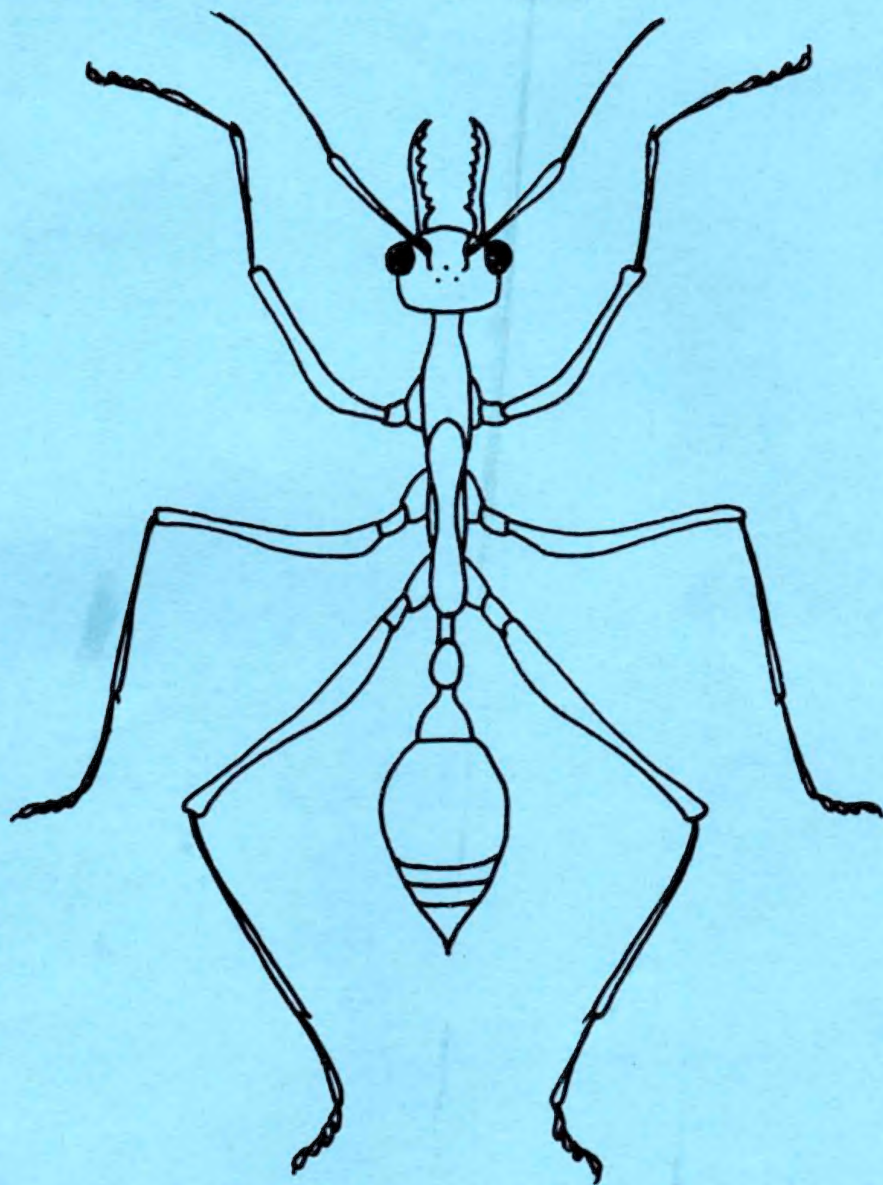


AUSTRALIAN ENTOMOLOGICAL SOCIETY



NEWS BULLETIN

Volume 4, Part 2, May, 1968

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C O N T E N T S

	<u>Page</u>
Office Bearers and Councillors etc.	22
Executive Report	24
Third Annual General Meeting	26
XIVth International Congress of Entomology	26
New members	27
Changes of address	28
Resignations	28
Some aspects of Plant Quarantine	29
News from South Australia	37
News from Tasmania	37
Entomological Society of Victoria	38
Entomological Society of Queensland	39
Entomology Students	39
Bibliography of Australian Entomology	40
Insects records of Papua and New Guinea	40
Movements within Australia	43
Visitors to Papua and New Guinea	43
Visitors to North Queensland	43
Australians going Overseas	44
Appointments	44
The Sciences Club	45
Personal Notes	45

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NEWS BULLETIN FROM INDIVIDUAL MEMBERS OF THE SOCIETY.

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MATERIAL.

Articles, Notes, Letters to the Editor and other material for the
News Bulletin should be sent to the News Bulletin Editor, or to your Regional
Councillor.

REPORT FROM THE EXECUTIVE

Three Executive and three Officers' Meetings were held on 27th February, 28th March and 2nd May, 1968.

Membership. Fifteen new members were elected and three resigned. Membership of the Society was 362 on 2nd May, 1968.

News Bulletin. Vol. 4, Part 1 was posted to members on 20th March, 1968.

Regional Councillor. Membership having reached 80 on 28th March, 1968 N.S.W. became entitled to a second Regional Councillor and after consultation with Mr. J.R.J. French, Councillor for New South Wales, Professor A.F.L. O'Farrell, University of New England was appointed.

Journal. Papers continue to be submitted at a more than encouraging rate in that sufficient papers had already been accepted in March to fill the first number of Volume 7. The Executive has decided that sufficient finance is available to allow an increase in the size of this number to 88 pages including advertisements.

Committees. At its meeting on 27th February the Executive drew up the following "Guide to the formation of Committees". It is not proposed at this stage to present the guide formally as By-Laws.

1. Committees may be appointed for such purposes as the Council, Officers or Executive consider desirable.
2. Appointment shall be by the Executive (in accordance with Cl.21 of the Provisional Constitution). Members shall be notified in writing by the Hon. Secretary of their appointment.
3. Nomination of a member to serve on a Committee may be made by Officers, Councillors or the Convenor of the Committee. In general the Convenor will be consulted before an appointment is made.
4. The Convenor of a Committee shall be appointed by the Executive. He shall act as Chairman of the Committee, shall be responsible to the Executive for activating the Committee and shall report to the Executive on its activities. The Committee may otherwise make its own arrangements, appoint a secretary etc.
5. The Vice President and Hon. Secretary are ex officio members of all Committees (existing By-Law) (Generally

they will not be expected to take an active part, but their membership should be borne in mind in the case of a division of opinions within the Committee).

