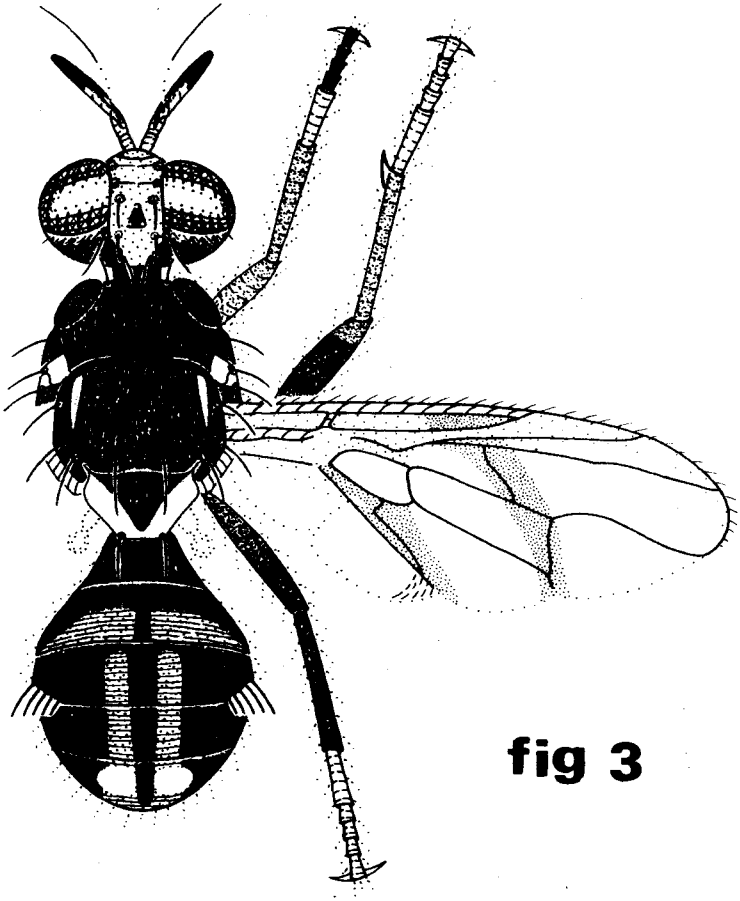


fig 3

(9) ELECTROPHYSIOLOGICAL ANALYSIS OF INSECTICIDE ACTION

by M. J. Rice and P. D. Webb, Dept. of Entomology, University of Queensland.

Our understanding of the biochemistry of insecticides is very advanced but if we hope to develop a rational understanding of the actions of insecticides and the mechanisms of insecticidal resistance fundamental studies of insect behaviour and physiology are also needed. The toxic effects of most insecticides are thought to be due to their action on the insect nervous system. Three main sites of insecticide action on the nervous system have been proposed, they are the sensc nerve cells, the nerve cell membranes and the junctions between nerve cells (synapses). All three of these structures are very small, delicate and difficult to investigate but by increasing our understanding of their physiology the foundations are laid on which the future design of potent, specific and biodegradable insecticides can be built.

The advent of modern electrophysiological apparatus heralds in a new era in understanding of the physiology of the nervous system and our demonstration shows a simple experiment, using such apparatus, to test the effectiveness of insecticides on the nervous system of the locust Locusta migratoria and the cockroach Periplaneta australasiae. The apparatus used consists of a set of electrodes which pick up electrical activity from the nerve cells, an amplifier increases the size of the responses and an oscilloscope is used to display the activity. In addition a loud-speaker system is used to make the nervous activity audible. A tape recorder and a pen recorder are used to make permanent records of the experiments for future analysis of the results. The arrangement is duplicated so that a control experiment can be run at the same time as the experimental procedure, giving a standard against which the effects of the insecticide can be measured (Figure 4).

