ENTOMOLOGICAL SOCIETY OF QUEENSLAND

News Bulletin

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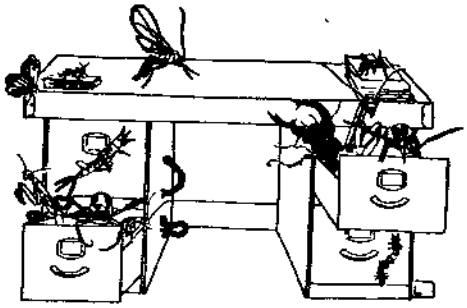

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THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

ANNUAL REPORT FOR THE YEAR 1983

The Council of the Entomological Society of Queensland takes pleasure in presenting its Annual Report for the year 1983, the Society's 61st year.

Attendance throughout the year at the Society's General Meetings was encouraging, averaging 30 members plus visitors per meeting. The fourth Perkins Memorial Lecture was held in August with a record attendance of 56 members and 17 visitors. The Society was delighted to hear Dr Ian Common's address on "Adaptation and Diversity in Australian Microlepidoptera". In December the Society held its Notes and Exhibits meeting at CSIRO Long Pocket. The meeting was preceded by a well-catered Bar-B-Que in very pleasant surroundings.

This year the Society awarded a prize in the Senior section of the Queensland Science Teachers Association Science Contest. A bursary of $50 was awarded to Mr John Simonidis from Brisbane Grammar for his exhibit entitled "Colour Pattern Element Formation".

Details of the years activities together with reports by the Treasurer and Convenor of the Publications Committee follow.

(a) Membership

The number of members increased to 320 members this year with the election of 21 new members. There was 1 resignation, 1 death, and 9 terminations of membership under Clause 4(f) of the Constitution. Currently, the 320 members represent 128 Ordinary members, 139 Country members, 49 Associate members and 4 Life/Honorary members.

(b) Council Meetings

There have been ten Council meetings during the year at which the attendance was as follows -

Dr R. Sutherst	8	Mr I. Fanning	9
Dr D. Sands	8	Miss J. Grimshaw	4
Miss M. Schneider	10	Mr E. Dahms	5
Mrs M. Elson-Harris	10	Dr M. Zalucki	7
Dr R. McFadyen	7		

(c) General Meetings

Eight General meetings and a Perkins Memorial Lecture were held during the year. The Main Business of these meetings was as follows -

March 14 — Presidential Address, Dr D. Sands - "Trends in Research on the Biological Control of Weeds".

April 11 — Dr D. Wilson - "Veterinary Entomology in the USDA".

May 9 — Dr P. Twine - "Siratac - a pest Management approach in Cotton".

June 14 — Notes and Exhibits as follows -

(a) R. Wylie - "*Ips grandicollis* in Queensland Pine Plantations"
(b) M. Schneider and I. Galloway - "A possible First Record of the Occurrence of *Cephalonomia gallicola* (Ashmead) (Hymenoptera, Bethylidae) in Australia"
(c) I. Passlow - "Biological Control Programmes"
(d) G. Maywald - "A Low Cost Electronic Data Logger for Ecological Applications"
(e) E. Reye - "Gynandromorphs in a Biting Midge - *Culicoides ornatus* Taylor 1911"

August — Perkins Memorial Lecture - Dr I. Common - "Adaptation and Diversity in Australian Microlepidoptera".

September — Mr I. Passlow - "DPI Entomology-Future Directions and Policy".

October — Dr N. Pierce - "Associations between Lycaenid Butterflies and Ants".

November — Dr S. Niven - "The Precise Environment of the Yellow Fever Mosquito (*Aedes aegypti*)".

December 12 — Notes and Exhibits

(a) I. Common - "A flash dancing moth"
(b) B. Cantrell - "My Churchill Fellowship - A visit to Mecca"
(c) R. Piper - "Natural mass mortality of Chironomids at Atkinsons Dam"
(d) N. Gough - "Allometric Growth in White Fringe Weevil Larvae"
(e) M. Taylor - "Nutritional Ecology of *Samea multiplicalis* (Salvinia Moth)"
(f) C. Freebairn - "Fishing"

Publications Committee Report

Problems experienced during 1982-83 with the printing of the ESQ Bulletin have been overcome with a changeover to our new printer (The Printery, Brisbane Paramedical).