6. Term of Appointment of a Committee shall be concurrent with that of the Executive which appointed it. Provided that where the Executive is satisfied that the Committee has completed its tasks, or has ceased to function effectively, the Executive may terminate its appointment.
7. Committees or members thereof shall not make statements in the name of the Society, unless authorised to do so by the Executive.
8. Committees or members thereof shall not incur expenses in the name of the Society unless authorised to do so by the Executive.

The following committees were appointed:-

Conservation Committee

Purpose: A watching brief on all aspects of conservation that affect insects, with the particular object of bringing to the notice of the Executive any matters on which it appears that the Society might usefully take action; providing relevant information so that a decision can be made, and where necessary, preparing a documented case for submission by the Executive to the appropriate authority.

Convenor: Mr. J.R.J. French

Members: Mr. L.S. Willan, Mr. M.S. Upton, Mr. R.A. van Baer,
Dr. B.Y. Main, Mr. G.B. Monteith, Mr. T.L. Fenner.

Environmental Quality Committee

Purpose: (1) To consider pollution of the environment by insecticides and to represent the Society in any discussions arising from the Society's proposal to the Academy of Science regarding the formation of a National Advisory Committee on Environmental Quality.

(2) To draw up suggestions for submission to the Commonwealth Statistician on the recording for statistical purposes of import, manufacture and utilisation of pesticides in Australia.

Convenor: Dr. D.F. Waterhouse

Members: Mr. P.W. Hogan
Mr. J.T. Snelson
Dr. G.H.S. Hooper.

XIV International Congress of Entomology.

The Executive asked the Australian Academy of Science to activate the

the Advisory Committee. A report of the first meeting appears elsewhere in this Bulletin. A request has been made to the Secretary of the XIII International Congress to present an exhibit at the Congress consisting of the Society's publications, statistics on Australian entomology and travel information on Australia.

Third Annual General Meeting.

The meeting is to be held in August 1969 in Adelaide in association with ANZAAS. The Executive has appointed the following Organizing Committee. Chairman: Mr. F.G. Gross, Secretary: Mr. P.G. Allen, Committee Members: Mr. G.W. Howard, Mr. A.M. Lucas, Dr. P.W. Miles (Reg. Counc.) Dr. F.D. Morgan and Dr. R.V. Southcott. The Executive has suggested a 2-day meeting on the Saturday and Sunday preceding ANZAAS.

Australian Entomologists.

The Executive hopes to prepare a list of Australian entomologists with their interests and will shortly be sending punch cards to Regional Councillors who, it is hoped, will be able to assist in the preparation of an informative register of entomologists. The register will include non-members.

XIV INTERNATIONAL CONGRESS OF ENTOMOLOGY

The Australian Entomological Society in 1967 requested the Council of the Australian Academy of Science to issue a formal invitation jointly with the Society to the Permanent Committee of International Congresses of Entomology to hold the XIV International Congress of Entomology in Australia in 1972. This invitation should be presented at the XIII Congress in Moscow in August 1968 by the Australian representative on the Permanent Committee, Dr. D.F. Waterhouse.

The Academy has agreed to be joint sponsor with the Society of XIV Congress, subject to the necessary funds being made available by the Commonwealth Government, and it has forwarded a submission regarding this to the Government. The Government has not yet given a decision, but it is hoped that it may do so before August. If not, the invitation can still be issued, but with the qualification that it is dependent on provision of Government financial support.

The Academy Council has appointed an Advisory Committee, with a wide Australian representation, to define the objects and outline the arrangements for the Congress. This Committee will meet only two or three times during the early stages of policy forming. The detailed

arrangements will be in the hands of a small Organising Committee of 3 or 4, to be appointed by the Academy Council.

Members of the Advisory Committee are Professor M.J.D. White, F.A.A., Dr. D.F. Waterhouse, F.A.A., Dr. I.M. Mackerass, F.A.A., Dr. M.F.C. Day, F.A.A., Prof. T.O. Browning, Mr. T.W. Hogan, Mr. C.N. Smithers and Dr. E.N. Marks. Mr. Smithers has been nominated as Congress Secretary. The Committee held its first meeting in Canberra on 24 April, to discuss a general outline of plans, for presentation with the invitation. It decided that the Congress should be held in Canberra in August 1972, and should dovetail with ANZAAS (which will be in Sydney in August 1972); it should last 7-10 days, with a ceiling of 1200 enrolments (ordinary and associate members). Special excursions of 3-5 days would be arranged. Proceedings would be under six broad sections, which could be subdivided as necessary. Papers would not be published except in abstract prior to the meeting

Further progress depends on the decisions of the Permanent Committee and the Commonwealth Government. If these are favourable, it is expected that the Organising Committee will commence activities at an early date, and that the extent to which New Zealand may wish to participate in Congress arrangements will be investigated.

E.N. MARKS.

NEW MEMBERS

Elected by Executive on 27.2.68.

- Mr. R. Sticka, Wattle Road, Crossroads, N.S.W. 2170.
 Mr. M.A. Bhatti, School of Biological Sciences, Department of Zoology,
 University of N.S.W., Kensington, N.S.W. 2033.
 Professor J. Le Gay Brereton, Zoology Department, University of New
 England, Armidale, N.S.W. 2351.
 Mr. C.W. Frazier, Zoology Department, University of New England,
 Armidale, N.S.W. 2351.
 Dr. M.O. Ind, Zoology Department, University of New England,
 Armidale, N.S.W. 2351.
 Mr. J.J. MacQuillan, Zoology Department, University of New England,
 Armidale, N.S.W. 2351.

Mr. Pui Yip So, 56A Begonia Road, Yau Yat Chuen, Kowloon, Hong Kong.

Elected by Executive on 28.3.68.

Mr. M.J. Gaven, 9 Carissa Avenue, St. Ives, N.S.W. 2075.

- Mr. J. Hatchell-Brown, The Willows, Roadside Delivery,
Broadford, Vic. 3658.
- Mr. R.W. Sutherst, Department of Parasitology, Veterinary
School, St. Lucia, Brisbane, Qld. 4067.
- Mr. W.G. Thwaite, Division of Science Services, P.M.B. 10,
Rydalmere, N.S.W. 2116.
- Dr. A. Sibatani, CSIRO, Division of Animal Genetics, P.O.
Box 90, Epping, N.S.W. 2121.
- Mr. J.H. Ardley, William Cooper & Nephews, 53 Phillip Street,
Concord, N.S.W. 2137.

