



NEWSLETTER

society for invertebrate pathology

VOLUME 26, NUMBER 2

June 1994



The Roman Coliseum at Nimes which will be visited on Wednesday afternoon as part of the mid-Colloquium tour

**Vith INTERNATIONAL COLLOQUIUM
ON INVERTEBRATE PATHOLOGY
AND MICROBIAL CONTROL
AND
IInd INTERNATIONAL CONFERENCE
ON *BACILLUS THURINGIENSIS*
MONTPELLIER, FRANCE
28 AUGUST - 2 SEPTEMBER 1994**

Scientific Programme: As indicated in previous announcements, the scientific programme will consist of morning plenary sessions with invited speakers (3 to 5 per

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The Organizing Committee has been most encouraged by the massive response to the 1st and 2nd announcements of the Colloquium. Over 400 participants and 67 accompanying persons have registered by mid-May and over 250 abstracts (invited or contributed papers, posters) have been received.

of invertebrate pathology interests. Afternoons will include symposia (invited speakers) and contributed paper sessions. A special poster session will occur on Wednesday morning after the coffee break, but all the posters will be on display throughout the Colloquium. In addition, evening sessions are scheduled on Monday and Tuesday.

Plenary Sessions: The scientific programme has reached an advanced stage of completion with all plenary sessions and symposia scheduled. The plenary sessions will cover the following topics:

- Monday: Symbionts and Endosymbionts
(Convenors: N. Boemare, R. Stouthamer)
- Tuesday: Molecular Genetics of Insect Pathogens
(Convenors: A. Klier, M. Summers)
- Wednesday: Mode of Entry of Pathogens
(Convenors: R. Granados, D. Boucias)
- Thursday: Invertebrate Resistance to Pathogens
(Convenors: F. Gould, L. Lacey)
- Friday: Strategies for the Utilization of Pathogens
(Convenors: G. Soares, R. Georgis)

Plenary sessions will be held in the main Pasteur auditorium (745 seats).

Symposia: Nineteen symposia are also scheduled on the following subjects:

- Monday: Novel Bacterial Toxins
(Convenors: H. Dean, R. Frutos)
Entomopathogenic Bacteria Symbiotic with Nematodes
(Convenors: R.J. Akhurst, N. Boemare)
New Approaches in the Study of Entomogenous Fungi
(Convenors: T.M. Butt, Y. Couteaudier)
- Tuesday: Mode of Action of Bacillus Toxins: Molecular Mechanism of Action and Resistance
(Convenors: D. Ellar, J.F. Charles)
Fundamental Aspects of Entomopathogenic Nematode Research
(Convenors: R. Gaugler, I. Glazer)
Entomopathogenic Fungi in Tropical Environments
(Convenor: B. Papierok)
Mode of Action of Bacillus Toxins: Mode of Action: Alternative Approaches
(Convenors J.L. Schwartz, J. Van Rie)
Safety of Exotic Fungi (Sponsored by the Division on Microbial Control)
(Convenors: M. Goettel, J. Vandenberg)

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Submissions to the following sections are solicited:

Forum: More substantial articles on current issues of concern, limited to approximately five pages.

Letters to the Editor: Issues of concern can be brought up here.

Microbial Control News: Information on new discoveries, "News Releases", formation of companies etc. pertaining to microbial control.

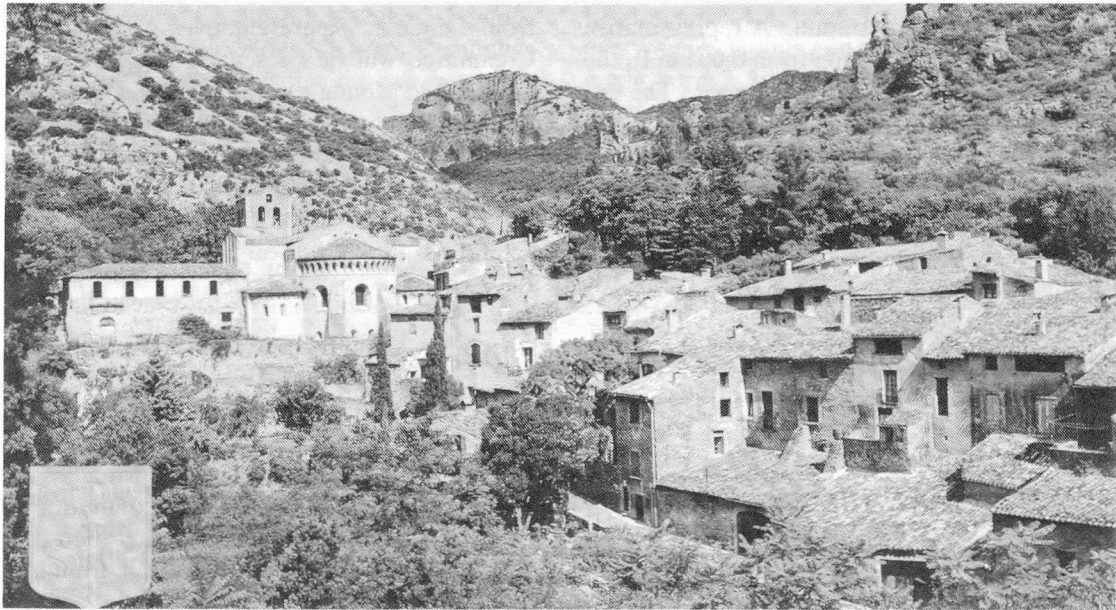
We also depend on our members to supply us with information for the following sections: **Obituaries**, **Member News** (Retirements, Awards, Promotions), **Members on the Move** (New addresses), **Positions Available/Wanted**, **Meeting and Workshop Announcements**, and other **News Items**.

