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## PROPOSALS FOR THE IOBC EXECUTIVE COMMITTEE 1976 - 1980

The Executive Committee of IOBC met in Rawalpindi, Pakistan, at the Station of the Commonwealth Institute of Biological Control, 24 and 25 October 1975 and finalized the slate of candidates who will be proposed for the Executive Committee 1976-1980 at the next General Assembly (August 1976). The candidates are: E. Billotti (President), C.B. Huffaker (Past-President), F.J. Simmonds and C. Ignoffo (Vice-Presidents), G. Mathys (Secretary-General), V. Delucchi (Treasurer).

The Secretary-General

### MEMBERSHIP FEE

Members of IOBC should request their bank to indicate their name on the credit advice to the Swiss Bank Corporation at Delémont, Switzerland, when payment of the annual membership fee is made. During 1975 the IOBC treasury has received several fees which could not be credited. Often a member uses the services of a bank which is located in a different country and the name of the paying bank is therefore of little help. When the treasury doesn't know the name of the payer, the journal *Entomophaga* cannot be ordered and this situation creates misunderstandings between members and the Organization.

The Secretary-General

### WEST PALAEARCTIC REGIONAL SECTION (WPRS)

#### Pesticides and beneficial arthropods

It is well known that the side-effect of pesticides on entomophaga (= beneficial arthropods) has been greatly neglected in the past. In spite of numerous single studies on this subject and of the overwhelming evidence that pest resurgence occurs as a consequence of the elimination of predatory and parasitic arthropods, no general and official action has been taken to study toxicity of pesticides to entomophagous organisms. The situation will only improve if side-effects of pesticides will be officially tested as part of the protocol for registration. In order to do this, standardized test methods have to be accepted. The use of key entomophagous arthropods and the acknowledgement of results of such tests also from other countries will facilitate this work.

Now the first step in the right direction has been done: the Biologische Bundesanstalt für Land-und Forstwirtschaft (Federal Biological Research Institute for Agriculture and Forestry) in the Federal Republic of Germany has accepted as (voluntary) part of pesticide registration some standard tests on the effect of pesticides on 3 entomophagous insects (*Trichogramma*, *Coccygomimus*,

1) HERFS, W. (1975) *Die Zulassung von Pflanzenschutzmitteln mit Nutzarthropoden schonenden Eigenschaften sowie die für die Zulassung erforderlichen Voraussetzungen in der Bundesrepublik Deutschland*. - *Nachrichtenbl. Deutsch. Pflanzenschutzl. Braunschweig*, 27, 152-155.

2) FRANZ, J.M. (1975) *Pesticides and beneficial Arthropods*. - *WPRS Bulletin 1975/1*, 147-152.

*Phygadeuon*) 1). These three parasitic Hymenoptera are of economic importance and are available in permanent rearings. Laboratory tests examine initial contact toxicity and evaluate not for mortality, but for reduction of the rate of parasitization. A field test concerns the situation in an apple tree. The details of the principles of standard tests had been worked out during the past years, first in a German working party, later on in a joint international (IOBC-WPRS) working group «Pesticides and beneficial arthropods» 2). So far, 24 experts of European countries (WPRS-members) have agreed to work on guide-lines for standard tests on 31 species of entomophagous arthropods. This complementary test, geared from the beginning at an international cooperation, will lead to an enlarged basis for a correct assessment of the total impact of pesticides as it is needed for an effective implementation of integrated crop protection. In the same time, such official tests will provide the pesticide industry with a unique chance to get acknowledgement for selectivity of their products. A symposium on this subject will be held at the XV International Congress of Entomology in Washington (Section Biological Control).

J.M. Franz, Inst. f. Biologische  
Schädlingsbekämpfung, B.B.A.  
61 Darmstadt, F.R.G.

