Entomological Society of Queensland

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Entomological Society of Queensland

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Front Cover: A photograph of the Old World Bollworm, *Helicoverpa armigera*, a cosmopolitan species found naturally in Africa, southern Europe, across Asia and in Australia. *H. armigera*, together with *H. punctigera* (found only in Australia) are major pests of many crops in Australian agriculture, particularly cotton, and is very well adapted to exploit agricultural systems, being highly polyphagous and mobile, highly fecund and having a capacity for strategic diapause. *H. armigera* is particularly damaging through its capacity to rapidly evolve resistance to pesticides, which it has done successively in Australia. For the last 20 years it has however, been well managed with transgenic Bt cottons accompanied by a pre-emptive resistance management strategy. In the last few years *H. armigera* has been confirmed to have invaded South America where it is causing havoc to cropping and moving northwards towards the USA. Interesting times ahead. *Photo by Cheryl Mares, CSIRO Entomology, Narrabri. Used with permission.*

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Entomological Society of Queensland

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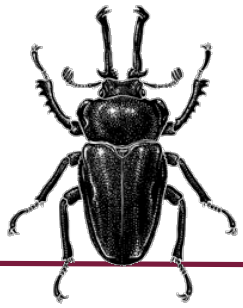
The **ENTOMOLOGICAL SOCIETY OF QUEENSLAND**, since its inception in 1923, has striven to promote the development of pure and applied entomological research in Australia, particularly in Queensland. The Society promotes liaison among entomologists through regular meetings and the distribution of a *News Bulletin* to members. Meetings are announced in the *News Bulletin*, and are normally held on the second Tuesday of each month (March to June, August to December). Visitors and members are welcome. Membership information can be obtained from the Honorary Secretary, or other office bearers of the Society. Membership is open to anyone interested in Entomology.
Contributions to the *News Bulletin* such as items of news, trip reports, announcements, etc, are welcome and should be sent to the News Bulletin Editor.
The Society publishes **THE AUSTRALIAN ENTOMOLOGIST**. This is a refereed, illustrated journal devoted to Entomology in the Australian region, including New Zealand, Papua New Guinea and the islands of the South Western Pacific. The journal is published in four parts annually.

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 (Coleoptera). Its magnificent purple and green colouration makes it one of the most attractive beetle species in Australia. Other common names include Rainbow, Golden and Magnificent Stag Beetle. It is restricted to the rainforests of northern Queensland. Emblem illustration by Sybil Curtis.



Entomological Society of Queensland
Minutes for General Meeting

Tuesday, November 12th, 2019
Held in the Seminar Rooms, Ecosciences Precinct, Boggo Rd, Dutton Park.
Meeting open: 1:01pm

Attendance (47):

Members (37): Mark Schutze, Lachlan Jones, Kerri Moore, Christine Goosem, Don Sands, Andrew Hayes, Eden Devon, Helen Nahrung, Desley Tree, Bill Palmer, Geoff Monteith, Shannon Close, Susan Wright, Chris Lambkin, Bernie Franzmann, Dawn Franzmann, David Exton, Jessa Thurman, Simon Lawson, Robert Teakle, Lyn Cook, Mike Muller, Liam Bromley, Colleen Foelz, Andrew Dickson, Richard Bull, William Arnold, Adelaide Power, Craig Edwards, Greg Daglish, Natalia Medeiros de Sousa, Kevin Lambkin, Gary Fitt, Des Foley, Nadine Baldwin, Kathy Ebert, Penny Mills.

Visitors (10): Carmel Harris, Adrian Holbeck, Adriana Yatie Mikami, Ana Laura Favoreta, Nicole Forrest, Dale Armstrong, Jeremy Anderson, Hector Carvalho, Flavia Nonos, Cheryl Petroeschevsky.

Minutes: The minutes of the last meeting were circulated in News Bulletin 47[7] October 2018. Moved the minutes be accepted as a true record: Penny Mills, Seconded: Christine Lambkin, Carried: All.

Nominations for membership approved by council:

General members:
Melinda Moir
Francesco Martoni
Chris Muller
Matt Shaw
Ross McLaren

Student Members:
Yun Hsaio (ANU)

General Business:
A reminder to organise QM loans by Dec. 9 before access to the collection is restricted until 2021 due to capital works. Susan Wright explained that the refurbishment at the museum would take at least 12 months and the collection will be closed to access from March until the works are completed.

Members were reminded to order your ESQ Calendar for 2020!

Main Business:
Presentation: "From past to present: origins and purpose of the Qld. Dept. of Ag. and Fisheries insect collection" presented by Mark Schutze.Vote of thanks provided by Gary Fitt.

Next meeting: 10 December:
The next meeting will be our Notes and Exhibits Christmas Meeting! This meeting will start at 3pm followed by our end of year gathering. Bring a plate to share and join us!

NOTE: change in start time: **3pm.**

Meeting closed: 2:10pm.

Two pupae from the two-tailed leaf beetle, *Aproida balyi* (Chrysomelidae) hanging from a leaf of wombat berry vine (*Eustrephus latifolius*). Photo:K.Ebert

At our next meeting...

Notes & Exhibits!!

The December meeting is one of our special *Notes & Exhibits* meeting. This is a less formal meeting consisting of several short talks and exhibits. Any member is welcome to share any item of entomological interest. It might be a 5 minute talk about an interesting observation, some items to show as an exhibit, a research update or plan - anything goes!

"Egg laying decision in a generalist moth - threshold, feedback or choice" - *Lachlan Jones, PhD Candidate, University of Queensland & 2017 Small Grant Recipient*

"Insects of our New Guinea neighbours" - *Jessa Thurman, PhD candidate, University of Queensland*

"*Pontomyia* revisited: marine flies" - *Christine Lambkin, Queensland Museum.*

"Unraveling *Gonipterus* diversity in Queensland" - *Natalia Medeiros de Souza, PhD candidate & 2018 Small Grant Recipient, University of Sunshine Coast*

"A moth caterpillar that eats scale insects and lives in green tree ant nests" - *Geoff Monteith, Queensland Museum*

This meeting is also our last meeting for the year, so plan to join us to celebrate with good food and good friends. **Please note: This meeting starts at 3 pm**. followed by our end of year gathering. We'll have some party food catered by the EcoCafe, but bring a plate to share if you can join us!

Tuesday 10 December at 3pm

Ground floor Seminar Room at EcoSciences. Tea, coffee & party food following.

All welcome!

Feature article:

From past to present: origins and purpose of the Queensland Department of Agriculture & Fisheries Insect Collection.

presented by
Dr Mark Schutze
Senior Entomologist
Plant Biosecurity Laboratory
Biosecurity Queensland
Department of Agriculture & Fisheries

Better known as the 'Queensland Primary Industries Insect Collection', or QDPC, the nearly two million insect specimens held by the Queensland Department of Agriculture and Fisheries (Q-DAF) Plant Biosecurity Laboratory represent the state's largest collection focussed on agricultural, horticultural, and biosecurity-relevant insects. From humble beginnings, the QDPC expanded to include virtually all insect groups from across Queensland, Australia, and overseas. The collection represents a dynamic resource not only for Queensland's government entomologists but entomologists from across the country and the world.

The Department's insect collection began in 1894 following the appointment of Queensland's first Government Entomologist: Henry Tryon (Fig. 1); an appointment that came seven years after the establishment of Queensland's Department of Agriculture (under the Department of Public Lands) in 1887. Tryon's appointment followed an impassioned plea from the Under Secretary for Agriculture, Peter McLean (Fig. 2), who in his 1892-93 Annual Report laid bare the desperate need for an entomologist given the absence of such expertise in the Department and the resulting burden thrust upon the Queensland Museum staff to respond to entomological enquiries from across the barely 30-year-old colony of Queensland (Fig. 3).

Thus, with Tryon's appointment it all began and he was soon compelled to start a collection to address the demands from across the state. These were not restricted to the insects, however, as Tryon proved equally adept at plant pathology and was also responsible for responding to plant diseases. Indeed, when Tryon concluded his tenure as Government Entomologist in 1925 he continued work as a plant pathologist.

