

INTERNATIONAL ORGANIZATION FOR BIOLOGICAL CONTROL
of noxious animals and plants

Newsletter No. 2

December 1972

This Newsletter contains reports on the 6th General Assembly held in Canberra in August 1972 during which and at the associated meeting of IOBC Council various matters were aired and decisions as to future developments taken. Several of the matters discussed are reflected in items in this Newsletter - for example, the list of sources of natural enemy material at present available.

There has been comparatively little response to the request in the last Newsletter for items of interest to be included in this issue - the apparent preponderance of news emanating from CIBC sources is entirely due to the fact that this information was sent in for inclusion.

Report of the Secretary-General on the meetings of the Executive Committee and of the Council during the 14th International Congress of Entomology
(Canberra, 20 to 30 August 1972)

1. Two meetings of the Executive Committee were held at Ursula College on 20 and 21 August. Participating in these meetings: V. Delucchi, C.B. Huffaker, F.J. Simmonds and F. Wilson. Three sessions of the Council took place at the Haydon-Allen Building and at Ursula College on 24, 28 and 29 August. Participating in the Council sessions: F.D. Bennett (WHRS), E. Biliotti (EC), L. Brader (WPRS), P. Cochereau (PRS), R. Delattre (TARS), V. Delucchi (EC), C.B. Huffaker (EC), F.J. Simmonds (EC), F. Wilson (EC), and K. Yasumatsu (SEARS). The main purpose of the two Executive Committee meetings and of the first Council session was to finalize an agenda for the 6th General Assembly (25 August 1972) and to discuss the financial situation of the Organization; the last two Council sessions were devoted to discussions on actions which the Organization should take during the forthcoming months. In addition to the aforementioned meetings there were numerous contacts between Council members and between these and members of the Organization.

6th General Assembly

2. It was decided to publish the report on the 6th General Assembly in the next Newsletter of the Central Organization, which should be distributed before the end of the year. At the General Assembly, which was held in the Copland Building in Canberra, reports by the Secretary General, the Treasurer, the leaders of the five Regional Sections and a presidential statement were presented.
3. The possibility of modifying the name of the Organization to include a reference to integrated control (International Organization of Biological and Integrated Control (IOBIC)) was raised at the General Assembly and different IOBC members held opposite opinions. It was subsequently decided by the Council to request from IOBC members three statements in favour of changing the name

of the Organization and three statements against it, to distribute the statements to all members of the Organization and seek their opinion by postal ballot. Statements in favour will be requested from R.F. Smith and R. van den Bosch, K. Yasumatsu, and L. Brader and V. Delucchi; statements against will be requested from P. DeBach, D. Rosen and T.V. Bourke. The postal ballot should be organized in 1973.

4. IOBC members will meet again during the 15th International Congress of Entomology, which will be held in Washington, D.C., in 1976.

Membership fee

5. Although the individual membership fee of US \$10 (or equivalent) is inadequate and does not even cover the price of one copy of Entomophaga, the Council decided to maintain it at the present level until 1973 (incl.). Payment of the fee will be requested in Swiss Francs preferably and to be made direct to the IOBC bank account at Delémont or to Regional Section Treasurers. Beginning from 1974 the fee for individual members should be Swiss Francs 50 (fifty) or equivalent in other currencies. The Treasurer will prepare and distribute a note explaining the reasons for the increase.
6. The payment of the fee for a given year has to be requested by the Treasurer of the Central Organization and by the Treasurers of the Regional Sections before the end of the preceding year. The main reason for this is that the publisher of Entomophaga has to be provided at the latest by the end of February with the list of addresses of the members entitled to receive the journal.
7. For certain members it is difficult to pay their fee in foreign hard currencies. This concerns members in some developing countries and in particular has been mentioned by those in Peru and Bangla Desh. Although it appears of particular importance for the Organization to gain new members from these countries, the Council felt that problems of this nature cannot be solved by the Central Organization and should be left to the Regional Sections, as has already been done with good results in several cases.

