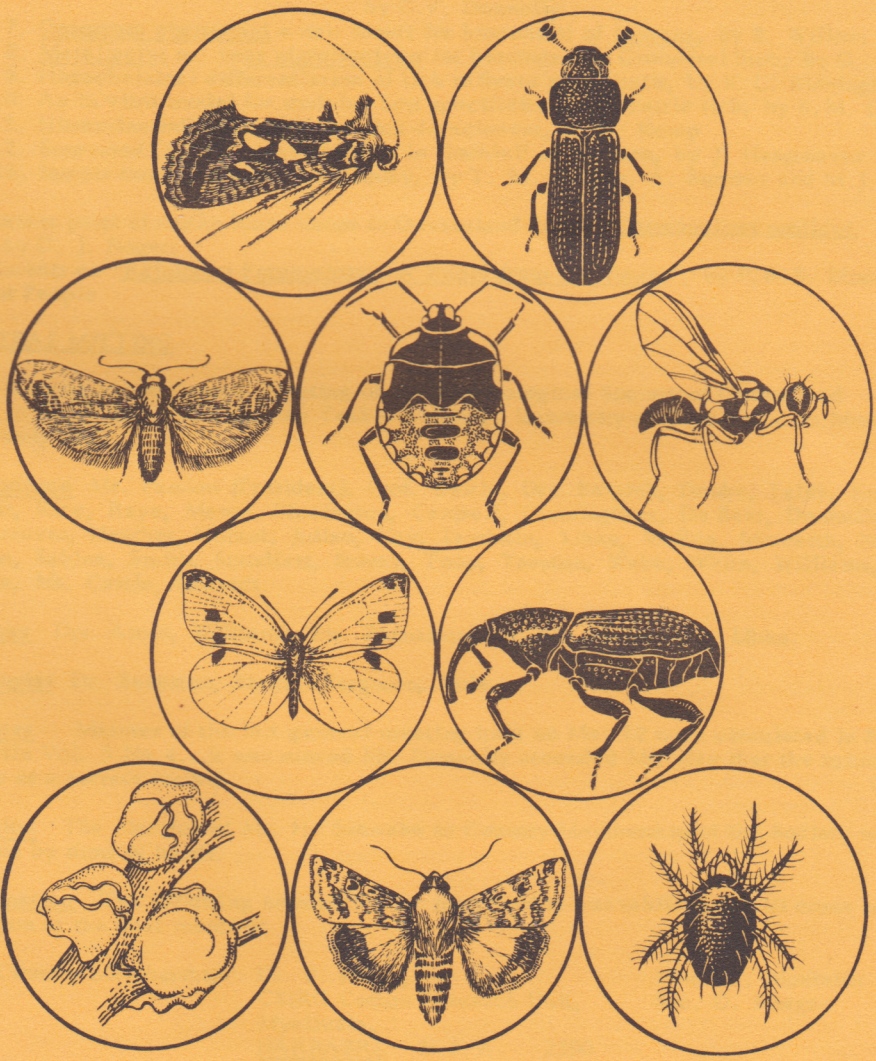
D. S. Kettle

NEWS BULLETIN

ENTOMOLOGICAL SOCIETY OF QUEENSLAND



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GENERAL MEETING

Minutes of the General Meeting of the Entomological Society of Queensland held in Room 402 of the Hartley Teakle Building, University of Queensland on Monday, 9th June, 1975.

Attendance Mr. Passlow (President), Prof. Kettle, Drs. Bensink, Doube, Exley, Kemp, Marks, Rice, Raye, Messrs. Binnington, Cantrell, Cunningham, De Baar, Donnelly, Hancock, Hargreaves, Heather, Hunter, Julien, Kay, Lambkin, Libke, McRae, Monteith, Naumann, Postle, Sabine, Smith, Standfast, Storey, Toop, Trouton, Webb, White, Williams, Willson, Wylie, Ms. Castle, Edwards.

Visitors Drs. Amos, Williams, Mr. Ratnasingham, Ms. Hargreaves, Libke.

Apologies Dr. Bengston, Messrs. Ferguson, Yule.

Minutes Minutes of the last general meeting held on May 12 were circulated in News Bulletin Vol. 3 No. 4. It was moved Mr. Donnelly seconded Mr. Kay that the minutes be taken as a correct record. CARRIED

Election The election of Mr. H. Schwabe to Country Membership of the Society was carried by show of hands.

Nomination The following nomination for membership was tabled and will come up for election at the next meeting.

Country Membership	Dr. P. Room, CSIRO Cotton Research Unit, Myallvale, NARRABRI. N. S. W. 2390	Nom. G. Monteith Sec. D. Morgan

Changes in Membership Status

1. Change of Address — Mr. Bruce Pyke, 17 Princess St., Paddington, Q. 4064

   Mr. F. Dori, P.O. Box 1117, Lae P.N.G.

2. Resignation — Mr. J. Martin

MAIN BUSINESS

NOTES AND EXHIBITS

1. SALTMARSH MOSQUITO CONTROL - INTRODUCTORY COMMENTS
by E.N. Marks, Q'ld. Institute of Medical Research

Society members severely criticised Brisbane City Council's attempts in 1970-74 to control Aedes vigilax by aerial spraying with Dibrom-ULV (cf. E.S.Q. News Bulletins 61, 62 & 81). In 1973 the Society held a symposium on "Mosquito Control in Brisbane" and appointed an Expert Committee on Mosquito Control under my Chairmanship. The Committee recommended application to A. vigilax breeding sites of an insecticide absorbed onto sand or other granules as the most suitable control currently available to local authorities (Marks, E.N. 1974. Saltmarsh mosquito control. Operculum 3(5-6): 87-88 (Sept.-Dec. 1973 issue)).

During the 1974-75 summer, Brisbane City Council commenced aerial applications of Abate-coated sand granules for A. vigilax control. On behalf of the Expert Committee, I asked whether the Society might receive a report on this. It was very pleasing to the Committee that this was approved and that Mr. Trouton, who has been closely associated with the City Council's aerial attacks on A. vigilax, and has recently been given charge of all Council mosquito control activities, would present the report.

2. SALTMARSH MOSQUITO CONTROL BY AERIAL LARVICIDING
by C.G. Trouton, Brisbane City Council

The Brisbane City Council currently has a tender for the control of saltmarsh mosquitoes by the use of aerial larviciding with Abate 5G at the rate of 1 lb to the acre.

To date three applications have been made.