A staunch advocate for the value of the profession, Henry Tryon is recorded lamenting the unjust stereotype of the '*amicable butterfly hunter*' in light of the significant contribution the professional entomologist made towards saving farmers '*hundreds and thousands of pounds, by following the*

advice of the Entomologist!' and was keenly aware of the acute threat exotic insects posed to Queensland's primary industries (what we today refer to as 'biosecurity'). Indeed, Tryon repeatedly made recommendations towards tough penalties for scurrilous offenders should they be apprehended in bringing foreign (= exotic) insects into Queensland, particularly for pests such as Phylloxera and the New Guinea sugarcane weevil. And so in this backdrop, Tryon established the reference collection to serve the entomological needs of Queensland.

This first documented records of the collection's 'Insect Register' are presented in the accompanying Figure 4. Here, each order was designated a prefix: 'Hy.' for 'Hymenoptera', 'C' for 'Coleoptera', and so on. Each specimen was then ascribed a number: 'Hy.1' for the first hymenopteran, for example, with entries not so much adhering to standards of which we are familiar with today, but perhaps a rather more

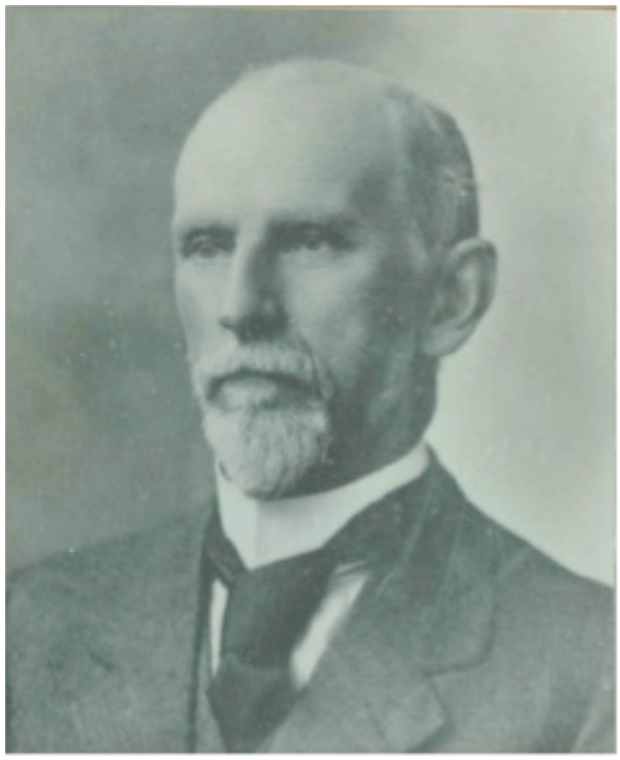


FIGURE 1: Henry Tryon: founder of the Department of Agriculture Insect Collection.

whimsical account of the specimen and the means by which it was acquired (often plucked from the windowsill, no less). Occasionally accompanying these entries were notes, if pertinent, regarding the life history or other ecological associates (Fig. 4. For example, 'D.6' (i.e., the sixth 'D'iptera added to the collection) was determined as '*Bolitophila* sp.', '*bred from larvae found upon the decaying shoot of a paw paw tree forwarded from Cairns. The larvae had secreted a glutinous web amongst the meshes of which they crawled as do the luminous dipterous*

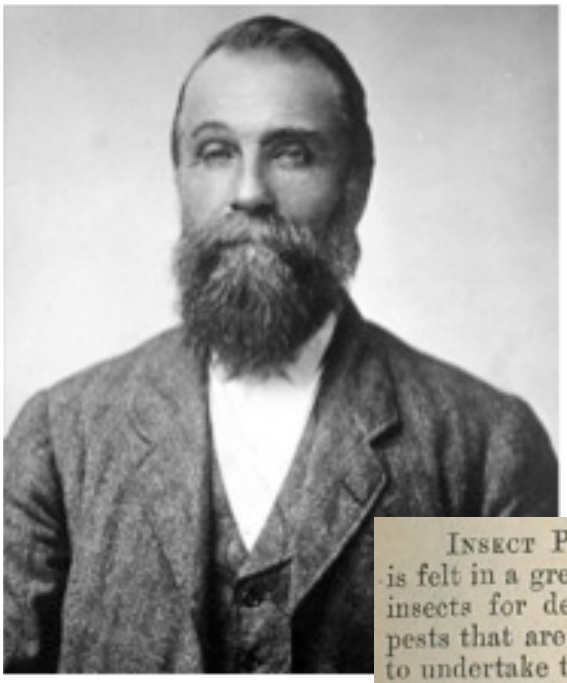


FIGURE 2: Peter McClean, first Under Secretary of the Department of Agriculture, appointed at the department's inception in 1887.

INSECT PESTS.—The want of an entomologist in this Department is felt in a greater degree year by year. Many farmers send down insects for determination, and ask for information concerning the pests that are destroying their crops. Having no officer competent to undertake this work, I am compelled to either fall back upon the officials of the museum, and so interfere with the course of their duties, or to inform the applicants that I am not in a position to afford them the information they ask—a position which I feel greatly, as it is clearly the duty of a Department of Agriculture to be able to deal with such matters.

FIGURE 3: Under Secretary Peter McClean's plea for an entomologist in his 1892-93 Annual Report.

larvae of New Zealand. The pupae were naked like those of hymenoptera and occurred in the web also. If referable to the genus Bolitophila *this insect is distinct from the New Zealand species. 7 specimens on cards*". Generally, no date of collection was given in the *Insect Register*, and entries were frequently much briefer than for *Bolitophila*! Incidentally, this specimen (or specimens) have, it seems, been lost to time, so we are unable to confirm whether or not this is indeed a correct determination. However, in all likelihood if this is one of the luminous dipterans it is (or was) possibly *Arachnocampa tropica*; a species relatively recently described by Dr Claire Baker (whom trained alongside me in UQ's Department of Entomology towards the end of last century, and before the department was lamentably dissolved into the larger Zoology department) in 2010. I am at a loss to explain its intimate association with *Carica papaya*, however.

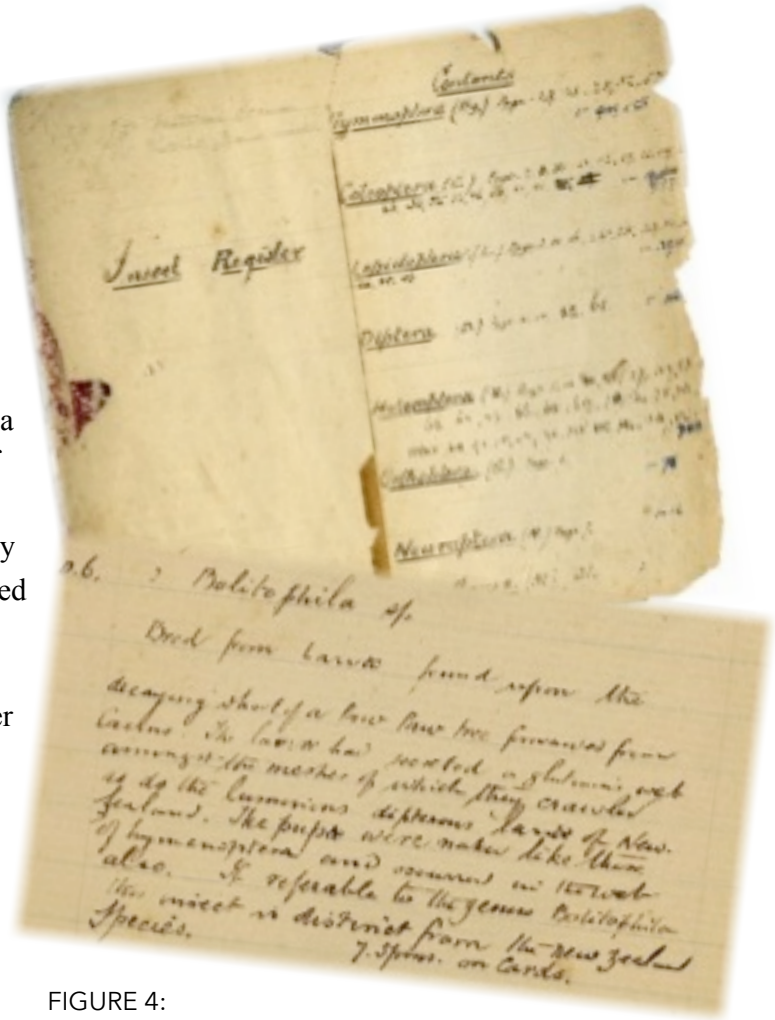
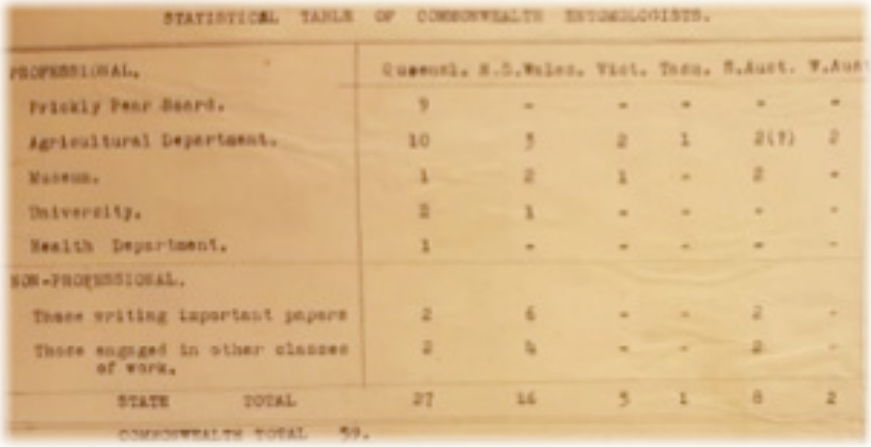