Send all submissions directly to the Editor in Lethbridge. Submissions via EMail or on computer disk (WP or ASCII) make our lives much easier and save on costs. Please include a hard copy of any text sent via computer disk.

Deadline for the next Newsletter is October 15, 1994

Tuesday Symposia continued:

Recombinant Insect Viruses
(Convenors: R. Granados, M. Bergoin)



St-Guilhem Le Desert,
which will be part of the Tuesday optional event

Current Development in the Use of
Microbial Pathogens for the Control of
Forest Insect Pests

(Convenor: J.C. Cunningham)

Thursday: Bacterial Toxin Engineering and Strain
Improvement

(Convenors: M. Peferoen, D. Lereclus)

Pathogens of Vectors and Their Use in
Biological Control

(Convenor: J. Fargues)

Defense Reactions in Insects

(Convenor: P. Bulet)

Delivery Systems for Bacterial Toxins

(Convenor: A.G. Porter)

Large Scale Culture of Insect Cells

(Convenor: J. Vaughn)

Microbial Control of Soil Insects

(Convenors: M.G. Klein, T.A. Jackson)

Friday: Bacterial Control of Vectors and Pests

(Convenors: N. Becker, I. Thiery)

Nematodes: Ecology and Biological Control

(Convenors: P. Smits, H.K. Kaya)

Marine Invertebrate Pathology

(Convenor: J.R. Bonami)

In addition to the symposia, two evening workshops will be held, one on Monday sponsored by the Division on Microbial Control entitled "Application technology of microbial insecticides", the other on Tuesday sponsored by

the Division on Microsporidia entitled "Cellular and molecular biology of microsporidia in cell culture".

Symposia and workshops will be held as concurrent sessions (three symposia per session) along with contributed papers. **The detailed programme along with the abstracts will be available at the registration desk.**

Other scientific events:

Monday evening:

Bt Management Working Group Meeting

Tuesday evening:

Microbial Control Division Meeting

Thursday afternoon:

SIP Business Meeting

Thursday evening:

Microsporidia Division Meeting

Additional registration details: As indicated in the previous Newsletters, each participant is responsible for making hotel reservations. Don't forget that Montpellier is a tourist area and hotels may be fully booked by the end of June. Hotels listed in the previous issue are selected hotels and are all within walking distance of Le Corum. The registration desk will be opened at Le Corum on Saturday 27 August from 2 to 7 pm and on Sunday from 9 am to 7 pm. This will allow the participants who booked for the Sunday tour (Visit of Carcassonne) to register the day before. The departure for the Carcassonne tour is scheduled on Sunday 28 August at 8:30 am from the "Gare

Routiere", adjoining the railway station. A representative will be at the ICIP desk at the station from 8:00 am to the bus departure time for those needing assistance. The bus will return to Montpellier (Le Corum) at around 6:30 pm. This will allow participants to attend the mixer on Sunday evening, also at Le Corum.