At the outset before this was undertaken the following in broad terms were some of the observations made:-

a. For the purpose of aerial larviciding Abate appeared to be the safest insecticide available because:-
   (1) Low toxicity to vertebrates.
   (2) No drift.
   (3) Particularly safe to use in areas where honey bees are working.
   (4) No problems as regards droplet size.
   (5) The timing of the application is not as critical as ULV adulticiding.
   (6) Penetration of the foliage to the resting places and the activating of the adults has not been a factor affecting the efficiency of the operation.
   (7) Wind velocity above 5 knots does not prevent application.

b. A continuous programme of light trapping had been carried out.

c. Adult landing rates appear somewhat erratic because:-
(1) At different times of the day different landing or biting counts can be obtained.
(2) When in the tidal areas there appears a variation depending on the height of the tide which varies from day to day.
(3) Adults which are present in the mangrove areas remain inactive during the day resting close down to the moist tidal affected areas.
When mechanically activated they quickly return to their resting places and are not interested in seeking out a blood meal.

d. The predicted tide heights are only a prediction and can vary up to 6 inches depending on weather conditions.

A monitoring area had to be regularly surveyed and this provided a basis on which to calculate those areas which would be subject to 7 foot tides and over, which are likely to produce a mosquito hatch out.

During the months of October, November and December depending on weather conditions a predicted tide of 7 feet 3 inches may only reach the level experienced with a regular 6 feet 11 inch tide and little hatch out of Aedes vigilax would occur.

At the other extreme where there is an 8 feet 2 inch tide with six days of flooding coinciding with heavy rain we find a situation where every small pool of water is supporting heavy mosquito breeding.

Under D.C.A. Law low flying planes cannot go within 2,000 feet horizontally to any built up area.

The first application took place on Thursday and Friday the 30th and 31st January 1975. The second application took place on Friday and Saturday 28th February and 1st March, 1975. The third application took place on Thursday 27th March, 1975.

The following were the procedures adhered to:-

a. In each instance before approval was given to apply the larvicide it was established that sufficient numbers of Aedes vigilax had hatched out to warrant the use of the larvicide.

b. Light traps were operated prior to and during the breedingcycle, the results of which are attached as Figure I.
The various mosquitoes obtained from one night's light trapping are listed in Table I.

c. An aerial survey of the area to be treated was carried out in a helicopter just after a 7 foot tide. The pilots responsible for the actual application were present so as to determine the boundaries of the application area and also those areas not required to be treated.

d. Application of the larvicide was timed to take place as soon as possible after the last of a series of 7 foot tides. If weather conditions were unfavourable this would allow for extra time on which planes could fly.
Also while in the second and third instar stages the larvae would be more prone to the effect of the larvicide.

e. The planes were calibrated so that 1 lb per acre of Abate was actually being applied.

f. Containers were placed out at various monitoring locations in the treatment area to provide the following data:-

1. Empty containers to assess the correct even lateral distribution of the granules. The result of approximately 12 to 15 granules was the desired optimum which was obtained.

2. Containers containing live larvae to establish that the larvicide was in fact sufficient to establish control over the breeding cycle.

The following are some of the observations made during the applications.

a. The carrier for the insecticide is sand or other granules and when sand comes into contact with moisture it tends to clog up and the even lateral distribution might be decreased from 1 lb per acre to $\frac{1}{2}$ lb per acre. It is of paramount importance that moisture is not allowed to enter the hopper in the plane; the hopper is thoroughly clean and dry before use and moisture is not allowed to collect around the metering mechanism.

b. Calibration of the plane should be carried out with the granules that will be used during the operation. It is preferable that all the granules used in the operation come from the same production batch run.

I have recently assumed the supervision of the section concerned with the overall control of mosquitoes and am in a position to analyse the complaints received regarding adult activity. Prior to treatment the complaints regarding Aedes vigilax averaged 12 per week, while after treatment the complaints dropped down to 3 per week.

Conclusions

a. The present methods of control are not designed to eradicate Aedes vigilax but rather to reduce their numbers down to an acceptable level so that they are no longer causing a nuisance.

b. Continuous investigations into the habits and breeding cycle of not only Aedes vigilax, but also other problem mosquitoes such as Culex fatigans, Culex annulirostris and possibly to a much lesser degree Anopheles annulipes is desirable so that the most efficient control methods may be adopted.

c. It is only by mutual understanding, co-operation and the exchange of ideas that we can develop the most suitable methods of control that are compatible to all those persons concerned with mosquito control and its effect on the environment.

Table I.
Results from a Light Trap catch on March 10th-11th 1975

Stanworth Road, Boondall	35 Aedes vigilax 7 Culex annulirostris 1 Mansonia xanthogaster 1 Aedes vittiger 1 Ficalbia elegans 1 Culex bitaeniorhynchus
Cribb Island Road, Cribb Island	27 Aedes vigilax 1 Aedes vittiger 2 Culex annulirostris
Greenwood Street, Mt. Gravatt	23 Aedes vigilax 1 Culex annulirostris