Elected by Executive on 2.5.68.

- Mr. J.J. Davis, P.O. Box 83, Nambour, Qld. 4560.
Mr. K.E. Ey, 119 Wilmington Street, Ayr, Qld. 4807.

CHANGES OF ADDRESS

(State of previous residence is indicated in brackets)

- Mr. J.T. Snelson, Pesticide Coordinator, Department of Primary
Industries, Barton, Canberra, A.C.T. 2600. (NSW)
- Miss S.R. Curtis, Division of Entomology, CSIRO, P.O.
Box 109, Canberra, A.C.T. 2601 (Qld.)
- Mr. D.M. Reeves, Box 1220, G.P.O. Brisbane. Qld. 4001. (Qld.)
- Mrs. S. Spencer (nee Hamlyn), 17 Butler Place, Kamo,
Whangarei, New Zealand. (Qld.)
- Mr. R.A. McLachlan, 5 Kenton Street, Chapel Hill, Qld. 4068. (Qld.)
- Mr. E.M. Reed, 113 Mackenzie Street, Hackett, A.C.T. 2601 (ACT).
- Mr. A.N. Burns, "Carinya", Short Street, Burleigh Heads,
Qld. 4220. (Vic.)
- Mr. A.G.L. Wilson, CSIRO, Div. Land Research, Kimberley
Research Station, Kununurra, W.A. 6743 (ACT).
- Mr. A.N. Johnston, 22A Grovell Street, Chatswood, NSW, 2067. (NSW)
- Mr. A.W. Day, 20 Wills Street, Griffith, A.C.T. 2603. (ACT).
- Mr. J.T. Snelson, 41 Gellibrand Street, Campbell, ACT, 2601 (ACT).
- Mr. G.O. Bedford, U.N./S.P.C. Rhinoceros Beetle Project,
C/- Lowlands Agricultural Experiment Station,
Keravat, via Rabaul, New Guinea. (unallotted)
- Mr. P.E. Madge, Waite Research Institute, Glen
Osmond, S.A. 5064. (W.A.).
- Mr. M.T.K. Wan, Semongak Research Centre, Dept. of
Agriculture, Kuching, Sarawak, East Malaysia. (Qld.)

RESIGNATIONS

- Dr. F.G. Smith, 36 Vincent Street, Nedlands, W.A. 6009.
- Mr. J.A. Baker, Dept. Primary Industries, Caboolture, Qld. 4510.
- Mr. C.F. King, St. John Fisher College, University of Tasmania,
Hobart, Tasmania 7000.

SOME ASPECTS OF PLANT QUARANTINE

By J.R. Morschel

(This paper was read at the second A.G.M. of the Society at Armidale, February, 1968).

Plant Quarantine is an endeavour by legislative procedures to keep out of a defined area such as country, state or region, insect pests and diseases which are not known to be present there and which are assessed to be potentially serious to agricultural, horticultural or forestry industries. Stated concisely like that it gives no indication of the many ramifications and problems associated with plant quarantine. As far as Australia is concerned all the problems associated with plant quarantine have not been resolved. It is no exaggerated statement to say that every day or so a new problem which requires resolution arises.

At the outset it must be emphasised that Plant Quarantine recognises that it must at all times define its policy to suit the practical situation recognising that Australia's trade with overseas countries must go on and that this country cannot cut itself from sources of new genetic plant material as it is developed overseas. Plant Quarantine has as one of its major responsibilities to devise ways and means whereby plant material of various kinds including living plants and seeds, may be introduced without bringing new pests and diseases into the country.

Not with the intention of criticising the authorities involved I propose to look at a couple of cases where insects pests have gained entry before plant quarantine became as well organised as it is today. By having a look at a few case histories it is possible to evolve improved quarantine procedures. One should point out that in plant quarantine one needs to be almost a kind of prophet foreseeing what may be potential serious insect enemies and how and where they may gain entry. There is little point in shutting the gate after the insect has been found in its new environment. Although the Japanese Beetle Popilla japonica has been known to science for more than a century it did not attract attention until it became established in North America.

It is believed that about 1911 the Japanese Beetle entered U.S.A. as larvae in soil around the roots of certain nursery plants, presumably Azalea or Japanese Iris. The Japanese Beetle evidently found not only more favourable environmental conditions in the U.S.A. but also it was not decimated by important natural enemies as it is in Japan. Despite strenuous eradication measures and efforts to prevent the spread of this insect in the eastern states of U.S.A. the infestation increased in extent and became firmly entrenched. In 1960 it was found in a limited area in California and it is believed that this particular infestation has been eradicated through early detection and prompt action.

Khapra Beetle, a native of India, is regarded as the most serious pest of stored products such as grain and seed. The United States expended over \$11 million in attempting to eradicate Khapra Beetle when it was found in

California in 1953. Although complete proof is lacking indications are that the beetle gained entry to U.S.A. in 1946 or earlier in burlap, fish meal or Pistachio nuts from India and established itself in a Californian warehouse. There it was mistaken for the domestic Carpet Beetle, from which its larvae can be differentiated only by an expert.

Military movements, especially during war, can undo in a very short time what quarantine and control programmes have taken years to accomplish. The Hessian troops, that landed at New York during the Revolutionary war, are believed to have brought the Hessian Fly from Southern Europe in their straw bedding. From Long Island, New York, the Hessian Fly has spread right across the North American continent. During World War II the Oriental Fruit Fly Dacus dorsalis was introduced to Hawaii and large sums of money and considerable effort are required to prevent it reaching the mainland of U.S.A.

The Gipsy Moth, Porthetria dispar, was knowingly introduced into Massachusetts by an experimenter in 1869 who was interested in silkworms. The endeavour to confine this pest by quarantine and control measures has cost the U.S.A. government considerable sums of money.

Some principles of plant quarantine

Recognising that the objectives of Plant Quarantine are to prevent the introduction or spread of a pest or disease the establishment of plant quarantine measures should rest on the following fundamental pre-requisites.

1. First and foremost the quarantine measure must be based on sound biological grounds. The pest or pests which the measure is designed to keep out of the country or area must be of such a nature as to offer an expected threat to substantial interests.
2. Quarantine must be established only for the prevention of introduction or the control of a pest or disease and not for the furtherance of trade or the attainment of some other objective.
3. Before a quarantine prohibition or restriction is recommended to the Government the subject requires to be carefully and thoroughly investigated and the advice of competent authorities sought.
4. Quarantine must derive from adequate law and authority and must operate within the provisions of such law. As conditions change or as further facts become available, quarantine should be modified. The obligation to modify quarantine as conditions develop is a continuing one and should have continuing attention.