How to reach Montpellier: People travelling by plane will reach Montpellier-Mediterranean airport from Paris-Orly (West Terminal), Paris-Charles de Gaulle (terminal B) or

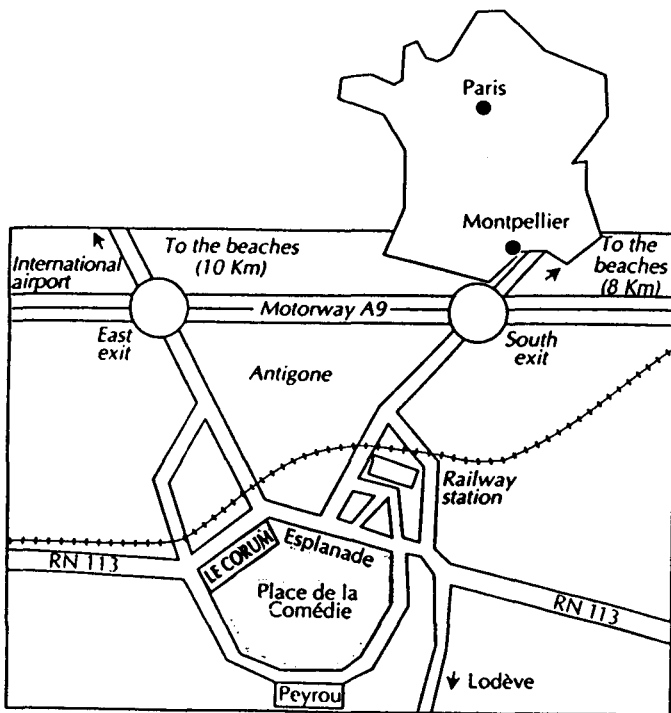
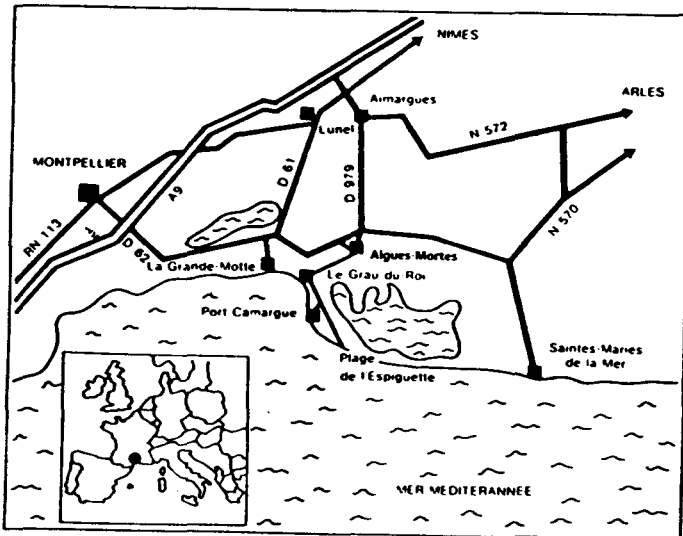
from London. Representatives of the ICIP Organizing Committee will be present at the airport on Saturday, Sunday and Monday morning to welcome participants and to direct them to the shuttles. Just look for the ICIP sign. The airport is 8 km from Le Corum. There will be a shuttle for each Air Inter flight (25 FF per person). A taxi drive to your hotel or Le Corum will cost you between 75 and 100 FF. Major car rental companies are present at the airport.

People travelling by train from Paris will certainly choose the TGV (High Speed Train, 4:40 hrs from Paris to Montpellier). All departures are from Paris-Gare de Lyon. A desk will be set up at the Montpellier train station on Saturday, Sunday and Monday morning with people from ICIP Organizing Committee to welcome participants and help them reach their hotel or Le Corum. The train station is 5-10 minutes walk from Le Corum and most selected hotels.

For those of you who are planning to reach Montpellier by car, the easiest way from the Rhone Valley is to take the tollway ("Autoroute") A 9 "Languedocienne", exit "Montpellier Est" and follow the direction "Centre Historique". You will then see signs indicating the direction to Le Corum. You could easily park your car at Le Corum parking lot and go to the registration desk where you will find information on how to get to your hotel. There is no free parking in the center of Montpellier (except for some hotels). Parking cards for one week at Le Corum will be available at a reduced rate at the registration desk.

Weather: The weather at this time of the year will probably be warm and clear. It is recommended you bring summer clothes and a swimming suit; however, Mediterranean climate is rather unpredictable and characterized by summer storms. Showers may thus occur. An umbrella may be useful in case of showers. Although you may get wet you will not be cold. No need to bring warm clothes unless you are planning to hike in the mountains. Beware of sunburns on the beach.