Regional Sections

8. The South and East Asian Regional Section was definitely approved on August 28, 1972. The Statutes of the Section will soon be deposited in the archives of the Central Organization and distributed to the Section's members.
9. The Council decided to limit the African Section to the tropical regions and to name it "Tropical African Regional Section" (TARS) (French: Section Région d'Afrique Tropicale, SRAT). South African countries are, therefore, not included in the Section; their members will be attached for the moment to the Central Organization..

Entomophaga and Newsletters

10. There was no report by the Publication ad hoc Committee to be considered at Council meeting. However, a proposal was made to include on the cover of, and in addition to, "Entomophaga" the subtitle "a journal of biological and integrated control". The Council decided to hold this in abeyance until the results of the postal ballot concerning the modification of the name of the Organization (point three of this report) have been obtained.
11. In order to improve the quality of the Newsletters it was decided to type the text on stencils in Bangalore (India) and to duplicate them in Zurich (Switzerland). The stencilled pages will be included in a cover.

Publicity

12. There is a need for a small brochure on the aims, the structure and the activities of the Organization. The Council suggested that the Executive members of IOBC be charged with the preparation of this brochure. The President of IOBC accepted the coordination of the work. The brochure will be printed in English. The WPRS will investigate the possibility of having the brochure translated and printed in French. Decision on this will be made at WPRS Sectional Council meeting of next November.

Establishment of ad hoc Committees and Working Groups

13. Information retrieval system: At present, several institutions appear to be interested in the establishment of a storage and retrieval system for bibliography on Entomology and more specifically on biological control. None of the interested institutions seems, however, to be in a position to establish such a system and to provide lists of bibliographical references on request, mainly because of the finance involved. The Council felt that efforts should be pooled together in order to accelerate the setting up of a storage and retrieval system for the benefit of biological control research workers. It decided, therefore, to establish an ad hoc Committee to explore this possibility and designated following persons as members: R. Foote (USDA), E.I. Schlinger and P. Rausch (University of California), B. Hurpin (INRA, France), R. Lagièrè (IRCT, France), and R.G. Fennah (CIE, London). R. Foote should act as Chairman of the Committee.
14. Microbial control: The Council suggested establishing an ad hoc Committee on microbial control to institute possible Working Groups, to search for additional IOBC members among pathologists and also for possible supporting members. The Committee should consist of C. Ignoffo (USDA), K. Aizawa (Japan) and C. Ferron (INRA, France). C. Ignoffo should act as Chairman of the Committee.
15. Integrated control: The Council proposed to create an ad hoc Committee on integrated control (incl. plant resistance and cultural

practices) and to include following members: M. Way (UK), H. Mori (Japan), R. Delattre (IRCT), and P.L. Adkisson (US). M. Way should act as Chairman of the Committee. The role of the Committee should essentially be to institute Working Groups.

16. Taxonomic problems are of primary importance in biological control and should be considered by an ad hoc Committee consisting of four members, i.e. D. Rosen (Israel), R.I. Sailer (USDA), T. Tachikawa (Japan), and V. Delucchi (Switzerland). D. Rosen should act as Chairman of the Committee. The role of the Committee should be to define the taxonomic problems in relation to biological control and indicate action to be taken.
17. To foster the exchange of natural enemies the Council proposed to prepare an inventory of the cultures available in the world and to publish it periodically in the IOBC Newsletters. V.P. Rao was designated as responsible for the preparation of the inventory.
18. The Working Group biological control of borers of graminaceous crops of the WPRS has been operating for several years on a world-wide basis. The Council decided to integrate it in the Central Organization as an ad hoc Committee with F.D. Bennett as Chairman, and J. Brenière and J. van Dinter as members. The Council then agreed on the establishment of a Working Group on the integrated control of *Diatraea* species under the supervision of the ad hoc Committee and with the collaboration of A.G. Mangelsdorf, plant breeder, Honolulu.

