

# sip

# newsletter

## society for invertebrate pathology

Volume V, Number 3  
August 1973

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### REPORT SIP MEETING

24th Annual AIBS Meeting  
University of Massachusetts, Amherst  
June 18 - 19, 1973

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### NEW LABORATORY OF BIOLOGICAL CONTROL DARMSTADT, FEDERAL REPUBLIC OF GERMANY

On April 11, 1973 the new buildings for the Laboratory of Biological Control (*Institut für Biologische Schadlingsbekämpfung*) in Darmstadt were dedicated by the president of the *Biologische Bundesanstalt für Land- und Forstwirtschaft (BBA)* (Federal Biological Research Institute for Agriculture and Forestry). Twenty years after its foundation, suitable facilities have been provided for the largest of the six external laboratories of the BBA. The Institution itself belongs to the Research Organization of the Federal Department of Food, Agriculture, and Forestry; Federal Republic of Germany. Great emphasis is given in the program of this laboratory to the development of insect pathology and microbiological control within the general scope of biological control.

After ten years of planning and four years of construction, two main laboratory buildings, one insectary and two modest bungalows have been completed at a cost of 5.2 million DM (Approximately \$1.6 million). A space of approximately 2000 m<sup>2</sup> is occupied by nine research staff members, ten technicians and eight assistants. An adjacent experimental field of 1,4 ha. provides an opportunity to carry out small field trials and to grow food plants for phytophagous project insects. Isolated laboratories are available for the mass production of microbial pathogens of pest insects in addition to a quarantine laboratory containing six climatized windowless cells, making possible the importation from alien faunal regions potentially beneficial arthropods without jeopardizing the local fauna by unintentionally introduced organisms.

The research program of the Biological Control Laboratory is devoted to basic and applied research on the development of biological control of pest arthropods as a contribution to crop protection. Major emphasis is placed on: (1) studies on the role of natural enemies in the field; (2) research in insect pathology and

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### PROGRAMME

#### ICIP/SIP MEETING

St. Catherine's College, Oxford, England  
September 3 - 7, 1973

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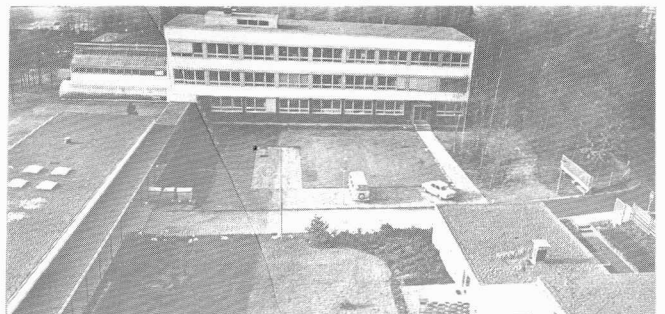
application of effective pathogens which are harmless to man, domestic animals, and beneficial insects to control pest arthropods; and (3) importation, acclimatization, colonization, and mass release of beneficial arthropods. This also includes the integration of biological control measures into crop protection systems (Franz, J. M., The role of biological control in pest management, *Boll. Lab. Ent. Agr. "Filippo Silvestri," Portici, 31*, in press).

The following research workers are at present conducting work in insect pathology/microbial control (special fields of activity in parentheses): Dr. J. Huber (viruses); Dr. A. M. Huger (protozoa, histopathology); Dr. A. Krieg (bacteria); Dr. G. A. Langenbruch (application of microbial control agents and bioassay); Dr. E. Müller-Kogler (fungi).

The provision of suitable working conditions is but one prerequisite for the successful development of project-oriented research. Other requirements are good cooperation, internally as well as externally.

We hope that, as before, members of our Society will continue to exchange ideas and material with us, assisting thereby in the traditional development of international cooperation.

J. M. Franz  
*Institut für biologische Schadlingsbekämpfung*  
D-61 Darmstadt, Heinrichstrasse 243  
Germany, Federal Republic



## **PATHOLOGUE**

Among the many pleasant personal contacts made during the Society program with AIBS in Amherst was an opportunity to meet with Mrs. Coviello from Academic Press and members of the Editorial Board of the Journal. One important item of business was assembling a list of new members of the Editorial Board to be appointed. Our Editor, Dr. Cheng, will continue to receive proposals during a brief meeting of the Editorial Board in Oxford.

A disturbing factor in the fortunes of the Journal is the small number of institutional subscriptions. One task we can each engage in immediately is to request the libraries of our departments, institutes, or laboratories to subscribe to the Journal. Institutional subscriptions are an essential means of support for journals, in addition to personal subscriptions. It is surprising that the Journal--the principal medium of communication for invertebrate pathologists--is not growing in the number of institutional or personal subscriptions at the same rate as we see the Society growing. Members of the Society receive a substantial discount on personal subscriptions. It is expected that most scientists will wish to maintain files of the Journal for their research libraries, in addition to assuring access to the Journal for their graduate students and colleagues outside invertebrate pathology by insisting that their institute or university libraries regularly subscribe to the Journal: In the near future Academic Press, in cooperation with the Society, will circulate to the total membership of the Society sample copies of past issues with specific information on costs for individual subscriptions and institutional subscriptions. In advance of receiving this special reminder from Academic Press and the Society, it will be to the advantage of the Society and to the good health of the Journal to determine when the library in your institution can begin its subscription if it does not already provide this service.

In 1974 the Society will provide an opportunity for programs in invertebrate pathology at two different locations. In June the Society will meet with the AIBS at Arizona State University--this will be the official annual meeting. In August the Society will provide a program for invertebrate pathology at the Third International Congress of Parasitology in Munich Germany. The designation of the Invertebrate Pathology sessions at the Congress is G7. Deadlines for short communications are 31 December 1973 for an indication of titles and authors and 31 March 1974 for submission of abstracts. In the next issue of the Newsletter we will make an effort to provide the necessary information for registration for participation in the Congress of Parasitology.