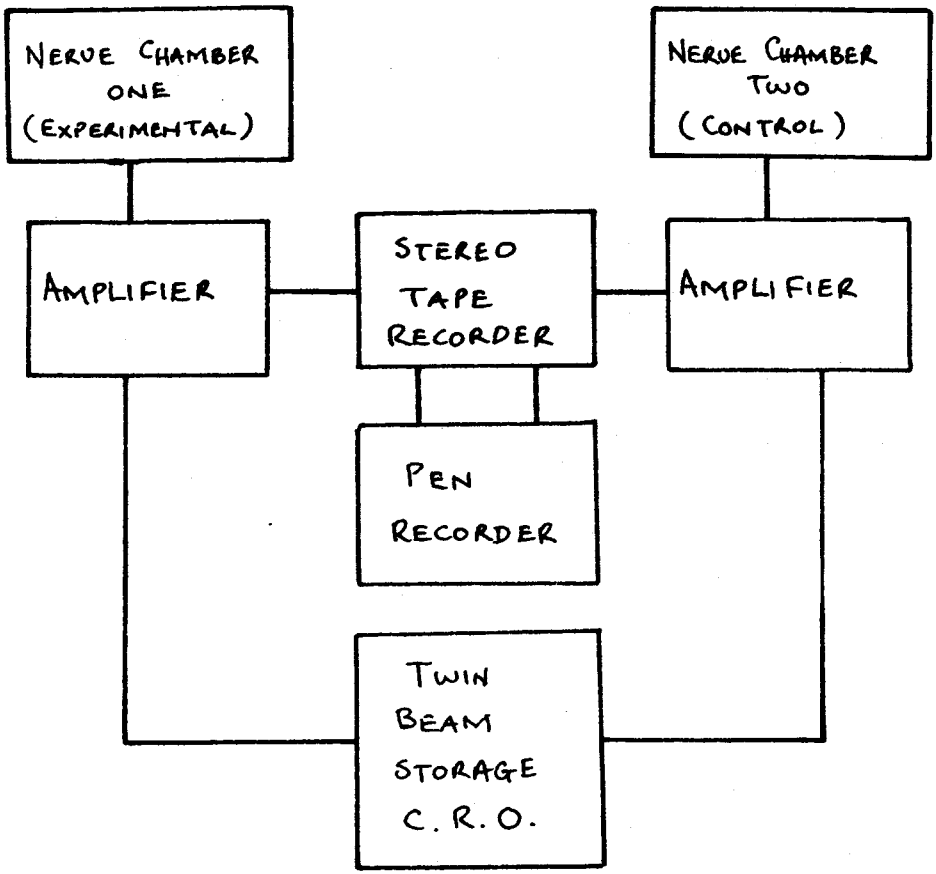


FIGURE 4. Electrophysiological Apparatus for Analysing the effects of Insecticides.

The insecticide demonstrated this evening is COROXON, an organophosphorus compound which acts at the junctions (synapses) between certain nerve cells. Its action is to increase the effectiveness of an excitatory transmitter substance (Acetylcholine) by blocking the enzyme that normally removes it (Acetylcholine Esterase). The result is that Acetylcholine accumulates in the nervous system, leading to excessive excitation of the nerve cells - signified by firing of high frequency, unco-ordinated, bursts of action potentials. As was shown in the demonstration, the crescendo of action potentials from the nerve cord of susceptible cockroaches and locusts two minutes after treatment with dilute Coroxon, is very dramatic (Figure 5.). The effects of insecticides on resistant insects are much less marked.

In addition to providing a very accurate means of investigating the effectiveness and mechanism of action of insecticides, electrophysiological analysis may also prove to be one of the most powerful and effective ways of analysing the development of pesticide resistance in insects and ticks.