Relationship with international organizations

19. It was reemphasized that it is the task of the Central Organization to establish relationships with international organizations. However, to simplify procedures, it was suggested that this be restricted to UN Agencies, like FAO, WHO, IAEA, etc. and their regional offices. The Secretaries of the Regional Sections are requested to send to the Secretary General of IOBC copies of their correspondence with other international organizations.
20. The Council agreed on the transfer of the IBP Working Groups to IOBC by the end of 1974, provided that some funds are available for their activity from sources other than IOBC. The Chairman of the IBP biological control theme (Section UM) has already proposed that royalties derived from the IBP volume on biological control (Cambridge University Press) be partly transferred to IOBC to finance the IBP WGs activity. If this proposal is accepted, funds might then be sufficient for the IBP WGs to conclude their activity within a reasonable period.
21. The FAO Conference on the Ecological basis to pest control, which will take place in Rome from 11 to 16 December 1972, will be represented by two IOBC members, i.e. V. Delucchi and L. Brader. Other IOBC Council members, as F.J. Simmonds, E. Bilicetti, G. Mathys and R. Delattre, will attend the Conference as representatives of their institutions.

22. A Symposium on Biological Control of Weeds will be held in France in 1973. The Symposium is organized by an informal group of entomologists, most of whom are members of IOBC. The Council decided to invite the group to hold the Symposium under the auspices of IOBC and to join IOBC as an ad hoc Committee on biological control of weeds.
23. The Organization has been requested to contribute financially to the 15th International Colloquium of Insect Pathology combined with the 6th International Meeting of the Society for Invertebrate Pathology to be held in the UK in 1973. Although the Organization is very interested in these Colloquia and meetings and has provided funds in the past, the Council regretfully has to refuse the request owing to the precarious financial situation of the Organization.
24. IOBC has proposed to the Steering Committee for the First International Congress of Ecology, to be held in the Netherlands in 1974, the organization of a Symposium on "The role of naturally occurring biological control in natural ecosystems" during an afternoon session of the Congress. The Council was informed in Canberra that during the ecology congress emphasis will be given to fundamental aspects of the movements of material and energy flow through ecosystems (like Carbon flow or Nitrogen cycle) rather than to population dynamics. Under these conditions the participation of IOBC has to be reconsidered at a later stage, when more details on the Congress are available.

Other business

25. The Council considered the request from Dr. J. MacBain Cameron, Sault Ste. Marie, Ontario, regarding IOBC policy on the question of registration of pathogens and of the legislation concerning the movement of biological control agents, incl. parasites, predators and pathogens (letter of 26 July 1972). Although the Council is in sympathy with the different points raised, it was felt that the problem is too complicated to be dealt with by an Organization like IOBC.

Treasurer's statement

This is a brief summary of the report presented at the 6th General Assembly.

Unfortunately, since the fixing of the subscription rates, the U.S. dollar had been devalued relative to most currencies, and hence the \$10 individual membership fee was actually insufficient to cover the cost of production of Entomophaga, let alone provide any funds whatever for either the running of IOBC or for any other activities. Institutional and supporting members were, not unnaturally, few at the outset, and the only additional funds provided was a small subvention of \$201.50 from IUBS - the balance remaining from the funds provided by IUBS for the Rome meeting at which the global IOBC was developed.

Further, for each individual subscription of US \$10 there was a disproportionately large bank charge when depositing this in a Swiss franc account, and there was also a varying exchange rate. Hence in future, where possible, it would be preferable if all subscriptions were paid as the Swiss franc equivalent (40 Sw.fr.).

Thanks are due to the organizations which provide gratis incidental administration services to the President, Secretary General, Treasurer etc., as this minimized running costs.

The number of individual members joining in the first 8 months since the inception of IOBC (141 + 307 WHRS) was quite encouraging, although financially of no benefit to IOBC, as these subscriptions were absorbed by Entomophaga and in addition incurred fairly high bank charges.

In 1971 there was one supporting member and 10 institutional members from WHRS, 29 institutional members from WPRS, 9 from CIBC and 5 others (totalling 53 institutional, 1 supporting). These have provided the main operative capital of IOBC in 1971 but there was very little expenditure for which this was needed.

The balance sheet shows a credit balance at December 31st of Swiss francs 15,207.30, but this is deceptive as only \$3070 had been paid to Librairie Le François for Entomophaga of the \$4910 due on account of the subscriptions actually received in 1971.

The accounts for 1971 are appended. For simplicity and accuracy I have kept separate payments and receipts made in dollars and Swiss francs, although all credits to the IOBC bank account have, of course, been converted to Swiss francs, in which currency our year-end balance is shown.