Activities: Montpellier is located 8 km north of the Mediterranean sea where you can enjoy water activities like swimming, windsurfing, scuba diving or simply sun bathing. The Pyrenees mountains are only a 2 hr. drive from Montpellier and a 4 hr. trip will bring you to the heart of the Alps mountains. Closer are the "Cevennes" mountains (featured in Robert Louis Stevenson's novel) which is a great place for hiking, camping and bike riding. Campgrounds as well as hotels and refuges are available



to spend a night (or more) on several-day hikes. Famous archeological sites like Nimes, Arles, Orange, Remoulins (Pont du Gard) or Vaison la Romaine can be easily reached by car (1 to 2 hrs). These sites will give you a taste of what living in the beginning of our era looked like in the Mediterranean Basin. Medieval places are very common in the vicinity of Montpellier. Carcassone and Aigues-Mortes are probably the most famous cities, but Avignon with its ramparts and Papal Palace is a very attractive place full of history.

Many castles are present in Southern France and among the most famous are the Cathar castles. A trip west of Montpellier to the Pyrenees will allow you to visit Montseur, Peyrepertuse, Queribus, Mirepoix or Foix which are historical landmarks. Located in a very attractive countryside, these places testify that history is still alive there. Provence is only a couple of hours drive from Montpellier. This area is well known for its scenery, its garlic and its sunny weather. The Rhone delta, known as Camargue, where bulls and horses live among a large variety of birds is no more than half an hour's drive from Montpellier. This is the largest bird sanctuary in the South of France. Bird watching as well as horse riding are the most popular activities in Camargue. Mosquito bites are also an activity you can enjoy there! Aside from scenery and open air activities, Southern France is known for its large choice of excellent food and wines.

Important telephone numbers: It is important to know that public telephones in France work essentially with phone cards, although a few coin-operated telephones are still available. It is recommended you purchase a phone card upon arrival at the airport or train station. Telephone cards (ask for "Telecartes") can be purchased at any newspaper or tobacco shop. It will cost 40 FF for a 50 units card or 96 FF for a 120 units card. You can call all the countries from any public telephone by dialing 19 followed by the country code without any need of an operator assistance.

Important telephone numbers are:

Police: 17
 Emergency medical assistance (SAMU): 15
 Fire: 18
 Anti-poison center (Montpellier): 67 63 24 01
 CORUM: 67 61 67 61
 Tourism office: 67 58 67 58

Exchange: There will be no problem in exchanging dollars or other major currencies. Major credit cards (VISA,

Mastercard, American Express) are accepted virtually everywhere. Hotels and restaurants can be paid by these credit cards. It is also possible to withdraw cash from bank teller machines with an international card.

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**XXVIIIth ANNUAL MEETING
 ITHACA, NEW YORK
 JULY 16 - 21, 1995**

Yes, that's right, the Ithaca folks are already busy planning a great meeting for 1995. For you non-Romans, it will be our 28th annual. Now is the time to be thinking about symposia topics, division workshops, and getting in shape for that record time you're going to set in the 5K race. If you have any ideas about these, please contact either John Vandenberg (Program Chair), or Al Wood (Local Arrangements Chair). If you have other questions, like "Why do we have meetings that start with mouthfuls like XXVIII and end in MCMLXLV?" then ask your newsletter editor. Quiz: What was the Roman numeral associated with our last meeting in Ithaca? No peeking at old programs. Answer next issue.

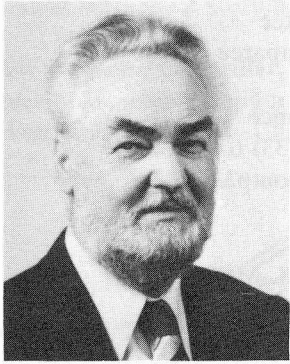
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1994 FOUNDER'S LECTURE

In 1982 the Society initiated an annual recognition of individuals, who, in the opinion of the Society, have contributed to the genesis and development of scientific

efforts and accomplishments identified as invertebrate pathology. In celebration of the recognition of an Honoree, the Society sponsors a Founder's Lecture. As a



Dr. Constantin Vago
Honoree



Dr. Lois K. Miller
Lecturer

highlight of this year's meeting in Montpellier, France, Dr. Constantin Vago and Dr. Lois Miller will be recognized as Honoree and Lecturer, respectively, for 1994. Dr. Vago conducted much of his research in Montpellier, and as such, is a truly appropriate Honoree. The selection for this year's Honoree and Lecturer was made by the Founder's Lecture Committee with considerable input from members of the Society.

Dr. Constantin Vago, 1994 Founder's Lecture Honoree

Our 1994 Honoree, Professor Constantin Vago, is an individual whose pioneering work has led to important contributions to the field of invertebrate pathology and therefore, his selection as the 1994 Honoree is most appropriate. Although his scientific work was concerned primarily with cytopathogenic mechanisms of interest for problems of general pathology, owing to his "comparative" approach and his preferential use of invertebrate models, his contributions have been essential for the development of our discipline, especially during its "pioneering" period. Dr. Vago played a key role in the discovery of many new pathogens including, chlamydiae, mycoplasmas and viruses (e.g. Densoviruses and Entomopoxviruses). In addition to their importance in insects, some of these pathogens have also been used as models for studies in molecular biology. Dr. Vago also worked on the concepts of "latency" and the present systematics of invertebrate viruses. His contributions are also well known in the birth of modern invertebrate cell culture and the beginnings of the microbial control of invertebrates.

