



# ENTOMOLOGICAL SOCIETY OF QUEENSLAND **NEWS BULLETIN**



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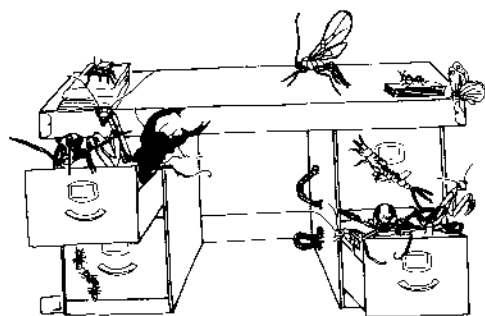
## EMBLEM

The Society's emblem, chosen in 1973 on the 50th Anniversary of the Society, is the king stag beetle, *Phalacrognathus muelleri* (Macleay), family Lucanidae. Its magnificent metallic purple and green colouration make it one of the most attractive of all Australian Coleoptera. It is restricted to the rainforests of northern Queensland.

## COVER

*Acroceratitis plumosa* Hendel is a widespread Southeast Asian species of fruit fly that breeds in the shoots of bamboo. It belongs to a large group of attractively-patterned bamboo-breeding flies allied to the Mediterranean fruit fly.

Cover illustration of *A. plumosa* by Susan Phillips.



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The issue of this document does **NOT** constitute formal publication for the purposes of the "International Code of Zoological Nomenclature 3rd edition 1985". Authors alone are responsible for the views expressed.

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## THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

### ANNUAL REPORT FOR YEAR ENDED 31 DECEMBER 1993

The Council of the Entomological Society of Queensland presents its Annual Report for 1993.

1993 was the Society's 70th anniversary, and highlights of the year were the special anniversary lectures, collectively titled "Science in Australia", the presentation of the first Student Award and the Perkins Memorial Lecture.

The anniversary lectures and the distinguished speakers, Ruth Wade, the Honourable Dr Barry Jones M.P. and Emeritus Professor Derek Tribe, introduced the Society to a wider audience. The generosity of the sponsors contributed to the success of the meetings and will provide support for future Perkins Memorial Lectures and the Student Award scheme.

The Student Award of \$250.00 was presented to Michael Gardener for his thesis titled "Nutritional suitability of two weed species to a biological control agent."

The biennial Perkins Memorial Lecture was addressed by Professor Rhonda Jones and guests included members of Mr Perkins' family.

Attendance throughout the year at General meetings averaged 38 members and visitors, with higher attendance at the special lectures.

Details of the year's activities, together with reports by the Treasurer, Convenor of the Publications Committee, and the Editor and the Business Manager of the Australian Entomologist follow.

#### 1. Membership

During 1993 12 members joined the Society, 1 member died, 7 resigned and 10 memberships were terminated. Currently there are 103 Ordinary members, 132 Country members, 25 Associate members, 14 Joint-Ordinary members, 4 Joint-Country members and 4 Honorary Life members. Memberships are held by 1 Institution, and there are 2 Sustaining Associates.

## 2. Council Meetings

Nine Council meetings and two special meetings were held, attendance was as follows:

R. Drew	9	A. Macqueen	1
G. Daniels	1	C. Neale	1
D. Foley	9	T. Heard	9
G. Maywald	8	R. Raven	8
D. Hancock	9	M. Schneider	1
P. Mackey	8	G. White	8
J. King	10	K. Lambkin	1
L. Barton Browne	7		

## 3. General Meetings

Nine General meetings were held, the Main Business of these meetings was as follows:

March 8	Presidential address. G. White - "Is there room for science in entomology?"
April 19	P. Ferrar - "Opportunities for overseas collaboration in entomology."
May 10	R. Kitching - "Insect conservation: pitfalls and prospects."
June 15	Notes and Exhibits:  Student Award presentation to Michael Gardener followed by his talk "Nutritional suitability of two weed species to a biological control agent."  R. Raven - "Conference on invertebrate biodiversity and conservation."  G. Monteith and H. Janetzki - "The Queensland Museum's insect workshops for teachers"  R. Sheridan - "New insect country loan kits for the Queensland Museum's school loan service"  D. Holdom - "A giant European wasps nest"