### WG on Microbial control of Gypsy moth (from SIP Newsletter 7, 1975)

The Working Group on Microbial Control of the Gypsy Moth, established in 1969 by the WPRS/IOBC, conducted a symposium at the International Congress of Plant Protection in Moscow. The Working Group has been primarily active in the production and use of viruses against *Porthetria dispar* in central and western Europe (cf. report in «Plant Protection (Beograd)», 124-125, XXIV, 1973). Dr. L. Vasilievic (Beograd), moderator, and Dr. P. Grison (Paris) reported the Working Group's intention to broaden its activities to (1) describing and analyzing gypsy moth outbreaks and virus epizootics among ecosystems which differ greatly (e.g., North Africa, Spain, Corsica, Sardinia, and Yugoslavia) and (2) stimulating cooperation in an enlarged joint (West-East) Working Group relevant particularly for countries such as Rumania, Bulgaria, and the Soviet Union. A meeting of this Working Group was proposed for the Autumn of 1976 in Rumania, where a common plan will be worked out to increase successful virus application, as well as other types of biological control techniques and silvicultural procedures, based on a better insight into the environmental conditions in the whole area of distribution of the pest, including non-outbreak zones.

J.M. Franz (same address as above)

### TOWARDS THE ESTABLISHMENT OF AN EAST PALAEARCTIC REGIONAL SECTION ?

On August 25, 1975, at the VIII International Congress of Plant Protection in Moscow, a meeting was held to finalize preparation for the foundation of EPRS/IOBC. Under the chairmanship of Dr. J. N. Fedayev (Moscow), delegations from Bulgaria, the German Democratic Republic, Hungary, Poland, Rumania, and Czechoslovakia expressed their interest in membership in the organization. Simultaneous translation by Congress interpreters was provided for the meeting,

which was conducted in the Russian language. Drafts of statutes for EPRS-IOBC had been distributed the day before the meeting and will need official approval. The Secretariat of EPRS will be in Moscow. Microbial control activities will be organized under a «Commission for Microbial and Genetical Methods». Cooperation with non-member institutes was emphasized.

## WESTERN HEMISPHERE REGIONAL SECTION (WHRS)

### Notes from Mexico

In June of 1975 the Biological Control Section of the National Institute of Agricultural Research in Mexico received from the University of Maryland a few shipments of *Pediobius foveolatus*, a parasitic species native to India. Research is being conducted on the possibilities of establishing this parasite for the biological control of the bean beetle, *Epilachna varivestis* Muls. in Mexico.

The III Symposium on Agricultural Parasitology in Mexico was held in the City of Guanajuato, November 5 through 8, 1975. The Symposium included a Round Table on the Biological Control of Insect Pests programs conducted in Mexico by federal agencies.

Dr. Jose L. Carillo S.  
National Institute of Agricultural Research, Chapingo, Mexico

### Biological control in Nicaragua

Dr. Gladys León, member of the Project of Technical Assistance for Cotton in Nicaragua, has been studying the incidence of *Heterolaccus grandis*, an important parasite of the bollweevil, *Anthonomus grandis*. The ectoparasite occurs in the dry season in cotton stalks, killing the larvae and pupae of the weevil in numbers up to 60%.

Observations made by the Nicaraguan Cotton Experimental Station at Posoltega and the Project of Technical Assistance for Cotton indicate that an effective fungal disease of the nymphs of the whitefly, *Bemisia tabaci*, is occurring naturally in Nicaragua. The fungi is suspected to be *Aschersonia*.

The use of *Trichogramma* is increasing yearly in Nicaragua. Inoculative releases are made in the early cotton growing season to increase the effectiveness of native *Trichogramma*, against cotton leafworm and bollworms. During the 1975 season more than 300 million egg parasites were released in the Nicaraguan cotton fields. It is expected that about a billion *Trichogramma* will be used in this country in 1976.