FIGURE 4:
Above: First pages, including contents page, of the Insect Register for the Department of Agriculture's Insect Collection. *Below:* Example entry in the Insect Register: 'D6'; i.e., the sixth dipteran specimen to be listed and identified as *Bolitophila* sp.

Regrettably, as for dear *Bolitophila*, not all of the early specimens remain–not due (we're sure!) to subsequent curators' neglect, but rather the questionable conditions within which the early collection was maintained. We read, for instance, of Tryon's battles with heavy rain, humidity, dirt, and of course the dreaded museum pests–bringing mould, damage and destruction to the fledgling collection. No climate control back then! This is keenly observed in Tryon's 1898-99 report, drafted shortly after major renovations to the Department's home on William Street, leading to a period of time the collection was without the most basic protection of a roof! (with accompanying 'heavy rain'), diplomatically referred to by Tryon as nothing less than an '*undesirable contingency'*. We also read of Tryon's struggles to grow the collection in light of other responsibilities. However, he does give due thanks to generous donations from the likes of Dodd, Turner, Illidge, and interstate colleagues including the Government Entomologist of Victoria, without whom the collection would have been much poorer as a consequence and to whom we are all indebted.

> Tryon was stretched to his limits. Charged not only with curating and managing Queensland's agricultural insect collection (at constant threat of decay, destruction, and despair), Tryon reported on all the identified specimens submitted to him each year–both injurious and beneficial (including those that might help fight Prickly Pear), referred and advised on the importation of destructive insects, accumulated knowledge on insectivorous birds, delivered educational lectures and courses, built up the library, and–as noted earlier–dealt with Queensland plant pathology problems to boot! He truly was a 'one-man-band', and a note on the QDPC's origins is indeed incomplete without deference to the great man.



STATISTICAL TABLE OF COMMONWEALTH ENTOMOLOGISTS.

PROFESSIONAL.	Queensl.	N.S.Wales.	Vict.	Tasm.	S.Aust.	W.Aust.
Prickly Pear Board.	9	-	-	-	-	-
Agricultural Department.	10	3	2	1	2(?)	2
Museum.	1	2	1	-	2	-
University.	2	1	-	-	-	-
Health Department.	1	-	-	-	-	-
NON-PROFESSIONAL.						
Those writing important papers	2	6	-	-	2	-
Those engaged in other classes of work.	2	4	-	-	2	-
STATE TOTAL	27	16	3	1	8	2
COMMONWEALTH TOTAL 59.						

FIGURE 5: Table taken from the 1923 minutes of the first ESQ meeting, depicting number of professional entomologists across the country. Note the number in Queensland relative to other states.

Taxed as he was, Tryon was in need of assistance to allow him to fulfil his wider obligations whilst permitting the preservation and growth of the collection. Tryon's own report from 1904-05 speaks volumes of the pressure he was under; I quote (my emphasis): "…the entire work of the office devolves on *a single individual*, and one that is probably *without parallel* in any part of the world that approaches Queensland, in comprising, not only a vast extent of territory, but–as the outcome of this–a territory in which the enterprise of its inhabitants identified with the promotion of primary industries of a rural nature is concerned with such diverse and important products. The fact of that individual being the originator of much of the knowledge that the office has disposed has alone rendered possible even what has been accomplished with *such imperfection.*" (Department of Agriculture Annual Report of the Entomologist, H. Tryon, 1904-05).

Dramatic as Tryon's comments are, Queensland was (and justifiably remains) the epicentre of Australian entomology. One need only look to the strength of our Society today, with membership numbers knocking at the door of the national society; or, indeed, extracts from the minutes of our very first meeting in 1923 at which it was soundly determined that Queensland hosted the lion's share of Australia's professional entomological community who were primarily divided between the Agricultural Department and the Prickly Pear Board (see Fig. 5).

(An aside: Tryon never joined the ESQ, which formed towards the end of his appointment as Government Entomologist because he thought the society would fail. This I learned from Mackerras & Marks' 'In retrospect: the insects and the entomologists', published in the 1973 Jubilee Publication of the ESQ titled '*Changing Patterns in Entomology*' (pp. 3-10, publication date 1974), a publication I direct all members towards for those with a penchant for brushing up on Queensland entomological history. Thanks to Neil Heather for bringing this gem to my attention).

Soon Tryon's pleas were heard. Edmund Jarvis commenced as Assistant Entomologist in 1908 and was given the task of prioritising the identification and arrangement of specimens, and subsequently took over duties in 1912-13 as Tryon engaged in work with the Prickly Pear Commission. Later, during the tenure of Robert Veitch (Tryon's successor from 1925), Henry Hacker joined the Department when he was seconded in 1929 then made an officer of the Department a couple of years later, and for whom was charged the task of building up the reference collection whilst working two days' a week with the Queensland Museum until his retirement in 1943. Also of note, amongst many others who I must for sake of brevity omit, was William Alan Thomson Summerville; who was similarly appointed by Veitch as custodian of the collections, a task he "*adequately discharged*" (Veitch, Annual Report of 1926-27). Alan Summerville was to go on to become, like Veitch, a future Director and, for his contributions, became Sir Alan.

There in William St the collection remained until Entomology's move some 70 years since inception

FIGURE 6: The QDPC at its home at the Long Pocket Laboratories, where it resided until 2010.

to a new home at Long Pocket Indooroopilly in the mid-latter half of the 20th century (Fig. 6). By then, the collection had grown under the guidance of previous Directors of Entomology Branch such as Veitch (mentioned above); Directors who fully appreciated the great value in the collection in supporting Queensland's agricultural sector; I refer the reader to a publication by Veitch, titled 'The History of Entomology in Queensland' published in 1962's Volume 1, Issue 1 (pp. 5-15), of the *Journal of the Entomological Society of Queensland* for a more extensive account of the period in the lead up to the Collection's move to Indooroopilly.

At this point I must extend my gratitude to Neil Heather, former employee of the Department, who graciously enlightened me as to the following details regarding the establishment of the Long Pocket laboratories, laboratories that originated thanks to the efforts of Bruce Champ & colleagues in establishing research facilities on the grounds of a State Government School Reserve at the end of Meiers Road, with the aim to continue studies on insect resistance to insecticides. By the mid-1970's the William Street entomologists had relocated to the Long Pocket site, with the planning for the new Entomology Building having been made under the watchful gaze of Drs A. Brimblecome and W.A.Macdougall (Deputy Director & Director) with its completion and grand opening made under his successor, Dr Tom Passlow.

The new site housed the greatly expanding Insect Collection, and was passed into the care of entomologists such as Bryan Cantrell (tachinid flies), Ian Galloway (Microhymenoptera), Ken Houston (coccinellid beetles), and later John Donaldson (specialist on scale insects), Desley Tree (thrips), Shaun Winterton (dipterans and neuropterans), and Nate Hardy (scales); not to forget, of course, Justin Bartlett (coleopterans)! The Collection remained at Long Pocket until the move in 2010 to its current residence, the Ecosciences Precinct located in the inner-city suburb of Dutton Park where the ESQ meetings are now held.