Bulletins are delivered to the printer photoreduced ready for printing with plates for photographs, maps, graphs and illustrations already prepared. This has resulted in prompt printing of the Bulletin, usually within 2 days of presentation to the printer.

Format during 1983-84 has changed little from the previous year and overall length has increased slightly. Costs for Volume 11 have averaged $222 per issue, up from $188 for Volume 10, an increase of 18%. This increase is not excessive as prices for the last 3 issues of Volume 10 were comparable. The cost of plates has risen from $4 to $12 per plate during 1983-84. Other printing cost increases will be limited to about 10% for 1984-85. Postal charges will rise with the despatch of the March issue (Volume 12 no. 1) of the Bulletin.

I wish to thank all associated with the content, preparation, printing and despatch of the Bulletin. Any contributions for Volume 12 will again receive prompt attention.

Ian Fanning
PUBLICATIONS COMMITTEE CONVENOR 1983

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Treasurer's Report

The Society's financial position remained sound despite a number of increased costs, which resulted in expenditure exceeding income by about $700. This was balanced by withdrawal of $1000 in November from the Savings Investment Account. It is anticipated that expenditure will exceed income again in 1984, but as reserves are still large, Council decided to defer fee increases until 1985, by which time they will unfortunately be inevitable. However, as there has been no fee increase since 1981 at a time of high inflation, the Society has done well in containing costs.

Printing of the Bulletin continued to be the major cost. The new printer proved much more satisfactory with regard to constancy of charges, quality and reliability of work, but cost was still high, an 18% increase over last year. Postage for Bulletins did not increase this year, nor did the costs of typing, compiling and stapling the Bulletins.

This year we had a Perkins Memorial Lecture which involved costs of $125.

Some income was received from sale of greeting cards and Bulletin binders. These are on sale to members at cost price ($3.00 each for binders, $1.50 for pack of 10 cards).

The Society now holds an Interest Bearing Deposit of $500 invested at 11.5% for 6 months, and there is $825.12 in the Savings Investment Account. The account earned $182.09 interest during the year.

Members for the most part continue to pay their subscriptions early in the year, and on December 31 there were only 18 members in arrears, while 76 members had paid in advance for 1984. Subscriptions are due on 1st January each year and early payment is always much appreciated.

R.E. McFadyen
HONORARY TREASURER 1983

ENTOMOLOGICAL SOCIETY OF QUEENSLAND

FINANCIAL STATEMENT FOR YEAR ENDED 31 DECEMBER 1983

GENERAL ACCOUNT

Income

		$
Balance 1.1.83		689.27
Subscriptions	2483.24	
Sales - cards	17.00	
- Bulletin binders	27.00	
- Bulletins	0.40	
Interest from SEC stock	231.32	
Interest Bearing Deposits	87.01	
		2845.97
Transfer from Savings Investment a/c		1000.00
		$4535.24

Expenditure

	$
Bulletin Printing	2355.91
Typing	150.00
Compiling	200.00
Bulletin Registration Australia Post	20.00
Petty Cash - Publ. Comm.	373.17
- Secretary's	54.26
- Treasurer's	13.97
Address labels	145.18
Science Contest Prize	50.00
Flowers for Dr H. Wharton's funeral	28.50
Address stamp	11.20
Ledger	11.35
Federal Withdrawal Tax and Stamp Duty	7.20
Return of stale cheque	8.10
Transfer to Perkin's Memorial Fund	100.00
	3528.84
Balance 31.12.83	1006.40
	$4535.24

Liabilities

Subscriptions paid in advance	624.00
Cheque not yet presented	50.00
	674.00
Excess of assets over liabilities	6628.60
	$7302.60

Assets

Subscriptions owing	191.50
S.E.C. stock	2201.00
Interest Bearing Deposits	500.00
Savings Investment Account	852.12
CSB (General and Perkin's a/c)	1136.56
Petty cash	75.00
Refreshment fund	14.42
Binders	267.00
Journals	632.00
News Bulletins	950.00
Cards	322.00
Stationery	100.00
Index to Minutes	1.00
Crockery and glassware	60.00
	$7302.60

PUBLICATION COMMITTEE ACCOUNT

	$		$
Balance 1.1.83	50.00	Postage	373.17
From General Account	373.17	Balance 31.12.83	50.00
	$423.17		$423.17