At the annual meeting of the Society in Arizona in June 1974, the election of new officers for the Society will have been completed. The Nominating Committee, composed of Drs. Tripp, Watanabe, and Lipa, under the chairmanship of Dr. Burges, is actively developing the slate of candidates for the offices of Vice President, Secretary, Treasurer, and two Trustees. I encourage your active assistance to the Committee by providing suggestions directly to these individuals.

An encouraging and stimulating aspect of a scientific meeting is the participation of graduate students and young scientists in the program and discussion groups. The Society program with AIBS at Amherst, Massachusetts was a superb example of the manner in which the Society serves the scientific community by providing a forum for the identification and discussion of common interests in the pathology of invertebrates. A strong element of unification was evident with concern of all invertebrate pathologists for the implications of the use of insect pathogens for management of insect populations, and the immediate need to broaden their understanding of the diseases of invertebrates other than insects, particularly in estuarine environments where the impact of insect pathogens must be understood.

If I didn't have the opportunity to see you in Amherst, I am looking forward to being with you in Oxford or in Arizona in 1974 for sure.



## **TRAVEL SUPPORT**

Travel support for North American's was not obtained for the meetings in England. Proposals for such support were well received by three agencies. However, due to limited funds for support for travel to scientific meetings, the proposals received low priority for funding.

The International Union of Biological Sciences (IUBS) is attempting to develop a plan to assure some support for scientists from all countries to attend future meetings. This is to be accomplished through a coordinated approach to seeking travel funds.

## **AFFINITY FLIGHT TO LONDON**

There will be no "affinity" flight to London. Because of a failure to receive sufficient deposits to hold seats on the flight by June 1 and difficulties involved in making arrangements for participants to return together, plans for this "affinity group" arrangement have been cancelled. Your attention is drawn to Vol. V, No. 2 of the NEWSLETTER for information on fares from the United States. This information appears on page 8 "UPDATE: AFFINITY GROUP TO LONDON."

## **POSITION SOUGHT**

Dr. Martin Shapiro is interested in obtaining a position in research, teaching/research, or industry/agriculture. Research experience includes insect virology; Coelomomyces sp; in vivo and in vitro virus production; insect tissue culture (moth and mosquito); production of tissue culture media. Publications, curriculum vitae and salary upon request.

Address: 2313 Champion Court  
Raleigh, North Carolina 27606 USA



# PROGRAMME

SEPTEMBER 3 - 7, 1973

Sunday, 2 September

15.00 SIP Council Meeting

Monday, 3 September

9.30 PLENARY SESSION (Lecture Theatre)

Chairman - Dr T.W. Tinsley, *Director, NERC Unit of Invertebrate Virology*

Opening of Proceedings -

Mr R.J.H. Beverton, *Secretary, U.K. Natural Environment Research Council*

Presidents' Opening Addresses -

Professor C. Vago, *President, Scientific Committee, International Colloquium*

Professor J.D. Briggs, *President, Society for Invertebrate Pathology*

10.00 SESSION ON MICROBIAL TOXINS (Lecture Theatre) (see page 4)

10.15 3rd SIP WORKING GROUP ON SAFETY OF MICROBIAL CONTROL AGENTS (Room A)