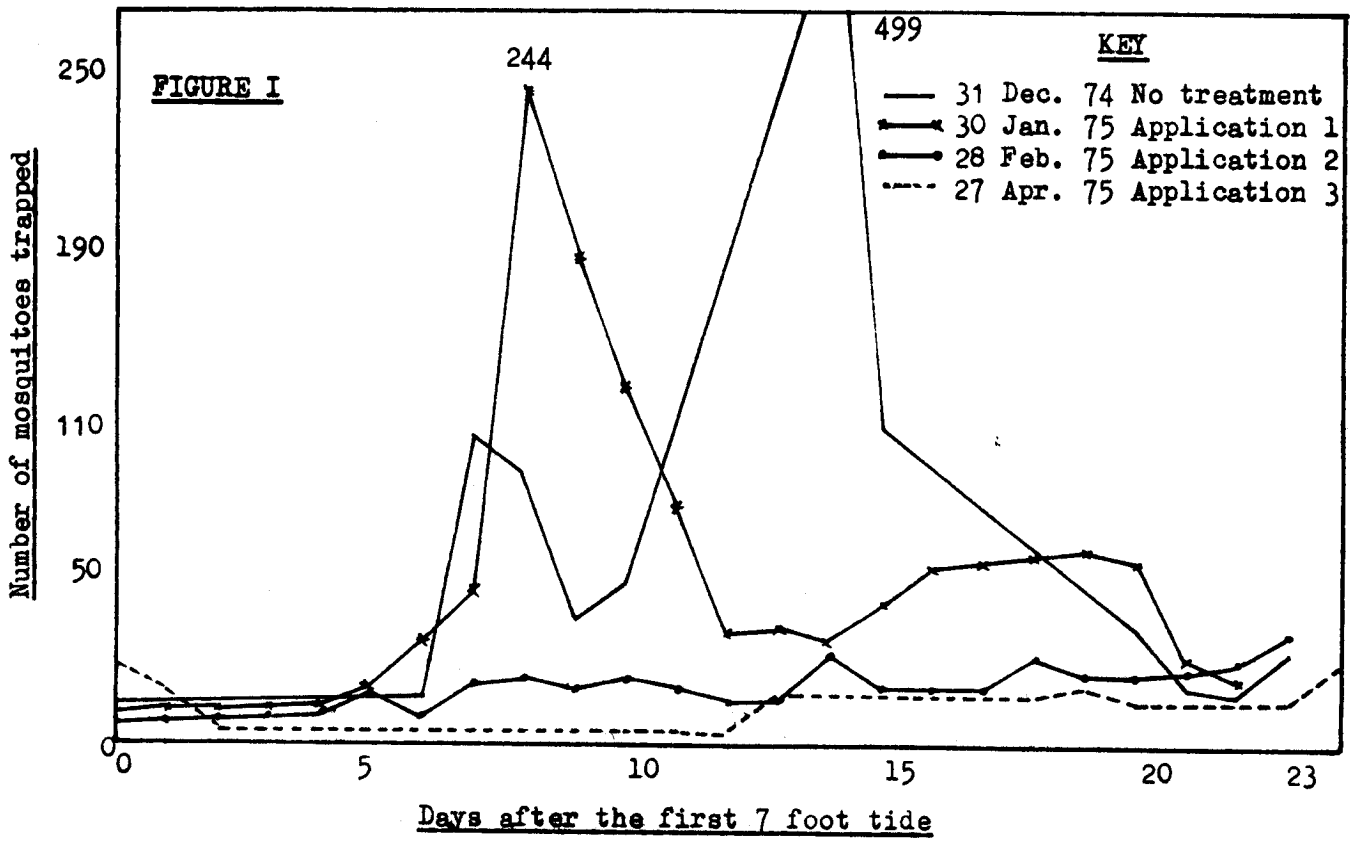
FIGURE I
KEY
31 Dec. 74 No treatment
30 Jan. 75 Application 1
28 Feb. 75 Application 2
27 Apr. 75 Application 3
244
499
Number of mosquitoes trapped
250
190
110
50
0
0
5
10
15
20
23
Days after the first 7 foot tide

3. THE TOBACCO STEMBORER

by R.H. Broadley, D.P.I., Mareeba.

The tobacco stemborer (Scobipalpa heliopa (Low.): Lepidoptera, Gelechiidae) is the chief insect pest of tobacco seedlings in the Mareeba-Dimbulah district of North Queensland at the present time. The reasons for this are twofold.

(1) It is difficult for growers to detect a stemborer infestation in the early stages. Damage may not be detected until plants are being pulled for transplanting into the field. Stemborer affected seedlings are unthrifty and seldom thrive in the paddock and therefore are usually discarded and destroyed.

(2) It is difficult to control with insecticides once an infestation has begun, as the larva of the stemborer feed within the plant tissues and are well protected from insecticide sprays.

The life cycle of the tobacco stemborer is basically as follows. The female moth lays most of her eggs on the laminae of the seedling leaves at night. A few eggs are also laid on the petioles and stems. Newly hatched larvae spend a short time wandering on the leaf surface before burrowing into the plant tissues. After mining erratically the larvae locate a leaf vein, and move down into it, to the leaf midrib and thence to the plant heart. As they move down the leaf midrib towards the stem larvae may feed on adjacent leaf tissue. These small fingerlike mines are quite different, and have a blotchy, irregular appearance. The fully grown larvae construct an exit tunnel for the emerging moth before pupating. The following points summarise the life cycle of the stemborer and the major external features of its attack on young tobacco seedlings.

(1) The adult stemborer moth is about one centimeter long, rusty-coloured and very similar to the tobacco leaf miner (Phthorimaea operculella (Zell.)) in appearance. However, it can be distinguished from it as the adult leaf miner moth has a speckled grey colouration.

(2) The oblong, cylindrical eggs which measure 0.05 mm x 0.25 mm are mostly laid on the leaves of the tobacco seedlings and are very difficult to locate. Stemborer moths show a preference for laying eggs on plants situated around the perimeters of tobacco seedling beds, and infestations are more likely to occur in these regions.

(3) Approximately 30-60 minutes after hatching first instar larvae bore into the tissues of the leaf blade. They subsequently move to the plant heart via the leaf veins.

(4) Once inside the stem the larvae excavate feeding tunnels and complete their development. It is normal to find only one larva per seedling.

(5) When fully grown the larva constructs an exit tunnel, and changes to a pupa.

(6) Larval feeding in the stem injures the plant tissues and symptoms of this damage can be seen externally. The most characteristic of these is the formation of a gall.

(7) Where the larva mines close to the surface of the stem a dark discolouration may be observed.

(8) The larvae may also destroy the growing tip of the plant. If this occurs, it is usual for the plant to start producing suckers, and this may result in a rosette arrangement of the leaves.

(9) Another sign of stemborer attack is distorted seedling leaves. These are caused by the tunnelling of the young larvae in the midvein of the leaves, as they move towards the plant heart. Because of the damaged cells, the leaves do not expand in a symmetric fashion.

4. GIANT SUBTERRANEAN COCKROACHES FROM QUEENSLAND
by G.B. Monteith, Dept. of Entomology, University of Queensland.

The subfamily Panesthiinae of the cockroach family Blaberidae is an Oriental/Palaearctic incursion into Australia, and its members are easily differentiated from normal cockroaches by their heavy build, armoured integument and powerful fossorial legs. Within Australia there are two basic ecological groups of panesthiines: the most familiar are the members of the genus Panesthia which include the common wood-feeding species which inhabit rotten logs in moist environments; less well-known are a group of very large species which have adopted subterranean habits. These latter species, belonging to the genus Macropanesthia and the genus Geoscapheus, are the subject of the exhibit this evening and the following notes.

The taxonomy of these large forms has been in a rather confused state but is currently under review by Dr. Louis M. Roth of Massachusetts, USA. From his studies it appears that there are four principal species in Queensland which show markedly different habitat preferences.