Dr. Mario Vaughan  
Banco Nacional de Nicaragua  
Managua, Nicaragua

### Parasite established

A. E. Bustillo of Instituto Colombiano Agropecuario (ICA), Medellín, Colombia, S. A., and A. T. Drooz of the Forestry Sciences Lab., Research Triangle Park, N. C. report the establishment of the scelionid *Telenomus alsophilae* on a defoliator of pine and cypress, the geometrid *Oxydia trychiata* in the Department of Antioquia, Colombia, at about 6° N. latitude. The source of the parasite was northwestern Virginia, about 39° N. latitude, from the hardwood defoliator, *Alsophila pometaria*. Specimens of the parasite were determined by Paul M. Marsh,

Systematic Entomology Laboratory, U. S. Department of Agriculture.

### WHRS Membership fee 1976

By this time all \$ 24 individual members as well as institutional and supporting memberships should have received Issues No. 1 and 2 of *Entomophaga* for 1975. Issues No. 3 and 4 are expected to arrive shortly. If you have not received either of the first two issues, please notify Dr. George E. Allen, University of Florida, Department of Entomology, 345 Archer Rd. Lab, Gainesville, Florida, 32611.

Dues notices for 1976 memberships and applications were mailed in January. New membership dues for 1976 are as follows:

Individual member (without <i>Entomophaga</i> )	\$ 10.00
Individual member (with <i>Entomophaga</i> )	27.00
Institutional membership	250.00
Supporting membership	1000.00

Total membership in the WHRS for 1975 in each of the categories was as follows:

Individual membership (\$7)	102
Individual membership (\$24)	89
Supporting membership	1
Institutional membership	9

G. E. Allen,

## PACIFIC REGIONAL SECTION (PRS)

### Plant hopper and tussock moth in the Solomon Islands

Studies on *Cyrtorhinus* spp. against brown plant hopper (BPH) on rice in the Solomon Islands show continued successful control when predator and host can be kept in balance.

Nearly 1,000 acres of rice have been harvested with minimum use of sprays. It was found necessary to spray against an armyworm and a leafroller, upsetting the balance between *Cyrtorhinus* and BPH, so that the problem now amounts to finding alternative sprays that will not harm the *Cyrtorhinus*. *Bacillus thuringiensis* has worked well in the laboratory but has not yet been tried in the field by aerial application. Testing for varieties of rice with resistance to BPH continues, in cooperation with the International Rice Research Institute.

An outbreak of a tussock moth (*Laelia venosa* Moore) in oil palms caused some anxiety but careful monitoring of the populations led to a recommendation of no action as the eggs were heavily parasitized by *Trichogramma* and the larvae by *Apanteles*.

As in the rice problem, if spraying is necessary it must be with a product which does not harm the parasites. *Bacillus thuringiensis* has been found effective against the larvae even when in the larger stages. The outbreak reported covered approximately 200 hectares, so spraying would not be lightly undertaken.

J. H. Stapley,  
Ministry of Agriculture and Lands,  
Honiara, S.I.

### Biological control of the Rhinoceros beetle in Samoa

The virus *Rhabdionvirus oryctes* is being used in Samoa to combat the rhinoceros beetle

*Oryctes rhinoceros*, a serious pest of coconut palms. Because of the inaccessibility of breeding sites in the jungle underbrush, control of this pest had been difficult. In 1976 the virus was introduced into Western Samoa using artificial breeding sites.

When adults are inoculated with a proper dose of virus, a chronic infection sets in. The virus multiplies in the gut epithelium, leaving muscles, nerves and other tissues unaffected for 2-3 months. Feeding stops and a «virus diarrhea» develops. The beetles become flying virus factories, disseminating the disease that has become an effective autocidal control method. This virus, together with the fungus *Metarrhizium anisopliae* and proper plantation sanitation, will be used in the integrated control program for rhinoceros beetle in Samoa.

(Abstracted from «Biological Control of the Rhinoceros Beetle in Samoa», K. J. Marshall, Proc. Conf. on Plant Protection in Tropical and Subtropical Areas. Manila, Philippines, November 1974).

## CIBC NEWS

### CIBC work under USA Public Law 480 Grants

At the Commonwealth Institute of Biological Control, Pakistan Station, work on a number of projects has been carried out since 1960 with U.S.A. PL 480 grants. These include forest, crop and orchard pests and weeds.