SECRETARY'S PETTY CASH

Balance 1.1.83	15.00	Suppers	54.26
From General Account	54.26	Balance 31.12.83	15.00
	$69.26		$69.26

TREASURER'S PETTY CASH

Balance 1.1.83	10.00	Postage	11.27
From General Account	13.97	Stamp pad	2.70
		Balance 31.12.83	10.00
	$23.97		$23.97

PERKIN'S MEMORIAL FUND

Balance 1.1.83	105.75	Travel expenses for	
From General Account	100.00	Memorial lecturer	110.00
		Supper costs	15.59
		Balance 31.12.83	80.16
	$205.75		$205.75

REFRESHMENT FUND

Balance 1.1.83	31.82	Drinks	38.00
Sales	38.60	Glasses	18.00
		Balance	14.42
	$70.42		$70.42

NOMINATIONS FOR 1984 OFFICE BEARERS

The following nominations for members of the Council and Publications Committee have been received by the Secretary.

Position	Nominee	Place of Work	Nominated Seconded
President	M. Schneider	U of Q	R. Sutherst M. Elson-Harris
Snr Vice President	B. Cantrell	D.P.I.	M. Schneider M. Elson-Harris
Treasurer	Dr R. McFadyen	Lands Dept.	E. Dahms M. Zalucki
Secretary	M. Elson Harris	Q.I.M.R.	R. McFadyen D. Sands
Publ. Committee Convenor	I. Fanning	Q.I.M.R.	D. Sands R. McFadyen
Hon. Auditor	Mr J.K. Jarratt		E.N. Marks M. Elson-Harris
Councillors 3 positions	E. Dahms	Qld Museum	M. Schneider J. Grimshaw
	Dr M. Zalucki	U of Q	M. Elson-Harris R. Sutherst
	Dr I.W. Forno	C.S.I.R.O.	D. Sands R. McFadyen
	M. De Baar	Forestry Dept.	D. Sands I. Fanning

Since there are four nominations for the three Council positions, there will be an election at the A.G.M. on March 19th. Election will be by ballot of members present at the meeting. Any member unable to attend may appoint, in writing to the Hon. Secretary before the meeting, a proxy to vote on her/his behalf. Such proxy must also be a member of the Society.

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ALLOMETRIC GROWTH IN WHITE FRINGED WEEVIL LARVAE

The larvae of white fringed weevil attack peanuts and potatoes on the Atherton Tableland. Despite the economic importance of the larva (a cosmopolitan pest) little is known of its biology.

The number of larval instars of many species can be found by plotting the frequency distribution of head capsule widths of a large sample of larvae from the field. As a consequence of Dyar's law the distribution is often multimodal, each mode representing one instar. While this method does not always work it is at least a starting point. Head widths of 362 larvae from 2 - 200 mgm, sampled at the end of the peanut season, were measured. Only two modes were apparent yet rearing showed that about 5 or 6 larval instars occurred within the range of the histogram. It was thus impossible to determine the number of instars from the frequency distribution.

White fringed weevil larvae have a head capsule retracted into the thorax. This makes the measurement of head width difficult and it is usual to refer to the larvae by weight. Head width, because it increases in size only at moults, has always been considered the most important determinant of larval stadium. The best criterion to judge weight as an indicator of larval growth is therefore head width and the relationship between weight and head width was examined. Head width (mm) and weight (mgm) were found to be very closely related using curvilinear regression. The regression of log head width (mm) on weight (mgm) was linear. Such a relationship was expressed in the form

$$y = .494\ x^{.279} \qquad (1)$$

where y = larval head width (mm) and x = larval weight (mgm). One might expect mass and volume to be very closely related. The volume of a sphere is related to the cube of the radius. The most meaningful relationship would therefore be between head width and the cube root of the mass, so the exponent .279 was replaced by the exponent .33. This was justified because .279 is close to .33, also the weight of a weevil larva varies depending on the moisture of the soil in which it is living. .33 was substituted for .279 and the value of b recalculated as .413. To test the validity of these changes the head capsule widths of two large series of larvae of known weights were calculated. The predicted and observed values were very close.