Macropanesthia rhinoceros Saussure is the largest species in Australia reaching 75 mm in length and 40 mm in width; it is often reputed to be the largest cockroach in the world but this is difficult to verify. It seems to be restricted to sandy loams and other light, friable soils in North Queensland. It is a familiar insect in the tobacco-growing areas around Dimbulah, west of Mareeba and is also known from the tract of dry rainforest known as the "40-Mile Scrub" west of Mt. Garnet. Nearer the coast it occurs in old, vegetated beach sands south of Townsville.

Macropanesthia gigantea (Tepper) is a smaller species occurring in the "granite belt" of Queensland around Stanthorpe. Little is known of this species.

Geoscapheus crenulatus Shaw is a large species reaching 60 mm in length and 35 mm in width and is associated with the extensive high coastal sand dune areas of south Queensland. So far as I am aware it occurs north to at least Gladstone and south to Noosa. It is a common insect in the coastal sands north of Bundaberg, in the Cooloola sand mass and on Fraser Island. It does not appear to occur on Bribie, Moreton or Stradbroke Islands although the environments of those islands seem eminently suitable.

Geoscapheus dilatatus (Saussure) is an almost circular species reaching 45 mm in length and 35 mm in breadth. It is extremely abundant in sandy soils characteristic of the cypress pine belt of inland Queensland and roughly extends from about Longreach in the north down through Augathella, Chinchilla, Miles, Inglewood and into NSW where I know it to be common in the Pilliga Scrub between Narrabri and Coonabarabran.

Although we know little of the biology of these giant cockroaches several interesting facts have emerged. It appears that most of the species are surface litter feeders and considering the enormous populations of cockroaches which are known to occur in some areas it is obvious that they must play a prominent role in the litter recycling process in these ecosystems. Both species of Geoscapheus construct burrows, each occupied by a single adult, which consist of a sloping or spiral passageway which leads from the surface to a chamber one to two feet below the ground. The surface entrance to these burrows is normally obscured by a large patch of ploughed up surface soil, presumably caused during external forays by the cockroach. Once one learns to recognize this evidence of their presence it is an easy job to locate the burrow proper by probing and then to excavate down to the terminal chamber where the insect will be found. The chamber is usually filled with up to a double handful of dead leaves which the animal carries down from the surface. These leaves are usually rather mouldy and I suspect that fungal breakdown of the leaves in these humid underground chambers is probably an important preparatory process in making the leaves suitable for consumption and digestion by the cockroach. In Geoscapheus crenulatus I have observed subsidiary

offshoots to the main chamber which are also filled with leaves and in which broods of juvenile roaches may be found. It appears that the young are solely dependent for food on surface litter foraged for by the adult.

A striking feature of the biology of some of these species are the mass surface "migrations" which take place after prolonged rain. This is the only stage when these creatures come to the notice of members of the general public and there is usually a minor spate of enquiries from the public after such events. Heavy rains appear to flood them out of their burrows and they are usually encountered crossing roads in thousands; once I even had specimens brought in as suspected baby tortoises! This behaviour is a common occurrence in Geoscapheus dilatatus and has been observed to a lesser extent in Macropanesthia rhinoceros.

These interesting cockroaches came to my attention in May this year when examining a sand mining threatened area of coast south of Round Hill Head in Central Queensland. The mining company had commissioned the preparation of an impressively bound Environmental Impact Statement which attempted to demonstrate that the area was a virtual biological desert. One of the points this report made was that there was a remarkable dearth of leaf litter throughout the region, hence the area supported no soil insects, nor predaceous birds or mammals which feed on soil insects, etc. etc. The report attributed the lack of leaf litter to suspected frequent bush fires. On traversing the area we found that there was indeed an almost total lack of litter; however we also found a tremendous density of active burrows of Geoscapheus crenulatus which reached a frequency of almost one per square metre in parts, each one stuffed full of stored litter. This situation says much for the litter turnover capacity of this species - and very little for the powers of observation of the environmental consultants who prepared the Impact Statement!

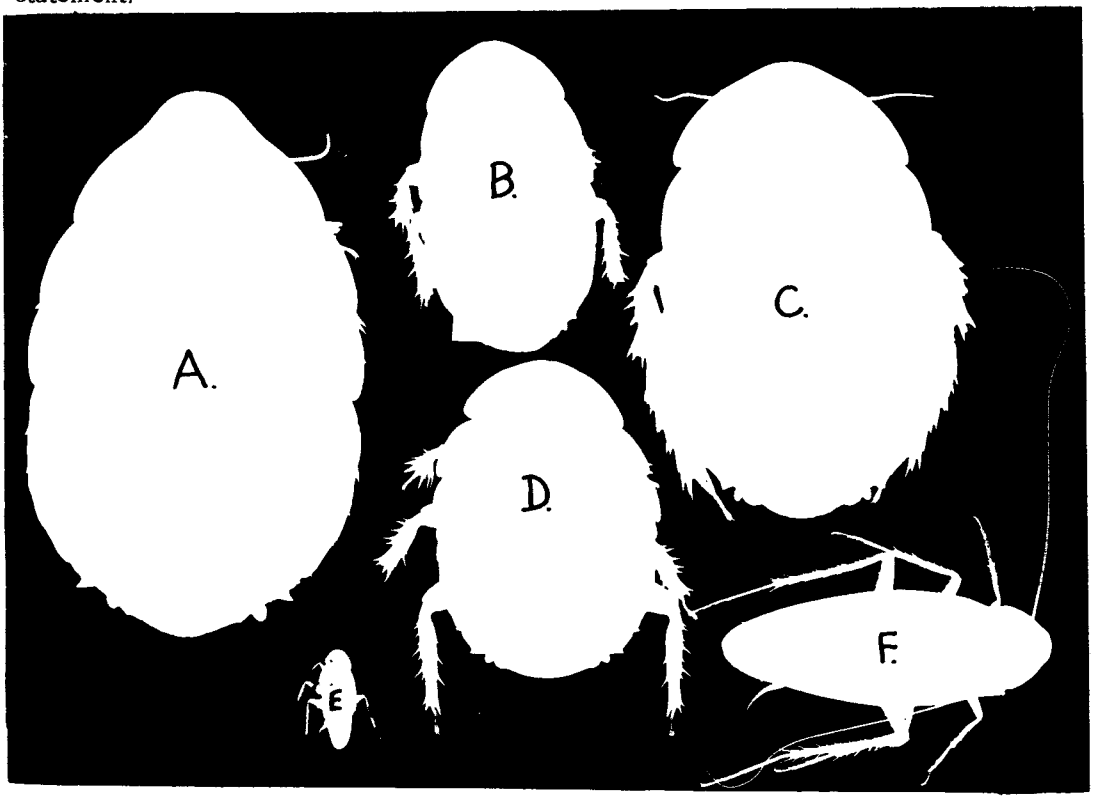

ILLUSTRATION FACING PAGE

Life size photographic silhouettes of giant cockroaches. (A) Macropanesthia thinoceros, (B) Macropanesthia gigantea, (C) Geoscapheus crenulatus, (D) Geoscapheus dilatatus. For size comparison the following common domestic species are also figured: (E) Blattella germanica, (F) Periplaneta australasiae. Print prepared by direct silhouette projection on to photographic paper - courtesy Martin Rice.