Dr. Vago played an important role in the early formation of the discipline of invertebrate pathology. As early as 1960, he created an international liaison committee for invertebrate pathology. He was a Founder of our Society for Invertebrate Pathology and was president from 1970 - 1972. He was important in assisting the Society to become a truly International Society and in its recognition as a commission of the International Union of Biological Sciences. Many of us still remember the 1971 SIP Conference and our welcome by Dr. Vago at the historic site of Pasteur's work in invertebrate pathology. He is an Honorary member and the 1987 Founder' Lecturer of our Society.

Professor Vago was born in 1921 in Debrecen, Hungary. Through his education he earned a Ph.D. and DSci. He was a follower of A. Szent-Györgyi and then A. Lwoff, both Nobel Prize winners. His professional career included work at several important institutes, (such as the University of Sciences in Montpellier, Pasteur Institut and the National Institutes of Scientific and Agronomic Research in France). He became a full professor and finally director during his career. He is a member of the Academy of Sciences of France and of several other countries in Europe. He was instrumental in the development of several important research institutions, but is most noted for his role in the establishment of the Center for Comparative Pathology in Montpellier-Saint Christol.

Dr. Vago remains an active member of the SIP and continues to play an active role in numerous international scientific organizations. He also continues to take a special interest in the activities of the many students he trained who now hold major positions of responsibility in numerous countries.

Dr. Lois K. Miller, 1994 Founder's Lecturer

Our 1994 Founder's Lecturer, Dr. Lois K. Miller, is a pre-eminent molecular biologist specializing in the field of baculovirology. Dr. Miller's contributions include more than 100 refereed publications on the molecular biology of insect baculoviruses in which she explored both basic baculovirus research, understanding the function and regulation of baculovirus genes and applied research, developing baculoviruses as gene expression vectors, and improving the properties of the viruses as insect pest control agents. Some specific areas of research have included: DNA sequence homology, genetic mutations and physical mapping of the DNA, viral mutants and transposable elements, transfection studies and

temperature sensitive mutants and their use as genetic markers. Dr. Miller was also a pioneer in the use of Restriction Endonuclease Analysis for the identification of baculoviruses.

Dr. Miller was born in central Pennsylvania, USA, in 1945. She received her Ph.D. degree in biochemistry at the University of Wisconsin-Madison in 1972. As a postdoctoral fellow of the National Institutes of Health and the American Cancer Society, she studied bacterial viruses at the California Institute of Technology and mammalian viruses at the Imperial Cancer Research Fund in London, UK. In 1975 she initiated her research on insect baculoviruses as a professor at the University of Idaho. In 1986 she moved to the University of Georgia where she is currently a Research Professor of Entomology and Genetics. Dr. Miller is a fellow of the American Association for the Advancement of Science and a fellow of the American Academy of Microbiology.

The Founder's Lecture Committee
Richard A. Daoust, Chair
Carlo M. Ignoffo
Anthony Sweeney
Clayton W. McCoy

MICROBIAL CONTROL NEWS

Regulation of Biological Control Agents In The USA

Since late 1991 I have sought your input to improve the process of regulation of biological control agents. You have clarified many issues about the current system, and have suggested potential solutions and mechanisms for its improvement. Your input has been extremely valuable. I want to make it clear how new regulations are developed and promulgated, so that you know what is expected to happen next.

First, APHIS publishes *draft regulations* in the *Federal Register* in the form of a "proposed rule" and invites public comment. When the public-comment period (usually 30 - 90 days) has expired, APHIS analyzes the incoming correspondence and determines if and how the particular proposed rule should be modified. Every incoming comment is considered carefully.

APHIS then publishes the "final rule" in the *Federal Register*, along with a synopsis of the public comments and an explanation of how the agency did or did not modify the proposed rule in light of those comments. The final

rule always carries an explanation of its anticipated economic effects and an "effective date." The final rule expresses the new regulations as they will appear in their permanent home, the *Code of Federal Regulations*.