General administration

The first essential is to survey the situation within the country and outside the country to determine the potential threats. This is a continuing operation and there is plenty of evidence that scores and scores of potential pests have not yet reached our shores. Just a small sample would include:

1. The Cotton Boll Weevil (Anthrenus grandis) which costs U.S.A. \$375 million per year.
2. The European Corn Borer (Pyraustanubilalis) is estimated to cost the U.S.A. 10% of its maize crop each year - a loss of more than 11 million tons.
3. The United States Department of Agriculture has expended over \$11 million in eradication measures against Khapra Beetle.
4. The European House Borer in South Africa has raised the price of all construction timber about \$3 per 100 super feet arising from mandatory treatments.

The administration of plant quarantine does involve some calculating of risk because to provide absolute protection it would be necessary to virtually bring trade to a standstill. Plant quarantine activities infringe on a very wide range of trade activities e.g. import of toys, glass and china, used motor vehicles, just to quote a few unusual items which may have significance to plant quarantine.

Effective quarantine is very dependent upon co-operation. Public authorities such as other interested Departments both Federal and State within Australia and Governments of other countries should be fully informed of quarantine requirements. Special efforts to inform the public should be undertaken. In this field under the guidance of Dr. Harrison, former Director of Plant Quarantine, Australia pioneered Plant Quarantine Publicity as a means of informing the public and soliciting their co-operation. It can be stated that communication is a very important aspect of plant quarantine administration and there needs to be a continuing endeavour to improve communication.

Several quarantine systems are used separately or jointly to prevent the establishment of new plant pests in an area free from them.

1. Inspection at point of entry involves inspection of plant material preferably at the first point of arrival to detect and refuse delivery of anything which may show infestation.
2. Inspection and certification at the point of origin undoubtedly excludes export of obviously infested or infected material.
3. Complete embargoes are not really favoured by Plant Quarantine unless they are absolutely essential.

4. Controlled introduction of plant and plant products is essential. The form of control varies according to the circumstances and takes due cognisance of the quarantine risk involved.

5. Whenever it is practicable quarantine has a responsibility to adopt treatment procedures and the effort to institute new effective treatment procedures needs to be a continuing one. Quarantine in depth involves the adoption of two or more of these procedures for the one item.

Quarantine treatments for insect pests

In addition to surveying and assessing the quarantine risk associated with specific imports of plant material, plant quarantine is charged with the responsibility of searching for, and prescribing treatments which will virtually eliminate the risk of introducing pests and diseases to the country. Once a practical treatment is available, it is a responsibility of plant quarantining to see that provision is made for its implementation.

The principal requirements of a treatment adaptable to plant quarantine are:-

1. It must be virtually 100% effective for the prescribed purpose, be it in control of insect, nematode, virus, disease or devitalising of plants material.
2. It should be applicable on a practical scale under varying conditions.
3. The operation procedure must not be too complicated.
4. Provided reasonable precautions are taken, and recognising that materials used are invariably toxic, the treatment operation should not be over hazardous for operators involved.

Fumigants, that is pesticides which are effective as a gas, are generally preferred for quarantine use because they can form concentrations either within open structures, inside commodities, or in cracks and crevices into which other insecticides penetrate with difficulty or not at all.

There are many chemical compounds which are volatile at ordinary temperatures and sufficiently toxic to fall within the definition of fumigants. In actual practice, however, most gases have been eliminated on account of unfavourable properties, including chemical instability, destructive effect on materials or in some instances high inflammability.

Well known fumigants are toxic to man and ways must be devised for their safe handling under the required conditions of application.

Many of the commonly used fumigants are heavier than air, the notable exception is hydrocyanic acid gas. If a gas heavier than air is introduced into a chamber filled with air and it is not agitated by fans or other means, it will sink to the bottom and form a layer below the air. In good fumigation practice, settling or stratification is not encountered. After a fumigant is vapourised uniform distribution throughout the space is achieved by multiple gas inlets and/or fans or blowers. Once the fumigant gas is thoroughly mixed with the air settling out or stratification of the heavier component takes place very slowly.

Before a constant concentration can be maintained the sorptive capacity of the article being treated must be satisfied and this capacity varies considerably with the article and the fumigant. The term sorption includes both absorption and adsorption.

Although tolerance of a pest to a fumigant is of major concern to plant quarantine, that is whether certain pests survive a specific fumigation, two other categories of tolerance must be considered in selecting a suitable treatment. One is concerned with the reaction of the commodity or article, in particular living plants material to the treatment. The second is chemical residue particularly in edible food commodities.

Methyl bromide

Experience has shown that methyl bromide is a most useful fumigant for plant quarantine purposes. Methyl bromide as a colourless odourless liquid vaporises or boils at the relatively low temperature of 40°F. The colourless methyl bromide gas has exceptional powers of penetration and together with its high toxicity to all stages of animal life make it an ideal fumigant. It is heavier than air, non inflammable and needs to be handled with proper caution.

Practically all plant material is tolerant to methyl bromide fumigation. There are very few cases where plants may be damaged when all proper care is exercised. Methyl bromide used at the correct dosage rate is unlikely to affect the viability of seed.

Application of methyl bromide

In all cases the fumigant should be volatilised before it enters the space to be fumigated. Temperature control within the fumigated space is important in order to obtain effective fumigation and minimise possible damage, especially to living plant material - 70°F is generally considered the optimum but fumigation at higher temperatures at slightly reduced dosage rates can be undertaken with satisfactory results.

Fumigation may be undertaken by two distinct procedures either under atmospheric conditions or under vacuum.

Atmospheric fumigation may be undertaken in a gas tight chamber usually of metal construction or under plant sheets approved because of their gas impervious properties. Plant Quarantine in Australia has adopted a 38 cubic foot metal cylinder which, with the use of 20 mls glass ampoules of methyl bromide, provides an effective and easy method of applying a standard dosage of methyl bromide.

Atmospheric fumigation, particularly of commodities in bulk quantities, is often carried out under plastic sheeting. The most efficient material for covering the stack and enclosing the gas is 0.008 thick polyvinyl chloride plastic sheeting with lamination crossed at 90° to each other. Although this sheeting is very thin it is impervious to methyl bromide gas. For fumigation under sheets special requirements in respect of stacking, gas distribution and circulation are to be observed.