The reason for the good fit of the cube root relationship was discovered when larvae were reared on carrot from the first instar. There were 11 instars. The average ratio of increase in head capsule widths between successive instars was 1.25, and the average increase in weight was 2.2, (excluding the last moult). According to Prizbram (see Wigglesworth, 1965) one would expect in some insects that the weight would double between instars and that the ratio of increase in head capsule width would be the cube root of two, or 1.26. His predictions on ratio of increase in head capsule widths are correct for white fringed weevil larvae.

Equation (1) can also be interpreted in the light of Huxley's (1932) work on relative (allometric) growth. He found that the growth of parts of an organism could be related to the growth fo the whole by such an equation. The exponent is the growth coefficient. In the larvae of the white fringed weevil the exponent is well below 1 indicating that the head capsule decreases in size relative to the whole organism as the latter grows.

References

Huxley, J.S. (1932). Problems of Relative Growth. Methuen, London. 276 pp.

Wigglesworth, V.B. (1965). The Principles of Insect Physiology.

N. COUGH
D.P.I.
INDOOROOPILLY

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NUTRITIONAL ECOLOGY OF *SAMEA MULTIPLICALIS* (SALVINIA MOTH)

MARTIN TAYLOR

A commonly observed effect of crop fertilization is the rapid increase of pest populations. Nitrogen appears to be the nutrient to which insects respond most dramatically with increased development rates and fecundities. Other plant biochemicals may however have additional or confounding effects on insect growth. Reduced plant water content may offset the effect of increased soluble nitrogen on herbivore growth when the plant is stressed. Plant defensive chemicals may vary independently of N, and have independent effects on herbivore growth under differing conditions of plant stress, fertilization and age. The population dynamics of plant-herbivore systems can become quite unstable following N enrichment, entailing large fluctuations and possibly extinction.

I have been studying the effects of N content of *Salvinia molesta*, the aquatic weed, on the life history of a herbivore, the pyralid *Samea multiplicalis*. By feeding weed from three nutritionally different localities to moth larvae, each larva getting food from a different site in respective instars, I have determined that N is indeed the most important affecting growth of the larvae and fecundity of the adults. Number of instars (5 or 6) and consequently growth rate, is set by N content of the food of the 1st instar, while fecundity is set principally by N of the food of the last instar. It is therefore very important to the moth's population dynamics not just whether N enrichment occurs but when it occurs in the life of a given cohort, since it can be shown theoretically that changes in rate of larval growth are more important to rate of pop. increase than changes in fecundity of the same order for animals such as *Samea*.

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FISHING

C. FREEBAIRN

Arriving in Queensland with an avid interest but no specific subject to pursue I was soon fishing around small water bodies for a thesis topic - parasites and pathogens of blood sucking Nematocera being the general theme.

After several weeks chasing saprophytic fungi a Mermithid nematode (O. Nematoda, F. Mermithidae) was found parasitizing *Anopheles annulipes* Walker larvae. Infection rates in the order of 70% for third and fourth instar larvae indicated that this was a good topic for further study.

Mermithids are obligate parasites, widely distributed in both aquatic and terrestrial habitats, attacking a wide range of invertebrates. Spiders, crustaceans, earthworms, leeches and molluscs may be parasitized but insects are the most common hosts (Poinar, 1979).

BIOLOGY

When development is complete nematodes emerge from infected larvae, in the third or fourth instar, via the anal segment - apparently the weakest point. The emerging nematodes, postparasitic juveniles, fall to the bottom of the container and move quickly into the substrate. The host dies soon after parasite emergence, mostly on the bottom but occasionally remaining suspended at the surface. The free living stages do not feed, their activities fueled by metabolism of the trophosome, a storage structure developed to almost fill the body cavity during the parasitic stage. Post parasites clump together in the substrate and within a week begin the moult to adulthood. The characteristic cuticular tail spine of the postparasite is shed with the juvenile cuticle in this double moult. Moulting, shortly, followed by mating occurs in the clumps. The female's vagina is at midbody and the male copulatory apparatus at the tail end. Males complete moulting ahead of females and copulation begins as soon as the receeding cuticle exposes the vulva. Egg deposition begins within a day of mating and continues for up to four weeks when the food reserves of the female are depleted and she dies. Males live for as long as 6 months.