5. MASS MIGRATION OF ISOPODS
by G.P. Donnelly, Department of Lands.

In April 1975 I observed part of a mass migration of isopods in the Longreach district. Masses of isopods covered the road along the stock route near Arrilalah about 40 miles south of Longreach. They were travelling towards the south. Tributary streams of isopods were noted emerging from the grasslands and combining with the main migration travelling on the bare ground of the road. When a vehicle travelled through the mass the survivors moved off the road into the grass. Some time after the passage of a vehicle they moved back on to the road and continued their migration. I would be pleased to hear from any members who may have witnessed a similar phenomenon.

6. HYPOGEOCOCCUS FESTERIANUS, A CACTUS-FEEDING MEALY BUG FROM ARGENTINA
by G.P. Donnelly, Department of Lands

H. festerianus was imported from Argentina for use in the biocontrol of Harrisia cactus. Two interesting features of its biology are that:-

a. it lays eggs singly rather than in ovisacs
b. males have been noted in all colonies and no evidence of parthenogenesis has been found.

The female insect is covered with a cottony mass similar to that seen on cochineal insects. Eggs are laid into this mass. On hatching from the eggs, the crawlers struggle through the cottony mass and wander about the cactus plant seeking sheltered parts where, by a thigmotactic response, they settle and commence feeding. This response leads to most crawlers settling around areas of new growth such as seedlings, lateral buds and flower buds.

Feeding by the mealy bugs does not kill the cactus but leads to distorted growth. Feeding by nymphs or adult females causes a cessation of plant growth in the immediate area of feeding. A single individual feeding on one side of a shoot will cause cessation of growth at the feeding site. The other side of the stem continues to grow normally. This results in distorted growth. A number of individuals around a bud or shoot cause complete termination of growth. This prevents the plant from spreading from the affected bud or shoot and can prevent flowering.

7. OCTOTOMA CHAMPIONI A NEW INSECT FOR BIOCONTROL OF LANTANA
by Brian Willson, Department of Lands.

O. championi is the latest insect to be released in Queensland in the continuing campaign to find suitable insects to control lantana (Lantana camara). Lantana has the distinction of being the weed against which biological control was first attempted. The first attempt occurred in Hawaii in 1902 and the first Queensland attempt was in 1914.

Under a joint programme with CSIRO and the NSW Forestry Commission an officer of the Qld. Department of Lands is at present stationed in Costa Rica and an officer of CSIRO is in Brazil. The programme is being funded by all three organisations. This programme commenced approximately 18 months agao and is expected to continue for 3 years.

O. championi was received from the Department of Lands officer in Costa Rica and has been approved for release after successfully completing one generation in quarantine. The first liberation of this insect was made in the State Forest, Kenilworth in April but it is too

early to determine its success or failure. It is somewhat similar to O. scabripennis but is smaller and has different elytral markings and shape. The shape of its larval mine is also slightly different to O. scabripennis.

8. METALLACTUS SP. NEAR NIGROFASCIATUS FOR BIOCONTROL OF GROUNDSEL BUSH BACCHARIS HALIMIFOLIA
by G. White, Department of Lands.

The chrysomelid beetle, Metallactus sp. near nigrofasciatus is part of a complex of Metallactus spp. feeding on various Baccharis spp. in South America. This species was collected from groundsel bush in southern Brazil for use in control of the bush in Queensland. A study of the insect's biology and host specificity was carried out by Paul McFadyen in Brazil.

Adults feed on the leaves of the groundsel bush. Oviposition behaviour is of particular interest. The females clasp the egg in their hind tarsi and rotate it while coating it with faecal material. Eggs are then dropped to the ground.

Newly hatched larvae open one end of the faecal capsule and move about with the capsule adhering to the abdomen. Larvae feed on the apices and young leaves of Baccharis halimifolia. As larvae grow, the capsule is enlarged posteriorly. When threatened, the larva withdraws into its capsule, blocking the entrance with the head capsule. Mature larvae leave the plant to pupate in the soil or leaf litter. The capsule is sealed by a white secretion and larvae enter a prepupal stage prior to pupation.

In Brazil there is apparently one generation each year. Adults emerge in early summer and survive and lay eggs throughout the summer. Larvae develop slowly through summer, autumn and winter. The developmental period varies from 4 to 6 months depending on temperature. Larvae developing from eggs laid early in summer mature in early winter and pass the winter inside the sealed capsule as dormant prepupae. The dormancy appears to be broken by increased temperatures during spring, when pupation occurs.

Host testing carried out in Brazil showed that Metallactus sp. was restricted in its feeding to a few species of Baccharis. It has now been bred through two generations on B. halimifolia.

The scattered feeding of adults on foliage causes insignificant damage to plants. The larvae, however, feed on shoot apices, usually causing shoot growth to cease and thus releasing lateral shoots from apical dominance. It is thought that the long feeding period of larvae could result in many of the lateral shoots being attacked as well.

If the insect becomes established, and if it builds up to a high population density, larval attack during summer could result in reduced growth and flowering of B. halimifolia.

9. HISTOCHEMICAL DIFFERENTIATION OF TICK SALIVARY GLAND CELLS
by K. C. Binnington, CSIRO Long Pocket Labs.

A study of the structure and histochemistry of the salivary glands of Boophilus microplus has been undertaken as part of the general study of the tick's saliva and the mechanism of feeding. Routine paraffin sectioning and staining of the salivary glands show distinctly five cell types and the use of a range of histochemical reactions increases this to seven. Improved morphological detail and differential colouration obtained through the development of the technique outlined briefly below shows that the gland probably contains at least nine cell types.

