

sip

newsletter

society for invertebrate pathology

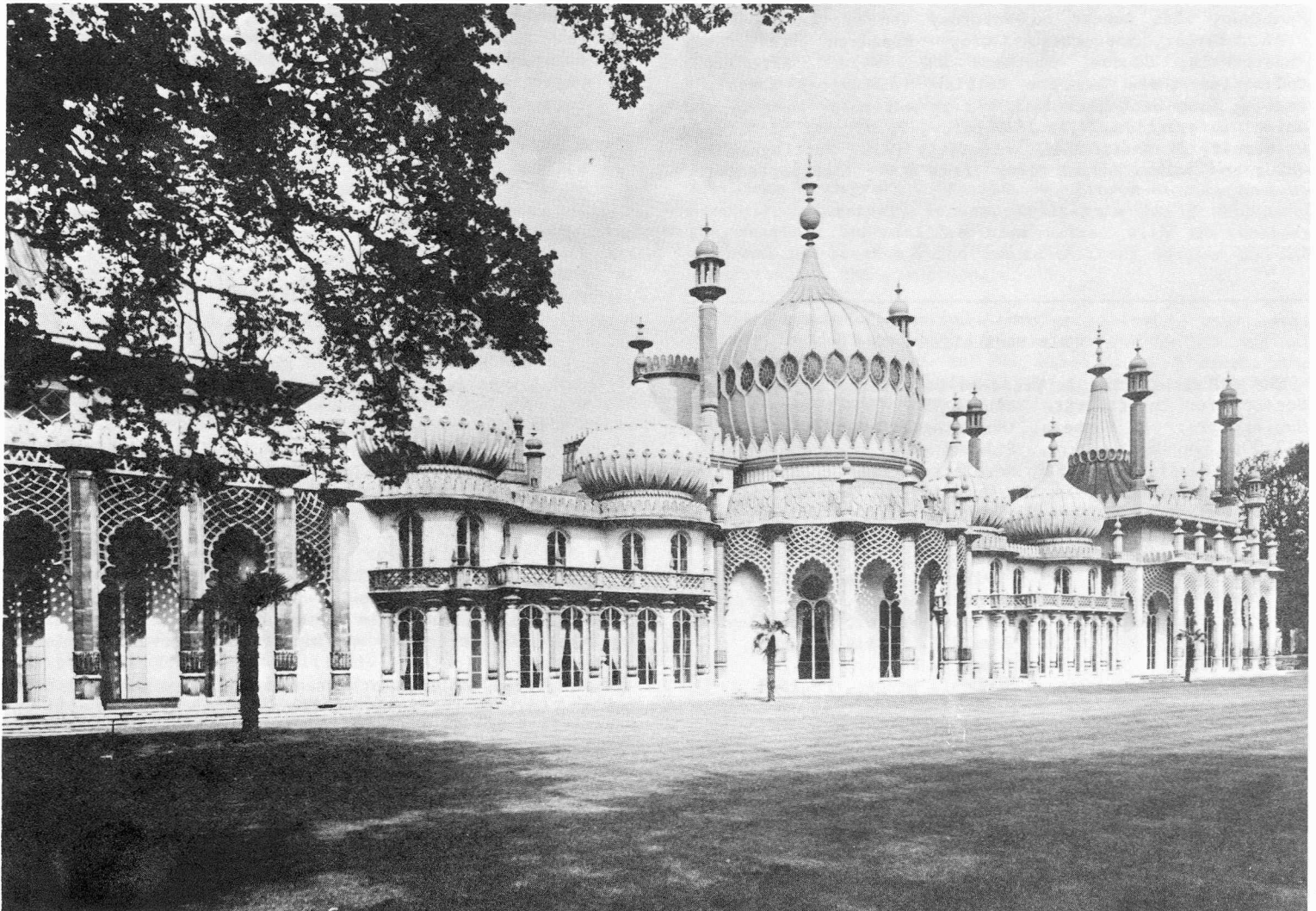
Volume 14, Number 2
April 1982

INVERTEBRATE PATHOLOGY AND MICROBIAL CONTROL
IIIRD INTERNATIONAL COLLOQUIUM ON INVERTEBRATE PATHOLOGY
XVTH ANNUAL MEETING; SOCIETY FOR INVERTEBRATE PATHOLOGY
University of Sussex, Brighton, United Kingdom
September 5th - 12th, 1982.

UK members are looking forward to welcoming you at Brighton in September. At that time the weather could still be warm enough for you to enjoy a swim in the sea. However, don't forget that the English summer includes wet days, so bring a waterproof coat and hat, and a few warm clothes for the cooler evenings.

Our planning schedule is proceeding well. Members are referred to earlier issues of the newsletter for programme details, information and registration form. We have one plea - if you haven't yet booked, would you please do so as soon as possible. The last day for receipt of abstracts of offered papers and registration at the standard rate is April 30th. After this there will be a late registration surcharge.

Accommodation will be available on campus on the evening of Saturday, September 4th for Council Members who will meet at 9.00 hours on the Sunday. Rooms can also be made



Brighton Pavilion, Sussex, U.K.

available on Saturday for anyone wishing to arrive a day early to recover from jet lag, but we need notice of your requirement. Our own transport service between Falmer Railway Station and the University Campus will operate on Sunday September 5th and Saturday September 11th, so members arriving on Saturday September 4th or later during the week should take a taxi from Brighton Railway Station since there are no taxis at Falmer Station.