The sticky eggs adhere to particles of the substrate and begin to hatch in approximately one week. The emerging preparasite leaves behind a cuticle shed within the egg. The second stage nematode, exhibiting a positive phototaxis, swims to the surface where it searches for a host. Preparasites live for 2-3 days. Penetration of the host is transcuticular, involving a stylet and possibly enzymatic secretions. The parasitic phase is completed in 6-10 days during which a moult followed by a burst of growth occurs.

TAXONOMY

Taxonomic characters are a little obscure, suffice it to say at this point that the combination of characters represented by this Mermithid is not found in any existing generic description.

ECOLOGY

Host-parasite interaction is complex. Multiple infection occurs and this is particularly important since the sex of the emerging nematodes is nutritionally determined: single infections produce 90% females and multiple infections 90% males.

Overinfection does occur, host and parasites dying, but as many as 23 nematodes can complete development in *An. annulipes*.

Laboratory cultures are maintained in *An. billi* and infection and development of the nematode in *Aedes notoscriptus* and *Culex quinquefasciatus* has been accomplished.

Poinar, G.O. (1979) -

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SPREAD OF A BEETLE ON ANNUAL RAGWEED IN BRISBANE SUBURBS

Since 1981, we have been rearing the leaf-feeding Chrysomelid *Zygogramma bicolorata* in outside cages at Sherwood, for releases in Central Queensland. Escapees from these cages have established a large colony on annual ragweed (*Ambrosia artemisiifolia*) in an adjacent paddock, and this has spread considerably since. We have found beetles as far as Brookfield showground and at the University Farm at Moggill in the western suburbs, and they are also spreading south and east.

I am anxious to determine just how far the beetles have spread, before the end of March when the ragweed dies and the beetles overwinter in the soil. The beetle is easily recognisable; it is 5 - 7 mm across, black and creamy-white in irregular stripes. It looks exactly like a rather large ladybird beetle but in black and white. There is no other similar beetle around and therefore no danger of mistaking it. The eggs are also easy to see; they are small, about 1 mm long, oblong, laid singly or in twos or threes on young leaves or the stem near the tip, and are clearly visible because they are bright yellow or orange. Adults are usually seen near stem tips, or on younger leaves.

If any interested member is aware of a patch of annual ragweed within a radius of about 10 km (as the beetle flies) from Sherwood, I would be grateful if they could check it out, and let me know whether or not these beetles were present.

R.E. McFadyen
Alan Fletcher Research Station
27 Magazine Street
Sherwood

379 6611

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Collecting Requirements

The Bureau of Flora and Fauna have issued a Guide to collecting requirements for Australian terrestrial flora and fauna, available from the Australian Government Publishing Service Bookshop at a cost of $0.85. Topics covered include written applications for permits, transport across State and Territory boundaries, conditions applying for permits and State and Territory details.

About People

Rob Sutherst will be visiting Zimbabwe, Zambia, Kenya and Burundi during February-March to review and revise the FAO ecological Tick research in Africa.

Nigel Short, a tick researcher from the programme, is visiting CSIRO. Rob Floyd will be joining the ACIER Tick Project in Africa to do modelling and will be working with Nigel.

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Dr Brian Kay has returned from visits to Puerto Rico, Florida and California where he has been meeting with mosquito researchers, and from Tahiti where he has been reviewing the WHO project on biological control of mosquito vectors in French Polynesia using copepod predators. During February he will be in North Queensland for the opening of the "Stop Dengue" Campaign for the current year.

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Dr Angus and Kerry Kay (nee Huxham) have left South Africa. Angus has joined the Atomic Energy Commission in Vienna until December 1984 to work on the Mediterranean Fruit Fly. They will be meeting up with Dr Gordon Hooper who is also working there until December.

The society welcomes Dr Vivienne Harris, formerly of the Department of Entomology, University of Arkansas who has arrived to lecture in the Department of Entomology, University of Queensland. She has worked on applied entomological projects in the U.S.A. and was responsible for working out the communications system of the green vegetable bug *Nezara viridula* in America.

Martin Rice has been granted study leave for a special studies programme from 1.7.84 until 30.6.85.

Congratulations to: Myron Zalucki who has been appointed to the position vacated by Dr Tom Woodward.

John Rhodes on getting his M.Sc. for his thesis entitled "Longevity of worker Honey Bees (*Apis mellifera*) on the Darling Downs, Queensland".

Samuel Firempong and his wife who have a son, Emmanuel, born on Christmas day.