An aside: Dutton Park, curiously enough, shares a particular link with the origins of the Queensland Department of Agriculture and Fisheries. Indeed, it was Charles Boydell Dutton–Secretary of Public Lands and whom Dutton Park is named after– who was a vocal advocate for the establishment of such a Department, supporting Sir James Robert Dickson, Colonial Treasurer and Acting Premier in 1887, in founding the Department while the then Premier of Queensland, Sir Samuel Walter Griffith, was offshore and attending an Imperial Conference. While history favourably recalls Dutton in Australia's Dictionary of Biography as possessing "…a sense of justice, likeable modesty and freedom from political taint [that] made him ideal for Griffith's assignment"; the press' opinion of him could not be more opposed as documented in the 1887 *Queensland Figaro* (Fig. 7). And yes, in case you were wondering, he is indeed the ancestor of a certain Federal Minister of Home Affairs!

The QDPC now resides at Dutton Park and is managed within the Plant Biosecurity Laboratory (within Biosecurity Queensland), sitting alongside the department's Herbarium (both collections are under Dr Roger Shivas, yet Schutze, Bartlett, and Royer practically curate the insect collection). It has grown to nearly two million specimens and is represented by pinned, wet (i.e., alcohol-preserved)

Dutton and the Press.

Charles Boydell Dutton has run amuck at the Queensland Press. When a man kicks against the pricks, his enemies may fold their arms and let him hurt himself without their assistance.

Dutton has not only played the clown, but the truth was not in him at Sandy Gallop the other day when he Ministerially attended the Queensland Pastoral and Agricultural Society's Show. Charlie said he didn't care a single dump for the whole Press, and then he raved and spat at newspapers in general. A man doesn't swear at a thing which is indifferent to his notice. Dutton couldn't get his back up about the Press, if the Press hadn't first made that back smart with the lash of its telling criticism. He knew he had "no case," so he "abused the other side." He is a fool for his pains. He has made his Press opponents laugh at his helpless rage, and he has made those pressmen who excused and shielded him turn angry at his base ingratitude.

The *Queensland Times*—hitherto a Sammite and Duttonian paper—thus resents Dutton's ill-temper—"As this journal was one of those which were, to a considerable extent, instrumental in placing that gentleman and his colleagues in power, we desire to inform him that he is by no means a tower of strength to the Ministry, and that his departure from the Lands Department would certainly not be regarded as a public calamity, as many a farmer and selector in West Moreton could testify."

FIGURE 7: The Press' opinion of the Secretary of Public Lands Charles Boydell Dutton, as published in The Queensland Figaro in the year of the Department's birth, 1887.

and slide-mounted material. We have started a DNA collection since my appointment in 2016, holding extracted DNA in deep-freeze at minus 80°C from specimens that have required molecular identification (esp. larvae and morphologically ambiguous specimens).

Major holdings of the QDPC include the world's largest collection of dacine tephritids (Fig. 9), thanks to the deposition of the tremendous collections of R.A.I. Drew and colleagues over recent decades (and more expected, with the completion of Prof. Drew's

FIGURE 10: The QDPC is home to over 45,000 specimens of scales, aphids, and thrips.

FIGURE 8: The QDPC in its current home, at the Ecosciences Precinct Dutton Park.

FIGURE 9: One of many, many, tephritid fruit fly drawers.

latest revisions). At some 100,000 specimens (of which approximately half are databased) this invaluable resource is frequently used for identifications to support Queensland's biosecurity, as well as taxonomic research by domestic and international workers and visitors. The QDPC has an extensive collection of slide-mounted material (Fig. 10); including 22,000 thrips, over 21,500 coccoids (= scales, mealybugs, and the like), and nearly 4,000 aphids, a credit to both their economic importance and dedicated curation by previous curators such as John Donaldson and Desley Tree. The remainder of the pinned collection is particularly notable for its coleopterans, more so since the recent acquisition of a large part of the Mareeba

Collection (some 200 drawers) once curated by the late Ross Storey. This collection has been transferred into the main collection, each specimen carefully labelled to denote is origin as the Mareeba-Storey collection to preserve its legacy. We also hold the Alan Fletcher Research Station Collection, CSIRO collections, and the Maroochy collection, with sub-collections focussed on, for example, pests associated with particular commodities or the biological control agents of weeds.

Of special note, perhaps, is that the QDPC is naphthalene free: there be not a mothball or flake to be found (or sniffed). Due to the (perceived?) risks (smell?) of naphthalene, all was removed (well, almost all) before the move to Ecosciences, and we have recently expunged the last remnants to conform with the building's policy. But how, pray tell, do we protect the collection I hear you ask? The collection is held at low temperature and humidity; pheromone lure traps for common museum pests are scattered about; and no paper or specimens are permitted into the collection without first being frozen for one week, thawed, and re-frozen for another. In addition, we regularly examine *every drawer* for signs of frass or other damage, with any suspicious drawers (and at least one drawer from either side) removed and subjected to the same freeze-thaw-freeze process as noted above. So far so good, with the collection continuing to be demonstrably free of museum pests. Touch wood. Indeed, collections around the world appear to be following this trend. Time will tell if we can truly live naphthalene-free…

As for Tryon's era, resources available for curation, management and maintenance are stretched to their limits and, it seems, ever dwindling in light of competing priorities. Insect collections are akin to libraries: specific specimens (or books) may seldom be sought, but once in a while a humble specimen (or book) inevitably saves the day; it's very much a case of 'out of sight out of mind' for the powers that be but that said, we still have our collection–for now. We have but two staff (myself and Justin Bartlett, Senior Technician) officially aligned to collection duties; and even then only for part of our positions and making up a combined 75% of a full human being (human-resource-wise). Meanwhile, Jane Royer (Senior Entomologist), while not officially aligned to the collection, nevertheless oversees the tephritids alongside her charge, Shannon Close (Technician), who has been feverishly reorganising the enormous tephritid collection given recent taxonomic updates. We each have our areas of expertise: myself with a background in tephritid integrative taxonomy but of necessity dipping my toes (feet? legs?) into the world of coccoids and, to a lesser extent, Thysanoptera; Justin remains up to his neck in coleopterans and psylloids and is primarily responsible for sorting the waves of sticky traps we receive from surveillance operations; Jane is swimming in all things tephritid (including researching and publishing in the field of tephritid chemical ecology); and Shannon with her general entomological experience supports the group as a whole, but has brushed up on tephritids too! In addition, Jane oversees a band of casual staff who tire day in day out sorting and identifying tens of thousands of fruit flies trapped from across the state as part of state and national surveillance programmes; and we do from time to time host volunteers–either to work on their specific group of interest in revising material and updating taxonomies, or assisting with general collection management tasks. Recent volunteers include Jessa

Thurman, Vivian Sandoval, Claudia Schipp, Penny Mills, and Judy King.

Entomologists directly working with the QDPC, L-R: Mark Schutze (Sen. Entomologist), Jane Royer (Sen. Entomologist), Melissa Starkie (Casual staff, fruit fly), Caterina Torrisi (Casual staff, fruit fly), Vanessa Cockington (Casual staff, fruit fly), Kathy Thomson (Casual staff, fruit fly), Shannon Close (Technician), Justin Bartlett (Sen. Technician).

Aside from a rich resource available to entomologists at home and abroad, the collection is fundamental in supporting Queensland's agricultural and horticultural industries. We frequently access the collection in responding to insect identification enquiries either from the public or as part of surveillance programmes run by the department, and the collection supports hundreds of diagnostic jobs each year. We work closely with our Federal Department of Agriculture colleagues, who are responsible for border detections, and our interstate equivalents at other State primary industry/ agricultural departments. We also maintain a close association with our dear friends at the Queensland Museum because whilst our collections have different foci (QM=biodiversity; DAF=agricultural pests & beneficials), there is abundant overlap between our collections and expertise that echoes the association across departments going back to Tryon's time. Indeed, such cross-institutional collaboration and support underpins everything we do.

Time to wrap up.