A small meeting room can be made available for anyone wishing to organize discussion groups, but please let us know your intentions as soon as possible.

Sussex is an area of great historic interest and has its own brand of scenic beauty. There is ample scope for local tourism. The reception will be held in the Brighton Pavilion (see photograph), built for George, Prince of Wales, in 1787 and later modified in the style of the Moghul palaces of India. Brighton Pier is also worth investigation and was recently featured in the New Scientist (Vol. 93, 4th February, 1982). We have arranged an interesting leisure programme for accompanying persons and delegates needing to relax.

We wish to thank the following organizations who, in addition to those mentioned in the last newsletter, have given us financial support; the British Council, Tate and Lyle Ltd (UK) and FAO.

Other meetings before and after the Colloquium have increased in number. For the week previous there is the XVIth International Symposium of the European Society of Nematologists at the University of St Andrews, St Andrews, Scotland, 29th August to Saturday 4th September (Prof. C.E. Taylor, Scottish Crop Research Institute, Invergowrie, Dundee, Scotland DD2 5DA). After the Colloquium there is; the British Mycological Society's meeting from September 14th - 17th entitled "Microbe and Animal Interactions" (Dr J. Peberdy, Department of Botany, University of Nottingham, University Park, Nottingham NG7 2RD); an "Autumn Fungal Foray" from 8th - 15th September

at Southampton (Dr J.G. Manners, Biology Department, Building 44, The University, Southampton, Hampshire SO9 5NH); a symposium on "Animal-Microbial Interactions" at the University of Exeter, 14th - 17th (H.O.W. Aggins, Bio-deterioration Centre, St Peter's College, University Aston, Saltley, Birmingham B8 3TE); a meeting on "Fundamental and Applied Aspects of Bacterial Spores" at Cambridge, 13th - 17th (Dr D.J. Ellar, University of Cambridge, Department of Biochemistry, Tennis Court Road, Cambridge) and a workshop on "Illustration of Fungi" at Southampton from 15th to 19th September (Dr Manners, see above).

Anyone wishing to visit research laboratories in the UK involved in work on Invertebrate Pathology should contact the following:

1. Dr. S. Lisansky for Tate and Lyle Ltd, P.O. Box 68, Reading, Berkshire.
2. Dr. D. Evans, I.C.I. Ltd, Jealots Hill, Bracknell, Berkshire.
3. Prof. E.U. Canning (Protozoa) and Dr G. Matthews (application equipment), Imperial College of Science and Technology, Sunninghill, Ascot, Berkshire; also Dr D. O'Donnell for the Commonwealth Institute of Biological Control on the same site.
4. Dr L. Bailey (bee pathology) or Dr N. Wilding, Rothamsted Experimental Station, Harpenden, Hertfordshire.
5. Mrs J. Bald (Dr Tinsley's secretary), N.E.R.C. Institute of Virology, Mansfield Road, Oxford OX1 3SR.
6. Dr D.M. Minter, London School of Hygiene and Tropical Medicine, Keppel Street, Gower Street, London WC1E 7HT (Neoaplectana, *B.t. israelensis*, vectors).
7. Dr. D.J. Alderman, Fish Diseases Laboratory, The Nothe, Weymouth, Dorset, DT4 8VB for the laboratory at Weymouth and any other fisheries laboratories that may interest you.

H.D. Burgess
Joint Organizer

SIP NEWSLETTER

The SIP Newsletter is produced four times a year by the Society for Invertebrate Pathology. Annual dues in the Society are: US members, including A.I.B.S. affiliation, \$12.00; non-US members, \$11.00; and students, \$4.00. Members receive the SIP Newsletter free. Application forms for Membership in the Society may be obtained from the Treasurer, Dr. James D. Harper, Dept. of Zoology-Entomology, Auburn University, Auburn, Alabama 36849 USA. Council Officers of the Society are:

President	Phyllis T. Johnson, USA
Vice President	Wayne M. Brooks, USA
Past President	Jaroslav Weiser, Czechoslovakia
Secretary	Oswald N. Morris, Canada
Treasurer	James D. Harper, USA
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	Michael C. Mix, USA
	Terry L. Couch, USA
	Peter Luthy, Switzerland

Send news items and other contributions to:
Sardar S. Sohi, Editor
SIP Newsletter
Forest Pest Management Inst.
Canadian Forestry Service
P.O. Box 490
Sault Ste. Marie, Ontario Canada P6A 5M7

INSECT PATHOLOGY AND BIOLOGICAL CONTROL Third Australasian Conference of Grassland Invertebrate Ecology held in Adelaide, Australia 1981

Concepts of pasture ecosystems with reference to New Zealand insect pests were discussed by John Longworth. The addresses of the speakers are given at the end of the summary.