The Accounts Verification Panel (Drs. Hagen, Messenger and Schlinger) to whom these accounts have been submitted state "We have studied the Balance Sheet for 1971 and the Estimate of Income for 1972, together with the report of the Treasurer for 1971. We find the numerical accounts explicit and correctly totalled, and accurately reflected in the report."

A very tentative budget has been drawn up for 1972 and this is also appended. (Appendix I, Balance Sheet for 1971; Appendix II, Estimates for 1972).

I may add some pertinent remarks as to the financial aspects up to July 31st 1972.

With Regional Sections formed and membership fees being collected by these for ultimate transmission to the global body of IOBC it is difficult at any date to tell exactly how membership is developing, but members have been late in paying 1972 dues. Hopefully reminders in both Newsletters 1 and 2 will bring in more subscriptions. We may possibly, from a financial point of view, particularly, record a special thanks to the International Center

for Biological Control and the Rincon-Vitova Insectaries Inc.

The fluctuations of currencies still provide a head-ache, and consideration should be given to paying the subscriptions in Swiss francs (at previous dollar par of approximately Sw.fr. 4 = \$1.00 US) i.e. Sw.fr. 40 - for individual, 200 - for institutional and 2000 or more for supporting - with possible later increase in line with generally rising costs.

With regard to estimated expenditure in 1972 with such a limited budget (even with funds provided expressly by IUBS to assist the meeting of Council in Canberra) little development can be planned in which expenditure is involved until we have some financial reserves, which, hopefully we may be able to develop in 1973.

(Please turn to pages 8 and 9 for
Appendices I and II)

Appendix I

Balance sheet - I.O.B.C. as on December 31, 1971

Receipt	Currency		Payment	Currency	
	US \$	Sw.fr.		US \$	Sw.fr.
<u>Subscriptions received for I.O.B.C.</u>					
By 141 Individual members of \$ 10	1410 -		To Le Francois for	3070	***
By 28 Institutional members of \$50	1400 -		<u>Entomophaga</u>		
By subscription from WHRS	890 -**		To Wolti-Furrer A.G.	99.80	
" " "	3070 -***		Zurich		
By subvention from IUBS -	800 -		Balance on hand	3700 -	760.31*
1971 (\$201.50)					
By Bank interest from May 25 to		60.11			
December 31, 1971					
(15 subscriptions from WPRS and					
several individual subscriptions					
not paid till 1972)					
	Total	6770 -		6770 -	860.11

* Dollars put into Swiss franc account at different dates and differing rates of exchange and also with bank charges deducted.

Total cash balance in bank as on December 31, 1971.

** Balance of 10 (x \$40) Institutional members, 1 (x \$490) Supporting member.

*** 307 Subscriptions to Entomophaga (i.e., 296 Individual members plus the 10 institutional and 1 supporting member).

Appendix II

Rough Estimates for 1972

Probable receipts	US \$	Probable expenditure	US \$
Balance brought forward (Sw.fr. 15,207.80)	Jan. 1, 1972 3800.00	<u>Entomophaga</u> 1971 bills not paid until 1972	1100.00
Balance of 15 Institutional subscriptions from WPRS	750.00	<u>Entomophaga</u> - 562 of \$10	5620.00
Individual membership 500 of \$10	5000.00	Executive Council meeting - Paris- March 1972	450.00
Institutional members Estimate - 60 of \$ 50	3000.00	Newsletters - 2 x 350	700.00
Supporting members - 2 of \$500 (Total members - 562)	1000.00	Secretarial services	600.00
IUBS Subventions	(a) 1250.00 (b) 2000.00	Material and postage	1000.00
		Fares for Council members for meeting at Congress in Australia	4500.00
		Eventualities	200.00
		Balance at December 31, 1972	2630.00
Total	16800.00		16800.00

Identification Centre of IOBC/OILB

In Newsletter No. 1 reference was made to the work of the Commission on Taxonomy of Entomophagous Insects of the West Palaearctic Regional Section of IOBC. The address of the Identification Centre is:

Dr. C. Besuchet,
Identification Centre of IOBC/OILB,
Museum d'Histoire Naturelle,
1211 GENEVE 6,
Switzerland

Oxford Symposium on Increasing the Biological Contribution to the Control of Pests and Diseases

The Proceedings of this Symposium are being published by Blackwell Scientific Publications Ltd., Oxford, and the title of the book will be "Biology in Pest and Disease Control". Dr. D. Price Jones and Mr. M.E. Solomon are the Editors.