We still have much ahead of us, including data-basing the rest of the collection, taking images of important voucher specimens, building the DNA collection, and engaging with researchers, collection managers, curators, and colleagues in supporting and developing projects that make solid use of the collection. We are here to provide services and assistance to the people of Queensland and beyond, aiding in specimen identification and the deposition of material into the collection (specimens relevant to agricultural, of course!). We also spruik the imperative to be on the lookout for foreign pests, such as the brown marmorated stink bug (*Halyomorpha halys*) or exotic fruit flies (such as *Bactrocera dorsalis*). For extensive lists of current targets I direct the reader to national priority lists (http://www.agriculture.gov.au/pests-diseases-weeds/plant) or a Queensland-specific list (https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/crop-growing/priority-pest-disease). For those interested in tephritid fruit flies, I can recommend the following website that was developed as part of a multi-partner research project I led when I was at QUT and that officially concluded last year: https://fruitflyidentification.org.au/. The new lucid key, expertly developed by Jane Royer, will be of particular interest I'm sure: a key that we aim to grow over time to include more and more of the commonly encountered tephritids of Australia and the region. If the keen-eyed collector (or gardeners) amongst you spot anything akin to the exotic pests included in the above, please call Biosecurity Queensland on 13 25 23; or the Exotic Plant Pest Hotline on 1800 084 881.

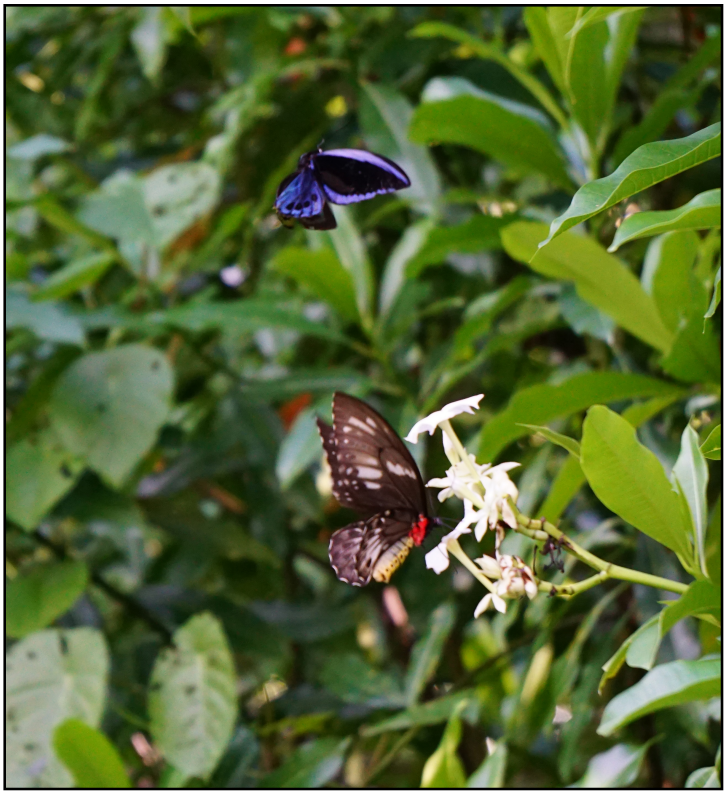
And of course, if you have any other questions please get in touch with me here at the QDPC; we're (almost) always happy to help!

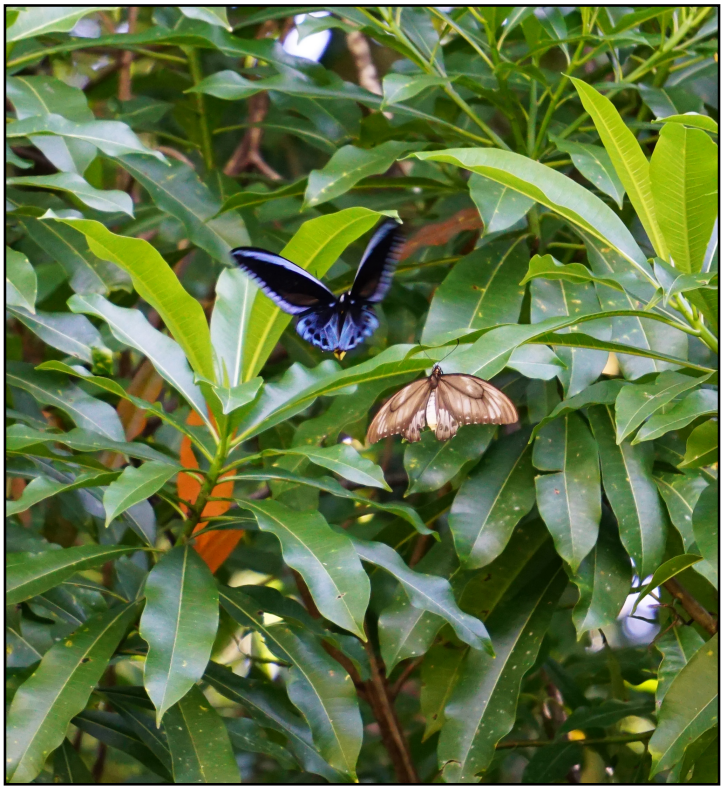
Entomology News

from Queensland and beyond...

Have you heard of the Bougainville Blues?

--Jessa Thurman





I recently got to travel as an ecotourism guide to New Guinea and its surrounding islands aboard a small expedition ship. One of the spots I was most excited to stop at was the Autonomous Region of Bougainville, which has only recently re-opened to visitors after a bloody civil war over the Panguna Mine owned by Bougainville Copper Ltd. This wealthy mining company previously supplied nearly half of Papua New Guinea's export profits, but after mistreatment of the locals and environmental degradation, a war broke out between the mine and the local community. The Papua New Guinean and Australian armed forces were sent in, but none of these efforts were a match and soon these rebels won their civil war. Its an exceptional story of environmental activism, although a very bloody one.

Nowadays, Bougainville is still working for independence and their referendum vote is coming up on November 23rd. If they obtain independence, the region is likely to continue mining, but on its own terms. On my travels up the mountain, I periodically found people creeping out of the slopes and was told they were all searching for gold. This and the sale of scrap metal from the mine is currently supplying the island with enough resources to subsist, but I hope they may have another option for income in the coming future.

I only came to learn the history of Bougainville when I first encountered collections of the Bougainville Blues (*Ornithoptera priamus urvillianeus*). These are extraordinary Birdwing

Butterflies, the males of which have unique blue coloration on their wings. Similar to Australia's green Cairns (*O. euphorion*) and Richmond Birdwings (*O. richmondia)*, these butterflies display sexual dimorphism with colorful, flashy males and more darkly colored females. The females are much larger however, and if I didn't know their flight pattern, I would have mistaken a few female butterflies for birds flying overhead. Our travelers came to this area to see and learn about wildlife, culture and the apocalyptic remains of the Panguna Mine, but none of them anticipated the beauty of the large, exceptional butterflies. Many of our birders were impressed by the Birdwings' mating display, while I was thrilled to see something that I had only seen beforehand preserved and pinned, alive and flitting through the forest.

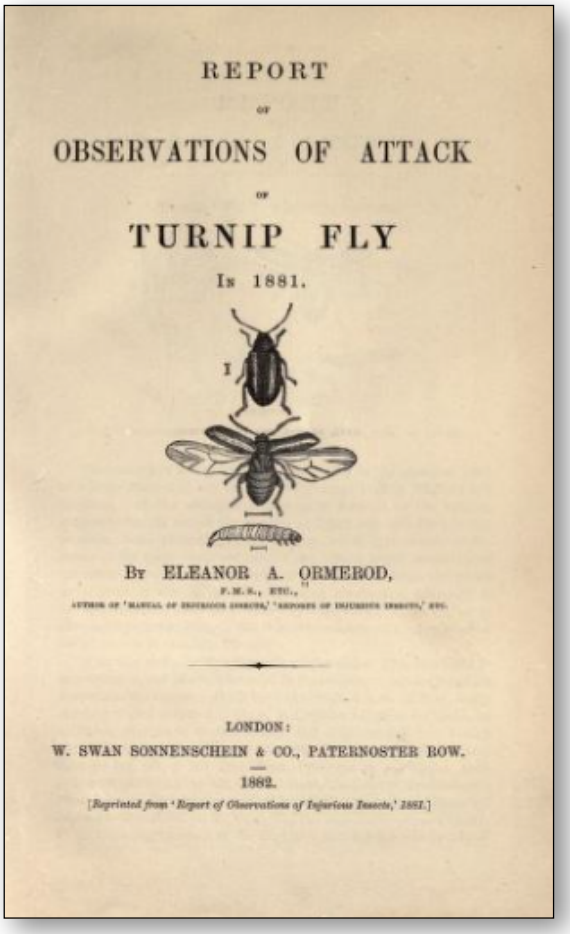
Life still thrives in Bougainville despite the bloody civil war, and these butterflies are a fine example of the beauty which this wild island has to offer. In years to come, I hope ecotourism can offer a source of income to promote conservation of these butterflies, the unique cultures of this island, and its many other treasures.