In vacuum fumigation, most of the air is removed before the fumigant is introduced. It is therefore necessary to have a specially constructed chamber, usually made of steel, capable of withstanding external pressures up to one atmosphere. The installation includes a pump to evacuate the chamber in 10 to 15 minutes with an arrangement of valves and pipes for the introduction and exhaustion of the fumigant. The primary objective of vacuum fumigation is to hasten and improve the penetration of the fumigant into the material undergoing treatment and thus kill insects more quickly than under atmospheric fumigation.

Quarantine treatments must be effective

For adoption as mentioned above quarantine treatment must be 100% effective and efficient. Methyl bromide meets the situation admirably but other treatments such as spraying, fogging and dipping have only limited application in quarantine usually as a holding treatment.

Two other treatments should be mentioned. Pressure impregnation of timber with certain fixed water borne preservatives of the metal, (copper ~~and~~ zinc) - chrome - arsenic type with specified minimum retention values have been adopted as recommended treatments for timber components of containers and pallets.

Application of heat finds use in Plant Quarantine. Whereas a fumigant is generally only effective against insect pests, snails, slugs and in some instances nematodes, heat treatment generally has a wider application in that, in addition to the above, disease organisms such as bacteria and fungi are also eliminated. Another application of heat is to devitalise seed. Where an all-round quarantine treatment is required, such as for the treatment of imported second hand jute bags or rice straw mats heat treatment is adopted, i.e. against

insects, diseases, weed seeds.

Disinsection of aircraft

A special treatment procedure relates to the disinsection of aircraft. As aircraft become larger and faster the possibility of introducing hitch hiking insects by means of aircraft becomes more likely.

Some years ago the World Health Organization made a special investigation of aircraft disinsection procedures and accorded Australia the distinction of having one of the most effective procedures.

Immediately upon arrival of the aircraft and prior to disembarkation of the passengers and crew a knock down spray is applied to the cabin and on the flight deck compartments kept closed for a specified period.

Treatment of the cargo and luggage compartments is carried out concurrently and equally thoroughly. The World Health Organization (W.H.O.) recommends aerosol formulations which are specifically manufactured for aircraft disinsection. Formula G651 with the following formulation is accepted as a standard aerosol for this purpose:-

Pyrethrum 25%	4.8%
DDT (72-75 ppi)	2.0%
Isopropyl Myristic	0.16%
Aromatic Solvent	9.04%
Propellant (Freon 11-12)	84.0%

$1\frac{1}{2}$ seconds per 100 cubic feet

While this specially formulated aerosol has not been specifically tested against a wide range of agriculture pests it has been adopted as the most effective currently available insecticidal aerosol. It is certainly far superior to the domestic type of aerosols.

Biological control

Biological control covers a wide field but in plant quarantine it generally relates to an insect parasitising an insect or weed pest.

Biological control is likely to continue to play an important role in pest management. In Australia C.S.I.R.O. and other Government Departments associated with agriculture and forestry are particularly interested in this issue.

Requests to import parasites impose a major responsibility upon plant quarantine. The purpose of handling intentionally imported insects under quarantine conditions is to prevent as far as possible the introduction of any undesirable species of insects or hyperparasites. Evidence needs to be carefully collated to

ensure that the potential parasite is itself not likely to become a pest when released in the local environment.

In order to undertake introductions for biological control work it is necessary to provide adequate and proper quarantine facilities with qualified staff to handle the imports. In order to confirm the habits of newly introduced species and ensure freedom from hyperparasites and disease, it should be bred for at least one generation in quarantine. Only within the last few years it has been recognised that nematodes can be associated with insects including those which may be useful in biological control.

A recent development in the search for phytophagous insects which may be useful for biological control of weeds, has been to conduct the investigation into potential hosts of the species under natural conditions overseas. It is recognised that results obtained by this procedure are far more realistic than forced feeding tests carried out in quarantine after introduction. Whenever practicable this procedure is being encouraged.

Imported insects are generally moved by air in sturdy containers. Quarantine Officers are instructed to handle approved importations of parasites with all urgency so that consignments arrive at destinations as speedily as possible. However it must be stressed that prior approval is essential. Quarantine recognises that considerable sums of money are expended in obtaining perhaps only a few obscure parasites from an out-of-way location and therefore the importing government agency is most anxious to ensure establishment of a colony of the parasite under quarantine.

General

Plant Quarantine under Commonwealth legislation has a major responsibility in keeping out of Australia unwanted pests which could seriously affect the national economy. It cannot afford to remain static and must be ever alert to foresee where risks may arise, and must be ready to adopt new techniques and procedures in the light of developments both in science and trade.

The cost of the Plant Quarantine programme is of the order of \$600,000 a year, a small price to pay for protection when one considers that Australia's export of primary products in 1963-64 earnt more than \$1,800 million and the nation's net farm income for the same period was nearly \$1,200 million.

To be successful plant quarantine needs the active co-operation of the public and the scientific services. In the past

we have enjoyed most helpful co-operation from Entomologists as a group and may this continue in an expanding manner. This co-operation involves constant observing and reporting. Entomologists as a result of their training adopt the habit of discerning insect activity where a layman would never notice it. Early detection is highly desirable if, for some reason or other, a serious insect should slip past the quarantine net.

I make an appeal to you as Entomologists that, in the event of you making any detection, you report it through the Quarterly Reporting Service established a few years ago through the Entomologists Conference. This reporting service assists all Entomologists throughout Australia as well as Quarantine.

NEWS FROM SOUTH AUSTRALIA

A meeting of South Australian members was held at the Waite Institute on April 10, 1968. A recommendation was sent to the Australian Entomological Society to appoint Mr. Gross of the South Australian Museum as chairman, and Mr. P. Allen, Dept. of Agriculture, as secretary of the organising committee for the coming IIIrd Annual General Meeting. The meeting also discussed the possibility of holding regular meetings of local members of the Society, and an ad hoc committee was appointed to report to a later meeting.

Research on red scale

The continuation of research on red scale has been made possible by a grant of \$13,490 from the Commonwealth Development Bank. This is an extension of a grant which the Bank previously made available for the duration of three years. This project is being carried out under the direction of Professor T.O. Browning, by Dr. R.H. Brewer and Dr. Gillian Robertson. Dr. Brewer, who has now accepted a position in the United States of America, intends to resign his present post in June and Mr. J.M. Cullen, who has almost completed his Ph.D. studies in the Department of Entomology, Waite Institute, will take over Dr. Brewer's duties.