D. Holdom and R. Piper - "The fungus *Hirsutella versicolor* infecting flatids in N. Queensland"

J. Marshall - "Photographic sampling of stream macrofauna"

S. Bunn - "A novel ephemerellid"

S. Schmidt - "Gene flow among conspecifics"

K. Dunn - "Assessing the conservation status of Australian butterflies"

R. Kitching & H. Mitchell - Visit to the Arthropod Diversity Unit

August 3 R. Wade - Science in Australia - "Industry ownership of research: problems and solutions"

September 1 B. Jones - Science in Australia - "Australia: Towards the 21st century"

October 18 D. Tribe - Science in Australia - "Agriculture, entomology, human progress and survival"

November 9 R. Jones - The Perkins Memorial Lecture - "The care and feeding of entomologists: entomological education, training and employment in a changing environment"

December 13 Notes and exhibits:

Sonya Broughton - "Lantana leaf insects: can they make a difference?"

Jan Green - "Spiders as biocontrol agents in citrus"

David Sparks - "Will biological control of fireweed be a conservation threat?"

Robert Raven - "Red-backs and other things"

Frank Page - "An interesting case moth damaging peaches and nectarines in the Granite Belt"

Bryce Skarratt - "Diagnosis, multi-media and pest management"

# **THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND**

## **TREASURER'S REPORT**

### **FOR YEAR ENDED 31 DECEMBER 1993**

The Society had an operating deficit of \$342.12. Most of this is due to a stock adjustment of Bulletin Envelopes as we had been inadvertently underestimating the cost for several years. Consequently, the financial situation is healthier in real terms than at this time last year. This is due in large part to the efforts of members in paying back dues; as a result only 20% of subscriptions for 1992 remained unpaid. The Society currently has 285 financial members, of whom 51 have yet to pay for their 1993 subscriptions. Of these, 7 still have not paid for their 1992 subscriptions. It is anticipated that most of the \$893.86 owed in back dues for 1993 will be paid, otherwise the deficit will be correspondingly enlarged.

The cost of producing the News Bulletin decreased slightly this year, as did postage. Income from Interest on bank accounts continued to fall and there was no income from sales or advertising during the year. A surplus of \$61 accrued from the December Meeting Supper, due to a larger than expected turnout.

Expenditure from the Sustaining Associates' Fund included a \$250 Student Award, \$102.90 towards cost of holding the Perkins Memorial Lecture and \$2161.09 towards costs of running the special 70th Anniversary Meetings during the year. Thanks to the very generous contributions by our Sustaining Associates and Special Meeting sponsors, it was not necessary to draw on the General Account. The Sustaining Associates Fund is now in a very healthy state.

Despite the operating deficit, the Society's financial position remains relatively sound.

D. L. Hancock, Honorary Treasurer 1993

# **THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND**

## **AUDITOR'S REPORT**

I have examined the financial books and supporting documents available, excluding the minutes of meetings, of the above Society and find them to be kept in accordance to accepted bookkeeping practices. The statement of Income and Expenditure for the 12 months prior to 31 December 1993 together with the Balance Sheet of that date, signed above this report and on the reverse side of this report, are in my opinion a true and fair account of the financial position of the Society.

Lynn Jensen C.P.A., Voluntary Auditor  
27 Michelangelo Street, FIG TREE POCKET 4069  
8 February 1994

**THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND**  
**FINANCIAL STATEMENT**  
**FOR YEAR ENDED 31 DECEMBER 1993**

**INCOME**

Subscriptions 1993	3335.3
Paid Prior (in 1992)	1231.6
Refreshment Fund	2.65
Dec. Meeting Supper	61.00
Donation	4.00
Interest	
Cheque A/C	138.80
Sav. Invest. A/C	20.06
Term Dep.	78.75
	<u>4872.26</u>
Deficit for year	<u>342.12</u>
	<u>5214.38</u>