Chairman - Dr Marshall Laird

10.40 Coffee

13.00 Lunch

14.15 SESSION ON PROTOZOA PARASITIC IN INVERTEBRATES (Lecture Theatre) (see page 4)

14.15 ADDITIONAL SESSION ON EXPERIMENTAL INVERTEBRATE VIROLOGY (Room A) (see page 4)

14.15 DISCUSSION GROUP - TOXINS OF *BACILLUS THURINGIENSIS* (Library North)

Convenors: Drs R.P. Bond and H.J. Somerville

15.55 Tea

19.00 Dinner

20.15 MICROSPORIDA SYMPOSIUM (Room A)

Convenor: Dr E.U. Canning

Tuesday, 4 September

9.00 SESSION ON EXPERIMENTAL INVERTEBRATE VIROLOGY (Lecture Theatre) (see page 4)

9.15 DISCUSSION GROUP - BIOCHEMISTRY OF PARASITOLOGY (Room A)  
Convenor: Dr A. Domnas

9.15 DISCUSSION GROUP - MICROBIAL CONTROL OF FOREST INSECTS (Library North)  
Convenor: Dr B. Maksymiuk

10.40 Coffee

13.00 Lunch

14.15 SESSION ON EXPERIMENTAL INVERTEBRATE VIROLOGY (continued) (Lecture Theatre)

14.15 SIP MICROSPORIDA DIVISION COMMITTEE MEETING (Library North)

15.15 Tea

15.50 SESSION ON PRODUCTION AND FORMULATION OF MICRO-ORGANISMS (Lecture Theatre) (see page 5)

15.50 SEMINAR ON CHARACTERISATION OF INSECT VIRUSES (Room A) (see page 5)

19.00 Sherry

19.30 Conference Dinner

Wednesday, 5 September

9.00 SESSION ON ECOLOGICAL CONCEPTS IN RELATION TO INSECT PATHOGENS (Lecture Theatre) (see page 5)

9.00 SESSION ON MARINE INVERTEBRATE PATHOLOGY (Room A) (see page 5)

9.00 WORKSHOP - DISEASES OF MEDICALLY IMPORTANT INSECTS (Library North)

Convenor: Dr D.W. Roberts

10.40 Coffee

13.00 Lunch

14.00 Stratford Excursion Departure (1st party)

14.15 SIP BUSINESS MEETING (Lecture Theatre)

16.00 Tea

16.30 Stratford Excursion Departure (2nd party)

19.00 Dinner

Thursday, 6 September

9.00 SESSION ON INFECTION PROCESSES AND SPECIFICITY OF INSECT PATHOGENIC FUNGI (Lecture Theatre) (see page 6)

9.00 INVERTEBRATE IMMUNOLOGY SYMPOSIUM (Room A)  
Convenor: Dr E.L. Cooper

10.40 Coffee

11.15 SESSION ON NEMATODE PARASITES OF INVERTEBRATES (Lecture Theatre) (see page 6)

11.15 DISCUSSION GROUP - RECENT RESULTS IN INSECT MYCOLOGY (Room A)

Convenor: Dr N. Wilding

13.00 Lunch

14.15 SESSION ON BACTERIA (Lecture Theatre) (see page 6)

14.15 SIP MEETING ON ADOPTION OF A COMPUTER-AIDED INFORMATION SYSTEM (Room A)

Convenor: Dr M.E. Martignoni

15.55 Tea

19.00 Dinner

Friday, 7 September

Departure

DETAIL OF SESSIONS

Monday, 3 September

SESSION ON MICROBIAL TOXINS (*Lecture Theatre*)

Organiser - Dr J.R. Norris

10.00 - Chairman - Dr M.H. Rogoff  
10.40

Invited Paper -

Drs R.P.M. BOND and H.J. SOMERVILLE, *Shell Research Ltd., Sittingbourne, England* -  
Microbial toxins with insecticidal activity

Contributed Papers -

11.15 - Chairman - Dr A.M. Heimpel  
12.35

M.H. ROGOFF, *International Minerals & Chemical Corporation, Illinois, USA* -  
Proposed model for toxic moieties in *Bacillus thuringiensis* serotype H<sub>3</sub> and H<sub>5</sub> crystals

B. TRUMPI and P. LUTHY, *Mikrobiologisches Institut der ETH, Zurich, Switzerland* -  
Molecular size and toxic activity of  $\delta$ -endotoxin compounds of *Bacillus thuringiensis*

P.G. FAST, *Insect Pathology Research Institute, Sault Ste Marie, Canada* -  
On the occurrence of fragments of the  $\delta$ -endotoxin of *Bacillus thuringiensis* in the haemolymph of treated insects

H. der BARJAC, M. PAIS, F. JARREAU, A. BURGERJON and A. BONNEFOI, *Institut Pasteur, Paris, France* -  
Comparison between the thermostable exotoxins extracted from different serotypes of *Bacillus thuringiensis*

SESSION ON PROTOZOA PARASITIC IN INVERTEBRATES (*Lecture Theatre*)

Organisers- Dr N.A. Croll and Dr K.E. Hudson

14.15 - Chairman - Professor Marshall Laird  
15.55

Invited Paper -

Dr H.C. CHAPMAN, *ARS Gulf Coast Mosquito Research Laboratory, Louisiana, USA* -  
The role of Microsporida in mosquito problems

Contributed Papers -

W.M. BROOKS, *North Carolina State University, USA* -  
Observations on a new microsporidan discovered in the corn earworm, *Heliothis zea*

B. PILLEY, *Glasshouse Crops Research Institute, England* -  
A microsporidan isolated from *Trichoplusia ni* introduced into *Spodoptera* species

E.I. HAZARD and S.W. OLDACRE, *Insects Affecting Man Laboratory ARS, USDA, Gainesville, Florida, USA* -  
Bimorphic development of some Microsporida

16.30 - Chairman - Dr J.J. Lipa  
17.30

J. WEISER, *Institute of Entomology, Prague, Czechoslovakia*  
Transmission of Microsporida via injection

P. GOTZ, *Biologische Institut, University of Freiburg, W. Germany* -  
Homology of the manubrium of *Mrazekia brevicauda* and the polar filament of Nosematidae (Microsporida)

B. FARRENS and M. GARNER, *University of San Diego, California, USA* -  
Inhibition of ciliate parasitism in *Tenebrio molitor*: ultraviolet radiation and antibiotics as cytostatic agents



ADDITIONAL SESSION ON EXPERIMENTAL INVERTEBRATE VIROLOGY (*Room A*)

Organiser - J.S. Robertson

14.15 - Chairman - Dr J.D. Paschke  
15.55

Contributed Papers -

D.W. ROBERTS, R.R. GRANADOS and W.J. McCARTHY, *Boyce Thompson Institute for Plant Research, New York, USA* -  
Interactions of entomopoxviruses and vaccinia viruses

R.R. GRANADOS, W.J. McCARTHY and M. NAUGHTON, *Boyce Thompson Institute for Plant Research, New York, USA* -  
Development of a cytoplasmic polyhedrosis virus and an entomopoxvirus in insect tissue cultures

W.J. McCARTHY, C. NESER and D.W. ROBERTS, *Boyce Thompson Institute for Plant Research, New York, USA* -  
RNA synthesis in an entomopoxvirus

S.R. WEBB, J.D. PASCHKE, G.W. WAGNER and W.R. CAMPBELL, *Purdue University, Indiana, USA* -  
Pathology and bioassay of mosquito iridescent virus in *Aedes aegypti* cell culture

J.R. ADAMS, R.M. FAUST and A.M. HEIMPEL, *ARS Insect Pathology Laboratory, Beltsville, Maryland, USA* -  
X-ray analysis of insect viruses and crystals of *Bacillus thuringiensis*

16.30 - Chairman - J.S. Robertson  
17.50

B.A. FEDERICI, *Boyce Thompson Institute for Plant Research, New York, USA* -  
Pathobiology of a cytoplasmic polyhedrosis virus in *Aedes taeniorhynchus*

A. MAGNOLER, *Stazione Sperimentale del Sughero, Italy* -  
Effects of cytoplasmic polyhedrosis on the gypsy moth, *Lymantria dispar* L.