Since the ban of D.D.T., 10 yrs ago, native pathogens and parasites appear to be stabilising population outbreaks of insect pests in pastures. The change is related to the soil acting as an important reservoir of insect diseases, particularly viral, protozoan and fungal pathogens. These diseases are transmitted from generation-to-generation via the soil. Often the pathogens of soil insects tend not to be host specific and may have a complex ecology. They may exist in a delayed density dependent manner indicating ways that insect pathogens may be best used in regulating pasture insect pests. This theme was taken further in Alison Miln's paper on the role of disease in the dynamics of a population of *Costelytra zealandica*. A delayed density dependent mechanism was clearly shown over a 6-yr period, with disease being the cause of fluctuating population densities. Peter Wigley

supported the study with work on Flock House Virus (FHV) of *C. zealandica*. He found that the virus was restricted to a very small area in the Flock House area after an extensive survey in the north and south islands of New Zealand. An immunoelectrophoretic technique was used to study seasonal changes in the density, weight distribution and virus loads of infected grubs.

A recent ecological study on a tachinid parasite of *C. zealandica* by Jenny Merton concluded the New Zealand research on the New Zealand grass grub. It was found that *C. zealandica* in the high lands has a hemivoltine life cycle which allows larvae to be present at the appropriate time for parasitism, while lowland populations of *C. zealandica* are univoltine and the opportunity for parasitism does not occur.

A survey from 1979-81 of parasites which influence the wingless grasshopper *Phaulacridium vittatum* in the N.S.W. table lands was discussed by Greg Baker. It was found that mermithid nematodes (Nematoa: Mermithoidae) became less dominant as a parasite after a prolonged below average rainfall, while dipterous parasites (Nemestrinidae, Sarcophagidae, Tachinidae) became more dominant. During the transition period, *P. vittatum* achieved a high pest status. In 1981, greater than 40% parasitism was attained by *Trichopsidea oestracea* (Diptera: Nemestrinidae) a parasite recorded only occasionally in previous seasons. Two other Diptera species were found to cause high mortalities in 1980-81, these being *Ceracia fergusonii* (Diptera: Tachinidae) and *Blaesoxipha pachytylia* (Diptera: Sarcophagidae).

In South Australia the establishment and spread of the sitona weevil parasite *Microctonus aethiopoidea* was outlined by Dennis Hopkins. Adult weevils which feed on leaves and roots of pasture medics became a pest after their accidental release in Australia in the late 1950's. *M. aethiopoidea* was released in 17 sites during 1979-80 and recovered from 12 sites 1 yr later. Parasitism levels ranged from 0-59%. A survey indicated the parasite was spreading at the rate of 5-10 km/yr.

Dick Hughs discussed the problem of assessing aphids and parasitoids when overlapping generations of both host and parasite occurred in the field. An effective method of obtaining data was achieved by rearing late instar nymphs, counting parasites and analysing the results with a dynamic model.

In South Australia Robin Coles outlined the success of field trials using fungal baits to control the pasture cockchafer *Aphodius tasmaniae* (Coleoptera, Scarabaeidae). *Metarhizium anisopliae* was found to be most effective on second and third instar larval populations when baits were applied in wet weather. A high degree of control was achieved after 3 months from application time.

Rob Davidson from Armidale summarized many of the inherent problems associated with parasites and predators of pasture pests. A proposal was made that agricultural extension should be accompanied by a technical information service about habitat requirements of specific predators and parasites; e.g., establishing native woodland understorey species as a habitat retreat and base from which native predators and parasites could interact with pasture pests.

Mr. John Longworth, Entomology Division, DSIR, Private Bag, Auckland, N.Z.

Dr. Peter Wigley, Entomology Division, DSIR, Private Bag, Auckland, N.Z.

Ms. Jenny Merton, Dept. Botany & Zool., Massey Univ., Palmerston North, N.Z.

Ms. Alison Miln, Ministry of Agriculture & Fisheries, Private Bag, Palmerston North, N.Z.

Mr. Greg. Baker, Entomology Br., Northfield Res. Lab., Dept. Agric. G.P.O. Box 1671, Adelaide, S.A. 5001.

Mr. Dennis Hopkins, Entomology Br., Northfield Res. Lab., Dept. Agric. G.P.O. Box 1671, Adelaide, S.A. 5001.

Dr. R. Hughes, CSIRO, Division of Entomology, P.O. Box 1700, Canberra City, A.C.T. 2601.

Dr. Rob. Davidson, CSIRO, Division of Entomology, Private Bag, Armidale, N.S.W. 2350.

Dr. Robin Coles, Dept. Entomology, Waite Agric. Res. Inst. Private Bag No. 1, Glen Osmond, S.A. 5064.

Robin Coles
Glen Osmond, Australia

EXEMPTION OF BIOLOGICAL CONTROL AGENTS

The entomogenous nematode, *Neoaplectana carpocapsae*, and its associated bacterium, *Xenorhabdus nematophilus*, have been exempt from registration by the United States Environmental Protection Agency (EPA). The California Department of Food and Agriculture has followed EPA's ruling and has exempted their use in California. John Kirkpatrick, President, BR Supply Company, Exeter, California consulted with members of the Nematode Subcommittee, S-135 Regional Project entitled "Development of Microbial Agents for Use in Integrated Pest Management Systems" and in a joint effort obtained the exemption. Mr. James Lindegren, USDA, ARS, WR, Stored Product Insects Research Laboratory, Fresno, California and a member of the Nematode Subcommittee also worked with the Western Regional IR4 Program which funded efficacy studies and had input towards the exemption.

This nematode-bacterial complex infects many pest species in the laboratory. It is not efficacious against foliar-feeding insects in the field. At present, the field use of this nematode will be primarily against soil-inhabiting or plant-boring insect species.