**EXPENDITURE**

Bulletin -	
Printingg	2373.00
Typing	0.00
Collating	400.50
Delivery	85.06
Envelopes	300.00
Postage	947.71
Other	147.06
(Labels, etc)	
Petty Cash -	
Treasurer	38.10
Secretary	0.00
Fed Debits Tax	10.45
Aust Ent Soc Sub.	40.00
Subs Discount '93	335.50
Subs 1992 not coll	171.50
Sundries(Flowers)	90.50
Deprec. Crockery	5.00
Costs Stationery	20.00
Stock Adj Envlpes	250.00
	<u>5214.38</u>



THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND  
**FINANCIAL STATEMENT**  
 FOR YEAR ENDED 31 DECEMBER 1993

**LIABILITIES**

Subs.-	In advance 1994	1067.50
	In advance 1995	54.00
Sustaining Assoc. Fund		1731.27

2852.77

Balance 1/1/93	8280.37
Deficit	(342.12)

7938.25

10791.02

**ASSETS**

Comm Bank Chq A/C	6381.19
(incl. Sust. Assoc. A/C \$1731.27)	
Comm Sav Inv A/C	916.97
Comm Term Dep	2000.00
Petty Cash	133.05
Refreshment Fund	41.95
Subs Owing 1993	893.86

10367.02

**Stock**

46 Pks cards @ \$1	46.00
0 Binders @ \$2.38	0.00
Journals (nominal)	1.00
News Bulletins	1.00
Index to Minutes	1.00
Stationery	30.00
Bulletin Envelopes	335.00
Crockery, Glassware	10.00

424.00

10791.02

Note: Special Meetings expenses include \$40 Bulletin Subsidy from General A/C and \$30.60 from Treasurer's Petty Cash; Perkins Lecture expenses include \$27.65 from Treasurer's Petty Cash.

**THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND  
FINANCIAL STATEMENT  
FOR YEAR ENDED 31 DECEMBER 1993**

**TREASURER'S PETTY CASH**

Balance 1/1/93	50.95	News Bull. Delivery	7.55
From General A/C	49.00	Postage	0.45
		Suppers	30.10
		Special Meetings	
		(Sust. Assoc. A/C)	58.25
		Balance	3.60
	<u>99.95</u>		<u>99.95</u>

**SECRETARY'S PETTY CASH**

Balance 1/1/93	9.45	Postage etc.	0.00
From General A/C	0.00	Balance	9.45
	<u>9.45</u>		<u>9.45</u>

**PUBLICATION COMMITTEE ACCOUNT**

Balance 1/1/93	99.98	Postage	947.71
From General A/C	967.73	Balance	120.00
	<u>1067.71</u>		<u>1067.71</u>

**REFRESHMENT FUND**

Balance 1/1/93	39.30	Drinks	8.95
Donations	11.60	Balance	41.95
	<u>50.90</u>		<u>50.90</u>

**SUSTAINING ASSOCIATES FUND**

Balance 1/1/93	395.26	Student Award	250.00
Contributions 1993	300.00	Special Meetings	2161.09
Donations	3550.00	Perkins Lecture	102.90
	<u>4245.26</u>	Balance	1731.27
			<u>4245.26</u>

# **THE AUSTRALIAN ENTOMOLOGIST**

## **1993 REPORT**

Volume 20 of The Australian Entomologist comprised 156 pages in four parts issued in July, August, September and December. The changeover in editorial team caused the first two parts to be issued later than usual.

### **Financial Position**

The number of subscriptions stands at 415 - 308 individual and 107 institutional. Subscription rates will remain unchanged in 1994.

The financial position is very sound, with asset position improved by over \$2000 in 1993. Such improvement is imperative for the future viability of the journal. Production costs are at present minimised by the undertaking of typesetting in-house. It is inevitable that this component will eventually have to be provided at full commercial rates. To meet this expected substantial increase in production costs and secure the future of the journal as a financially viable Society activity, it is essential that a sound asset base be maintained.