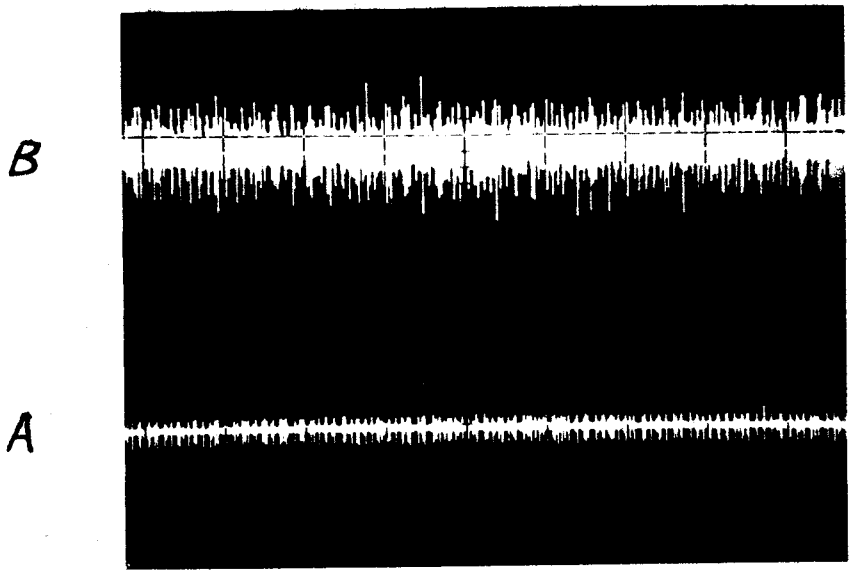


FIGURE 5. PHOTOGRAPH OF OSCILLOSCOPE RECORD.

A. Level of activity before application of insecticide.

B. Level of activity about 1 minute after application of insecticide.

VOTE OF THANKS: Mr. Standfast moved a vote of thanks to those who had given such a wide range of talks and displays. This was carried in the usual manner.

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

Annual Report for the Year 1974

The Council of the Entomological Society of Queensland takes pleasure in presenting its Annual Report for 1974, the Society's 52nd year.

After the successful 50th Anniversary celebrations of 1973 the year of 1974 was somewhat back to routine for the Society. However the membership has continued to grow and a most pleasing level of attendance has been maintained at general meetings through the year.

Several items were successfully offered for sale during the year. After being delayed by the January floods the special Jubilee volume, "Changing Patterns in Entomology", was received in March and had had encouraging reviews and steady sales since then. Our gratitude is expressed to the Australian Entomological Society for assistance in the production and distribution of this important publication which will become a landmark in the history of the Society. A 57 page index to the subject matter of the early minutes of meetings of the Society from 1923 to 1950 was also produced and this represents an important and useful addition to the Society records. A specially manufactured News Bulletin binder embossed in gold with the Society emblem was sold out soon after receipt of stocks, indicating a ready acceptance by members.

The controversial Insect Export Legislation was a matter of concern to Australian entomologists throughout the year and, with the support of members, the Society continued to oppose this unwarranted Regulation. Following discussion and a formal motion at the General Meeting of December 9 a letter of protest urging repeal of Regulation 13A was sent to the Minister for Science. The News Bulletin of the Society has played a leading role in the legislation controversy as a forum for member's views and as a regular information service for Australian entomologists.

In another area of public controversy the Society sponsored an article by Dr. E. N. Marks in the conservation magazine "Operculum" which dealt with environmental problems associated with control of salt marsh mosquitoes.

Once again the Society awarded prizes for entomological entries in the annual Science Contest organized for high school students by the Science Teachers Association. This year there was a marked improvement in the standard of entries examined by the judges.

Details of this year's meetings together with reports from the Treasurer, the Publication Committee and the Fauna Subcommittee follow:

(a) Council Meetings

A total of eleven Council Meetings were held during the year at which attendance was as follows:

Mr. G.B. Monteith	- 11	Mr. T. Passlow	- 8
Dr. A. Macqueen	- 7	Mr. H.A. Standfast	- 8
Dr. B.F. Stone	- 10	Mr. R.I. Storey	- 8
Mr. I. Galloway	- 9	Mr. R. Yule	- 10
Mr. T.M. McRae	- 11		

(b) Membership

A total of 47 new members were elected during the year and at present total membership stands at 335. There are 119 Ordinary members, 157 country members, 47 associate members, 4 honorary associate members, 7 honorary members and one life member. There were 5 resignations and 19 lapsed memberships.

It is with regret that we record the deaths of Professor B. Hocking of the University of Alberta and Mr. R.A.J. Meyers of Ciba-Geigy, Beenleigh.