Harry K. Kaya
University of California
Davis, U.S.A.

OBITUARY

Dr. Gordon E. Bucher died suddenly of a heart attack on 1 February 1982 at Winnipeg, Manitoba. On his retirement in December 1981 Gordon had served with Agriculture Canada for over 40 years. He obtained his B.A. in 1937 and his M.A. in 1939, both from the University of Toronto and his Ph.D. in 1946 from Ohio State. He started his entomological career at the former Research Institute, Belleville, Ontario, where he worked as a summer student from 1936 to '41 inclusive. The period 1942 to 1946 was spent with the Canadian Army, initially as an artillery instructor at Suffield and later seconded as a research scientist to the

U.S. Army at their biological warfare base in the Gulf of Mexico. He was discharged with the rank of captain. In 1946 he returned to the Belleville Institute and in 1947-48 was on a transfer of work in Europe where he was instrumental in establishing the post war European Laboratory of the Commonwealth Institute of Biological Control, Feltmeilen, Switzerland. Late in 1948 he returned to Canada as Head, Biological Control Investigations Laboratory, Kingston, Ontario where he remained until 1955.



Dr. Gordon E. Bucher

With the consolidation of Canadian biological control research in 1955 he returned to Belleville to head a program on insect pathology. On the closure of the Belleville Institute in 1972, he transferred to the Research Station, Winnipeg where he worked until his retirement.

In his service with Agriculture Canada, Gordon published over 50 research papers and contributed chapters on insect pathology to 4 books. Although best known as an insect pathologist, his early work included studies on insect taxonomy, morphology, and ecology and during the past 10 years in Winnipeg he worked and published on a variety of ecological problems associated with insect control in canola (rapeseed) crop.

He was a member of the Entomological Societies of America, Canada and Manitoba, the Society for Invertebrate Pathology, the Canadian Society of Microbiologists and Sigma Xi. He was elected a fellow of the Entomological Society of Canada in 1979.

Gordon is survived by his wife, Marion, a daughter, Carolyn Joyce of Bayside, Ontario and two grandchildren, Angela and Melissa.

G.L. Ayre
H.G. Wylie
Agriculture Canada
Research Station
Winnipeg, Manitoba

SOCIETY FOR INDUSTRIAL MICROBIOLOGY
1982 ANNUAL MEETING

The dates of the 1982 annual meeting of the Society for Industrial Microbiology have been changed from August 8-13 to August 15-20. The meeting will be held at the University of Minnesota, St. Paul, MN.

AN ANONYMOUS GIFT

An anonymous gift of \$50.00 has been received by the S.I.P. from one of its members. While no restrictions have been placed on the use of this money, the donor hopes that it would help build a fund to cover the expenses for our recently instituted "Founders' Lectures". Other members looking for a worthwhile cause to support should consider a similar tax deductible contribution.

James D. Harper
Treasurer S.I.P.

MISSING MEMBERS

As a result of the announcement on missing members in the February 1982 issue (Vol. 14, No. 1, p. 5) of the SIP Newsletter two members; e.g., John Roberts and Chihiro Ayuzawa, have been located. Below are listed the names of some more missing members, including the first two from the previous list. If anybody knows about their whereabouts, please inform Treasurer James D. Harper, Dept. of Zoology-Entomology, Auburn University, Auburn, Alabama 36849.

R. Laison,
Maria da Gloria Sampaio Gomes,
Julie Fegley,
Mohamed Bin Mohd-Salleh,
Riva Rubenstein,
James Bell, and J. Thomas McClintock.

James D. Harper

CHANGE OF ADDRESS

In the past the SIP members have notified their change of address to one of the following officers of the Society:

1. Secretary,
2. Treasurer, or
3. Editor, SIP Newsletter.

It is in fact the Treasurer who maintains the membership list and keeps their addresses up to date. Therefore, to save time and to expedite the correction in your address, please send your change of address notification to:

Dr. James D. Harper
Treasurer S.I.P.
Department of Zoology-Entomology
Auburn University
Auburn, Alabama 36849
U.S.A.

Be sure to include your old address, preferably the computer address label from the mailing you get from the Society, to help locate your name in the computer.

Sardar S. Sohi, Editor
SIP Newsletter

POSITION AVAILABLE

Insect Pathologist: Post-Doctoral Associate Position at the University of Florida, Agricultural Research and Education Center, Lake Alfred beginning October 1982. Full-time research on entomopathogenic fungi associated with the soil-inhabiting larvae of 4 species of weevils. Ph.D. in invertebrate pathology/entomology, mycology or related field. Non-tenure accruing position, 3-yr appointment. Salary: \$21,000. Send resume by August 15, 1982 to Dr. Clayton W. McCoy, University of Florida, Agricultural Research and Education Center, Lake Alfred, FL 33850 (ph. #813-956-1151). Florida is an Affirmative Action/Equal Opportunity Employer.