### **Journal Content**

The journal provides a popular vehicle for the publication of short papers of general entomological interest. The emphasis will continue to be on natural history observations, and the Editorial Panel is continually reviewing journal content to ensure that subscribers read rather than simply shelve each issue. During the year 33 papers and three book reviews were published, and three manuscripts were rejected. Over 20 acceptable manuscripts are at hand for 1994.

### **Acknowledgements**

We offer our sincere thanks to Greg Daniels for providing invaluable service in formatting and typesetting; to Geoff Monteith for his advice in editorial matters; and to Lynn Jensen, the Honorary Auditor. As a final note and on behalf of the Society, we express our gratitude to the many entomologists, both professional and amateur, who have given so freely of their time in refereeing papers for the journal - their contributions underpin the journal's quality and reputation.

Kevin Lambkin, Editor,

Peter Mackey, Business Manager.

# THE AUSTRALIAN ENTOMOLOGIST

## FINANCIAL STATEMENT FOR YEAR ENDED 31 DECEMBER 1993

### ASSETS

CBA Cheque A/C	3167.66
UniCredit Term Deposits	11158.07
Subs. owing 1993	528.00
Reprint charges owing 1993	1650.00
Stationery	207.30
	-----
	16711.03

### LIABILITIES

Subs. in adv. 1994	589.00
Subs. in adv. 1995	16.00
Printing Vol 20(4)	1370.00
	-----
	1975.00

### EXCESS ASSETS OVER LIABILITIES:

14736.03

### INCOME

Subscriptions	7274.46
Reprint charges	4575.00
Sales	122.00
Interest - cheque A/C	69.10
- deposits	641.57
	-----
	12682.13

### EXPENDITURE

Printing	6399.00
Postage	1290.39
Stationery	291.90
Typesetting	300.00
State Gov. Tax	7.95
PO Box rental	137.00
Registration Aust. Post	80.00
Subs. 1992 not paid	198.00
Reprints 1992 not paid	100.00
Bank charges	41.51
Photocopying	20.30
Graphics	200.00
	-----
	8966.05

### EXCESS INCOME OVER EXPENDITURE

	3716.08
Plus BALANCE 1/1/93	11019.95
	-----
	14736.03

## **THE AUSTRALIAN ENTOMOLOGIST**

### **AUDITOR'S REPORT**

I have examined the financial books and supporting documents available, excluding the minutes of meetings, of *The Australian Entomologist*, and find them to be kept according to accepted book-keeping practices. The statement of Income and Expenditure to 31 December 1993 together with the Balance Sheet of that date are in my opinion a true and fair account of the financial position of the journal.

Lynn Jensen C.P.A.  
27 Michelangelo Street  
FIG TREE POCKET 4069

7 February 1994

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## **PUBLICATIONS CONVENOR'S REPORT**

### **FOR VOLUME 21, 1993/94**

Volume 21 consisted of the usual 10 issues and contained 188 pages. Production and delivery was made possible by a number of people. Rachel McFadyen and colleagues at the AFRS handled the laborious task of packaging and delivering. John Donaldson produced the labels for envelopes and provided the membership list for publication. Gudrun Sarnes produced the September issue in my absence. Carol Sweatman typed the minutes of each meetings. The majority of speakers provided their talks on disk. The network of news "brokers" around the state responded promptly to endless requests for news. Jeff Sheppard replaced Dean Brown at All-Clear Offset Printers and is maintaining the same excellent service.

The title of the Publications Convenor will change to News Bulletin Editor for the next term as the former title gave the false impression that the position covered responsibility for the Society Journal, *The Australian Entomologist*.

I will be seeking re-election for the next term. I am always happy to receive suggestions for the improvement or additions to our news forum and any feedback on the recent changes.