The Technique: (i) Fixation in cold 2.5% glutaraldehyde (ii) Reaction for esterases using the indoxyl acetate technique (iii) Embedding in glycolmethacrylate and sectioning at lum (iv) Staining by a Periodic acid-Schiff/Haematoxylin/Orange 6 sequence.

10. AN in vitro MODEL FOR STUDYING HOST SPECIFICITY OF THE CATTLE TICK
by B. M. Doube, CSIRO Long Pocket Labs.

One of the most curious aspects of the biology of the cattle tick is its high degree of host specificity. Host specificity of ticks can be determined at three levels of organisations - (i) host seeking (ii) attachment (iii) feeding. The specificity of the cattle tick, a one host tick, is most commonly expressed by a failure of larvae to attach to other bovine hosts. This specificity has been responsible for the failure of many attempts to feed the tick through artificial membranes. Recently, however, David Kemp developed a method for rearing the larvae in vitro on thin slices of bovine skin floating on a reservoir of bovine serum. Following this David and I adapted the technique to look at attachment behaviour of larvae.

These studies have shown that a consistent and high proportion, approximately 70%, of larvae attach after 16, 20 and 24 hours after infestation at constant temperatures in the range of 32° C to 40° C; at temperatures outside this range a much lower proportion of larvae attached. The proportion attaching after 16 hours was not affected by relative humidity, previous exposure of host animal to B. microplus or the origin of the skin (neck, shoulder, rib, rump). The relevance of these findings to the explanation of the predilection areas of the cattle tick of hosts was discussed.

These studies have provided a standardised model which can now be used to examine the stimuli which induce or inhibit larval attachment to skin surfaces.

11. HISTAMINE INFLAMMATION AND TICK DETACHMENT
by D. Kemp, CSIRO Long Pocket Labs.

Parasitic insects usually feed from blood vessels or from a blood pool and are only in contact with the host a short time. To a tick larva, which must feed on a reactive host lesion for a long time, this must appear as the height of luxury.

There are many ways in which the host can inconvenience the tick parasite. The immune reaction can lead to histamine release, irritation of the host and hence grooming. More subtle changes, such as constriction of blood vessels either by chemical mediators or under control of the nervous system could deprive the parasite of nutrients. Perhaps more important for ticks, is the arrival at the feeding site of antibodies and numerous blood leucocytes. Eosinophils and neutrophils are predominant in the lesion and these may release such nasty items as acid phosphatase, peroxidase, proteolytic enzymes, and trace metals such as copper. Antibodies will also be present, no doubt contributing an anti-tick effect.

Inevitably the tick larvae must feed on what appears to be a damaging brew, and presumably they cope as best they can by neutralizing harmful enzymes and chemicals, and rapidly excreting others. Little or nothing is known of this side of tick feeding and digestion, but there is a way in which the tick can aleviate the situation other than by an exercise in biochemistry. Larvae detach earlier on highly resistant animals where the lesion brew develops faster. It seems that they get prior warning of their impending doom and move to a new site when the host has to start the attack again. The changes in the lesion which the ticks detect prior to moving appear to be associated with the inflammation initiated by histamine release. Injection of as little 0.8 um of histamine beneath larvae causes a proportion to detach. The histamine itself does not appear to be the stimulus detected since other chemicals causing inflammation also cause detachment and yet others having no inflammatory effect have no detaching effect.

12. SUSPECTED D.D.T. PHYTOTOXICITY IN 'IOCHIEF' SWEET CORN

by J. Hargreaves, Redlands Horticultural Research Station, D.P.I.

Sweet corn is a rising minor crop in the Lockyer, Fassifern, Logan and Redlands areas, with growers selling either to the market direct on a purely fresh basis or linked to processing factories where corn is sold in a variety of packaged styles.

Corn earworm (Heliothis armigera) infested sweet corn reduces sales appeal, necessitates excess handling, and is claimed to cause taint problems in such style packs as cream corn and corn niblets by virtue of larval frass and bacterial decay in damaged kernels.

A flotation technique can separate a substantial proportion of damaged kernels and larvae in those styles involving stripped kernels. However, this style of corn produces the least return and the flotation process is expensive to install.

Growers and processors, therefore are anxious to reduce the problem in the field and we have been anxious to guide the rather haphazard grower regulation techniques.

On field trials at Redlands we have confined our regulation to the period of green silk which we have found to be in the vicinity of 17 days. Our initial reliance will be on chemical pesticides, to allow us working time to develop a more multifaceted approach to silk protection.

A range of insecticides, known to be effective against H. armigera was appplied at three frequencies during the silking period. The data from Trial II (see Table) show that all chemicals effectively protected the cobs from larval depredation and that, basically, an application frequency of three times a week would suppress damage to minor levels.

Treatment & Frequency Trial II	Treatment Mean (% damaged cobs)	Transformed* Mean
Untreated	90.7	72.8
Endosulphan 0.07% a.i. Weekly	58.4	49.9
Twice Weekly	17.8	24.8
Thrice Weekly	8.1	16.5
Monodotophos 0.05% a.i. Weekly	63.7	52.9
Twice Weekly	21.0	27.5
Thrice Weekly	5.2	13.1
D.D.T. 0.1% a.i. Weekly	47.8	43.8
Twice Weekly	43.4	41.1
Thrice Weekly	12.8	20.9
Methomyl 0.025% a.i. Weekly	57.0	54.7
Twice Weekly	17.2	25.4
Thrice Weekly	3.3	8.5
Methamidophos 0.1% a.i. Weekly	48.3	44.0
Twice Weekly	10.5	18.7
Thrice Weekly	1.1	3.6
Differences necessary for significance	5% 8.8 1% 12.1	*sin $\sqrt{x}^{-1}$

Economic considerations would preclude the use of 7-8 sprays per silking; however, on examination of yields we found that we were obtaining almost 2 cobs per main stalk and one from the tillers. The cultivar 'Iochief' is in field practice regarded as a one cob corn. The silking for the "one cobs" would subsequently be far less than 17 days, and using our best frequency rate it may be possible to protect that cob with 2-3 sprays. Trials have been initiated to this end.

D.D.T. 0.1% a.i. treated cobs have shown a progressive proportion of cobs with non-developed kernels (see Fig. 2). This infertility was most marked on the thrice weekly sprayings. It is not known whether the D.D.T. or its commercial carrier affected the pollen tube development or if indeed some style abnormality developed. Further work is planned in this direction.

This abnormality, however, can be most fortuitously used in our extension work with growers, in efforts to promote use of more suitable chlorinated hydrocarbon insecticides than D.D.T.