FOREST PEST MANAGEMENT INSTITUTE
SAULT STE. MARIE, ONTARIO, CANADA

A brief write-up on the Forest Pest Management Institute (FPMI) appeared in the April 1981 issue (Vol. 13, No. 2, pp. 15-16) of the SIP Newsletter. Recent staff changes and other happenings pertinent to the Insect Pathology and Biocontrol Program are reported here. Janina Krywienczyk (Serology) so well known to many SIP members, especially those working on *B.t.*, will be retiring this coming June. Ozzie Morris (Biocontrol Strategies), Secretary of the SIP and also well known for his work on *B.t.*, will shortly move to Canada Department of Agriculture in Winnipeg, Manitoba. David Perry joined us earlier this year to work on the pathology and epizootiology of entomogenous fungi, and Mary Legris joined the Viral Chemistry group last fall. Peter de Groot has returned to the Field Efficacy group after completing his B.Sc. Forestry degree. We will soon be looking for replacements in Serology and Biocontrol Strategies.

An Advisory Committee has been appointed to review the FPFI's R & D program on a continuing basis and to advise the Director on its relevance to forest pest management. Initially, the Director of FPFI has been appointed the Chairman of the Committee, and the other 25 members are from Canadian Forestry Service Headquarters and research establishments, Canadian Wildlife Service, Environmental Protection Service, Fisheries and Oceans, Canada Department of Agriculture, National Health and Welfare, National Research Council, the British Columbia Council of Forest Industries, Canadian Pulp and Paper Association, Association of University Forestry Schools and the provincial government forestry authorities. The first meeting of the Committee was held at the Institute on March 17-18, 1982 when members were given an overview of the FPFI's R & D program.

Mr. F.L.C. Reed, Assistant Deputy Minister, Canadian Forestry Service, has indicated that the CFS will increase its resources in biological control research over the next two years, from the present 20 percent of its forest protection budget to an estimated 25-30 percent. This increase will not be made at the expense of ongoing research on chemical pesticides which are essential for effective forest management strategies. It is hoped, however, that increased emphasis on biological control research will reduce our dependence on chemical pesticides eventually.

This year FPFI will conduct cooperative microbial control trials in several provinces across Canada. A joint program with B.C. Ministry of Forests, Pacific Forest Research Centre and FPFI will test the effectiveness of a nuclear polyhedrosis virus (NPV), two chemical insecticides (Orthene and Sevin) and *B.t.* against the Douglas-fir tussock moth, *Orgyia pseudotsugata*. Also, FPFI will be testing the efficacy of a granulosis virus (GV) against the western spruce budworm, *Choristoneura occidentalis*, in

B.C. In Ontario an NPV will be tested for the control of the eastern spruce budworm, *C. fumiferana*, and Gypcheck (an NPV product) will be tested against the gypsy moth, *Lymantria dispar*.

In 1982 the *B.t.* spray program will attempt to determine the optimum spray volume required for the effective control of *C. fumiferana*. Also, a new formulation of *B.t.* that provides in-flight encapsulation of the material will be tried that will help to determine the optimum droplet size. In Sault Ste. Marie area tests will be carried out to study the effect of naturally occurring *Entomophthora* on forest insects.

During 1981 a total of 58,590 hectares of forests was sprayed with *B.t.* in three of the provinces in Canada (Nova Scotia, 28,330 ha; Quebec, 25,500 ha; Ontario, 4,760 ha) against *C. fumiferana*. In 1982, plans are to spray with *B.t.* 4,000 ha in Newfoundland, 30,000 ha in Quebec and 3,490 ha in Ontario against this insect.

Dr. David Perry, a Research Scientist at FPFI will present a course entitled "The Ecology of the fungi" this summer (July 19-August 21) at the University of Virginia, Mountain Lake Biological Station in the Appalachian mountains. It will cover research on the ecology of fungal pathogens of forest insects in addition to their systematics, phylogenetics, morphology, distribution, isolation and cultivation. For further information contact Dr. Perry here at FPFI or Dr. J.L. Riopel, Director, Mountain Lake Biological Station, Gilmer Hall, University of Virginia, Charlottesville, VA 22901, USA.

Also, the Institute has started a quarterly Newsletter. Each issue will feature a topical lead article, highlights of ongoing research in pest management, timely briefs by FPFI scientists and outside contributors, and news items excerpted from various sources. It is designed primarily for people involved in forest pest control. Copies can be obtained from:

Information Services
Forest Pest Management Institute
Canadian Forestry Service
P.O. Box 490
Sault Ste. Marie, Ont. P6A 5M7
Canada

G.W. Green
Director, FPFI

PARTIAL PROGRAM
SIP 1982 AD HOC MEETING WITH AIBS
The Pennsylvania State University
University Park, U.S.A., 8-12 August 1982

MONDAY MORNING, AUGUST 9

8:45 Welcome and Announcements

SESSION 1. Symposium: Insect Pathogens and Applied Biology. Convened by MARTIN SHAPIRO, Otis Methods and Development Center, USDA-ARS, Otis ANGB, MA 02542. Willard Hall, Rm. 260.

9:00 CARSTENS, ERIC B. Department of Microbiology and Immunology, Queen's University, Kingston, Ontario K7L 3N6. Genetic manipulation of baculoviruses.

9:30 HARGETT, LOUIE T. and ERIC UMMEL, Sandoz Inc. Crop Protection Division, Rt. 10, East Hanover, NJ 07936 and 480 Camino Del Rio South, San Diego, CA 92018. Current status and future potential of viruses for insect control.

10:00 COFFEE

10:30 ANDALORO, JOHN T. Department of Integrated Pest Management, Cornell University, Geneva, NY 14456. Potential use of insect pathogens in future integrated pest management (IPM) programs.