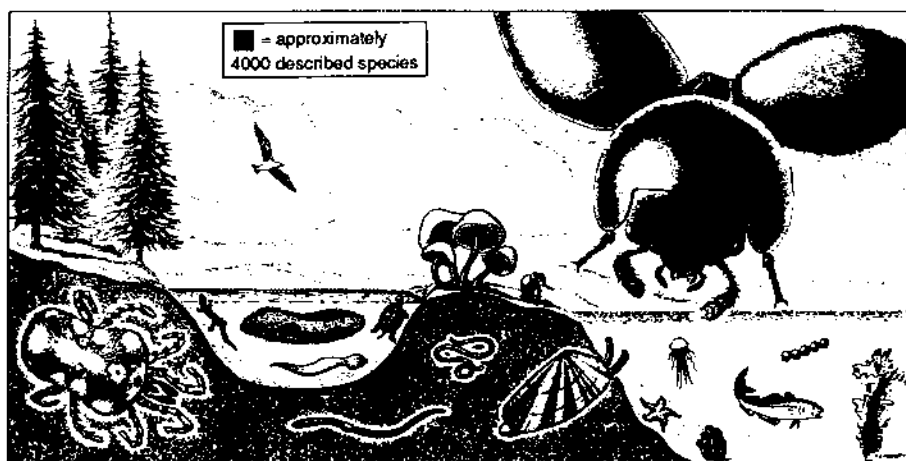
Tim Heard, Publications Convenor



# NOMINATIONS FOR 1994/95 OFFICE BEARERS

The following nominations for members of Council have been received by the Honorary Secretary.

Position	Nominee	Nominated	Seconded
President	Lindsay Barton Browne, CSIRO	Dick Drew	Dave Hancock
Senior Vice-President	Elaine Brough, DPI	Dick Drew	Lindsay Barton Browne
Honorary Secretary	Judy King, DPI	Dick Drew	Graeme White
Honorary Treasurer	David Hancock, DPI	Dick Drew	Tim Heard
News Bulletin Editor	Tim Heard, CSIRO	Dave Hancock	Graeme White
Councillors (3 positions)	Des Foley, Uni of Qld	Tim Heard	Lindsay Barton Browne
	Gunter Maywald, CTPM	Dave Hancock	Lindsay Barton Browne
	Graeme White, AFRS	Robert Raven	Dave Hancock



*"Speciscape": each organism's size represents the number of described species in its major taxon. If some estimates are right, the beetle should be 10 to 50 times bigger!*

## **Entomology on the information highway.**

An Electronic Mail (E-mail) notice board is available to entomologists around the world. Entomo-l services the global community of entomologists by providing a ready and simple means of rapid communication. The sorts of information which are aired by these means comprise announcements of conferences, seminars, symposia and the like; notices of positions available; news about publications; all sorts of views about problems which entomologists encounter with collecting permits and the like; questions about the natural history, bionomics, taxonomic status, range, etc. of insects; greetings and congratulations; and snippets of news, opinions, and information. The service was initiated by the Entomological Society of Canada and the University of Guelph a couple of years ago.

There are about 500 subscribers using the network. The exchanges from Eastern Europe to South America, Northern Europe to Australia, and amongst professionals, amateurs, university types and government and industry scientists have proven to be highly useful.

To join, at no cost, simply send an E-mail message to

**LISTSERV@UOGUELPH.CA**

with the text of the message:

**SUBSCRIBE ENTOMO-L YOUR REAL NAME**

and you're on.

To post a message, use the address

**ENTOMO-L@UOGUELPH.CA**

and proceed. Your message will visit the University of Guelph, Ontario Canada upon leaving your institution's computer. Then it will be flung out to the world and all subscribers.

Please feel free to join the fray. I will be happy to answer questions.

My E-mail address **PKEVAN@UOGUELPH.CA**

My FAX + 519-837-0442

My address by Pulmonate-Post (snail mail): Dept. Environmental Biology, University of Guelph, Guelph, Ontario N1G 2W1, Canada.



# PEOPLE AND PROJECTS



NEWS FROM THE QUEENSLAND INSTITUTE OF MEDICAL RESEARCH

Mosquito Control laboratory

Lynda Muir is currently spending six weeks in Charters Towers and Townsville evaluating sticky disposable lures designed for *Aedes aegypti* surveillance. She has enthusiastic support from the CT and Townsville city councils, Northern Regional Health Authority and Bruce Russell who has commenced an honours project at the Department of Zoology, James Cook University with Phil Weinstein and Brian Kay.