(c) Meetings

Nine meetings were held during the year. Average attendance was 41 members and visitors. The main business was as follows:-

March 11 — Presidential Address by Dr. B.F. Stone, - "Entomolgy's debt to chemistry"

April 8 — Mr. Ross Wylie - 'Forest Entomology in Papua-New Guinea'

May 13 — Panel discussion - 'Butterflies - our best known insect group'
(a) Dr. H.T. Clifford - Butterfly larvae & monocotyledon inter-relationships as an information transmission system'
(b) Mr. D.L. Hancock - 'A Phylogeny of the Australasian swallowtails (Papilionidae)'
(c) Mr. G.B. Monteith - 'An exercise in the distribution of eastern Australian butterflies'

June 10 — Notes and Exhibits
(a) Mr. B.H. Franzman - 'A new subfamily of the Phasmatodea from Australia'
(b) Mr. M.H. Colbo - 'A note on the Blackflies (Simuliidae) of Australia'
(c) A.P. Dodd - 'Notes on drinking in some Lepidoptera'
(d) R.I. Storey - 'Notes on some dung beetles (Scarabaeinae)'
(e) Mr. G. Donnelly & Mr. G. White - 'A System for the mass collection of the Noogoora burr Beetle Nupserha antennata in the field'
(f) Mr. J. Hargreaves - 'Chlordimeform bleaching in Cabbages'.
(g) Mr. R. Wylie & Mr. R. Yule 'Display of Forest Insects'.

July 8 — Mr. R. Elder - 'The Locust outbreak in Central Queensland 1971-1974'

Sept 9 — Prof. P.D. Gerhardt - 'Insect pests of vegetable crops in Arizona, U.S.A.'

Oct 14 — Dr. R.L. Doherty - 'Arthropod-borne viruses in Australia - The story of Murray Valley Encephalites'

Nov. 11 — Dr. A. Macqueen-' Cophrophagous insects in North America'

Dec. 9 — Notes & Exhibits
(a) Dr. M.J. Rice - 'The Heart of Plusia argentifera - observations using Cinephotography and Electrophysiology'
(b) Mr. D. Hunter - 'Nectar Feeding in Simuliidae'
(c) Dr. E.N. Marks - 'Some interesting recent mosquito records'
(d) Mr. J. Hargreaves - 'Clordimeform bleaching in Cole Crops.
(e) Dr. E.J. Reye - 'New syrup extraction technique for larvae of biting midges'
(f) Mr. R.I. Storey - 'A remarkable grasshopper from Arnhemland'
(g) Mr. G. Donnelly - 'New biocontrol insects for Harrisia cactus'
(h) Mr. D.L. Hancock & Dr. R.A.I. Drew - 'New Fruit fly records from Cape York
(i) Dr. M.J. Rice & Mr. P. Webb - 'Electrophysiological analysis of insecticide action'

(c) Treasurer's Report

After many anxious moments during the year, considerable pruning of the News Bulletin, and some fund raising efforts by the Council (Cape York Report and Bulletin Binders), 1974's finances finished the year in a satisfying state. In retrospect it may appear that the air of gloom surrounding the Society's funds and the action taken to increase subscriptions, may have been illconveived. There is, however, little doubt that most members regard the News Bulletin to be their prime reason for membership, and in order to justify production of this item in a form befitting that objective, it is desirable to refrain from imposing unnecessary constraints on its size and contents. This was unfortunately necessary in 1974. Inflation was, of course, the overriding factor here.

The symposium account is being wound up and while there is no doubt the functions associated therewith were a resounding success, the Organizing Committee deserves a further round of applause for the financial success also achieved. More details of this will be available when the final audit of this account is completed later this year.

The introduction of subscription statements appears to have been a further success as subscriptions owing have fallen by $75.00. Furthermore, we completed 1974 with only 25 unfinancial members.

I would like to compliment members for their prompt attention to subscription payment and urge you all to continue in this vein. With your cooperation in this way your Council will be able to function effectively.

ENTOMOLOGICAL SOCIETY OF QUEENSLAND

Financial Statement for year ended 31st December, 1974.