Maria Merian's illustration of cockroaches on pineapple. Image: Wikipedia.

Two historical women entomologists

Dr Tanya Latty, an entomologist and lecturer at University of Sydney, has written two articles for *The Conversation* this year as part of their "Hidden Women of History" series.

Tanya writes about the 17th century entomologist, ***Maria Sybylla Merian*** who lived in Germany, and was a keen observer and illustrator of insects. Maria was different from most insect artists at the time because she painted insects in their natural state including behaviours and ecological interactions rather than from preserved specimens. She is known for her book on metamorphosis which contains paintings of caterpillars, their host plants and life cycles from egg to adult. This was significant because at the time, many people believed that life


REPORT

OF

OBSERVATIONS OF ATTACK

OF

TURNIP FLY

In 1881.

By ELEANOR A. ORMEROD,

LONDON:

W. SWAN SONNENSCHEIN & CO., PATERNOSTER ROW.

1882.

One of Eleanor Ormerod's Reports on the "turnip fly" which is a chrysomelid beetle: *Phyllotreta nemorum*. Image: Archive.org

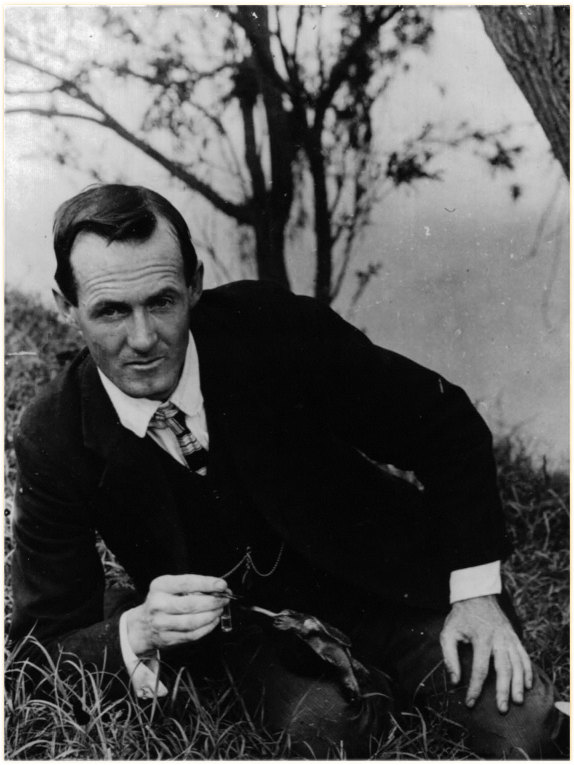
arose spontaneously from inanimate matter. Maria's work was the beginning of ecological studies. Carl Linnaeus would often refer to her illustrations for his species descriptions. Many species have been named in her honour including *Avicularia merianae,* a theraphosid spider from Peru.

Tanya also writes of ***Eleanor Anne Ormerod***, one of the first agricultural entomologists in England in the late 1800s. On behalf of the Royal Horticultural Society, Eleanor collected and identified insects that were helpful and harmful to agriculture. She was unique because most entomologists at the time were not focussed on agriculture (and most were men). Eleanor worked closely with farmers visiting them and observing their insects pests. She published a series of reports for farmers describing insects pests, their behaviour and guidelines for control. She made significant contributions to the insect pest collection of the Royal Horticultural Society and was given the position of Consulting Entomologist, unpaid of course. To read more:

http://theconversation.com/hidden-women-of-history-eleanor-anne-ormerod-the-self-taught-agricultural-entomologist-who-tasted-a-live-newt-120158

https://theconversation.com/hidden-women-of-history-maria-sibylla-merian-17th-century-entomologist-and-scientific-adventurer-112057

The History Corner...



Thomas Harvey JOHNSON (1881-1951)

Born Sydney. Started career as a teacher, then studied biology at University of Sydney leading to a D.Sc. in 1910. After working in the Bureau of Microbiology in Sydney, 1909-11, became foundation Lecturer-in-charge of the Department of Biology, University of Queensland, in 1911. Later became first Professor of Biology, 1919-21. Appointed Chairman of the Queensland Prickly Pear Travelling Commission and (with Henry Tryon) travelled overseas in 1912-14 in search of biocontrol organisms against prickly pear. Successfully introduced mealybug, *Dacylopius ceylonicus,* which controlled *Opuntia monacantha.* Also introduced *Cactoblastis cactorum* which did not survive. Appointed Controller of the Commonwealth Prickly Pear Laboratories, 1920-22, and founded the Sherwood laboratory. Other Queensland work included (with colleagues and students, G.H.H. Hardy, M.J.Bancroft and O.W.Tiegs) studies of cattle tick, blowflies, muscids, onchocercaisis and fish epidemics. Later became Professor of Zoology at University of Adelaide and worked mostly in parasitology. Won many awards and honours and produced 299 publications.

Biography: Sandars, D. 1954. *Proceedings of the Royal Society of Queensland.* 64:57-68.

What is the ESQ Council and what do they do?

Each year the society forms a new governing council which consists of a President, Vice-President, Past President, Treasurer, Secretary, three Councillors, a News Bulletin Editor and the Business Manager from *The Australian Entomologist*. Each of these people volunteers their time to attend a council meeting once a month prior to the General Meetings. These meetings are amiable and provide a time to discuss upcoming events and society interests. The council members undertake various tasks to keep our society running smoothly.

What do they do?

President: the President chairs the meetings and is responsible for inviting our guest speakers for the general meetings. The President also oversees the council and acts as our general community liaison. The President is initially elected as a Vice President, who then steps into the role of President the following year.

Vice President: the Vice President provides back-up when the President is absent and steps into the Presidential role in the following year. The Vice-President can also assist other councillors with special tasks if needed.

Treasurer: the Treasurer takes care of the incoming and outgoing accounts which are mainly incoming membership fees and various expenditures for bulletin printing, postage, student awards, small grants, etc. The treasurer maintains the membership database.

Secretary: the Secretary takes notes at meetings, makes sure the rooms are booked and ready for our meetings, deals with correspondence and mails out new member packs.

Councillors (3): Councillors attend council meetings and provide support as needed.

News Bulletin Editor: The Bulletin Editor collates the meeting minutes, transcript of presentations and other news into a monthly news bulletin; organises the printing and mail out of the bulletin

Business Manager, Australian Entomologist: the Business Manager manages many aspects of the journal including subscriptions, invoices, subscriber database, journal mail out and more.

How can you be a part of the action?

As a new year approaches, these council positions are once again open for nomination. If you are interested in getting a bit more involved in your society, this may be your opportunity! If you would like to know more about what any of these positions involve, contact the secretary at secretary@esq.org.au Please consider helping out with one of these positions. Nomination forms are due to the secretary by 31 January 2020 and can be found at www.esq.org.au/pdf/Nomination2020.pdf .

New council positions commence after the March AGM.

Thank you!

Vale

Mervyn Bengston

1932–2019

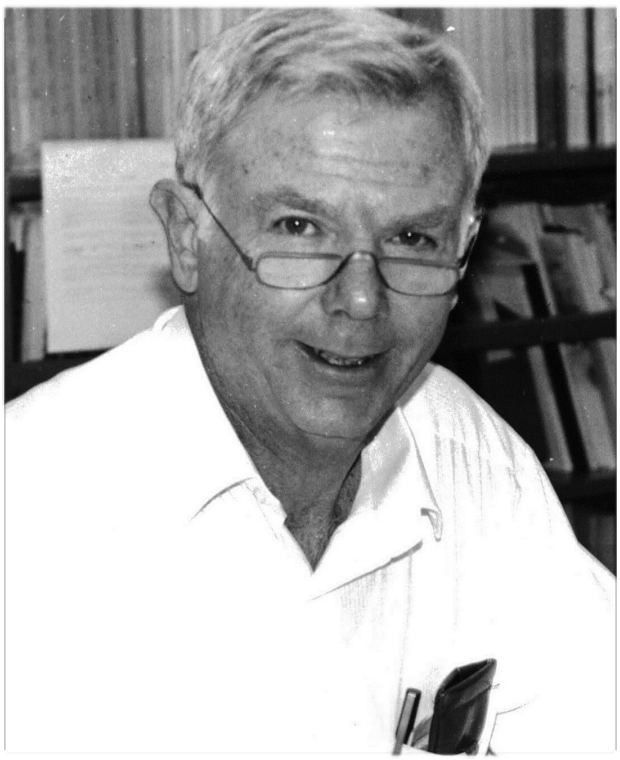
The death of Merv Bengston, a long term member of Ent Soc Queensland and a past President (1971) occurred on 27th August 2019 aged 87 years. His outstanding contributions to Entomology locally, nationally and internationally spanned 50 years. At the time of his retirement he was Director of the Entomology Branch of the Department of Primary Industries (now Department of Agriculture and Fisheries).