11:00 MURPHY, SHELDON R. Performance Management Group, Suite 1101, 30 East 40th Street, New York, NY 10016. Industrial involvement in development of microbial control agents.

SESSION 2. Society for Invertebrate Pathology "Meet your officers session". Willard Hall, Rm 260.

11:30 PHYLLIS T. JOHNSON (President) and other officers will present current activities and problems of SIP, followed by informal discussion.

MONDAY AFTERNOON, AUGUST 9

SESSION 3. Contributed Papers. Viruses and Bacteria. Presiding: EDWARD M. DOUGHERTY, Insect Pathology Laboratory, USDA, Beltsville, MD 20705. Willard Hall, Rm. 260.

1:30 DOUGHERTY¹, E.M., M. SHAPIRO², J.R. ADAMS¹, and R. ROCHFORD¹. ¹Insect Pathology Laboratory, USDA, Beltsville, MD 20705 and ²USDA, ARS, Otis AFB, Massachusetts 02542. Partial characterization of several geographical and plaque purified isolates of a multiply embedded nuclear polyhedrosis virus of the gypsy moth *Lymantria dispar* (MLdNPV).

1:45 GETTIG, R.R., T.M. HATFIELD and W.J. MCCARTHY. The Pennsylvania State University, University Park, PA 16802. A cell culture system for the study of *Heliothis* SNPVs.

2:00 MCCARTHY, WILLIAM J. The Pennsylvania State University, University Park, PA 16802. Effects of several pesticides on *Autographa californica* MNPV development in TN-368 cells.

2:15 SHAPIRO, M. and R.A. BELL. USDA-ARS, Otis Methods Development Center, Otis ANGB, MA 02542. Comparative infectivities of gypsy moth nucleopolyhedrosis virus isolates from North America, Europe, and Asia.

2:30 BIEVER, K.D. USDA, SE, ARS, Biological Control of Insects Research Laboratory, Columbia, MO. Inoculative introduction of virus for suppression of lepidopteran pests.

2:45 KANOST, M.R. and P.E. DUNN. Department of Entomology, Purdue University, W. Lafayette, IN 47907. The specificity of serum lysozyme induction in *Manduca sexta*.

3:00 COFFEE

3:30-4:00 See SIP program available at meeting

POSTER SESSION

1:30-4:00 Posters

SESSION 4. Workshop: Current status and description of latest modifications of Environmental Protection Agency guidelines (Sub-part M) for safety and

registration of insect pathogens. Discussion Leader: FREDERICK S. BETZ, Hazard Development Division, TS-769, Environmental Protection Agency, 401 M Street SW, Washington, DC 20460. (Tel: 703-557-7351). Willard Hall, Rm. 260.

4:00 BETZ, FREDERICK S. History, recent changes, and current status of EPA's "Guidelines for Registering Biorational Pesticides".

TUESDAY MORNING, AUGUST 10

SESSION 5. Society for Invertebrate Pathology and Mycological Society of America Joint Symposium: Arthropod-Associated Fungi: Fungal Diseases of Marine Crustacea. Organizer and Convener: CHARLES E. BLAND, Department of Biology, East Carolina University, Greenville, NC 27854. Willard Hall, Rm. 260.

8:30 FISHER, W.S. Aquaculture Program, Animal Science Department, University of California, Davis, CA. *Lagenidium* infection of shrimp eggs.

9:00 CRISP, L.M. and C.E. BLAND. Department of Biology, East Carolina University, Greenville, NC 27854. Biosystematics of *Lagenidium callinectes* and notes on its control in aquaculture.

9:30 PORTER, D., A.K. SPARKS and JOLLY HIBBITS. Department of Botany, University of Georgia, Athens, GA 30602 and National Marine Fisheries Service, Seattle, WA 98112. Structure and histopathology of *Trichomarix invadens*, a biotrophic parasite of Tanner crabs.

10:00 COFFEE

10:30 OVERTON, S.V. and C.E. BLAND. Department of Biology, East Carolina University, Greenville, NC 27854. Development and sporulation of *Haliphthoros milfordensis* parasitic on marine crustacea.

11:00 FISHER, W.S. Aquaculture Program, Animal Science Department, University of California, Davis, CA. Antifungal bacterial activity.

11:30 LIGHTNER, D.V. Environmental Research Laboratory, University of Arizona, Tucson, AR 85706. Fungal diseases of marine crustacea: A review.

SESSION 6. Contributed papers: Protozoa, Nematodes, and Other Pathogens. Willard Hall, Rm. 217.

8:30-12:00 See SIP program available at meeting.

DISPLAYS. Products and application equipment for microbial control will be presented as posters and/or actual materials in the hallway near the meeting rooms. For details see WILLIAM G. YENDOL, Pesticide Research Laboratory and Graduate Center, Pennsylvania State University, University Park, PA 16802 (Tel: 814-863-0844).

8:30-5:00 Displays

TUESDAY AFTERNOON, AUGUST 10

SESSION 7. Symposium: Diseases of Invertebrates other than Insects. Organizer and Convener: MARENES R. TRIPP, Office of the Director, School of Life and Health Sciences, University of Delaware, Newark, DE 19711. Willard Hall, Rm. 260.

1:30 JOHNSON, PHYLLIS T. National Marine Fisheries Service, Pathobiology Investigations, Oxford Laboratory, Oxford, MD 21654. Crustacean viruses.