Craig Jennings returned from carrying out a dengue vector control project in Lao PDR during December and currently is finishing analysis and writing up before commencing a PhD on the vector competence of mosquitoes for Ross River virus. The latter will be funded through a NH&MRC grant to Brian Kay for three years.



NEWS FROM THE QUEENSLAND DEPARTMENT OF PRIMARY INDUSTRIES

During February Mr Mitsuru Katayama of the Japanese Ministry of Agriculture and Fisheries visited the Fresh Fruit Disinfestation Group at Indooroopilly. His visit was part of a verification trial by Neil Heather and Bob Corcoran of vapour heat treatment of mangoes. The trial follows several years of research funded by ACIAR, and may lead to access to the Japanese market.

Recently Dick Drew and the Fruitfly Group at Indooroopilly were host to Carol Quashie-Williams who is a UN volunteer in Western Samoa on the Regional Fruitfly Project. While on a break from her work on the project she took time to visit the laboratories and look at specimens.

Merv Bengston and Greg Daglish (Indooroopilly) have just started a new ACIAR project involving CSIRO, QDPI and CTPM. The project which is entitled "the development of decision-support tools for managing pests in grain storages" is being led by Barry Longstaff (CSIRO, Canberra). The other Australian collaborators are Peter Annis (CSIRO, Canberra), Geoff Norton and John Turner. Overseas activities will be carried out in Indonesia with Badan Urusan Logistik (BULOG).

Nerissa Cini, a student at James Cook University, was one of the recipients of Centre for Tropical Pest Management's vacation scholarships and spent several weeks in January surveying banana growers in the Tully-Innisfail area for their awareness/ enthusiasm/ adoption of the IPM methodology espoused in the project recently completed by Bruno Pinese and Richard Piper. Bruno has spent a nightmarish few months working his way through the proofs of the Banana Pest Management Manual which evolved from the IPM project and which will be distributed to all banana growers.

Ian Cunningham took a new role as Costume Maker, ostensibly for the Mango Mardi Gras which was held at Mutchilba (west of Mareeba) in late January. Six outsized masks in the form of insect heads (including those of the mango seed weevil, mango tip borer and mango flatid) adorned fleet-footed DPI bodies charging amongst the crowd brandishing water pistols - surely not to play on the spray gun mentality of some growers - (but) to drench onlookers with progressive pest management concepts.



#### NEWS FROM CSIRO INDOOROOPILLY

Peter Room and Jim Hanan are attending the First World Cotton Conference in Brisbane in February. They will present a demonstration of "virtual cotton". "No more getting your hands dirty with that real stuff" a certain program leader was heard to say.

Marc Coombs has had his first frustrating experience importing a biological control agent into the country. The tachinid parasitoid, *Trichopoda giacomellii*, a natural enemy of Green Vegetable Bug, is presently in Quarantine. Culturing and host specificity testing can now commence.

Ken Harley is in Uganda contributing to a FAO training course on aquatic weeds and advising on biological control of water hyacinth in that country. Tony Wright and Wendy Forno are attending the Fourth International Conference on Plant Protection in the Tropics in Malaysia. They will also be holding discussions with future ACIAR collaborators.

Society member and ex-queenslander, Bob Winks, was recently awarded a 1993 CSIRO medal for outstanding contribution to the Australian grain industry. Bob developed SIROFLOW a novel grain fumigation technique that has become the major grain protection and disinfestation method used in this country.

The second CTPM Biocontrol of Tropical Weeds course is looming and weeds staff at Long Pocket and elsewhere are gearing up. We're better prepared this time with lecture notes submitted in advance for publication.



## NEWS FROM THE QUEENSLAND DEPARTMENT OF LANDS

### Alan Fletcher Research Station

Brian Willson is visiting Indonesia for two weeks as part of an ACIAR funded *Chromolaena* biocontrol project. We hope he has no problems with his cabin baggage. It will include a south American gall fly, *Procecidochares connexa*!