Forest Entomology

A day trip was arranged recently for Entomology I and II students at the Waite Institute, in order to see the extensive outbreak of Ips grandicollis in Northern pine forests. The trip included a demonstration of activities of the insect, and students were addressed on the forest/weather relationships by the District Forester.

NEWS FROM TASMANIA

A meeting of the Tasmanian members was held on May 2 and Dr. I.S. Wilson, Senior Lecturer in Zoology, University of Tasmania addressed the meeting with a talk entitled "Electronics in Entomology". The attendance was twelve.

Invitations have been extended to Affiliated Societies e.g. Field Naturalists, Science Teachers, Ornithologists etc., to attend our meetings because of low member numbers.

Mr. K.L. Taylor, Division of Entomology has transferred back to Tasmania.

Professor G.C. Wade, Dean of the Faculty of Agriculture, University of Tasmania is on Sabbatical leave and will visit both Europe and North America on his six month trip abroad.

Dr. J.L. Madden, Division of Entomology, C.S.I.R.O., Hobart, will be attending the XIIIth International Congress. He will visit forest entomology research centres in both North America and Europe and will be away for three months.

ENTOMOLOGICAL SOCIETY OF VICTORIA

After a number of years service at the helm, our President, Mr. Zod-le-Soeuf stepped down, to take a respite and some rest from the position he had so admirably filled. The Society has enjoyed a successful year, with an increase in membership and a big influx of younger enthusiasts who can do nothing but good in our midst.

Normal meetings every second month were augmented by what for better terminology can be called "workshop nights".

These have been held at C.S.I.R.O. Forestry Division where, under the care of Mr. John Beasley and Mr. Doug Howick, the practical side of timber problems were shown and explained to members, coupled with some very good film.

The Plant Quarantine Section was visited on another occasion and under the guidance of Mr. John Barnes, fumigation, steam and heat sterilization, samples and specimens of a variety of groups, including a twenty-drawer collection of insects mostly from overseas, were exhibited.

These work shop nights were appreciated and more of these will be planned for the future.

This year appears to be one of travel, for on their way overseas or to go soon are Mr. Doug Howick, Mr. Arthur Neboiss, and our president, Mr. John Barnes, we wish them all "Bon voyage".

Speakers and their subjects for 1967-68:-

Mr. John O'Brien - Deputy Chief Chemist, Dept. of Agriculture
(Six Months around Australia).

Mr. Peter Smith - Virologist, Dept. of Agriculture

(Insect Vectors an aid to virus spread).

Mr. Peter Holbeach - Entomologist, Fisheries & Wildlife Dept.
(Ant Lions)

Mr. Ian Lelliot - Entomologist, Forest Commission of Victoria
(Sirex Parasites and their Breeding Problems)

Dr. George Etterschank - Monash University
(The Desert Ant)

MEETINGS OF THE ENTOMOLOGICAL SOCIETY OF QUEENSLAND

Meetings are held in the Department of Entomology, University of Queensland, at 8 p.m. on the second Monday of each month (except January and February) unless special circumstances necessitate an alteration of date or time. Notes and exhibits, especially from country members, are welcomed and arrangements can be made for their presentation.

The following meetings have been held since the beginning of the year:

March (11/3/68). The Annual General Meeting - Dr. G.H.S. Hooper gave his Presidential address on "The Current Status of Insecticide Resistance in Australia" and the following officers were elected for 1968:

President: Miss E.M. Exley
Senior Vice-President: Dr. K.L.S. Harley; Junior Vice-President:
Dr. G.H.S. Hooper.
Hon. Secretary: Mr. G.B. Monteith; Hon. Treasurer: Mr. H. Burton
Councillors: Dr. R.H. Wharton, Mr. B. Willson, Dr. G. Bennett,
Mr. G.W. Saunders.
Hon. Auditor: Mr. J.P.T. Mackay

April (8/4/68). Eric G. Matthews, University of Puerto Rico, gave an illustrated address on "The Behaviour of Dung Beetles".

ENTOMOLOGY STUDENTS

Universities in New South Wales currently have the following numbers of students engaged in entomological studies.

<u>University of New South Wales:</u>	Ph.D. -	3
	M.Sc. (part time)-	3
	Hons. Grad. -	2
	Undergraduate -	17
<u>Sydney University:</u>	Post Graduates -	3
	Under Graduates -	6

University of New England:

Post Graduate - 2.

A BIBLIOGRAPHY OF AUSTRALIAN ENTOMOLOGY

A.D. Musgrave's Bibliography of Australian Entomology, 1775-1930, published in Sydney in 1932, has proved an invaluable reference for Australian entomologists.

Since 1930 there has been a tremendous expansion in entomology, in both experimental and taxonomic fields, and a continuation of this bibliographic record is strongly to be recommended. It is understood that Musgrave's records for his Bibliography from 1931 up to the time of his death have been deposited with the National Library in Canberra, in the form of a typed copy of his record cards. This can be photocopied, but the cost of reproducing one copy running to 490-500 pages of foolscap is prohibitive.

It is suggested that the Australian Entomological Society consider publishing the remaining section of Musgrave's Bibliography.

H.M. BROOKES

A LIST OF NEW OR INTERESTING INSECT RECORDS IN THE TERRITORY OF PAPUA AND NEW GUINEA FOR THE YEAR ENDING 31ST MARCH, 1968.

(from Entomology Section, D.A.S.F.)

New Records

Agrotis munda Walk. (Lepidoptera:Noctuidae) - adult collected from aircraft ex Sydney and Brisbane, Port Moresby, October, 1967. Identified by Mr. I.F.B. Common).

Anthribidae (gen. et sp. ?) (Coleoptera) - infesting dried shrimps ex Singapore, collected Port Moresby 9.XI.1967 (sent to C.I.E.).

Caryedon gonagra (F.) (Coleoptera:Bruchidae) - adults reared from larvae infesting seed of Cassia bakeriana received from Thailand, April, 1967. Quarantine interception, seed destroyed.

Lyphia sp. (Coleoptera:Tenebrionidae) - found boring in bamboo stems at Brown River, May, 1967. Collected by G.F. Moss (C.S.I.R.O. Division of Building Research) who is studying bamboo as a low-cost building material.