Studies have been made on the biology, ecology and natural enemies of: *Adelges* and *Pineus* on conifers; wood-wasps of the family Siricidae, sawflies (*Gilpinia*, *Nematus melanaspis* and *Priophorus*), conifer cone-insects (*Dioryctria abietella*, etc.) and various leaf- and bud-destroyers in high altitude forests; forage and grain legume aphids (*Acyrtosiphon pisum* (Harris), *Aphis craccivora* Koch and *Therioaphis trifolii* Monell); green peach-aphid (*Myzus persicae*) (Sulz.); several species of scale-insects, fruitflies (*Dacus* etc.) and mites; corn-borers (*Chilo partellus* (Swinh.) and *Sesamia*); rice-borers (*Tryporyza incertulas* (Walk.) and *Sesamia*); Pentatomids attacking weedy and cultivated graminaceous plants; many species of grasshoppers and of dung-breeding flies.

Investigations on the pink bollworm *Pectinophora gossypiella* (Saund.); on various aphids attacking Gramineae; Coccinellid predators of scale-insects; grasshoppers; the cone-borers, *D. abietella* and *E. pylonitis*, and the sawflies *Gilpinia* and of their natural enemies are continuing.

Work on a number of weeds, for example *Carduus nutans*, *Cuscuta*, *Cyperus rotundus*, *Halogeton glomeratus*, *Myriophyllum*, *Striga*, *Xanthium strumarium* has been carried out. At present, natural enemies of *Hydrilla verticillata*, *Arceuthobium*, *Amaranthus*, *Abutilon*, *Rumex*, *Sorghum halepense*, *Tamarix*, *Cannabis* and *Papaver* are being studied. A number of specific natural enemies of various weeds have been recorded.

As a direct result of this work *Coleophora parthenica* Meyr. has been established against *Sa'sola iberica* following its introduction into California in 1973 and it promises to be of considerable value against tumble-weed there. Recently it has been sent to Canada.

A number of shipments of material for trial have been sent to the U.S. authorities following these investigations. In addition, the following the information obtained in

these studies, a number of natural enemies have been sent to other countries:- **Adelges** predators have been sent to Canada, those of **Pinus** to East Africa, and Hawaii and to the European Station for trials against **Adelges** in Europe. Sawfly parasites have been sent to the European Station for laboratory studies for Canada; those of **Dacus** spp. and **Saissetia oleae** to France in connection with an FAO project in Greece, and those of **Dacus** spp. to Mauritius and Zambia; those of aphids to New Zealand; natural enemies of different scales to Bermuda, the Cook Islands, Saudi Arabia, South Africa, Trinidad and the Bahamas; those of **P. gossypiella** and grasshoppers to Barbados, **Cuscuta** natural enemies have been sent to Barbados and the Bahamas; those of **Cyperus rotundus** to Barbados, Tonga and the Cook Islands.

Thus from these PL 480 sponsored investigations there have been results of benefit to a number of countries in various parts of the world.

Inquiries concerning the availability and possible supply of natural enemies of these insect and weed pests would be most welcome.

F.J. Simmonds, CIBC

### Puncture-vine

**Microlarinus laeeynii** and **M. lypriformis** (Curculionidae) have been successfully used in the biological control of **Tribulus terrestris** in the USA and other areas. CIBC is now carrying out a survey for additional natural enemies of puncture vine in areas around Bangalore, India.

### Biotrop-CIBC project

In collaboration with CIBC, BIOTROP (Regional Centre for Tropical Biology) has started work on a new project for biological control of aquatic weeds, primarily **Eichhornia crassipes** and **Salvinia molesta**, in Indonesia. Dr. R.A. Syed, CIBC Entomologist, is now stationed at BIOTROP, P.O. Box 17, Bogor, Indonesia (Information on BIOTROP in INTECOL Newsletter of December 1975).