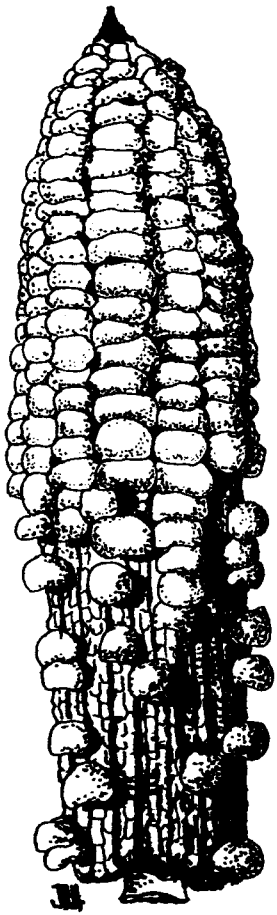

FIGURE 2

13. INSECTS THROUGH THE MAIL - A DISPLAY
by T.M. McRae, A. Burrows and M. J. Rice. Dept. of Entomology, University of Queensland.

Postage stamps and philatelic First Day Covers with entomological themes were displayed by Tom McRae and Alison Burrows and cigarette cards of interest to entomologists were contributed by Martin Rice, the collections adding a very interesting and colourful exhibit to the meeting.

Vote of thanks

In moving the vote of thanks Mr. Sabine commented on the variety and high standard shown by the contributions and this was carried in the usual manner. There being no further business the President closed the meeting and invited all present to supper.

IMPORTANT PESTS OF AGRICULTURAL CROPS IN QUEENSLAND PART 5. Cosmopolites sordidus Germar

The banana weevil borer, Cosmopolites sordidus is figured on the News Bulletin cover on the right in the second to bottom row. It is a pan-tropical pest of bananas and other Musa spp. such as Manilla hemp (M. textilis). The larva is the damaging stage, feeding internally in the corm (the underground bulbous stem) and the lower parts of the pseudostem, restricting the flow of water and nutrients to the growing point and expanding leaves. Typical symptoms of weevil borer attack are a reduced growth rate and bunch size. In severe cases leaves yellow and die prematurely.

Eggs are deposited singly in holes chewed in the banana corm by the female. The most favoured oviposition site is between the leaf sheath scars on the crown of the corm, just above the ground. On hatching the larvae bore into the corm, the tunnels of mature larvae reaching 1 cm in diameter. Pupation occurs within the larval feeding tunnel.

The adults are nocturnal and closely associated with the banana plant, living in trash adjacent to the plant, in old pseudostems under leaf sheaths and in larval feeding galleries. They are apparently flightless even though wings are present. As a result, spread of this pest is slow, the main method being by transport in planting material.

In most areas of Australia where this weevil occurs it can be controlled effectively with Dieldrin sprays applied to the bases of the plants. However, in some parts of northern New South Wales a high level of resistance to Dieldrin has been detected. Resistance to this insecticide is also known from the South and Central American areas. In these areas a number of organophosphorus compounds have been substituted. Monitoring for insecticide resistance is carried out at intervals by the Queensland Dept. of Primary Industries.

One important aspect of control is to dispose of old pseudostems as these provide an ideal sheltering place for adults and can also act as breeding sites. The pseudostems should be chopped up after the bunch is harvested to ensure that it dries out quickly, thus denying adult weevils food and shelter.

D. J. Rogers
Dept. of Primary Industries,
South Johnstone.

COMMENTS ON "RAINFOREST ENTOMOLOGY- A REPLY FROM THE TOWER"

At the risk of inducing severe attacks of bruxism within the entomological community I am forced to add the following rejoinder to the rainforest polemic.

Mr. Monteith makes the point that in his address he pleaded for some rainforest ecology to be taught rather than an exclusive concentration in the area (1). This was not my interpretation (2) of the written version of his address (3). However, this is no more than subjective hair-splitting and I'll pass on to more serious issues.

Mr. Monteith goes on to make the case that the rainforest is a complex system and as it is not feasible to obtain a holistic appreciation of the total system it is nevertheless instructive to examine some of the system out-liers. Our Malaysian medical entomologist referred to in (1) is in fact in control of his total system in that he knows what the key manipulative elements and processes are in the context of his applied goals. This situation bears no comparison to the rainforest. This surely must be a case for a total systems study as a prelude to teaching. Researching the system periphery will yield results that can only be classified as peripheral. There is certainly an obligation to invest more resources into rainforest research but it does not follow that we are at a stage in our knowledge where we can afford to experiment with teaching in that area. The heuristic approach is worthwhile in research and in some areas of post-graduate education as the Gestalt school would have us believe, but there is certainly no excuse for this approach which is so profligate of resources in the packed syllabi and curricula extant in undergraduate courses.

The eminent researchers around the world referred to in (2) are those now engaged in the multi-million-dollar-funded Huffaker Project, evidence surely that enormous resources in man-power, time and finance are only now beginning to unravel the complexities of monocultures.

It was with considerable disappointment that I noted Mr. Monteith's inclusion of new polemic material in the last issue of the News Bulletin (1), regarding discussion at the recent symposium of the Ecological Society of Australia. Mr. Monteith makes the statement that we (4) presented no field evidence to back our "theoretical monoculture model" during disucssion at the E.S.A. symposium.

I make the following points.

1. We presented no theoretical model. Rather we presented some axiomatic schemata within a managerial framework. Note the title of the paper "Management of the cotton agroecosystem in southern Queensland : A preliminary modelling framework". For the sake of the uninitiated there are vast differences between modelling schemata, theoretical models and operational models. Asking for field data to back up schemata is tantamount to requesting proof for the validity of the Brisbane road directory.

2. A theoretical model is accepted widely as one which satisfies known systems parameters, is mathematically constructed and usually in cybernetic language. After considerable validation and testing for predictive value the theoretical model may evolve into an operational model. To label our schemata as a theoretical model, although flattering, is untenable (Oh that the biosphere was that simple!).

3. Mere data presentation finds no place in E.S.A. symposia. The title of this symposium "Managing Terrestrial Ecosystems" would suggest what this symposium was all about. Thus papers were sought which highlighted the philosophical issues behind ecological management. There is a sufficient plethora of prosaic journals only too willing to accept data "pot boilers". Our paper concentrated on the symposium theme and espoused certain management options; the back-up proof is to be found in Table I which is the summation of over 2000 graduate man-hours' field and laboratory research.