Microlarinus lypriformis (Woll.) (Coleoptera:Curculionidae).

Adults received from Hawaii in April, 1967 and released directly into the field in three areas in the Port Moresby area, Central District, are now well established on Tribulus cistoides, the puncture vine. Tribulus in the release areas continues to show signs of regression.

Teleonemia scrupulosa Stal. (Hemiptera:Tingidae). Adults and nymphs observed defoliating lantana (Lantana camara), Wewak, April, 1967. Damage to plants severe. This is the first Territory record of the establishment of T. scrupulosa. Nymphs and adults had been previously introduced to Finschhafen from Fiji in 1959, but they failed to establish. The source of the present Wewak establishment is not known.

Strumeta tryoni (Frogg.) (Diptera:Tephritidae). Adults bred from infested nectarines ex Sydney and tomatoes ex Sydney. The infested fruits were being carried concealed in hand luggage and were detected at Port Moresby (February).

New Economic Records

Adoxophyes, sp. nov. (Lepidoptera:Tortricidae) - bred from larvae feeding on Camellia sinensis, Konedobu, August - September 1967.

Agrotis ipsilon (Boisd.) (Lepidoptera:Noctuidae) - Larvae caused serious damage to spring onions at Taliligap, New Britain, during early August, 1967.

Brevipalpus californicus (Banks) (Acarina:Tenuipalpidae) - adults and nymphs caused moderate leaf damage to tea (Camellia sinensis) in parts of the Wahgi Valley, Western Highlands District, during July-September, 1967. Adults and nymphs were widely distributed throughout the tea growing areas in the Whagi Valley, February 1968.

Crioceris sp. ? bakewelli Bailey (Coleoptera:Crioceridae) - adults and larvae feeding on foliage of yam (Dioscorea sp.), Port Moresby, April 1967.

Helopeltis clavifer Walk. (Hemiptera:Miridae) - adults feeding on shoots of Flemingia congesta, Bisianumu, Central District, November 1967.

Hemitarsonemus latus Banks (Acarina:Tarsonemidae) - a heavy infestation developed on experimental tea seedlings in a glasshouse, Port Moresby, July 1967.

Longitarsus ? sp. nov. (Coleoptera:Alticidae) - dense populations caused severe defoliation of tea seedlings in a nursery at Pugamp, Western Highlands District, March 1967.

Locusta migratoria L. (Orthoptera:Acridiidae) - solitary adults reported from Goodenough Island, Milne Bay District, March 1968.

Lyctus sp. ? brunneus (Steph.) (Coleoptera:Lyctidae) - boring in seasoned timber of Myristica sp., Goroka, Eastern Highlands, 1967.

Papuana woodlarkiana (Montr) (Coleoptera:Dynastidae) - Adults damaged 8-month old

seedling oil palms (Elaeis guineensis). At Murua, Guld District by chewing into the bases of the plants, which were growing in large polythene bags. In June 1967, 4 percent had been killed and a further 20 per cent stunted to varying degrees. Similar damage was also noted on a small proportion of seedlings in nurseries at Hoskins and Keravat, New Britain; Buin and Aropa, Bougainville; and Kavieng, New Ireland, but specimens were not collected from these localities. Other Papuana spp. may also be involved.

Papuana sp. (Coleoptera: Dynastidae) - Adult feeding in tuber of Solanum tuberosum, Mount Hagen, Western Highlands, November 1967.

Planococcus citri (Risso) (Hemiptera: Coccidae) - Adults and nymphs feeding on Flemingia congesta and apparently causing leaf and shoot malformation, Bisianumu, Central District, November 1967.

Psyllidae, gen. nov. (Hemiptera). Adults and nymphs infesting seedings of Eucalyptus deglupta, Togoba, Western Highlands, August 1967.

Pyralidae (gen. et sp. ?) (Lepidoptera) - Bred from larvae feeding in galls on leaves of Eugenia sp. ('lau-lau'), Kavieng, New Ireland, 1968 (March).

Scolytidae (gen. et sp. ?) (Coleoptera) - Boring in Casuarina sp. and apparently causing death of some trees, Wandu area, Chimbu District, November 1967. (Sent to C.I.E.)

Scolytidae (gen. et sp. ?) - Boring in Mundulea sericea, Saiho, Northern District, March 1968. (Sent to C.I.E.)

Selenothrips rubriocinctus (Giard.) (Thripidae) - caused severe to complete defoliation of several 15-month old cashew trees (Anacardium occidentale) in a planting of four acres at Bereina, Central District, in June 1967.

Spodoptera litura (F.) (Lepidoptera: Noctuidae) - First and second instar larvae feeding on young oil palm (Elaeis guineensis) fronds in seedling nursery, New Britain, March 1968.

Taenaris myops kirschi (Stgr.) (Lepidoptera: Amathusiidae) - Adults were bred from larvae feeding on foliage of coconut (Cocos nucifera) at Kapogere, Central District, April 1967.

Tetraneura nigriabdominalis (Sas.) (Hemiptera: Aphididae) - Adults and nymphs feeding on roots of pangola grass (Digitaria decumbens) at Keravat, New Britain, February 1968.

Zeuzera sp. (Cossidae) - larva boring in trunk of young Grevillea robusta, Mount Hagen, Western Highlands, March 1968.

MOVEMENTS WITHIN AUSTRALIA

Mr. I.F.B. Common and Mr. M.S. Upton have just returned from a two-month collecting trip in south-western Australia. This yielded some 20,000 Lepidoptera and many other insects for the Australian National Insect Collection.

VISITORS TO THE TERRITORY OF PAPUA AND NEW GUINEA

Dr. and Mrs. J. Zarzycki, 6 Boulevard Kellermann, Paris, France, spent a month in the Territory from late February. Dr. Zarzycki collected Lepidoptera at Iae, Wau and surrounding areas. He was especially interested in species of Ornithoptera.

Dr. L. Gressitt and Professor T.C. Mae, Entomology Department, Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A., arrived in the Territory early in April to carry out field work during April and May. Dr. Gressitt will be mainly concerned with Coleoptera, while Professor Mae will work on parasitic Diptera.

Dr. F. Bianchi, Chief Entomologist, Hawaiian Sugar Planter's Association arrived in the Territory early in April. He will spend approximately eight months in the Territory looking for new parasites and predators of the sugar cane weevil, Rhabdoscelis obscurus (Boisd.). He will also be looking at the parasite and predator complex of the noctuid stem borer Sesamia grisescens Walk.