Request for Pteromalini

M.C. Miller, Dept. of Entomology, Univ. of Georgia, Athens, Georgia 30601, U.S.A.

Dr. Miller would like to receive species of *Tetrastichus*, *Nasonia*, *Peridesmia*, and *Zatropis* of the Pteromalidae (at least 12 specimens in 95% alcohol without glycerine). He would like specimens of Pteromalini from any source.

Information Request on Parasites/Predators of *Phylloxera devastatrix*

M.F. Schuster, Dept. of Entomology, Mississippi State Univ., P.O. Drawer EM, State College, Mississippi, U.S.A.

Anyone with information on parasites or predators of *P. devastatrix* Pergande on pecan or hickory is invited to correspond with Dr. Schuster.

First Record of *Entomophthora grylli* in Argentina

I.S. de Crouzel, Inst. de Patología Vegetal, (INTA), Castelar, Argentina

The fungus *Entomophthora grylli* Fresenius is reported for the first time on various tucuras in Argentina. This pathogenic fungus was found ex *Dichroplus elongatus*, *D. pratensis* and *D. punctulatus* on the following host plants: *Conyza bonariensis* var. *microcephala*, *Agropyron elongatus* and *Brassica* sp. (Fresa, R. 1971 R I A, INTA serie Pat. Veg. VIII (2): 83-88).

Biological Control of Citrus Pests in El Salvador

Jose R. Quezada

Several armored scales and other Coccids occur on citrus in El Salvador. The most severe armored scale is *Unaspis citri* (snow scale). Other species attain dangerous populations only after chemical treatments directed against *U. citri*. Native natural enemies seem unable to control the scale. Species of *Signiphora*, *Aphytis*, and *Aspidiotiphagus* have been reared from it. An attempt is being made to introduce the predatory ladybeetle *Telsimia* sp. from Fiji, but two shipments, so far, have failed because of the predators dying in transit. Once we succeed in bringing the scale under control, the rest of species can be managed more easily.

Another species is the citrus blackfly, *Aleurocanthus woglumi* Ash. Apparently, it was introduced four years ago, and we have been studying its dispersion for two years. Species of *Chrysopa*, and *Delphastus* seem important, as well as the pathogenic fungus *Aschersomia aleyrodis*. In July, 1971, we released about 3000 *Prospaltella* sp. imported from Mexico. The release site, a four-acre orchard surrounded by coffee plantations, was heavily infested, and was completely cleaned in about four months. Recovered parasites are now being released in other areas in an attempt to control the citrus blackfly.

Paulinia established on Lake Kariba

Dr. D.J.W. Rose, Dept. of Zoology, University of Rhodesia, Salisbury, Rhodesia reports as follows:

I have just (September, 1972) returned from Lake Kariba where the grasshopper *Paulinia couminata* is well established in the three release zones. Both the Trinidad and Uruguay strains are doing well. They are numerous wherever new growth is expanding over shallow water. Estimates of densities by quadrats and by marking recapture methods give estimates of 3-4 *Paulinia* per square metre. As this is the beginning of the summer the populations may greatly increase this year. About 20-30% leaves are damaged in these areas.

C.I.B.C. Reprint List

A list of reprints of papers and some of the reports by members and former members of staff of the Commonwealth Institute of Biological Control is available and can be had on request from the Entomologist-in-charge, C.I.B.C. Indian Station, P.O. Box 603, Bangalore 560006, India. The C.I.B.C. Annual Reports give a list of all reports produced and papers published each year. The report for 1971 is available on request from the C.I.B.C. Indian Station, and those for 1968-1970 from the Entomologist-in-charge, C.I.B.C. Pakistan Station, Murree Road, P.O. Box 8, Rawalpindi, Pakistan.