GENERAL ACCOUNT

Balance 1.1.74	1898.85	Petty Cash Secretary	70.44
Subscriptions	1327.28	Subscription (A.E.S.)	10.00
Indexes, Binders, Cape York Reports	261.73	Science Prizes	31.80
Elsevier Excerpta Medica	35.20	Receipt Book & Journal	3.10
Bank Interest	10.93	Postage Elsevier Excerpta Medica	16.90
Transfer from Symposium A/c	5.00	Postage Binders etc.	11.50
Transfer from Wine Fund	10.00	Stamp Duty & Bank Charges	7.62
		Stationery	39.00
		Buxton & Henshall Binders	78.00
		Subscription refund	10.00
		Transfer to Symposium A/c.	10.72
		Members Levy Publication Account	96.00
		Photocopy Cape York Reports	6.00
		Balance 31.12.74	3157.91
	$3548.99		$3548.99

PUBLICATION ACCOUNT

Interest SEA Stock	187.08	Deficit Balance 1.1.74	1674.05
Sale News Bulletins	2.43	Printing News Bulletin	1140.72
Journal Sales	20.00	Petty Cash Publication Committee (postage)	105.74
Members Levy	96.00	Besley & Pike (Envelopes)	149.50
Deficit Balance 31.12.74	2764.50		
	$3070.01		$3070.01

PETTY CASH ACCOUNTS

SECRETARY:		Suppers	40.59
Balance 1.1.74	9.17	Postage	21.97
From General A/c.	70.44	Photostating	8.05
		Balance 31.12.74	9.00
	$79.61		$79.61
PUBLICATION COMMITTEE:		Bulk Postage	87.92
Balance 1.1.74	4.71	Photostating	5.33
From General A/c	103.54	Postage News Bulletins	2.20
Cash transfer	2.20	Balance 31.12.74	15.00
	$110.45		$110.45

LIABILITIES		ASSETS	
Subscription paid in advance	142.23	Subscriptions owing	127.50
Bad Debts	2.25	Commonwealth Savings Bank	397.44
Excess Assets over Liabilities	3472.46	Petty Cash	19.00
		Crockery & glassware	12.00
		SEA Stock	2201.00
		Stationery on hand	60.00
		Journals on hand (390)	780.00
		Journals sold (10)	20.00
	$3616.94		$3616.94

Audited and found correct. The abovementioned amounts for subscriptions paid in advance and owing have not been verified. Nor have the symposium affairs.

R. J. BALL
7.2.75

(d) Publication Committee Report

The year 1974 was one of mixed blessings for the Bulletin of the Entomological Society of Queensland. In all nine issues were published at an average of 13 pages per issue. This is compared to the previous year when ten issues were brought out at an average of close to 18 pages per issue. This marked reduction in the size of the Bulletin which can be further illustrated by the number of items listed in the annual index, 61 for 1973 versus 39 for 1974, was due largely to the increased costs of printing and postage caused by the current inflationary climate. With the new subscription rates we can look forward to adequate funds being available for 1975.

Members responded well to the change in format used in 1974 - the use of charter type in all but special notices, and the use of the back cover for the Index and Notice of next meeting (another reason for reduction in Bulletin size) and this format with a new front cover, will likely be maintained through next year.

As far as editorial policy goes, we tried to include as wide a variety of subjects as possible in the bulletin, from taxonomic, ecological and physiological notes to entomological crossword puzzles. The Bulletin was also made available to members as a forum for entomological debate - it played an especially important role in the Insect Export Legislation controversy. It is hoped that next years committee will also follow these policies and that the members of the Society will supply the material for the Committee to use.

Special thanks again go to Sybil Monteith for her artistic assistance throughout the year. The Convenor, Mr. Storey, also wishes to thank the two Committee members, Mrs. Fran Holton and Mr. Ian Naumann for their hard work throughout the year, especially when he was away on field work for extensive periods of time.

(e) Fauna Subcommittee Report

The Fauna Subcommittee which was inaugurated in late 1973 was active during 1974. Its most ambitious project was the preparation of a 37 page, illustrated report called "Focus on Cape York" which presented historical and entomological grounds for the preservation of an area surrounding Somerset and the tip of Cape York. The report was distributed to government and conservation bodies; sales of the report to members necessitated a second printing and earned a small profit for the Society.