4. If Mr. Monteith had attended the opening of the symposium he would have learnt to his profit that all discussion generated by the symposium contributions would be printed in a forthcoming issue of the Bulletin of the E.S.A. He would also have learnt that authors would be allowed to expand their answers to questions to render them more explicit. Thus although the discussion connected with the pest management section was cut short by time limitations, the discussion did, in fact, proceed afterwards and the full version may be read in (5).

5. The working group to which the authors (4) owe certain allegiance is currently responsible for the employment of four graduate officers. There are fifteen "data papers" published or about to be published by the group stemming from the last 18 months' research. I include the two statements above in the event that people of influence such as grant awarders or referees will not be misled by Mr. Monteith's statement in (1). The graduate officers referred to above are dependent on the continuity of financial support to the group. Mr. Monteith's statements do nothing positive in this regard. In fact, I prefer to believe his statement to be an example of paralogism and as such it exhibits nothing more than a rare degree of imperceipience. On the other hand if his statement was meant to be an attempt at dissembling, the imputation contained within the statement is opprobrious and potentially libellous. I cannot believe that this was seriously intended.

Mr. Monteith's 'cri de coeur' for tolerance and understanding towards related disciplines and academic prediliections is commendable but hardly credible in the light of his intemperate and amateurish incursions into areas beyond his expertise. It may be instructive to conclude my remarks by quoting from a recent Presidential address to no less an august body than the American Entomological Society by Perry Adkisson (6). I quote the penultimate paragraph:

"In this regard, we also should be alert to another danger and that is academy snobbery concerning basic and applied science. It is with dismay that I still see individuals and granting agencies taking the attitude that the only "good" science is basic science and that applied science is something less than good. These are the same types of thinkers that believe that basic ecology studies can only be done in some exotic place such as a tropical rainforest and not in an alfalfa field and that basic physiological research on insects can be performed only on some exotic butterfly and not on an economic species such as the corn earworm. The location of the research or the species involved should not be a factor. What should really matter in determining whether the research is good or bad should be the methods used and the quality of the information gained. The human population is rapidly approaching the time when this type of snobbery can no longer be afforded in biology, entomology, or agriculture, or any of the sciences. It should be put down at every opportunity."

P.R.B. Blood
Entomology Department,
Univ. of Q'ld.

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ABOUT PEOPLE

A meeting of the joint Queensland-Australian Government Cryptotermes brevis Committee was held in Brisbane on June 5th. C. brevis is an exotic drywood termite which is established in Maryborough and has been recovered from Brisbane and Bundaberg. The objective of the meeting was to review the present status of the insect and assess future strategies for its control. The Committee comprises representatives from Australian Health Department (Quarantine), Australian Department of Northern Development, Forest and Timber Bureau, CSIRO, and Queensland Departments of Primary Industries and Forestry. The meeting was attended by Robin Yule, Dept. of Forestry, Q'ld., Neil Heather, D.P.I., Q'ld. and Tony Watson, CSIRO, Canberra. Tony also spent a day examining Odonata in the Museum Collection of the Dept. of Entomology, University of Q'ld.

Geoff and Sybil Monteith, David Hancock and John Kerr are entomologists who will join with three ornithologists, one herpetologist, one mammalogist and one botanist on a three week expedition to northern Cape York Peninsula in early July. The main objective of the trip is to explore some major tracts of rainforest near latitude 11°35'S on the east coast. This region has only recently had road access put into it by COMALCO and since the forests lie midway between the better known rainforests of Iron Range to the south and Bamaga-Lockerbie to the north the insect fauna should prove very interesting. Incidentally, lepidopterist colleagues of John Kerr will be pleased to hear that this year he has been honoured with the Chair of Pathology in the Medical School of the University of Queensland.

Neal Hardy, an Honours student at the Australian National University, Canberra, visited Queensland in June to make collections of hydrophilid water beetles which he hopes to establish in culture for studies of larval biology, morphology and taxonomy. He spent a week in South Queensland including a visit to Stradbroke Island and then moved on to north Queensland where he hoped to make contact with Cairns coleopteris George Brooks.

Leng Hong Teo has completed two very productive weeks work at the Entomology Department, University of Queensland. He successfully used electrophysiological techniques in a study of the effects of fumigants on insect respiratory physiology in the Department's newly established physiology facilities. Dr. Teo has now returned to his position as Lecturer at the Nanyang University, Singapore.

Harry Burton spent ten days in Brisbane with his family organising the continuation of work on the lakes of North Stradbroke Island with Angela Bensink. During his stay he spoke, to members of the Entomology Department, University of Queensland and visitors to the department's seminar series, on the lakes of the Vestfold Hills, Antarctica. He also made a weekend trip to Brown Lake, North Stradbroke Island, liaising with Neal Hardy.

Editor's Note: Frank Page (D.P.I., Biloela) is working on the bionomics and ecology of the lucerne jassid Austroasca viridigrisea Paoli, not the sorghum midge, as was stated in News Bulletin Vol. 3. No. 4., May, 1975.

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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, 14th July, in Room 323 of the Hartley Teakle Building, University of Queensland, St. Lucia, Brisbane. The main business of the evening will be an address by Dr. Malcolm Campbell of the Entomology Dept. of the University of Queensland, entitled "Some Aspects of the Biology of Culicoides brevitarsis". Visitors are very welcome and supper will be served after the meeting as usual.

THE SOCIETY

The Entomological Society of Queensland is an association of over 300 people with a professional or amateur interest in Entomology. It is dedicated to the furtherance of Pure and Applied Entomological Science and, since its inception in 1923, has promoted liaison amongst entomologists in academic, private and governmental institutions. It has a concern for the conservation of Queensland's natural resources. Further information is available from the Honorary Secretary at the address given above.

MEMBERSHIP

Membership is open to anyone interested in Entomology and entitles the member to attend monthly Society meetings, held on the second Monday night of the month, and to receipt of the News Bulletin. There are three classes of subscription membership:
Ordinary: persons residing in the Brisbane area ($9.00 p.a.)
Country: persons residing outside Brisbane ($8.00 p.a.)
Associate: persons not in receipt of a full salary ($3.00 p.a.)

THE NEWS BULLETIN

The monthly News Bulletin reports on the Society's monthly meeting, keeps members informed of Society events and news, and provides a vehicle for debate and discussion. Contributions in the form of articles, notes, letters, news clippings and photographs are always welcome, and should be sent to the Convenor of the Publication Committee at the address given above. The deadline for contributions is the Wednesday following the monthly Society meeting.