Merv came from a small-crop farming family in the Redlands District south of Brisbane. He grew up in years disrupted by WWII but through a combination of exceptional academic ability and schooling relocations, matriculated from Wynnum State High School at age 16. He obtained a position as a science cadet in what was then the State Department of Agriculture and Stock which enabled part time study towards a Science degree at the University of Queensland. It was a fortuitous achievement as job opportunities post-war were limited by preference for ex-service personnel. Even so, his student enrolment required special dispensation as the minimum age for entry was 17 years. Merv went on to major in Botany since Entomology alone could not constitute a major at that time. His studies contained a significant component of mathematics at which he was naturally gifted.

On graduation in 1953 Merv was appointed "Assistant to Entomologist" and posted to the Granite Belt region, stationed first in the town of Stanthorpe then at Applethorpe where a new laboratories complex was

built on an existing experiment farm. Merv's family background from a horticultural farm and his inherent ability soon enabled him to gain the respect of regional fruit and vegetable producers. He was administratively and technically under the supervision and mentoring of Toowoomba-based Dr Alan May who had active experimental programs in the region including his major interest, fruit flies. However Merv's interests became mites and codling moth as pests of deciduous fruit trees together with broader seasonal pest management strategies. He combined sophisticated biometric and other mathematical strategies with developmental observations on insects and mites to achieve ground breaking approaches to management of pests of deciduous fruit trees. During these years Merv was awarded first an MSc then a PhD as a part-time student of UQ meantime keeping bees as a hobbyist and enjoying golf at what was to become a his lifetime sport.

In 1970 Merv was relocated to Indooroopilly to take over the departmental program on Stored Products Pests. Although CSIRO was in the throes of establishing its Stored Grain Research Laboratory to be located in Canberra, research funding was available to continue the existing Queensland Department of Primary Industries program. Merv went on to develop this programme attracting increasing funding as time went on. It encompassed grain protectants with attendant insecticide resistance problems and underpinned national grain exports based on insect contamination kept below the level of detection. It complemented CSIRO research in Canberra. Much of this stored product pest research was based on bioassay techniques and Merv worked with departmental biometricians to further develop computer programs which greatly enhanced precision of this research. As time went on his research encompassed studies on the biology and ecology of most grain pest species and broader ways of managing infestation levels. He became convenor of the Working Party on Grains Protection, which coordinated relevant research throughout Australia. Subsequently, Merv's work was seen to be of value to international cooperative research programmes being developed by the Australian Centre for International Agricultural Research (ACIAR). This led to cooperative experimental projects with Merv as Project Leader, in China, India, Indonesia, Malaysia, Philippines and Thailand and wide recognition of Merv internationally both within the countries and through research publications. He also took a leading role in the international field of stored products research at their high profile biennial conferences.



From the time of his work on deciduous fruits Merv achieved a high research publication output and this increased markedly during his time as a stored grains researcher. Apart from his own papers Merv acted as a technical editor and referee for a number of relevant high profile international journals. He also acted as mentor to younger entomologists at both Graduate and Postgraduate levels continuing in this role after his retirement in 1998. His total of technical publications would have approached 200.

--Neil Heather

Biology and management of Bactrocera *and related fruit flies*

by Anthony R. Clarke

Hardback| $150| ISBN:9781486312139| 272 pages| 244x172 mm, CSIRO Publishing, Oct 2019

This book is an interesting and readable account of the biology and management of *Bactrocera, Dacus and Zeugocacus* fruit flies (Tephritidae: Dacinae: Dacini). This is a diverse group of flies comprising over 900 species, found largely in Australia, Asia and the Pacific. The larvae infest fleshy fruits and vegetables, with some species being highly polyphagous and among the worst horticultural pests in the tropics and sub-tropics. While there have been a few books covering tephritid fruit flies in recent decades, this is the first book published to focus specifically on these three genera.

As stated in the Introduction, the book 'is targeted at field entomologists, extension officers, quarantine officers and market access negotiators who need a single source that can provide a rapid, yet comprehensive introduction to the group'. It is written in an accessible style that provides sufficient background necessary for understanding all core aspects of fruit fly biology, ecology and management. Fruit fly researchers will also find this book highly valuable as a single resource covering a breadth of fruit fly topics.

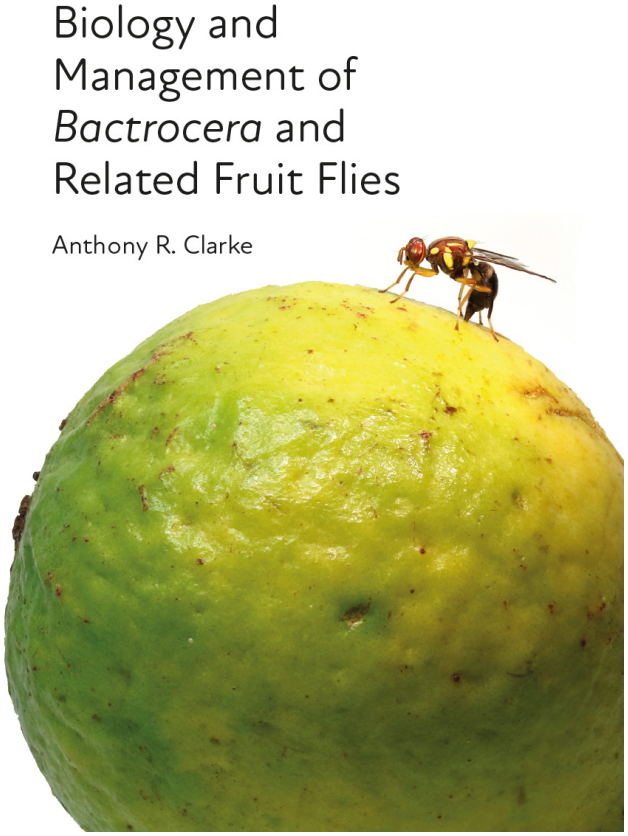
The book is divided into three sections: (i) the evolutionary history, taxonomy, systematics and diagnosis (chapters 2-3), (ii) biology, behaviour, ecology, host use, invasion biology and natural enemies (chapters 4-8) and (iii) pre- and post-harvest management and regulatory controls (chapters 9-11). Chapter 10 is a guest chapter by Peter Leach on Phytosanitary Measures, covering post-harvest disinfestiation techniques for trade. The final chapter (12) covers the future of fruit fly research and management, including genetic tools, post-pesticide management, and the value of fruit flies in biodiversity assessments. Information throughout the book is based on a comprehensive coverage of current and historical research.

The book has occasional diagrams or black and white photos to illustrate points, such as illustrations of morphological features for diagnosis, the reproductive system and parasitoid lifecycles. It has useful tables, including a glossary of morphological characters, juvenile development times of pest species and parasitoids associated with different species, and figures and graphs reproduced from other publications.

The book treats the Dacini as a whole biological group rather than a collection of a few pest species. As such it covers biology and ecology of non-pest species along with the pests. The group is treated more than just pests to be managed, but a diverse dipteran group worthy of their own ecological and evolutionary studies.

This is a valuable, much needed reference written by Australia's leading fruit fly researcher. As a biosecurity entomologist and fruit fly researcher I know it will be a well-thumbed resource I keep close at hand.

-Reviewed by Jane Royer



End of year Reminders

2020 ESQ Calendars

If you would like to order a 2020 ESQ calendar,
please contact Shannon Close at shannon.close@uq.net.au for details.
Calendars can be posted or picked up at the December meeting.