2:00 LIGHTNER, D.V., R.M. REDMAN, and T.A. BELL. Environmental Research Laboratory, University of Arizona, Tucson International Airport, Tucson, AR 85706, and Laie, HI 96762. Penaeid shrimp diseases of major importance in culture facilities in Hawaii and in the Central American and Southwestern Pacific Regions.

2:30 RITTENBURG, JAMES. Lobster Project, University of Maine, Orono, ME 04469. *Gaffkemia* infection and immunity in the American lobster.

3:00 COFFEE

3:30 OPRANDY, JOHN J. and PEI W. CHANG. Department of Aquaculture Science and Pathology, University of Rhode Island, Kingston, RI 02881. The induction of hematopoietic neoplasia by 5'-bromodeoxyuridine in apparently healthy *Mya arenaria*.

4:00 HARSHBARGER, JOHN C., JR. Museum of Natural History, Smithsonian Institution, Washington, DC 20560. Recent advances in invertebrate oncology.

4:30 YOSHINO, TIMOTHY P. Department of Zoology, University of Oklahoma, Norman, OK 73019. Trematode diseases of gastropod molluscs: Role of circulating hemocytes in parasite resistance.

SESSION 8. Contributed Papers: Fungi. Presiding: G.L. NORDIN, University of Kentucky, Lexington, Kentucky 40546. Willard Hall, Rm. 217.

1:30 BEN-ZE'EV, ISRAEL. NSERC/Agriculture Canada, Research Branch, Research Station, Harrow, Ontario NOR 1G0, Canada. *Erynia neopyralidarum* sp. n. and *Conidiobolus apiculatus*, two pathogens of pyralid moths, components of a nomen confusum: *Entomophthora pyralidarum* (Zygomycetes: Entomophthorales).

1:45 NORDIN, G.L. G.C. BROWN, and J.A. MILLSTEIN. University of Kentucky, Lexington, Kentucky 40546. Epizootiology of *Erynia* fungi affecting *Hypera* weevils in the alfalfa ecosystem in central Kentucky.

2:00 MILLSTEIN, J.A., G.C. BROWN and G.L. NORDIN. University of Kentucky, Lexington, Kentucky 40546. Conidial discharge in *Erynia* sp. (Zygomycetes: Entomophthorales), a mechanistic hypothesis based on *in vivo* experimentation.

2:15-5:00 See SIP program available at meeting.

DISPLAYS. See TUESDAY MORNING for description.

6:00 MIXER. At the home of WILLIAM G. YENDOL, 242 Whitehall Road, University Park (approximately 3 miles from campus). Transportation available - see program distributed at meeting.

WEDNESDAY MORNING, AUGUST 11

SESSIONS 9 and 10. Contributed papers. See SIP program available at meeting. Willard Hall, Rm. 260 and 217.

WEDNESDAY AFTERNOON, AUGUST 11

SESSION 11. Contributed papers (If needed). See SIP program available at meeting. Willard Hall, Rm. 260.

Donald W. Roberts, Chairperson
Permanent Program Committee

POSITION AVAILABLE

Post-Doctoral Research Associate Virology at the Insect Pathology Resource Center, Boyce Thompson Institute. Research and training in genetics, replication and efficacy of insect viruses. Experience in contemporary biochemical and molecular techniques preferred. Application deadline August 31, 1982. Send curriculum vitae and names of three references to Dr. H. Alan Wood, Insect Pathology Resource Center, Boyce Thompson Institute, Tower Road, Ithaca, N.Y. 14853, USA. Telephone (607) 257-2030. Affirmative Action/Equal Opportunity Employer.

REPORT ON REGIONAL PROJECT S-135

The Technical Committee of Regional Project S-135 on the "Development of Microbial Agents for Use in Integrated Pest Management Systems" held its annual meeting February 16-18, 1982 at the Capitol House, Baton Rouge, Louisiana. Thirty-six members and industrial representatives attended the meeting with Dr. James R. Fuxa serving as chairman of the local arrangements committee. During its business meeting, Dr. L.O. Warren commented on the status of several other regional projects and indicated that funds had been made available for the support of regional project research on biological control as related to integrated pest management programs. The Executive Committee of S-135 suggested that these funds should be used to support expanded field work on the development of *Nomuraea rileyi* as a microbial insecticide. Specific guidelines for the use of the funds have been developed subsequently by W. Yearian and D. Boucias, and members of S-135 have been given the opportunity to submit specific proposals for funding in 1982.

Dr. G. Allen indicated that S-135 was perceived favorably by CSRS and encouraged renewal of the project for another 5 years. The current status of the EPA guidelines for registration of biorational pesticides was also discussed, and members of S-135 should have at least one more opportunity to review the guidelines before publication. He also encouraged S-135 to consider a joint meeting next year with other regional projects with interest in biological control.

Comments from various industrial representatives emphasized their current research interests and the need for the support of S-135 members for the continued use of microbial insecticides. While registration of microbials is no longer perceived as a limiting factor, the acceptance of microbials as effective pesticides is apparently limiting sales. Discussion of this problem was continued at a separate, informal meeting later between S-135 members and industrial representatives.