### ICI Plant Protection Division / CIBC cooperation

Some experiments have been started in Pakistan to test the effects, if any, of various insecticides on the natural enemies and the control they exert on aphids attacking the oil-seed crucifer (**Brassica campestris**) and the subsequent effects on yields. Such a cooperative project could be the start of very interesting collaboration between a predominantly chemical insecticide company and an organisation devoted to biological control. Following this work at the Pakistan Station it is hoped to develop similar work there in connection with aphids on cotton, work at the West Indian Station to carry out investigations on the effect on natural enemies in general when certain insecticides are applied against the yellow aphid, **Sipha flava**, on sugar cane; and possibly some in connection with natural enemies of temperate climate orchard pests, this to be carried out at the European Station.

Such collaboration is an ideal way of obtaining accurate advance information as to the possible side-effects of the application of apparently most promising insecticides for the control of various pests.

F. J. Simmonds, CIBC

### Preliminary survey of the natural enemies of *Cinara* sp. (Aphididae) and of poison ivy in Florida for Bermuda

The Commonwealth Institute of Biological Control was commissioned by the Bermuda Department of Agriculture to search for natural enemies of the aphid **Cinara fresae**, a pest of **Juniperus bermudiana**, and of poison ivy **Rhus toxicodendron**. Accordingly, a reconnaissance visit was paid to Florida to carry out our preliminary field work and to consult local entomologists.

As no aphids were encountered on **Juniperus** spp. collections were made on **Pinus** spp. Aphids were very scarce on these but evidence of heavy parasitism was noted. Two primary parasites **Pauesia bicolor** Ashmead and **Xenostingmus bifasciatus** Ashm. were reared but in inadequate numbers for shipments. Further investigations during April, the season when **Cinara** spp. are abundant, are planned for 1976.

More than 35 phytophagous insects and mites are recorded from poison ivy (**Rhus toxicodendron**) in eastern USA. Initially, plans called for the collection and shipment of the poison ivy sawfly **Arge humeralis** because all records indicated that it could be safely introduced without the need of elaborate host specificity tests. It was not encountered during the survey but the extent of damage by several Lepidoptera suggests that they exert considerable pressure on the plant despite heavy attack by parasites. Assuming that the commoner Lepidoptera (identifications pending) are adequately host specific to permit introduction the prognosis for the successful biological control of poison ivy in Bermuda appears to be excellent. A contract has been negotiated with the University of Florida, Gainesville, whereby Prof. Dale Habeck will arrange regular sampling and undertake preliminary studies on the biologies of the commoner species.

F.D. Bennett, CIBC West Indian Station.

### Successful biological control of army worm *Mythimna (Pseudaletia) separata* in New Zealand

The introduction in 1970 from the CIBC Pakistan Station of the Pakistan strain of **Apanteles ruficrus** (which was already represented in the New Zealand fauna) against cutworms led to a surprising result. Whilst more recently it has been recovered in New Zealand from cutworms its most striking impact was on **M. separata**. Dr. R. Cumber, who has worked in New Zealand on biological control for many years, has supplied information, which is condensed in the following. He has known this 'army worm' in northern New Zealand for over 40 years and can vouch for the dramatic effects of this introduction. He states that prior to 1974-75 the maize-growers, who had traditionally been very dependent on insecticidal protection against armyworm, gained confidence that their maize would not suffer as before and expanded acreages in maize. This, a good growing season, and lack of loss through **Mythimna** resulted in a change-over from New Zealand importing maize to having an exportable surplus of 60-80,000 tonnes (which involved exports of several million dollars).

The graziers at the same time benefited considerably, with no 'armyworm' outbreaks and hence no critical food shortages during these periods. Assessment of benefits here is very complicated, but they have certainly been very marked.

A commercial firm has estimated that in the North Island chemicals worth more than \$ 250,000 usually used against **Mythimna** have in fact been unused. Allowing a similar figure for the application of chemical there is a saving in chemical applications alone of \$ 500,000.

Previously this pest had come to be accepted in its 'explosive' capacity - and this has changed dramatically.