Membership Renewal 2020

Membership renewals for 2020 are due 1 January 2020. A renewal form is included with this bulletin but the renewal forms are also available on the website http://www.esq.org.au/pdf/Renewal2020.pdf

Please let me know if you have recently changed your postal or email contact details. If you are unsure of your subscription status then please contact me by post or email.

Best wishes for the New Year!

Jessa Thurman, ESQ Treasurer
PO Box 537, Indooroopilly Q 4068
thurmanjh@gmail.com

Submissions now open for:

2020 ESQ Student Award & Small Grant Scheme

Application forms available on the website.

ESQ Student Award ($500):

Are you finishing up your Honours degree this year or did you finish earlier this year? Is your project entomology related? Applications for the $500 student award for 2020 are now being accepted. Deadline is early April 2020. Details will be in the bulletin and on the website. You don't need to be a member to apply. Submission form is available on the Society website at: www.esq.org.au/pdf/studentaward2020.pdf

ESQ Small Grants Scheme (up to $2000):

The small grants scheme is available each year to support entomology related projects up to $2000. Applicants must be members; Projects are to be undertaken in Australia. Projects must be undertaken in the 12 months from July of the year of submission to the following June. Preference is given to stand-alone projects rather than as top ups to existing projects. Proposals must be submitted by May 31st. Submissions will be reviewed, then successful applicants will be notified in June in order to start their project in July. Recipients are required to provide a one page report at the project mid-point; a presentation at a Notes & Exhibits meeting is encouraged but not required. A written summary of research findings and project outcomes is also encouraged.Submission pro forma is available on the Society website at: www.esq.org.au/pdf/SGSaward2020.pdf

Announcements

Queensland Museum Insect Collection closing to visitors and loans 10 December 2019 until October 2020

The Queensland Museum is beginning a program of capital works that will affect the collection areas over the next 18 months. We would like to inform members of arrangements made for QM Entomology visitors and loans during the combined AES 2019 Australian Entomological Society 50th AGM and Scientific Conference, in association with the Society of Australian Systematic Biologists and Australasian Arachnological Society this year in Brisbane 1-4 December. The Queensland Museum is situated an easy 5 min walk from the Brisbane Convention and Entertainment Centre, the venue for this year's conference. https://www.qm.qld.gov.au/Visit+Us/Museum+Location The Welcome function will be held in the Museum on Sunday 1st Dec.

In order to allow as much access as possible we will set up a booking system for visitors to our collection around the time of the conference (preferably Nov. 29 or Dec. 5, 6 and 9). QM Entomology can accommodate up to 6 people at a time. If members are intending to visit the QM collection during this time, we ask that you contact the Curators or Collection Managers (Listed below) as soon as possible with the following information:

- taxa you would like to view
- roughly how much time you think you will need.
- what equipment you need
- dates and times you wish to visit
- likelihood of requiring a loan.

In addition, due to the capital works program, loans will be unavailable after the conference. Preference will be given to those researchers who visit during (or immediately after) the conference and hand carry their material with them. Any loans that have been requested by the end of the conference will be serviced but no more new loan requests will be accepted.

So to sum up at this stage:

Loans open until 9 December 2019 (limited spaces available during conference, weekdays only)

Loans closed 10 December – January 2021 (pending works completion)

Potential interruption to services and access into 2021.

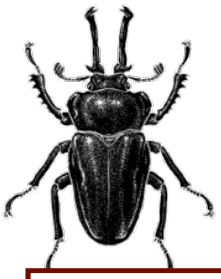
We will still accept loans returns during the entire time and we encourage researchers to assess their current loans and return any material they no longer need as soon as possible. When returning material please also contact Curators or Collection Managers.

Contact details: either direct to Collection Managers or Curators or via entomology.inquiry@qm.qld.gov.au

We will inform members of restrictions as dates are confirmed. In the meantime, if you are planning to visit or require specimens please contact the Entomology team at QM as soon as possible.

The Entomology Team:
Dr Chris Burwell, Dr Christine Lambkin, Susan Wright, Karin Koch.

The Arachnology Team:
Dr Robert Raven, Dr Michael Rix, Dr Owen Seeman, Wendy Hebron



Diary Dates for 2019

Meetings held on the second Tuesday of the respective month

MARCH 12	Mike Muller, ESQ President	AGM and Presidential Address: *"Come in Sucker – A 46-year Journey with Biting Flies"*
APRIL 9	Dr. Phyllis Weintraub (Volcani Institute, Israel)	*"Symbiotic bacteria associated with phytoplasma vector"*
MAY 14	Dr. Nancy Schellhorn (RapidAIM Pty Ltd)	*"The journey to RapidAIM."*
JUNE 11	Notes and Exhibits	Student Award winner and other presentations
AUGUST 13	Dr. Raghu Sathyamurthy (CSIRO)	*"Assessing risk in host-specificity testing for weed biocontrol: juxtaposing scientific and regulatory perspectives*"
SEPTEMBER 10	Susan Wright (Queensland Museum)	"*The Queensland Museum Collection – what we hold and why"*
OCTOBER 8	Perkins Memorial Lecture: Prof. Ary Hoffman (Uni. of Melbourne)	*"Studying the endosymbionts living inside insect cells: from curiosity driven research to disease control (and beyond)"*
NOVEMBER 12	Mark Schutze (QDAF)	*"From past to present: origins and purpose of the Qld. Dept. of Ag. and Fisheries insect collection."*
DECEMBER 10	Notes & Exhibits	Notes and Exhibits/Christmas Afternoon Tea

SOCIETY SUBSCRIPTION RATES

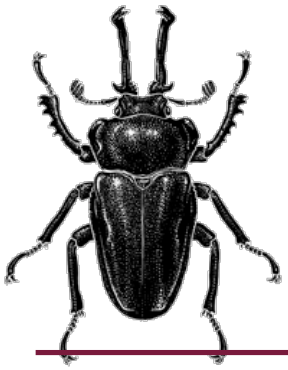
GENERAL	Person who has full membership privileges	**$30pa**
JOINT	Residents in the same household who share a copy of the *News Bulletin*, but each otherwise have full membership privileges.	**$36pa**
STUDENT	Student membership conveys full membership privileges at a reduced rate. **Free the first year**, $18pa subsequent years. Students and others at the discretion of the Society Council.	**$18pa**

ESQ membership subscriptions should be sent to the Treasurer, PO Box 537, Indooroopilly, QLD 4068
http://www.esq.org.au/membership.html

THE *AUSTRALIAN ENTOMOLOGIST* SUBSCRIPTION RATES

AUSTRALIA	Individuals/Institutions	**AU$33pa/AU$37pa**
ASIA/PACIFIC	Individuals/Institutions	**AU$60pa/AU$65pa**
ELSEWHERE	Individuals/Institutions	**AU$65pa/AU$70pa**
ELECTRONIC	Individuals/Institutions	**AU$25pa/AU$30pa**

Journal subscriptions should be sent to the Business Manager, PO Box 537, Indooroopilly QLD 4068
http://www.esq.org.au/publications.html



Entomological Society of Queensland

Notice of next meeting:

Tuesday, 10 December 2019, 3:00 pm

Notes & Exhibits

" Egg laying decision in a generalist moth - threshold, feedback or choice"

Lachlan Jones, PhD Candidate, University of Queensland

" Insects of our New Guinea neighbours"

Jessa Thurman, PhD Candidate, University of Queensland.

"*Pontomyia* revisited: marine flies"

Christine Lambkin, Queensland Museum

"Unraveling *Gonipterus* diversity in Queensland"

Natalia Medeiros de Souza, PhD candidate & 2018 Small Grant Recipient, University of Sunshine Coast

"A moth caterpillar that eats scale insects and lives in green tree ant nests"

Geoff Monteith, Queensland Museum

All welcome! Join us after the meeting for tea and coffee and party food! You are welcome to bring a plate to share.

Ground floor Seminar Room, Ecosciences Precinct, Boggo Road, DUTTON PARK

***More venue details available at* http://www.esq.org.au/events.html**

Next News Bulletin:
Volume 47, Issue 9 (Jan/Feb 2020)

Deadline Wednesday, 29 January 2020.

Send your news/stories/notices to the editor at: k.ebert@uq.edu.au