Progress towards integrated pest control under glass in the United Kingdom

Resistance of *Tetranychus urticae* to acaricides in the 1950's stimulated research to rationalise its control. The discovery of *Phytoseiulus persimilis* by Dosse in 1960 enabled biological control to be exploited and subsequently integrated with chemicals.

To-day limited pest management systems are in commercial use, and co-operative research between the firms producing natural enemies and the Glasshouse Crops Research Institute (GCRI) is being encouraged. At the GCRI integrated control programmes, considered to be commercially practicable, are being developed. These are tested on nurseries by the Ministry of Agriculture's Advisory Service (ADAS). Co-operation with various university departments extends fundamental knowledge of specific pest/natural enemy interactions - especially their ecological relationships, both with each other and with pesticides.

The research programme is orientated to four crops, cucumbers, tomatoes, chrysanthemums and mushrooms.

Integrated control of cucumber pests is already practised commercially. The pests are first evenly introduced throughout the crop with material supplied by two commercial firms who also produce natural enemies for the control of red spider mite *T. urticae* and the greenhouse white-fly *Trialeurodes vaporariorum*. These biological control techniques are integrated with the chemical control of thrips, aphids and cucumber powdery mildew. Co-operative investigations with universities are concerned with the ecological and behavioural consequences of pesticide use on the above mentioned organisms. The potential of aphidophagous Cecids, Chrysopids, Coccinellids, and the parasite *Aphelinus flavipes* are also being investigated to limit damage caused by *Aphis gossypii* (*franguli*) on cucumbers should this species become resistant to pirimicarb.

Practical recommendations for the integrated control of tomato pests have not yet been formulated, but techniques for manipulating *Phytoseiulus/T. urticae* and *Encarsia/T. vaporariorum* are being tested on a field scale. Further studies are in progress to integrate the control of the tomato leaf-miner *Lixiomyza solani* with these.

Successful biological control programmes have been developed for *Myzus persicae* and *T. urticae* on chrysanthemums but commercial use is limited by the many hitherto minor pests that then become troublesome. GCRI and University Departments are investigating both parasites and chemicals for limitation of leaf-miner (*Phytomyza syngenesiae*) populations. Control of the aphids, *Brachycaudus helichrysi* and *Macrosiphoniella sanborni*, by parasites, predators and/or selective pesticides are also under investigation.

Recently initiated basic studies include the potential of

pathogens (fungi, bacteria and viruses), for aphid and caterpillar control, while an intensive programme is under way to develop techniques for sciarid and phorid flies in mushroom farms using entomophilic nematodes.

The glasshouse environment, like an incubator, is ideal for the manipulation of pest natural enemy complexes, and so permits fairly rapid progress towards integrated control. Preliminary commercial experience suggests that the methods are relatively cheap to apply and provide an additional bonus through increased production following the reduction of intensive pesticide programmes which are themselves phytotoxic to "soft" glasshouse plants.

(Dr. N.W. Hussey, Glasshouse Crops Research Institute, Rustington, Sussex, England)

Establishment of a promising parasite of *Selenaspidus articulatus* in Peru

Selenaspidus articulatus is a major pest of citrus in Peru and is also important in parts of the Caribbean but in East Africa, where it is believed to have originated, it is usually very rare. The CIBC was requested by the Peruvian Government to investigate its natural enemies with a view to biological control. No specific natural enemies were found in Trinidad by the West Indian Station. Following this a search was made in the Kampala area of Uganda by the East African Station. The scale was found on robusta coffee at a rate of less than one per tree. Parasites were reared which were identified by Dr. D.P. Annecke as *Aphytis* (two) spp., *Aspidiotiphagus* sp., and *Habrolepis rouxi*. Their numbers were too low to obtain material for shipment and no success was achieved in attempts to culture the scale. Fortunately, a small outbreak was found on a *Ficus* sp. tree at Naivasha, Kenya. Two shipments of infested leaves were sent to Peru in November and December 1971, which yielded *Aphytis* sp. and *H. rouxi*. Ing. O. Beingolea succeeded in culturing the *Aphytis* sp. and began releases in February 1972. He reports that the parasite is now well established and showing signs of being able to exert control.

Attempts are being made to obtain further material of *H. rouxi*, from *S. articulatus*, for shipment as it is expected that if established this internal parasite will complement the external *Aphytis* sp.