Alan Tomley is having success rearing the rubber vine rust, *Maravalia cryptostegiae*. He has begun field releases of the pathogen in central and northern Queensland using an air shear device which rockets spores over 10 metres into the air!

The second "Biocontrol of Tropical Weeds Course" begins in Brisbane on 28 February. There are 12 confirmed participants from The Pacific, Southeast Asia and Africa. Rachel McFadyen is busy coordinating.



## NEWS FROM THE UNIVERSITY OF QUEENSLAND

### Department of Entomology

Andy Austin from the Waite campus of the University of Adelaide visited the Qld University Insect Collection to continue his studies on Scelionids.

Norman Fashing from the College of William and Mary, Williamsburg, Virginia, is based at Griffith University for a short time while collaborating with Dave Walter and Roger Kitching on mites in tree holes. Dave and Norman have already visited Lamington National Park in pursuit of these tree hole dwellers.

Greg Daniels recently toured Cape York with wife Alice and Rod Eastwood. Greg reports that numerous species of flies previously known only from the Iron Range area were taken on the southern end of McIlwraith Range. Uncommon insects which were collected during the trip included four specimens of the Society's emblem, Phalacrognathus muelleri, coming



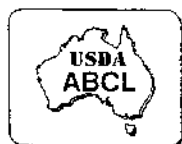
to light on the Windsor Tablelands and Chrysops australis and Lissimas australis at Mt Misery and Normanby River. Greg waxed lyrical relating his third ascent of Mt Coen. During previous ascents he noticed increasing Lepidopteran activity and on the third ascent the sound of dropping frass was like rain as every plant was being defoliated! Naturally lots of robber flies were also collected during the trip.

Myron Zalucki has returned from the CRC for Temperate Hardwood Forestry in Hobart where he was their "Visiting Scientist". He worked on early stage survival of Chrysophtharta bimaculata on Eucalyptus regnans in relation to various plant characters with the "team" down there, as well as assisting ex UQ student Tony Clarke with interpretation of some population data. Tony and Linda Clarke had another arrival on the 23rd of December in the form of Rebecca Jane weighing in at 8lb 8oz. Congratulations Tony and Linda!

Joan Bryan visited the mine and transmigration settlements near Tembagapura in Irian Jaya during January and the first half of February to study the vectorial importance of a new species of Anopheles mosquito suspected of spreading malaria in that region. PhD student, Michael Ross spent the first half of February collecting fruit around Cairns and Darwin in search of parasitoids of fruit flies.

The department said goodbye to three postgrad students during January. Deolinda Pachó returned to Mozambique after completing a M.Ag.St, Pearlina Sayaboc returned to the Philippines after completing a M.Ag.Sc.(Res.) and Zhen Changsheng after completing his PhD has taken up a sales position with the agricultural chemicals division of FMC, based in Hong Kong.

Two new overseas students are starting postgrad studies within the department in February. They are; Mr Ahmad Dahlan from Haanuddin University, Indonesia who is beginning a PhD and Ms Swarnalatha Alugadda (Latha) from Andhra Pradesh Agricultural University, Hyderabad who is beginning a M.Sc.(Qual).



## UNITED STATES DEPARTMENT OF AGRICULTURE

### Australian Biological Control Laboratories

Joe Balciunas and staff at the USDA ABCL have been compiling their annual report during January. The report contains an updated list of insects which have been collected feeding on the paperbark tree, Melaleuca quinquenervia, and its closely related allies. Anyone wishing to obtain a copy of this report should contact Joe in Townsville. The ABCL has finally received formal permission to export the defoliating sawfly, Lophyrotoma zonalis, to quarantine in Florida for further testing.