V.D. MILOSERDOVA and E.M. SUKHORADA, *Ukrainian Academy of Sciences, Kiev, USSR* -  
Reproduction of *Galleria melonella* nucleopolyhedrosis virus in ovarian cell cultures of *Porthetria dispar*

E. ZH. SIMONOVA and O.A. ALIOSHINA, *Institute for Microbiological Methods of Plant Protection, Moscow, USSR*  
Nuclear polyhedrosis of the codling moth, *Carpocapsa pomonella* L.

Tuesday, 4 September

SESSION ON EXPERIMENTAL INVERTEBRATE VIROLOGY (*Lecture Theatre*)

Organiser - J.S. Robertson

9.00 - Chairman - Professor C. Vago  
10.40

Invited Paper

Dr T.W. TINSLEY, *NERC Unit of Invertebrate Virology, Oxford, England* -  
Experimental Virology - Which way shall we go?

Contributed Papers

W.A.L. DAVID, *Glasshouse Crops Research Institute, England*  
Some studies relating to transovarial transmission of granulosus virus in *Pieris brassicae*

G. CROIZIER and G. MEYNADIER, *Station de Recherches Cytopathologiques, Saint Christol-les-Alès, France* -  
Immunological studies of proteins of baculovirus inclusion bodies in Lepidoptera

G.R. GARDINER and H. STOCKDALE, *Shell Research Ltd., Sittingbourne, England* -  
Adaptation of an established line of *Spodoptera frugiperda* to a simple tissue culture medium

Tuesday (continued)

- 11.15 - Chairman - Dr A.M. Huger  
12.35
- J.F. HENDERSON and P. FAULKNER, *Queen's University, Kingston, Ontario, Canada* -  
Properties of the non-included viral agent produced in tissue cultures infected with the NPV (Bundle Virus) of *Trichoplusia ni*
- R.H. GOODWIN, J.L. VAUGHN and S.J. LOULOUES, *ARS Insect Pathology Laboratory, Beltsville, Maryland, USA* -  
Baculovirus infections in noctuid cell lines  
(to be presented on behalf of the authors by Dr J. Adams)
- L. BAILEY and B. STANLEY, *Rothamsted Experimental Station, Harpenden, England* -  
Two newly discovered viruses of the honey bee
- A. BURGERJON, *Station de Recherches de Lutte Biologique, La Minière, Versailles, France* -  
A preliminary study on specificity of the nuclear polyhedrosis of *Mamestra brassicae*  
(to be presented on behalf of the author by Dr B Hurpin or Dr P. Ferron)
- 14.15 - Chairman - Dr L. Bailey  
15.35
- R. ENGLER, *Environmental Protection Agency, Washington, D.C. 20460, USA* -  
U.S. Government Regulations of insect pathogens used for pest control.
- T. FUKUDA and H.C. CHAPMAN, *ARS Gulf Coast Mosquito Research Laboratory, Louisiana, USA* -  
Miscellaneous studies with a mosquito iridescent virus
- P. FERRON and B. HURPIN, *Station de Recherches de Lutte Biologique, La Minière, Versailles, France* -  
Development of the *Beauveria tenella* (Delacr.) Siemaszko mycosis in *Melolontha melolontha* L together with an *Entomopoxvirus melolonthae* infection
- J.S. BUCHANAN, *University of Stirling, Scotland* -  
Electron microscopic observations on a virus infection of the marine bivalve *Tellina tenuis*
- SESSION ON PRODUCTION AND FORMULATION OF MICRO-ORGANISMS.  
(Lecture Theatre)
- Organisers - Dr H.D. Burges and Dr J.R. Norris
- 15.50 - Chairman - Dr C.M. Ignoffo  
17.30
- Invited Paper -
- Dr H.T. DULMAGE, *ARS, Brownsville, Texas, USA* -  
What can we ultimately expect of different technologies?
- Contributed Papers -
- L.J. GOLDBERG, *Naval Biomedical Research Laboratory, Oakland, California, USA* -  
Control of *Culex tarsalis* using a combination of B.T. with a growth regulator
- B. MAKSYMUK, *Pacific Northwest Forest and Range Experiment Station, Corvallis, Oregon, USA* -  
Aerial application of microbial insecticides
- W.A. SMIRNOFF, *Laurentian Forest Research Centre, Quebec, Canada* -  
*Bacillus thuringiensis* formulations: their advantages and deficiencies when used currently
- 15.50 - SEMINAR ON CHARACTERISATION OF INSECT VIRUSES (Room A)  
17.50
- Convenors: Dr K.A. Harrap and Dr M.D. Summers
- The following papers will be included in this Seminar:
- L.R. TANZER, M.D. SUMMERS, and K. EGAWA, *University of Texas, Austin, USA* -  
Comparative biochemical study of the proteins from the granulosis viruses of the cabbage looper, *Trichoplusia ni* and the fall armyworm, *Spodoptera frugiperda*
- M.D. SUMMERS and D.L. ANDERSON, *University of Texas, Austin, USA* -  
Comparative studies on occluded insect virus DNAs



H.M. MAZZONE, *Forest Insect and Disease Laboratory, Connecticut, USA* -  
Studies on the rod forms and nucleic acid isolated from the nucleopolyhedrosis viruses of the gypsy moth, *Porthetria dispar* L. and the European pine sawfly, *Neodiprion sertifer* Geoff.