Most of the meeting was devoted to subproject reports on research activities accomplished during 1981 and plans for 1982. The virus and bacteria subproject groups met together while the other groups held separate meetings. As research efforts in application technology crossed the boundaries of all the other subgroups, the continuation of this group as a separate subproject was questioned and may be discontinued in future meetings. Each subproject chairman will aid in the formulation of a new project proposal for the potential renewal of S-135 in 1983.

Dr. C. McCoy will serve as the new chairman of S-135 for 1982-83 as Dr. W. Brooks declined to serve due to his pending responsibilities as an officer in the Society of Invertebrate Pathology. Dr. J. Hamm was elected as secretary and Dr. H. Kaya as representative-at-large. The meeting of S-135 in 1983 will be held at one of 3 locations with the following priority: Las Vegas, Nevada;

Phoenix, Arizona; and Orlando, Florida. A committee will be appointed to look into the possibility of arranging a joint meeting next year with other regional projects and an appropriate local arrangement committee will be designated later.

W.M. Brooks
Secretary, S-135

SOUTHEASTERN BIOLOGICAL CONTROL WORKING GROUP

The annual meeting of the Southeastern Biological Control Working Group (SBCWG) was held at Mobile, Alabama on the evening of January 27. Among the officers for 1982 are: Joe Lewis, President; Walker Jones, Vice President; and Don Nordlund, Secretary-Treasurer. Membership in the SBCWG is open to all persons interested in biological control and residing in nine southeastern states plus Puerto Rico. Further information can be obtained from Don Nordlund, USDA ARS, Tifton, GA 31793.



Officers for 1982, Southeastern Biological Control Working Group. Front Row, L-R - L. Klostermeyer (UT, Knoxville), D. Nordlund (USDA ARS), W. Whitcomb (UF, Gainesville), W. Jones (USDA ARS), W. Dickerson (USDA ARS). Back Row, L-R - M. Miller (USFS), J. Hamm (USDA ARS), A. Cofrancesco (USAE), W. Snow (USDA ARS), G. Smart (UF, Gainesville). Absent from photo - W.J. Lewis (USDA ARS), E. Theriot (USAE), R. Smith (USDA ARS), J. Harper (Auburn U.), W. Yearian (U. Ark.), W. Gardner (UG, Experiment), K. Elsey (USDA ARS), D. Green (U. Mayaguez).

"Biological Control - Approaches by Five Disciplines", the first symposium sponsored by SBCWG, was presented at the ESA Southeastern Branch Annual Meeting in Mobile, AL, on January 28, 1982. The speakers and their disciplines were: John Hamm, USDA ARS, Tifton, GA - Invertebrate Pathology; Don Nordlund, USDA ARS, Tifton, GA - Entomology; Grover Smart, UF, Gainesville, FL - Nematology; Raghavan Charudattan, UF, Gainesville, FL - Plant Pathology; Gary Buckingham, USDA ARS, Gainesville, FL - Weed Science; and Will Whitcomb, UF, Gainesville, FL - Needs and Opportunities for Cooperation. Each speaker summarized the state of the art in his discipline, the current research projects in the southeastern U.S., and his

of the principal functions of the SBCWG which is to provide a means for exchange of information among members in different disciplines.



Speakers at the symposium "Biological Control - Approaches by Five Disciplines" held at the Southeastern Branch Annual Meeting, Mobile, AL, and sponsored by the Southeastern Biological Control Working Group (SBCWG). L-R - G. Buckingham (USDA ARS), W. Whitcomb (UF, Gainesville), G. Smart (UF, Gainesville), D. Nordlund (USDA ARS), R. Charudattan (UF, Gainesville), J. Hamm (USDA ARS).

REPORT ON CANADA-USA COOPERATIVE *B.t.* TRIALS AGAINST THE SPRUCE BUDWORM (1979-81)

In October 1978, the Canadian Forestry Service called a meeting of *B.t.* researchers and applicators with a view to formulating some guidelines for *B.t.* aerial applications and to document information gaps which when filled would contribute to the general acceptability of the product. Subsequent to this meeting, O.N. Morris (FPMI) was named the Canadian Coordinator for the *B.t.* spray trials and Chairman of an International *B.t.* Advisory Committee with D.G. Grimble (USDA Forest Service) as Co-Chairman and U.S. Coordinator. The CFS Technical Recommendations were reviewed by the Advisory Committee and submitted to cooperators in both countries with minor changes as the CANUSA (Canada-USA) Technical Guidelines. In 1979, 1980 and 1981, *B.t.* was applied to 44,500 ha, 100,413 ha and 79,378 ha of spruce-fir forests, respectively, in 124 treatment plots in the provinces of Ontario, Quebec, New Brunswick, Newfoundland, and Nova Scotia in Canada and the state of Maine (USA).

Analysis of the 3 year data showed the following trends: (1) An operational dosage rate of 20 B.I.U./ha gives inconsistent results in terms of tree protection. The application rate of 30 B.I.U./ha was consistently effective. (2) Ground deposit rates lower than 25 droplets/cm² produce inconsistent results. (3) Operational dosage rates of conventional chemical pesticides (fenitrothion, matacil, orthene and sevin-4-oil) are only slightly more effective than *B.t.* applied at 20 B.I.U./ha and similar in efficacy when *B.t.* is applied at 30 B.I.U./ha.

O.N. Morris, Coordinator
Canada-USA *B.t.* Trials
Forest Pest Management Institute, Canada