Bulburin State Forest, near Miriam Vale, is another area of interest to the Subcommittee which arranged a successful field trip to the area during the Easter break which attracted a dozen enthusiastic participants. Valuable information on the insect fauna of the region was obtained and it is expected that this will be the next target area for a focus report.

The Fauna Subcommittee also made an unsuccessful submission opposing the proposed protection of two species of Queensland Butterflies by the Queensland Government and unfortunately today these two common species are protected by law throughout the State of Queensland

(Note: This index does not include general notices, minutes of Meetings, 'About People' or other similar items which occur regularly in every issue of the Bulletin)

ABOUT PEOPLE

Bryan Cantrell has obtained a position as an identification entomologist with Department of Primary Industries, Entomology Branch, in Brisbane. He will be responsible for the identifying of Diptera & Lepidoptera from field workers, and for the maintenance of the D.P.I. Collection of those two orders.

Don Smith has been appointed as a technical assistant of a joint project on Fruit Fly ecology under Dick Drew of D.P.I. Entomology and Gordon Hooper of the Department of Entomology University of Queensland. He will be based at the Long Pocket Entomology Laboratories of D.P.I.

Brian Kay, of the Queensland Institute of Medical Research is currently at Kowanyama, Mitchell River, on the Gulf of Carpenteria for a month of field studies. His work is part of a continuing study on the seasonal host preferences of the mosquito Culex annulerostris.

Ian Galloway of D.P.I. Entomology, Brisbane is spending a month in Canberra studying Scelionid Hymenoptera in the ANIC. The work is part of a study being made for a Ph.D. with the University of Queensland.

Neil Forrester, entomologist with the Dept. of the Northern Territory in Darwin, has been redeployed to Toowoomba following the cyclone where he will be attached to the Dept. of Primary Industries Laboratory to continue his studies on diapause in sorghum midge. Hugh Brier a former student at the University of Queensland, has also received a position with the same organization at Toowoomba.

Lands Department Entomologists Graham Donnelly and Graham White have just completed a month of field collections of the Noogoora Burr beetle, Nupserha antennata in Central Queensland. Mr. White was based in Alpha and Mr. Donnelly in Rockhampton. The project concerned the harvesting of wide populations of the beetle for shipment and release in other problem areas throughout Queensland. They also visited North Keppel Island to examine populations of Cactoblastis and cochineal on Prickly pear.

Sue Beattie, from Melbourne, spent a fortnight in the Cairns area during February, collecting and studying the biology of Lucanidae and Cetoniinae (Coleoptera).

Henry Howden, of Carlton University, Canada, is currently on a study tour of Australia, accompanied by his wife. Primarily interested in the Taxonomy and Biology of Geotrupidae, (Coleoptera), he spent several weeks of February in North Queensland.

John Rogers, of D.P.I. Entomology, South Johnstone, N. Qld., spent a week of late January at the University of Queensland, completing work on his Masters degree on Bean Fly in the Department of Entomology.

Several Members of the Society who were residents of Darwin, had substantial personal losses in the Darwin Cyclone Disaster. These are: Allan Allwood, who lost most of his house, and Tom Weir & Wayne Mollah, whose brick flat is still uninhabitable. The new Scientific Laboratories, at Berrimah, where the Entomological Section is located were fortunately little affected by the storm, and at the moment are the place of residence of all three. The large Insect Collection of the Institute was unaffected.

Harry Standfast, of CSIRO, Long Pocket, will be spending a month in the Darwin area as part of a long term study of the biting flies of veterinary importance to the region.

Dick Drew, Bryan Cantrell and Don Smith, all of D.P.I. Entomology, Brisbane have just completed a $2\frac{1}{2}$ week trip, collecting Diptera (primarily Fruit Flies), along the Queensland coast. They got as far as Mossman.