C.C. PAYNE and T.W. TINSLEY, *NERC Unit of Invertebrate Virology, Oxford, England* -  
A comparison of some cytoplasmic polyhedrosis viruses

D.C. KELLY, R.J. AVERY, N.F. MOORE and D.E. VANCE, *University of Warwick, Coventry, England* -  
Comparative studies on some iridescent viruses

Wednesday, 5 September

SESSION ON ECOLOGICAL CONCEPTS IN RELATION TO INSECT PATHOGENS (Lecture Theatre)

Organiser - Dr W.A.L. David

9.00 - Chairman - Dr C.E. Gordon-Smith  
10.40

Invited Paper

PROFESSOR S.J. WEBB, *University of Saskatchewan, Canada* -  
Ecological factors influencing the stability and persistence of pathogens in the environment

Contributed Papers -

Y. TANADA and E.M. OMI, *University of California, Berkeley, USA* -  
Persistence of insect viruses in field populations of alfalfa insects

C. SIDOR and M. MACELJSKI, *Institut Pasteur, Zagreb, Yugoslavia* -  
The results of investigations on the occurrence of polyhedral viruses in the noctuid, *Autographa-Plusia gamma* L., in various regions of Yugoslavia

P.V. VAIL, *Western Cotton Research Laboratory, Phoenix, Arizona, USA* -  
Further studies on the cross infectivity of the nuclear polyhedrosis virus isolated from *Autographa californica*

11.15 - Chairman - Dr Y. Tanada  
12.35

R.P. JAUQUES, *CDA Research Station, Harrow, Ontario, Canada* -  
The persistence of viruses of *Trichoplusia ni* and *Pieris rapae* in field plots

A.E. KARPOV and Y.A. KARABASH, *Ukrainian Academy of Sciences and Lenin Academy of Agricultural Sciences, Kiev, USSR* -  
Activation of latent virus infections in insect pests

K. GOLANSKI (deceased 21 April 1973), *Institute of Zootechnics, Cracow, Poland* -  
Stressors of mulberry silkworm, *Bombyx mori* L., virosis  
(to be presented by Dr M. Piasecka-Serafin)

J.B. CARTER, *University School of Agriculture, Newcastle-upon-Tyne, England* -  
The effect of environmental temperature on the replication of *Tipula* iridescent virus in *Tipula oleracea*

SESSION ON MARINE INVERTEBRATE PATHOLOGY (Room A)

Organiser - Dr A.K. Sparks

9.00 - Chairman - Dr P. Korringa  
10.40

Invited Paper -

Dr A.K. SPARKS, *Gulf Coastal Fisheries Center, Galveston, Texas, USA* -  
The role of invertebrate pathology in marine invertebrate aquaculture

Contributed Papers -

J. DELVES-BROUGHTON, *Lord Rank Research Centre, High Wycombe, England* -  
Pathological problems associated with prawn cultivation

J.A. COUCH and D.W. NIMMO, *Gulf Breeze Environmental Research Laboratory, Sabine Island, Florida, USA* -  
Histology and ultrastructure of hepatopancreas of pink shrimp exposed to the polychlorinated biphenyl, Aroclor<sup>R</sup> 1254

D.J. ALDERMAN, *Portsmouth Polytechnic, England* -  
Fungal diseases of marine crustacea in British waters

Wednesday (continued)

- 11.15 - Chairman - Dr P. Korringa  
12.35
- J.E. STEWART, J.W. CORNICK, B. ARIE and B.M. ZWICKER, Fisheries Research Board, Halifax, Nova Scotia, Canada - Virulence and resistance in the blue crab *Callinectes sapidus* from North Carolina
- C.A. JOHNSON, III, Duke University Marine Laboratory, Beaufort, North Carolina, USA - Microsporidan infections in the blue crab *Callinectes sapidus* from North Carolina
- J.T. CECIL and R.F. NIGRELLI, Osborn Laboratories of Marine Sciences, New York, USA - Toxicity of sea star axial organ explants grown on tissue cultured clam heart cells
- C.J. BAYNE, Oregon State University, Corvallis, Oregon, USA - Molluscan internal defense: the fate of  $C^{14}$ -labelled bacteria in *Helix*

Thursday, 6 September

SESSION ON INFECTION PROCESSES AND SPECIFICITY OF INSECT PATHOGENIC FUNGI (Lecture Theatre)

Organiser - Dr N. Wilding

Chairman - Dr D.W. Roberts

Invited Paper -

PROFESSOR Y. ZACHARUK, University of Saskatchewan, Canada - Resistance to fungal pathogens by insects

Contributed Papers -

H.T. TRIBE, J. WILLCOX and L.A. BURNSALL, University of Cambridge, England - Fungal parasitism in cysts of the nematode genus *Heterodera*

A. DOMNAS and P. GIEBEL, University of North Carolina, Chapel Hill, USA - The behaviour of o-diphenol oxidase in *Aedes atropalpus epaticus* infected with *Lagenidium* sp.