Brazil has a new centre for biological control

A new Centre for Biological Control of Insects and Weeds has been established at the Agricultural School of the University of Sao Paulo in Piracicaba, S. Paulo. This is operated by the Department of Entomology with the following objectives: (1) multiplication of native predators and parasites of insect pests and weeds, (2) introduction of predators and parasites from other locations to study the possibility of their use in the region, (3) to study

economic ways of mass producing natural enemies to be released in the field, (4) to do exploratory field work to determine which parasites and predators are to be found attacking a pest species, and last but not least (5) to integrate the use of biotic agents with insecticide applications (when necessary) in such a way as to maintain as many of the beneficial biotic agents as possible after the chemical treatment is made.

Four projects are already underway, they are: (1) Three parasitic flies of a sugarcane borer are being reared for field releases and to be distributed to interested sugarcane groups. (2) Three hymenopterous parasites of the Cedar or Mahogany shoot borer are being reared. These parasites were supplied by the Commonwealth Institute of Biological Control, West Indian Station, Trinidad. (3) A second parasite of the Rhodesgrass scale has recently been introduced to handle a problem area along the coast in Brazil. This was introduced from Hawaii where it was collected and forwarded to us by the Hawaiian Department of Agriculture. (4) A survey is being conducted to determine the parasites and predators of the pineapple mealybug in Sao Paulo.

Brazil Entomology Meeting

A national meeting of entomologists was held at Uruguea, Bahia, Brazil, from February 21 through 25. This was sponsored by CEPLAC (Executive Commission for Cacao Rehabilitation in Brazil). The meeting was attended by some 50 entomologists from all parts of the country.

Papers were presented on all phases of entomology, however, the majority of the 80 papers were in the following categories: vegetable crops, cacao, sugarcane, cotton, peanuts and tropical crops. Ten of these papers were in the field of acarology.

A new entomological society was formed at this meeting. The new society will be called "Sociedade Entomologica do Brazil". The officers are:

President:	Dr. Pedroto Silve (CEPLAC, Itabuna, Bahia)
Vice-President:	Dr. Jose Alberto H. Freise (UNIVERSIDADE FEDERAL DE VICOSA, Minas Gerais)
1st Secretary:	Dr. Joao Manuel de Abreu (CEPLAC, Itabuna, Bahia)
2nd Secretary:	Dr. Jose Oscar Comas de Lima (UNIVERSIDADE FEDERAL DE VICOSA, Minas Gerais)

The five counsellors for the new society are:

Dr. Oswaldo Giannotti, Instituto Biologico, Sao Paulo.

Dr. Carlos Jorge Rossetto, Instituto Agronomico, Campinas, Sao Paulo.

Dr. Mario Bezerra de Carvalho, UNIVERSIDADE FEDERAL DE PERNAMBUCO, Recife, Pernambuco.

Dr. Father Jesus S. Moure, UNIVERSIDADE FEDERAL DO PARANA, Curitiba, Parana.

Dr. Elpidio Amante, INSTITUTO BIOLOGICO, Sao Paulo.

The "Sociedade" is open to members from outside Brazil. Those wishing to join and receive the annual publication should send a cheque for US\$8.00 to Dr. Roger N. Williams, OSU/ESALQ Contract, c/o American Consulate General/Sao Paulo, APO New York 09676. Dr. Carlos Flechtmann, ESALQ, Universidade de Sao Paulo, Piracicaba, S.P. is the editor of the new publication which will be entitled, "Anais da Sociedade Entomologica do Brazil".

FAO Conference on Ecology

Proceedings of the FAO Conference on Ecology (11-16, December, 1972) are expected to be published by the FAO. Those interested in receiving this publication and also the Proceedings of the FAO Conference on Integrated Control (6-8, December, 1972) may please send their names and addresses to the Secretary, IOBC.