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Val Davies, Geoff Monteith, Geoff Thompson, Julie Callon, Tom Ewert and Pat Marks spent 10 days during December collecting at Kroombit Tops.

Diane Calabrese from Dickinson College, Pennsylvania visited the Museum during January. She is interested in cytological studies of Gerridae.

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Clyde Wild, Brian Willson and Rachel McFadyen have been on various field trips to Central and North Queensland, releasing insects for the biocontrol of Parthenium and prickly acacia, or inspecting previous releases. Allan Tomley, Paul McFadyen and Graham Donnelly have been using the S.E.S. helicopter to release insects on the groundsel-bush-infested islands of Moreton Bay.

Tony Molyneux, on his return from Tasmania, joined the AFRS team of "casuals" for a few weeks, before going to the Waite Institute with a University of Adelaide Scholarship to start a Ph.D. under Dudley Pinnock.

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CHANGE IN DATE OF ANNUAL MEETING

Due to the absence overseas of the President of the Society, the Annual General Meeting will now be held on Monday 19th March nor Monday 12th March as previously advised.

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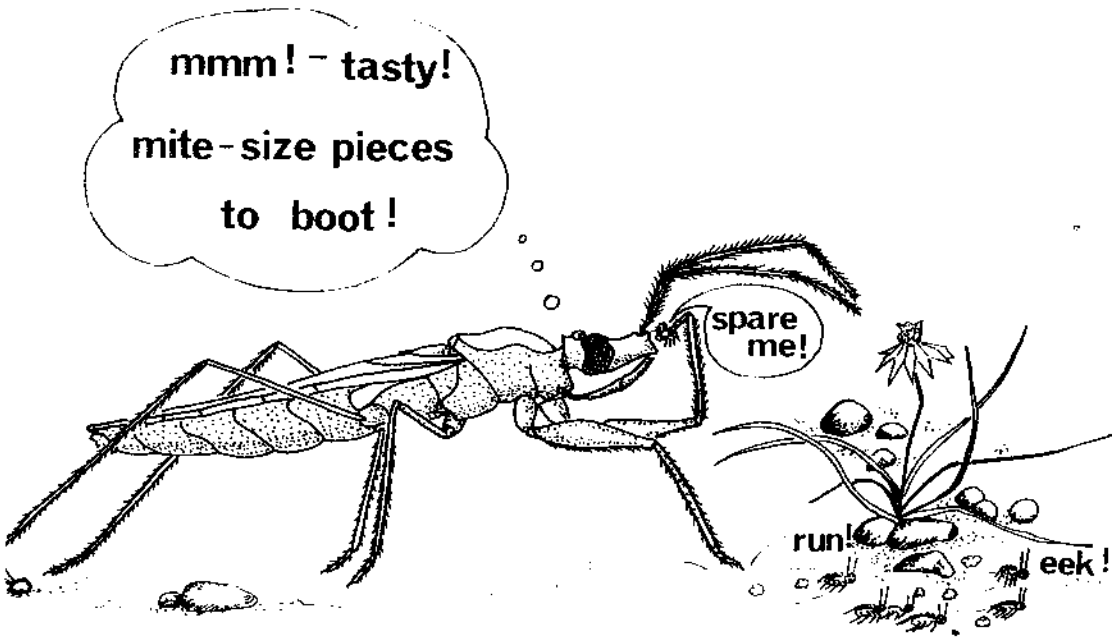
INSECT ASIDES

By Cobie



G. Thompson

OFFICE BEARERS 1983 - 1984

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377-3650

NOTICE OF NEXT MEETING:

The next meeting of the Entomological Society of Queensland will be the Annual General Meeting to be held on Monday 19th March in Room 323 of the Hartley Teakle Building, University of Queensland, St. Lucia, Brisbane, commencing at 8.00 pm. The meeting will include the presentation of the Presidential Address by the retiring President Dr R.W. Sutherst entitled "A systems approach to livestock pest management".

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

THE SOCIETY

The Entomological Society of Queensland is an association of over 300 people with professional and/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 liasion 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 receive the News Bulletin. There are three classes of subscription membership.

Ordinary: persons residing in the Brisbane area ($10.00 p.a.)
Country: persons residing outside Brisbane ($8.00 p.a.)
Associate: students and others at the discretion of the council ($5.00 p.a.)
Joint: is 1.5 times the standard the class.

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.

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