R. KENNETH and I. OLMERT, Hebrew University of Jerusalem, Rehovot, Israel - Some intrinsic and external factors influencing infectibility of *Spodoptera littoralis* by *Beauveria bassiana*

SESSION ON NEMATODE PARASITES OF INVERTEBRATES (Lecture Theatre)

Organisers - Dr N. Croll and Dr K.E. Hudson

Chairman - Dr C. Laumond

Invited Paper -

Dr G.O. POINAR Jr., University of California, Berkley, USA - Entomogenous nematodes - a neglected field comes to life

Contributed Papers -

M. LAIRD, Memorial University of Newfoundland, St. John's, Canada - Invertebrate pathology and the integrated control of blackflies

K.E. HUDSON, Imperial College of Science and Technology, Ascot, England - Prospects for controlling glasshouse insect pests using nematodes

9.40 -  
10.40

11.15 -  
12.35

Thursday (continued)

O. LYSENKO and J. WEISER, Institute of Entomology, Prague, Czechoslovakia -

Bacteria associated with *Neoplectana carpocapsae* Weiser and their pathogenicity for *Galleria mellonella*

SESSION ON BACTERIA (Lecture Theatre)

Organiser - Dr H.D. Burges

Chairman - Dr G.E. Bucher

Invited Paper

Drs N.H.E. GIBSON and J. WOLF, University of Leeds, England - Beyond *Bacillus* - some neglected insect pathogens

Contributed Papers

E.W. DAVIDSON and S. SINGER, Universities of Rochester and Western Illinois, USA - Pathogenesis of *Bacillus sphaericus* infections in mosquito larvae

J.D. PODGWAITE, Northeastern Forest Experiment Station, Hamden, Connecticut, USA - Studies on a strain of *Serratia marcescens* pathogenic for larvae of *Porthetria dispar* L.

A.E. PYE, Ohio State University, Columbus, USA - Phenoloxidase activity and activation in the haemolymph of immunised *Galleria mellonella* larvae

Chairman - Dr D.E. Pinnock

B. RASMUSSEN and H.G. BOMAN, University of Umea, Sweden - In vivo induction of anti-bacterial defence factors in insects

H.G. BOMAN, I. NILSSON and K. PAUL, University of Umea, Sweden - In vitro studies of anti-bacterial factor in insects

K.I. MARKOV, R.T. GRIGOROVA and V.I. JELEVA, Bulgarian Academy of Sciences, Sofia, Bulgaria - Study on some mutants of *Bacillus thuringiensis*

14.15 -  
15.55

16.30 -  
17.35



## ADDITIONAL DETAILS

Our Call for Papers for the Oxford meetings has met with an excellent response, and many more papers were received than can be accommodated in the available programme time. Extra session time will be fitted into the programme where necessary. Unfortunately some contributions were not sufficiently related to the carefully planned topics of any of the main sessions. By the time contributors read this notice they will know whether the Programme Committee has been able to accept their papers. The Committee very much hopes that you will still wish to attend the Colloquium even if you have not been allotted time to read your paper. The conference promises to afford an opportunity for much lively discussion if everyone who has indicated an interest does indeed come. Additional Specialist Discussion Groups have been arranged as detailed below.

In view of the heavy oversubscription of the contributions to the Colloquium, the Programme Committee has decided to accept additional papers by title and abstract for inclusion in the printed "Abstracts," even though there will be insufficient time available for these papers to be read at the Colloquium.

### SPECIALIST DISCUSSION GROUPS

In addition to those listed in the last NEWSLETTER, there will be discussion groups on:

**TOXINS OF BACILLUS THURINGIENSIS**--to discuss recent results and ideas on B. thuringiensis and other microbial toxins. Convenors: Dr. R. P. M. Bond and Dr. H. J. Somerville, Borden Microbiological Laboratory, Shell Research Ltd., Sittingbourne, Kent, England. Time: Monday afternoon, 3 September. Those who would like to participate should write without delay to Dr. Somerville, giving a brief title of any contribution they wish to make and requirements for projection (if possible slides should be 35 mm).

**RECENT RESULTS IN INSECT MYCOLOGY**--an informal symposium, to follow the main Session on Insect Pathogenic Fungi. Convenor: Dr. N. Wilding, Bee Department, Rothamsted Experimental Station, Harpenden, Herts, England. Time: 11.15 hrs., Thursday, 6 September. Please inform Dr. Wilding if you wish to participate as soon as possible.

**ADDITIONAL SESSION ON EXPERIMENTAL INVERTEBRATE VIROLOGY**--to accommodate the large number of virology papers contributed

**WORKSHOP ON DISEASES OF MEDICALLY IMPORTANT INSECTS**--  
Convenor: Dr. D. W. Roberts, Boyce Thompson Institute, 1086 North Broadway, Yonkers, New York 10701 USA

**DISCUSSION GROUP ON MICROBIAL CONTROL OF FOREST INSECTS**--Convenor: Dr. B. Maksymiuk, Forestry Sciences Laboratory, 3200 Jefferson Way, Corvallis, Oregon 97331 USA

**SIP MEETING ON ADOPTION OF A COMPUTER-AIDED INFORMATION SYSTEM**--Convenor: Dr. M. E. Martignoni, Glasshouse Crops Research Institute, Worthing Road, Rustington, Littlehampton, Sussex, England

### AUTHORS PLEASE NOTE

If you will be reading a paper at the Colloquium, the interpreters who will be providing simultaneous translation request you to bring with you for their guidance extra copies (four if possible) of any documents from which you will speak (other than your printed abstract). Please also bring copies (5) of a list of your slides. These should be handed in to the Conference Office as soon as possible after your arrival at St. Catherine's.

### SUPPORTERS

A further generous contribution toward the cost of the Oxford meetings has been received from the Fairfax Biological Laboratory, New York.

### TRAVEL ADVICE

#### London Airport to Oxford, Sunday, 2 September

The following information for travel from London Airport to Oxford is given to assist participants. We should be grateful if you would advise us beforehand if you know you will not be arriving until the last train quoted below:

Heathrow Depart Bus	Reading Depart Train	Arrive Oxford
13.15	15.20	16.00
	15.30	16.17
15.15	16.33	17.10
16.15	17.39	18.15
17.15	18.32	19.08
18.15	19.39	20.10
19.15	20.42	21.18
	21.04	21.35
20.15	22.07	22.55

Passengers for the bus from Heathrow to Reading should report either to the British Rail Desk or British Rail Hostess at the airport terminal. British Rail Hostesses will be wearing Rail Blue uniforms.