Mr. G.O. Bedford, Insect Ecologist (Project Area), U.N./S.P.C. Rhinoceros Beetle Project has been posted to the Territory for a period of 12-18 months, with headquarters at the Lowlands Agricultural Experiment Station, D.A.S.F., Keravat, New Britain.

VISITORS TO NORTH QUEENSLAND, 1968.

Jan. 9-15. Mr. E.E. Adams (Edungalba, C.Q.) joined me at Mt. Spec (Paluma) for our fifth annual collecting trip to this area. Due to last years drought, the eucalypts were late in flowering and blossom beetles were scarce. "Light" collecting was very limited due to rain every night.

Roderick Dobson, of the Channel Islands, was also in this area for part of our time. He was collecting Odonata for the A.N.I.C. We were able to present him with a Petalura sp. that he was seeking.

Feb. 20. Mr. T.L. Fenner (T.P. & N.G.) spent a few days in the area on his way home from the Armidale Conference.

Mar. 12. Mr. and Mrs. Allan Ey of the Ayr Museum (Tourist Attraction) visited the district on a short collecting trip. It had been their intention to spend several weeks in this area during February, but the record floods disrupted their programme.

Mar. 25. Mr. Jack Macqueen (Toowoomba) and Dr. John Kerr (Brisbane) spent some time in the district on a Lepidoptera collecting trip. Collecting conditions were poor but they reported collecting a new race of "Skipper" at Mareeba.

J.G. BROOKS

AUSTRALIANS GOING OVERSEAS

Mr. M.M.H. Wallace leaves in June for an extended visit to India, Europe and north Africa to continue his studies on the biological control of the Lucerne Flea and other pests. Partial support for his work in France will be provided by a Technical Cooperation Scholarship of the Australian French Association of Technical and Professional Specialists. Mr. Wallace will also attend the International Congress of Entomology at Moscow.

Dr. R.W. Taylor leaves this month to spend six months in Asia, Europe and Africa. He will spend two months collecting ants in Malaysia, attend the International Congress of Entomology in Moscow, and then study ant material in a number of European museums. Several of these museums have generously agreed that some of the Australian paratypes in their care should be transferred to the National Insect Collection and Dr. Taylor will devote much of his effort to sorting, packing and shipping this material. He will return to Australia via Africa.

Professor T.O. Browning has arrived in Paris where he will spend some months working in the Laboratoire de Biologie Animale of Professor Germaine Cousin, Universite de Paris. He has been appointed "professeur d'echange" and will be giving a few seminars while there.

Professor A.F. O'Farrell will be attending the International Congress of Entomology in Moscow. He will deliver a paper and a film on Odonata.

APPOINTMENTS

STAFF APPOINTMENT - DEPARTMENT OF AGRICULTURE, STOCK AND FISHERIES, TERRITORY OF PAPUA AND NEW GUINEA.

Dr. C.S. Li, entomologist now stationed at Darwin with the Northern Territory Administration, has been seconded to the Territory. Dr. Li has been working in the Northern Territory for the past seven years, specialising in insect pests of rice.

Dr. Li will be stationed at the Plant Industry Centre, Bubia, just out of Lae. He will be working on mite pests of tea and also insect pests of rice and sugar cane.

DEPARTMENT OF AGRICULTURE, N.S.W.

Mr. John Hamilton is no longer working on Argentine Ants and is now at the Department of Agriculture, Rydalmere.

Mr. Graham Thwaite who graduated in Agricultural Science from the University of Sydney, has joined the Department of Agriculture, Rydalmere.

APPOINTMENT AT LA TROBE UNIVERSITY

Dr. I.W.B. Thornton has taken up his appointment to a Chair in the Department of Biological Sciences at La Trobe University. Professor Thornton was previously at Hong Kong University; his research interests lie in the study of the Psocoptera and of butterfly genetics.

AUSTRALIAN MUSEUM BUTTERFLY COLLECTION

Mr. John Peters has been seconded to the Australian Museum Entomology Department from the New South Wales Education Department. He is engaged in rehousing and rearranging the Museum butterfly collection, the nucleus of which is the Waterhouse material. The collection will be arranged in new standard cabinets so that expansion and study will be facilitated.

APPOINTMENT AT AUSTRALIAN MUSEUM

Mr. Michael Gray is expected to take up an appointment as Assistant Curator (Arachnids) at the Australian Museum, Sydney, in early June.

"SCIENCES CLUB, CLUNIES ROSS HOUSE, NATIONAL SCIENCE CENTRE"

"An extraordinary meeting of Foundation Members of the Sciences Club was held at the Club premises (under construction), Clunies Ross House, National Science Centre, 191 Royal Parade, Parkville, Vic. - 3052 on 11th December, 1967. Approximately 500 people attended and a Club Committee with Mr. J.E. Cummins as President and Mr. J.A. Roberts, Secretary-Treasurer was elected. Members interested in joining the Club should submit their applications to the Secretary-Treasurer at the above address".

PERSONAL NOTES

Dr. Pat Marks, has been appointed to the Executive of the Australian Conservation Foundation.

Dr. George Ettershank, Department of Zoology and Comparative Physiology, Monash University, Melbourne, returned in January from a seven weeks overseas trip visiting centres in U.S.S.R. and U.S.A. He spent one month lecturing at the Leningrad State University on techniques for the study of energy flow in soil

living invertebrates, and visited several laboratories around Leningrad and the Institute of Animal Morphology at Moscow. He found research workers at Leningrad very friendly and anxious to make contact with Australian Entomologists. He was impressed with the depth of the course given to students particularly the broad outlines covered and the degree of detail and techniques that were acquired. However the standard of facilities for teaching and research were disappointing.

He returned via the U.S.A. visiting centres at Harvard and Cornell, and the California State College at Fullerton, at which centres discussions were held on ants and collections made.

Dr. G.J. Shanahan, is acting as Chief Entomologist, Department of Agriculture in view of Mr. G. Pasfield's overseas trip.

Mr. J.C. Gellatley, is acting as Senior Entomologist, Department of Agriculture, Rydalmere.

Mr. G.J. Snowball, C.S.I.R.O. Entomology Division, Biological Control Unit, has been appointed as coordinator under the International Biological Programme for the South Pacific.