Briefly the costs of the project have been approximately \$ 20,000 in New Zealand and CIBC expenditure to provide the original stock of **Apanteles ruficrus**. In the 1974-75 season alone the return 'could be valued at \$ 10,000,000 — probably more — with considerable benefits in the 1973-74 season and the future assured of comparable beneficial effects'. Thus by this estimate the cost/benefit figure is around \$ 25,000 / 10,000,000 or to 400 per year or a 40,000 % return. Even if it is thought that this is an exaggeration, a tenth of this - a \$ 4,000 % annual return on total expenditure is quite satisfactory, particularly bearing in mind that of the total expenditure only a fifth was that by CIBC.

It is suggested that anyone interested in the control of **M. (P.) separata** or possibly would like to try **A. ruficrus** against other similar species should contact CIBC.

F. J. Simmonds

### US TEAM OF ENTOMOLOGISTS VISITS PEOPLE'S REPUBLIC OF CHINA

During August 1975, a team of nine U.S. entomologists visited six provinces of the People's Republic of China and had discussions with leading entomologists and other pest control technologists there. The visit was arranged by the Committee on Scholarly Communication with the People's Republic of China, which is sponsored by the American Council of Learned Societies, the Social Science Research Council, and the National Academy of Sciences (USA).

IOBC president, Carl Huffaker was a member of this Insect Control Study Group and was able to gather considerable information on current biological control programs in China.

Biological control in China is receiving extensive emphasis nationally, and especially so in those provinces that have heavy rice, citrus, cotton, sugar cane and corn production. Integrated control is also receiving much emphasis, and cultural control and biological control form the main basis of these programs, especially cultural controls, it was said. Insecticides are used widely but with substantial restrictions in their use - i.e. intensive monitoring is done to ascertain the needs for using pesticides and ones considered compatible with biological controls are favored.

Biological control efforts include extensive use of **Trichogramma** for certain pests of the above crops and also for spiny pine caterpillars in Kirin Province, wide use of **Bacillus thuringiensis** and specialized use of **Beauveria bassiana** (for control of European corn borer, for example), conservation and augmentation of various other natural enemies in deciduous fruit orchards, citrus and cotton, for example, and several specialized projects, including biological control of the lichee stinkbug by mass release of the eupelmid **Anastatus** sp., and of a

caterpillar that is damaging to lac production, by use of *Bracon greeni*. Lastly, they herd flocks of ducks 1000 to 1500 at a time through rice paddies for control of insect pests and weeds, accomplishing at the same time production of a major meat supply.

## FAO/UNEP CONSULTATION ON PEST MANAGEMENT SYSTEMS

The FAO/UNEP Consultation on Pest Management Systems for the Control of Pests of Cotton was held in Karachi, Pakistan, from 13-16 October 1975. The primary goal of the Consultation was the formulation of a multinational program for the development and application of integrated pest control in cotton growing areas. The program of the Consultation provided for a series of short introductory lectures on different aspects of integrated pest control. These were completed by detailed discussions on recent developments in the participating countries. The topic discussed were the following:

Contribution of integrated control to cotton production (R.F. Smith), Host plant resistance (H.D. Thurston), Parasites and predators (V. Delucchi), Entomopathogens (L.A. Falcon), Habitat manipulation (A. Khalifa), Behaviour modifying chemicals (D.G. Campion), Conventional pesticides (R. Delattre), Environmental consequences of cotton pest control practices (Sayed El Bashir), Training needs (R.F. Smith), Role of FAO/UNEP Cooperative Global Program (L. Brader), Role of Regional Programs (M. Way), Role of National Programs (M. Vaughan), and Information Systems for alternative control methods (C.B. Huffaker). Three Committees were set up during the Consultation for the study and preparation of detailed project proposals for the African Region, Asian Region and the Latin American Region. The Consultation recommended (a) to establish three Regional Programs located in North Africa with links to African countries, in the Near East with links to Middle and Far East countries, and in Latin America; (b) to provide in each Regional Program a Coordinator, a Liaison/Training officer and sufficient experts for specific fields of plant protection; and (c) to establish a Regional Steering Committee comprising delegates from participating countries responsible for planning.