Fare: Single £1.25. Period return (valid 10 days) £1.90--train fare, Reading to Oxford approximately £0.59p (Single); £1.18 (Period Return)

If your return travel to Heathrow will be by the same route you will find it economical to purchase Period Return tickets. You are advised to carry sufficient British currency for these fares.

#### Central London to Oxford, Sunday, 2 September

For delegates travelling to Oxford from central London the best trains on Sunday are as follows:

Depart Paddington	Arrive Oxford
10.40	12.00
11.35	13.05
15.55	17.10
17.05	18.15
17.55	19.08
19.05	20.10
20.05	21.18
20.30	21.35

## ADDITIONAL DETAILS (Continued)

From 16.00 hrs till 21.45 on Sunday, 2 September, there will be a Reception Desk, labelled INVERTEBRATE PATHOLOGY, situated close to the exit at Oxford Railway Station. The Conference Representative at this Desk will help you with transport to St. Catherine's College. If you arrive in Oxford by train before 16.00 hrs, we advise you to take a taxi to St. Catherine's College.

The telephone numbers of St. Catherine's College and the Unit of Invertebrate Pathology are Oxford 49541 ext. 265 and Oxford 52081 respectively. Maps of Oxford and information with regard to parking facilities for those delegates arriving by car can be supplied on request.

Lunch will not be available at St. Catherine's on Sunday, but for delegates arriving at St. Catherine's College during Sunday afternoon, tea will be served at 16.00 hrs. The evening meal will be served at 19.00 hrs and will be a cold buffet, suitable for latecomers on arrival.

## REGISTRATION

On arrival at St. Catherine's, please go immediately to the Conference Office for registration.

## BRITISH CURRENCY

As anticipated in the announcement brochure, due to the introduction in the United Kingdom of Value Added Tax on 1 April 1973, St. Catherine's College is now obliged to charge 10% tax on accommodation costs. We regret that we shall, therefore, be obliged to ask delegates for 40 pence extra charge per night. It will help our administrative staff enormously if delegates would please ensure that they are carrying sufficient British currency to pay this at registration. It will not be possible to cash travellers cheques in Oxford on Sunday.

## CLIMATE AND CLOTHING

The English September weather is notoriously capricious, and you are advised to bring rainwear. Daytime temperatures may be quite warm, but evenings will be cool.

## THEATRE EXCURSION

We have succeeded in securing 75 seats for a performance of Richard II at the Shakespeare Memorial Theatre, Stratford-upon-Avon on Wednesday evening, 5 September. The party will travel in two coaches, one of which will leave St. Catherine's early in the afternoon, visiting Warwick en route to Stratford. This excursion will include a visit to Warwick Castle and to an exhibition of the costumes used in the Six Wives of Henry VIII BBC television series.

The second coach, for delegates who will be attending the afternoon SIP Business Meeting, will leave St. Catherine's at 16.30 hrs and travel direct to Stratford to join the advance party for a pre-theatre dinner at the Shakespeare Hotel, close by the theatre.

The cost of the Stratford excursion will be £5.00, to include theatre seat, dinner (exclusive of drinks) and transport. We regret that this is rather more than originally anticipated, due to the increased cost of theatre seats. The cost of the Warwick visits will be additional-- £1 or £2.

Those who have indicated interest in the theatre visit on reservation forms returned to Miss Arnold before 15 June will have first call on tickets for the excursion. Requests received after this date have been put on a "waiting list," so that we can issue tickets on a "first come, first served" basis. The cost of the excursion will be payable, and tickets will be issued, at registration.

## LADIES PROGRAMME

Ladies accompanying delegates will be invited to register as Associate Members of the Colloquium on arrival at St. Catherine's College. The Associate Membership Fee will be £4.50 to include the Conference Dinner and organisational costs of arranging the Ladies Programme. The cost of individual excursions will be additional. Full details of the Programme, which will include visits to Blenheim Palace, some of the Oxford Colleges, the Ashmolean Museum etc., will be available at registration.

Your Programme Committee hopes that you will find the arrangements made for you at the 1973 Colloquium to your liking, and that the occasion will prove to be thoroughly enjoyable. We look forward to welcoming you to Oxford in September.

*M. K. Arnold, Secretary, ICIP/SIP  
Unit of Invertebrate Virology  
Commonwealth Forestry Institute  
South Parks Road, Oxford OX1 3RB  
ENGLAND*

## PRE-CONFERENCE VISIT

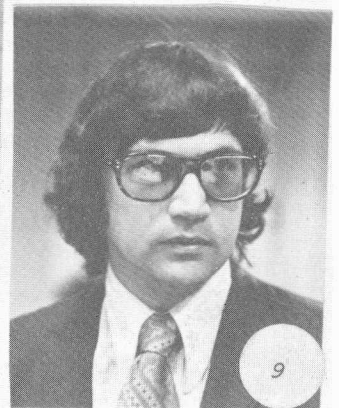
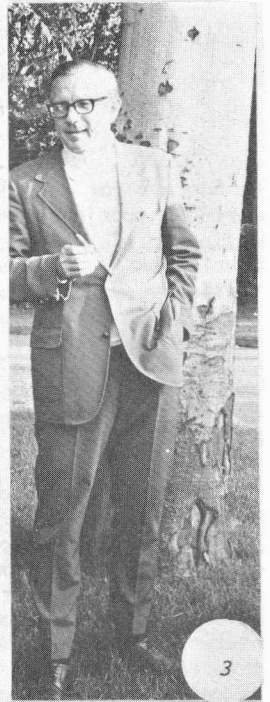
### Fisheries and Food Fisheries Laboratory