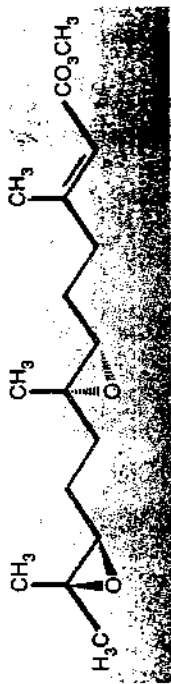
# How to rob flies of their youth

**David Bradley**

IT IS possible to make species-specific insecticides? By working out the 3D structure of a growth and reproduction hormone found in some flies, Australian chemists have come a step closer to making compounds that block the hormone's action, killing the flies. Such chemicals could one day replace the organophosphate insecticides now used to treat sheep infested with blowflies.

Rod Rickards and his colleagues at the Research School of Chemistry at the Australian National University, Canberra, collaborated with Peter East, an entomologist at the CSIRO (Australia's National Research Organisation) to find the complete 3D structure of the substance called juvenile hormone III bisepoxide (JHB<sub>3</sub>). The team reports its results in the latest issue of *Chemical Communications*.

JHB<sub>3</sub> is found in houseflies and flesh flies as well as blowflies. The hormone prevents fly larvae from developing into adults until they have produced all the proteins necessary for adulthood. Blocking the hormone would make the larvae turn into adults too early and kill them. It would also harm



The ins and outs of a hormone: trial and error led to the structure of JHB<sub>3</sub>, with one triangular epoxide group on each side of the chain

other processes, such as an adult's sexual development. Although scientists have discovered much about the juvenile hormones of butterflies and moths, little is known about the juvenile hormone in flies.

Although researchers knew it was a derivative of farnesic acid, its exact 3D structure was unknown. "I think the minute quantity available was the crucial reason," says Rickards. "Sheep blowfly glands produce [in the laboratory] only billionths of a gram of JHB<sub>3</sub> each hour," he explains. Now that his team has determined the hormone's structure, Rickards expects researchers will try to make it and devise compounds that block its synthesis or its action.

Earlier studies have shown that the fruit fly and Australian sheep blowfly have enzymes that convert one form of farnesic

acid into JHB<sub>3</sub>. Rickards and his team deduced that the layout of certain bonds in farnesic acid would not change during the conversion. This meant that the structure of JHB<sub>3</sub> had to be one of its four possible stereoisomers—molecules that are chemically identical but which have different arrangements of their atoms in space.

The researchers made all the stereoisomers from scratch and then compared their physical and chemical properties with those of the natural hormone. The results indicated that the hormone has the structure shown in the Diagram. Rickards suspects that JHB<sub>3</sub> will have the same structure in other flies because its 3D structure is similar to the likely precursor which is common to many species.

David Morgan, a chemist at the University of Keele who specialises in insect hormones and pheromones is impressed with Rickards's team's result. "They have used ingenious chemistry on very small samples to get the exact structure," he says.

"This may lead to new directions in using juvenile hormones for insect control. Mimics of some juvenile hormones are commercially available already but not for flies."

# **AUTHOR INDEX TO VOL. 21 OF THE NEWS BULLETIN OF THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND INC.**

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The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia and particularly in Queensland. Membership is open to anyone interested in entomology. The Society promotes liaison among entomologists through regular meetings and the distribution of a News Bulletin to members. Meetings are announced in the News Bulletin and are normally held in the Department of Entomology, University of Queensland at 8.00 p.m. on the second Monday of the month (March to June, August to December each year). Visitors and prospective members are welcome. Membership information can be obtained from the Honorary Secretary or other office bearer.

Contributions to the **NEWS BULLETIN** are welcome and should be sent to the Publications Convenor.

The Society publishes **THE AUSTRALIAN ENTOMOLOGIST**, a journal devoted to entomology of the Australian region, including New Zealand, Papua New Guinea and islands of the south-western Pacific. The Australian Entomologist is published in 4 parts annually.

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## NOTICE OF NEXT MEETING

The next meeting of the Entomological Society of Queensland will be held at **8.00 pm** on **Monday, 14 March 1994** in Room 323, Hartley Teakle Building, Uni of Qld. This will be the Annual General Meeting, with election of office bearers and the **presidential address**

Visitors are welcome. Supper will be served after the meeting.