## ASWAN SIDE EFFECTS

In Egypt, more than 100 Egyptian and American scientists over the next five years will attempt to learn more about the ecological side effects of the Aswan Dam, completed in 1970. The Ford Foundation recently announced that it had just granted \$ 125,000 for the effort, although the bulk of foreign support comes from the U.S. Environmental Protection Agency. By controlling the flow of the Nile, the dam is enabling farmers to grow as many as three crops a year, but it also is blamed for a sudden increase in the debilitating bilharzia parasite, river erosion, increased soil salinity, and a dwindling of the Mediterranean fisheries. As a first step toward improving Nile water management practices, the scientists will construct an elaborate computer model that will mimic the interactions of the entire ecosystem of the river, including plant and animal life. The project is directed by Egypt's National Academy of Scientific Research and Technology.

## CONGRATULATIONS.....

to Dr. J. H. Stapley who was honored with the MBE award in Her Majesty's New Years Honours in January 1975. Dr. Stapley is Senior Research Officer, Ministry of Agriculture and Lands, Honiara, British Solomon Islands Protectorate.

## DR. V.P. RAO RETIRES

Dr. V. P. Rao, Entomologist-in-charge, CIBC West African Substation, Kumasi, retired from service in August, 1975. Prior to his transfer to Ghana in 1973, Dr. Rao was in charge of the CIBC Indian Station for about 15 years. He served as a Vice President of the South and South East Asian Regional Section (SEARS) of IOBC. His new address is 129, Jayamahal Extension, Bangalore-560 046, India. We wish him many happy years of retirement.

## CHANGE OF ADDRESS

Dr. P. Cochereau, ORSTOM, Nouméa, New Caledonia, who has been for several years a very active member of IOBC in the South Pacific area, has now moved to Ivory Coast. His address is: ORSTOM, B.P. 694, Bouaké.

## MEETINGS

The first EUCARPIA/IOBC meeting on host plant resistance to insects and mites is scheduled in Wageningen, the Netherlands for 7-8 December, 1976. Objectives of the meeting will be to discuss techniques of testing for resistance, breeding of resistant varieties, genetics of resistance, mechanisms of insect resistance and the implication of insect variability; to exchange preliminary research results and to coordinate and integrate research programs. Correspondence concerning the meeting is to be addressed to the Secretary of the Organizing Committee, Instituut voor de Veredeling van Tuinbouwgewassen, Postbus 16, Wageningen, the Netherlands.

XI Congreso Nacional de Entomología, March 8-10, 1976, Mexico City, Mexico. Contact: Centre de Convenciones, Reforma 445, Mexico 5, D.F. Mexico.

Annual Meeting of Japanese Society of Applied Entomology and Zoology, April 1-3, 1976, Kyoto University, Kyoto, Japan. Contact: T. Kono, National Institute of Agricultural Sciences, Nishigahara, Kita-ku, Tokyo, Japan.

3rd International Congress of Plant Pathology, August 16 - 23, 1978, München, F.R.G. (first announcement). The Congress is being organized by the Deutsche Phytomedizinische Gesellschaft on behalf of and in collaboration with the International Society for Plant Pathology. Further information can be obtained from: Congress Plant Pathology, Biologische Bundesanstalt, Messeweg 11/12, D-3300 Braunschweig, F.R.G.

The editors wish to thank all who have contributed to this issue of the Newsletter. Items may be mailed at any time to C. B. Huffaker, Division of Biological Control, University of California, 1050 San Pablo Avenue, Albany, California 94706 (USA) or to V. Delucchi, Entomologisches Institut der ETH, Universitätstrasse 2, 8006 Zürich, Switzerland. They will be held for use in the next issue of the Newsletter. Contributions from many places are necessary to make a useful publication. Editors and organizers of this issue: C.B. Huffaker, V. Delucchi, F.J. Simmonds, January 31, 1976.

PRINTED MATTER

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