Information on some possibility for biological control

In connection with the lists being prepared both by IOBC, and by WHRS (see items from the Regional Section Newsletters), of sources of various natural enemies which are available for use elsewhere, CIBC has prepared a memorandum on some possibilities for biological control indicating some of the problems where this may be promising, areas and countries where control might be of interest, areas where work has been or might be carried out, and CIBC stations where material could be obtained. This is based mainly on recent work carried out by CIBC and enquiries it has received. The list is by no means comprehensive, and it is often difficult to put all relevant data into concise tabular form. However, for what it is worth this list, of some 100 insect and weed pests, is now available from the CIBC Pakistan Station, P.O. Box 8, Rawalpindi, Pakistan, and will be supplied on request.

If demand warrants then further lists will be drawn up for similar distribution in the future, but it would help considerably if recipients would make suggestions for improvement of presentation and enquire about pest of particular interest to them. Moreover, if individuals will send in similar suggestions based on their own work, these can be incorporated in future lists.

Obituary

Two well-known entomologists, Dr. W.R. Thompson and Dr. T.H.C. Taylor, who were outstanding in the field of biological control, died in the first half of this year.

Dr. W.R. Thompson, F.R.S.

Dr. Thompson died on 30th January, 1972 at the age of 84. After a distinguished academic career he served as Entomologist, United States Department of Agriculture, 1909-1913 and 1919-1928; Bacteriologist, Royal Navy 1915-1919; Assistant Director, Imperial Institute of Entomology 1928-47; Director, Imperial Parasite Service the name of which was subsequently changed to the Commonwealth Institute of Biological Control (1947-58), from which post he retired. He was made an F.R.S. in 1933, F.R.S. (Canada) 1949; Hon. Member Prof., Institute of the Civil Service of Canada 1949; Corresponding Member National Academy of Bordeaux; Laureat Société Entomologique de France (Prix Passet); Past President, Aquinas Society; Editor, Canadian Entomologist, 1947-58; President, 10th International Congress of Entomology, 1956; Distinguished Visiting Prof., Michigan State University, 1959; Hon. Fellow of the Royal Ent. Soc. London 1957; Hon. Fellow of the Royal Irish Academy; Hon. Member of the Ent. Soc. Canada; Medal: University of Bordeaux and National Academy of Bordeaux; Doctorate honoris causa Bordeaux; D.Sc. hon. causa Carleton. First Harry Scott Smith Award 1967.

He had a long and distinguished career in entomology and in biological control, in the more scientific study of which he was one of the early pioneers, as he was also in the field of the mathematical theory of population growth in connection with parasite-host relationships and their bearing on biological control. He also did considerable research in the taxonomy and systematics of Tachinids. During his work in the U.S.D.A. he did extensive work on the natural enemies of the gypsy-moth and European corn-borer, and as Assistant Director of the (now) Commonwealth Institute of Entomology and Director of the C.I.B.C. (and its forerunners) was responsible for extensive development of biological control work, in the earlier years particularly in Europe for Canada, New Zealand and Australia, and later, with the establishment of C.I.B.C. stations in the West Indies, India, Pakistan, Argentina and California, as well as in Europe, of similar work on a very much broader basis. In addition to work on practical biological control problems, Dr. Thompson initiated the production of the "Catalogue of the Parasites and Predators of Insect Pests", a list with references to records from the literature. Some 15 volumes of this were published prior to Dr. Thompson's retirement.

With his death entomology has lost a world-renowned personality whose impact in the field of biological control will be of lasting academic and economic value.

Dr. T.H.C. Taylor

Dr. Taylor was a pioneer of the biological control of insects and helped in the eradication of several serious insect pests in Fiji in the 1920's. In 1935 he went to Uganda as a Government Entomologist, where he will be long remembered for his work on cotton pests, for which he was awarded a D.Sc. degree in 1937. In 1944 he

returned to England to join the Commonwealth Institute of Entomology, and became Assistant Director in 1946. In 1953, at the invitation of Sir Boris Uvanov, he joined the Anti-Locust Research Centre as Deputy Director and in 1959 succeeded Uvanov as Director. He retired prematurely in 1962 because of increasing ill health, but remained as Editor to the ALRC and to the new organization which succeeded it, the Centre for Overseas Pest Research, until his death on 14th April, 1972 at the age of 70.

He was well known in international entomological circles and was Technical Consultant to the U.N. Food and Agriculture Organization and to all the international locust control organizations.