APHIS' proposed rule addressing biological control will be published soon. I encourage you to read the proposed rule and send in a written response during the public-comment period. Your comments may deal with the substance, scope, or specifics of the proposed rule. APHIS is obligated to deal with *all issues* raised by commenters. (For example, the recent proposed rule on notification for genetically engineered organisms in *7 CFR Part 340* was modified significantly following public comment.) Interested parties can respond as individuals or through an appropriate group.

I hope you will continue to be involved in development and finalization of APHIS' new regulations affecting biological control.

Ernest S. Delfosse
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Ecogen Launches Insecticidal Nematode Program

Ecogen Inc. has initiated a broad-based international research effort to develop insecticidal nematode products. Dr. Gaugler, as Director of Nematode Research, coordinates the overall program. Much of the research program, particularly in the areas of nematode discovery, development, and formulation is based at Ecogen-Europe, a subsidiary of Ecogen Inc. located in a new, state-of-the-art research facility near Perugia, Italy. Dr. Richard Daoust is the General Manager of this laboratory. Ecogen-BIO Germany was recently formed near Kiel to address issues of nematode liquid fermentation; Dr. Ralf Ehlers is providing leadership for this team of researchers. Research on methods development and quality control is being conducted at Ecogen's international headquarters in Langhorne, Pennsylvania. Process research and development is underway at Ecogen's nematode manufacturing plant, Ecogen-Australia, located in Hobart, Tasmania and administered by Dr. Dennis Thiele. Nematode storage research has been contracted to a team led by Dr. Robin Bedding of CSIRO in Canberra, Australia. In addition, Ecogen is supporting research on more basic aspects of heterorhabditid and steinernematid nematodes at Rutgers University in the U.S. (Dr.

Gaugler), the Volcani Center in Israel (Dr. Itamar Glazer), and Christian Albrechts University in Germany (Dr. Ehlers).

According to Dr. Bruce Carlton, Executive Vice President of Research and Development, "Ecogen sees insecticidal nematodes becoming a major factor in the control of an array of insect pests, especially those that spend some part of their life cycle in the soil. We believe nematodes will provide a cost-effective and environmentally sound way to control these insects. With the distinguished research team we have assembled, we believe that Ecogen is on its way to becoming a major force in providing insecticidal nematode products for agricultural and related markets."

Ecogen is presently marketing four nematode species produced at Ecogen-Australia. In addition to nematodes, Ecogen has developed and marketed a number of novel Bt and pheromone bioinsecticide products, and is also developing biofungicide products.

Randy Gaugler
Ecogen Inc.
Langhorne, PA 19047-1810
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EcoScience Signs Retail Distribution Agreement for Bio-Path™ Cockroach Control Chamber

WORCESTER, MA, February 2, 1994 - EcoScience Corporation today announced that it signed a marketing and distribution agreement for its patented Bio-Path™ Cockroach Control Chamber with Bengal Chemical Company. The agreement, the first component of EcoScience's North American retail distribution strategy, provides non-exclusive distribution rights in retail markets including lawn and garden, hardware, mass merchandising and grocery chains throughout the U.S. The market for cockroach control products worldwide is approximately \$560 million annually at the manufacturer's level. In the U.S., the market is estimated to be approximately \$200 to \$250 million.

"Bengal Chemical is an ideal partner for EcoScience," said James A. Wylie, Jr., President and Chief Executive Officer of EcoScience. "They are an aggressive household products company with a proven track record for successfully introducing high performance insect control products. Bengal is committed and capable of establishing Bio-Path™ as a leading cockroach control product."

Bob LeBlanc, President of Bengal Chemical, noted,

"Bengal anticipates that the Bio-Path™ technology will be the beginning of a new era of pest control in the U.S. We are extremely excited to be leading the way in the retail market, and expect to launch Bio-Path™ in the spring of 1994."

EcoScience's patented Bio-Path™ technology uses a natural microbial agent to control household pests. Although used like a bait station, the Bio-Path™ Cockroach Control Chamber is the first product which only requires that the cockroach touch the microbial agent found in the chamber. The exposed cockroach can then spread the microbial agent to other cockroaches through direct contact, known as the Horizontal Transfer™ effect, which greatly enhances cockroach population control.

Bengal Chemical, a rapidly growing privately held corporation, headquartered in Baton Rouge, Louisiana, is engaged in the development and marketing of a broad range of products for the retail homeowners pesticide market. Innovation, quality, and customer satisfaction have been the long term commitments of Bengal.

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Bt Management Group Focuses on Resistance

Davis, Calif. (May 7, 1993)--The biorational industry is working to prevent insecticides based on *Bacillus thuringiensis* (Bt) from falling victim to the very condition that has made them a popular alternative to chemical pesticides: insect resistance.