Several new Post-Graduate students have been taken on at the Department of Entomology, University of Queensland. These are (together with their projects):

Cynthia Castle (Honors), working on the Physiology of the Blowfly Heart

Kevin Lambkin (Honors), working on the taxonomy and general biology of Achilidae (Hemiptera)

Terry Spencer (Honors), working on tissue culturing of Heliothus

Tony Postle (Masters), working on general studies on predaceous heteroptera, especially anthocorids and mirids.

Peter Samson (Masters), working on comparative efficiency of predators of Heliothus on cotton

Dave Hancock (Masters), working on the phylogeny of Australasian Papilionidae (Lepidoptera)

In addition to postgraduate studies, Mr. Lambkin and Ms. Castle will also be doing tutoring in the department.

THE NEW BULLETIN COVER

The new cover of the Bulletin of the Entomological Society of Queensland, will unfortunately not appear till the Next issue of the Bulletin. The new cover traditionally carries insects with which the incoming President is concerned. This year, as the new President is Mr. T. Passlow, head of Entomology Branch, Queensland Department of Primary Industry, and is thus concerned with all insects of economic importance in Queensland agriculture, it was decided that the cover for 1975 feature ten of the most serious economic pests to which members of his branch must concern themselves. In addition, each Bulletin this year will feature a short article on one of the ten species, written by a different D.P.I. Officer concerned with its control. The first of these articles, written by Mr. I. Cunningham on the Tobacco Looper, is featured below. Mr. Cunningham is currently completing a Ph.D. project at the University of Queensland, concerning this important pest of Tobacco.

SOME IMPORTANT PESTS OF AGRICULTURAL CROPS IN QUEENSLAND , Part 1

Plusia argentifera Guen, the Tobacco Looper

The Tobacco Looper, Plusia argentifera Guen is a native lepidopteran which has developed into a major foliar pest of tobacco in Australia. Feeding by the larvae causes loss of leaf lamina, interception of vascular flow to the leaf and disruption of normal plant growth.

In North Queensland, the insect has increased in economic importance in recent years with the trend towards irrigated crops grown during the dry spring and early summer months, as opposed to the normal practice of planting seed in the beginning of the Northern Wet (December).

Eggs are laid on the undersurfaces of the basal leaves of the plant. A variable number of larval instars, from 1 to 7, may occur. However, during the final four days of feeding, the 1st instar consumes five times the leaf area eaten by the earlier instars.

In Northern Queensland, the most significant natural control agents are fungal pathogens (Entomophthora spp) which are responsible for high larval and pupal mortality during warm humid weather. In recent years, pesticide use has been minimised by the establishment of a pest forcasting service by the Department of Primary Industries. Populations of P. argentifera are monitored throughout the growing seasons and growers then advised when to apply pesticides, allowing for decreased use of pesticides.

Two studies are currently under way on the pest which are aiming to further reduce the amount of pesticides used on the crop, and thus minimize economic losses to the grower. These concern:

1. Distribution of immature stages on the Tobacco plant.
2. Establishment of economic thresholds of injury to the plant.

I. C. Cunningham
Dept. of Entomology
University of Queensland,
St. Lucia.

THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

MEMBERSHIP NOMINATION FORM

I nominate (Name) .....

(Address) .....

.....

for Country, Ordinary, Associate * Membership of the Entomological Society of Queensland. (*Strike out which ever does not apply.)

Nominated .....

Seconded .....

I accept nomination .....
(Nominee's Signature)

Forward completed form to:-

The Honorary Secretary,
Entomological Society of Queensland,
c/- Department of Entomology,
University of Queensland,
ST. LUCIA...QLD...4067.

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NOTICE OF NEXT MEETING

The next meeting of the Entomological Society of Queensland will be held at 8.00 p.m. on Monday, March 10, 1975 in Room 323 of the Agriculture and Entomology Building, University of Queensland. This will be the Annual General Meeting of the Society and business will be as follows:

(i) Presentation of the Annual Report for 1974.

(ii) Presentation of the Financial Statement for 1974

(iii) Election and Induction of the 1975 President, Council and Publication Committee.

(iv) Presidential Address by the retiring President, Mr. G. B. Monteith, entitled "Australian Rainforest Insects - a Neglected Fauna"

Supper will be served after the meeting and visitors are welcome.