A pre-conference visit has been arranged to the Ministry of Agriculture, Fisheries and Food Fisheries Laboratory at Burnham on Crouch, Essex, on Friday, 31 August 1973. This laboratory is concerned with estuarine and in-shore waters, and is responsible for shellfish fisheries, disease and pollution control and investigation in England and Wales. Burnham on Crouch is a small, quiet town lying on the estuary of the River Crouch some fifty miles east of London and is well known as a yachting centre. Since it seems likely that most visitors will wish to stay in London before continuing to Oxford on Sunday, it is proposed that transportation will be provided from central London to Burnham and back on August 31. Alternatively, visitors who wish can stay at Burnham, although there are no Sunday trains from this town.

Those who indicate interest in this visit on their registration form will be circulated to establish the most suitable meeting place and type and time of travel.

*D. J. Alderman  
Department of Biological Sciences  
Portsmouth Polytechnic  
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Portsmouth PO1 2DY*





SIP/AIBS, Amherst  
June 18-19, 1973

Picture Caption, page 10

## REPORT SIP MEETING

24th Annual AIBS Meeting  
University of Massachusetts, Amherst  
June 18 - 19, 1973

The Society for Invertebrate Pathology held a two-day meeting in conjunction with the 24th Annual AIBS Meeting at the University of Massachusetts in Amherst June 18 and 19. Three forms of discussion were held: a half-day symposium on host/parasite specificity, a roundtable discussion of the legal and social aspects of biological control, and a full-day symposium on diseases of crustaceans. The first two sessions were organized by Drs. Anthony Nappi and John Stoffolano and the third by Dr. Gilbert Pauley.

It was emphasized repeatedly that further understanding of mechanisms of host/parasite interaction will require a careful definition of experimental conditions (e.g., source and genetic composition of host, its age, stage of life cycle; the parasite's lineage, exact dose and route of administration, method of assay, etc.) to insure comparable experiments in different laboratories. It is clear also that the powerful tools of molecular and cellular biology can and must now be applied to elucidation of cellular and subcellular host/parasite interaction.

The roundtable discussion was led by Dr. Heimpel (Drs. Lewis and Ignoffo being unable to attend), and he outlined the concerns of U.S. federal government agencies as well as those of the World Health Organization. As biological control agents become a practical alternative to chemical means, attention is being focused on the criteria that need to be satisfied to insure safety of humans. Questions were raised concerning the adequacy of these criteria, particularly for non-mammalian, non-target species (e.g., will a virus released to insects infect shrimp?). Dr. Heimpel pointed out the possibility that extensive mandatory safety testing may make some potential agents unattractive to commercial developers, and therefore the federal government may have to reassess its role in the developmental phase of various potential control systems.

Diseases of crustaceans are attracting numerous investigators and offer a great variety of systems for the study of basic biological problems of host/parasite interactions. The variety of results presented cannot be summarized here, but the entire symposium will be published as a special volume by the National Marine Fisheries Service. It seems clear, however, that with more workers studying crustacean diseases, significant new findings can be expected in the near future.

Overall the sessions were well attended, the quality of papers was uniformly high and considerable discussion was generated. All of these are hallmarks of a good meeting.

M. R. Tripp  
Biological Sciences  
University of Delaware  
Newark, Delaware 19711  
USA

## EXCERPTS

1971-72 ANNUAL REPORT  
ANIMAL RESEARCH INSTITUTE  
YEERONGPILLY, QUEENSLAND, AUSTRALIA

"Potential bacterial pathogens of Boophilus microplus"  
P. E. Green and Lorraine E. Rosenfeld

Various species of bacteria have been reported as associated with mortality in the Ixodidae. An organism consistently isolated at this Institute is Aeromonas liquefaciens. The pathogenicity of this organism to B. microplus is being investigated, and it would seem to be a cause of considerable mortality in some bioassay procedures carried out with acaricides and fungal extracts.

"Testing of fungal extracts for toxicity for Boophilus microplus, Lucilia cuprina and coccidia  
M. D. Connole and P. E. Green

A further 172 extracts were examined for evidence of biological activity against L. cuprina and B. microplus. Of these, five showed some activity against L. cuprina.

In collaboration with a private company, a total of 421 extracts were prepared and tested for anticoccidial activity in chickens. Although 15 extracts showed some suggestion of activity initially, repeat tests were negative. This work has been discontinued.

G. C. Simmons  
SIP NEWSLETTER Correspondent  
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Yeerongpilly, Queensland 4105  
AUSTRALIA

## JIP SUBSCRIPTION RATE CORRECTION

Vol. V, No. 2 of the SIP NEWSLETTER stated in error that subscription rates for the Journal of Invertebrate Pathology would be \$26.00 per year for all members. This is incorrect. Subscriptions outside the United States and Canada have an additional \$2.40 charge for postage for each calendar year subscription which includes two volumes. We regret any confusion this misunderstanding may have caused.

## COMPOSITE PICTURE CAPTION

1. (left to right) C. Sindermann, H. C. Whistler, G. Pauley, J. Couch; 2. R. Wallace and P. Starkweather; 3. C. Sindermann; 4. A. Sparks; 5. W. R. Paterson; 6. J. Chadwick; 7. D. Lightner; 8. E. Gould; 9. J. Stoffolano; 10. R. Coviello and T. Cheng; 11. G. Wittig and M. Summers; 12. A. Rouse

SIP NEWSLETTER

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