Industry representatives are funding educational programs and field research on how resistance can be avoided by using Bt products as part of an integrated pest management (IPM) strategy, says Susan MacIntosh, chairperson of the Bt Management Working Group (BtMWG), an international group of scientists from 13 private companies. Over the past four years the group has provided \$250,000 in funding, for Bt research projects.

"When Bt products are used wisely in IPM programs, and combined with a range of pest control measures, the risk of resistance is minimal," says MacIntosh. "Reports to the contrary are incorrect."

"IPM strategies use chemical, biological, cultural practices or other methods to insure that no one product or method is used so frequently as to promote insect resistance."

Insect resistance in biological insecticides has not been identified by the scientific community as a widespread or inevitable situation, adds MacIntosh, a scientist at Entotech, Inc. in Davis.

"But due to the diversity of Bt products, we anticipate wider use of biological pest-control tactics. It is time to take a proactive approach to minimizing the threat of insect resistance to these products," she adds.

"It is critical that Bt remains a viable option for agriculture," says MacIntosh. "After 30 years of successful use, Bt is considered one of the safest pesticides available. It is biodegradable and has no adverse effects on beneficial insects, other wildlife or farm workers. That's why we are encouraging the use of Bt within an IPM strategy."

The only documented cases of Bt resistance under field conditions have occurred in isolated incidents for a single species, the diamondback moth, says MacIntosh.

The diamondback moth has relatively low mobility and a high reproductive capacity, up to 25 generations per year in tropical climates. Since these moths have developed resistance to all other insecticides, Bt was sprayed intensively with no additional pest control measures, a situation conducive to rapid resistance development, MacIntosh adds.

"There is no evidence, published or otherwise, that points to resistance development in gypsy moths," says Norm Dubois of the United States Department of Agriculture Forest Service in Hamden, CT.

"Resistance to certain Bt insecticidal proteins has been induced in several other insect species in artificial selection experiments, but resistance appears to develop quite differently in the field as compared to the laboratory", says Dubois.

Bt is a bacterium which, under natural conditions, produces insecticidal proteins that controls a variety of insect pests. Bt use has increased at a rapid pace but remains only a small part of total insecticide sales.

For more information, please contact: Sue MacIntosh, Chairperson, BtMWG at Novo Nordisk Entotech, Inc., 1497 Drew Avenue, Davis, CA 95616 USA OR: Marnix Peferoen, Plant Genetic Systems, J. Plateaustraet 22, B-9000 Gent, BELGIUM

From: Resistant Pest Management, Vol.5 (2) 1993

Resistance of Diamondback Moth to *Bacillus thuringiensis* in China

The diamondback moth (DBM), *Plutella xylostella* (L.), developed resistance to most pyrethroid and organophosphorus insecticides in 1980s in P.R China (Zhu et al. 1991). As an alternate, the *Bacillus thuringiensis* (Bt) insecticides became more important to control DBM, especially in the south of China where pyrethroids resistance in DBM was more severe. The production and application of Bt formulations less than 0.3 millions kg in 1985 increased to 1.5 millions kg in 1990. About 20% of Bt insecticides was used for the control of lepidopteran pests in crucifers.

The resistance of DBM to Bt has been reported in fields in the United States (Tabashnik et al. 1990, Shelton et al. 1993) and Malaysia (Syed 1992), and in greenhouse in Japan (Tanaka 1992). All of these cases were related with the extensive applications of Bt to control DBM. So we selected four areas in China for the detection of Bt resistance in DBM, i.e. Shenzhen (Bt used most extensively), Shanghai (extensively), Wuhan (less extensively) and Beijing (inextensively) (Zhao et al. 1993).

The DBM larvae and pupae were collected from Brassica fields in October and November 1992 in Shenzhen, Shanghai and Wuhan, and in May 1993 in Beijing. A susceptible (S) DBM strain was provided by Prof. Y.Q. Sun. DBM larvae were reared on fresh cabbage leaves at $25 \pm 1^\circ\text{C}$ and photoperiod 14:10 (L:D). Third instar of F1 or F2 and leaf disk dip method similar to Tabashnik et al. (1990) were used for bioassays. Wetable powder (WP) formulation with the potency of 1,5000 IU/mg of the HD-1 strain of *B. thuringiensis* subsp. *kurstaki* from Hubei Academy of Agricultural Sciences was used for the study. DBM larvae were kept for 48 h at $25 \pm 1^\circ\text{C}$ before the mortality was determined. The discriminating concentration method for resistance monitoring was also used for comparison with concentration-mortality tests.

Table 1 shows the resistance ratios (RRs) of DBM to Bt and their relationship with the % survival at a discriminating concentration. Compared with the LC50 of S strain, the RRs of DBM populations in Shenzhen and Shanghai were 41.4- and 6.1- folds, respectively, with Wuhan and Beijing populations not significantly different with S strain. These results were comparable to the fields Bt application history in each of the areas.

The survival rates at the discriminating concentrations of 25 IU/ μl (equivalent to 50 mg [AI]/litre) led to similar

conclusions with the concentration tests on the relative susceptibility of five DBM populations to Bt. The concentration-mortality tests did not show significant difference in resistance between Wuhan and Shanghai populations, but the discriminating method did (Table 1). From this result we could get a same conclusion as Tabashnik et al. (1993) (in which the concentration was about half of that we used), i.e. bioassays using short time intervals and a single concentration may greatly increase efficacy for routine evaluation of resistance. We thought 25 IU/ μ l was a suitable discriminating concentration for on-farm resistance monitoring to Bt in DBM in China.

Population	Slope \pm SE	LC50 (95%FL) IU/ μ l	RR	% Survival at 25I/ μ l
Susceptible	1.46 \pm 0.20	0.50 (0.30-0.82)	1.0 c	0 c
Beijing	1.23 \pm 0.21	0.54 (0.26-1.10)	1.1 c	0 c
Wuhan	1.39 \pm 0.23	0.82 (0.41-1.66)	1.6 bc	0 c
Shanghai	1.92 \pm 0.36	3.07 (1.62-5.83)	6.1 b	7.4 b
Shenzhen	1.86 \pm 0.27	21.05 (12.68-34.95)	41.1 a	48.4 a

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- and
- Wei-zhuan Wang Institute of Plant Protection Guangdong Academy of Agricultural Sciences Guangzhou, 510640 P.R. China
- From: *Resistant Pest Management*, Vol. 5 (2) 1993

Agricultural Genetics Company Forms Subsidiary Companies

Agricultural Genetics Company (AGC) has focused its business interests by forming three subsidiary companies. These are: MicroBio, which specialises in the use of naturally occurring organisms as biopesticides and biofertilizers; Axis Genetics, which is focusing on recombinant DNA technology to develop novel pest disease control strategies as well as pharmaceutical uses for plant products; and Cambridge Plant Breeders, which is a plant breeding company.

MicroBio has a range of biofertilizer products (based on *Rhizobium* bacteria and mycorrhizal fungi), produces and markets two strains of entomopathogenic nematode (Nemasys[®] and Nemasys H[®]) for control of horticultural and mushroom insect pests, and has an ongoing *B. thuringiensis* collaboration with Ciba which has resulted in the marketing by Ciba of a number of products (Turex[®], Agree[®] and Design[®]). Recently, MicroBio has launched in the UK a new nematode-based product for control of slugs (see "New Nematode Use: Slug Control" below.)

Axis Genetics is researching into the natural defence mechanisms of plants against insect and nematode pests

and has identified a number of plant proteins with activity against both types of pests. Recombinant DNA technology is being used to construct transgenic crop varieties which will be field trialed in the near future.

Paul Rodgers
Axis Genetics Ltd.
Babraham, U.K.

New Nematode Use: Slug Control

The Agricultural Genetics Company subsidiary, MicroBio, has launched a new nematode product, Nemaslug®, for use by UK gardeners to control slugs. Slugs are probably the most troublesome pest facing UK gardeners and can damage a wide range of plants in Spring and Autumn. Nemaslug® contains a nematode parasite of slugs, *Phasmarhabditis hermaphrodita*, which was isolated in the UK. The product was developed in collaboration with the Institute of Arable Crops Research, Long Ashton Research Station (LARS).

P. hermaphrodita is capable of killing all pest species of slug tested but earthworms, carabid beetles and other insects are not affected by the nematode. Dauer larvae of the nematode infect slugs by entering the mantle cavity, where they grow and reproduce, causing a characteristic swelling of the mantle. Slugs are inhibited from feeding after a few days, thus protecting crops from damage. The slug dies eventually, usually after 1-2 weeks at 10°C but the nematode is capable of killing slugs at temperatures as low as 5°C.

Slugs are also significant pests of arable crops, such as wheat, oilseed rape, and potato in Europe. MicroBio and LARS are now collaborating on a new project to develop the nematode for control of slugs in arable crops.

Paul Rodgers
Axis Genetics Ltd.
Babraham, U.K.

New Electronic Source For IPM Information

IPMnet is operating and available on-line 24 hours a day offering individuals and institutions worldwide a free source of globally vital Integrated Pest Management information.

This purpose-designed network, a joint effort of the Consortium for International Crop Protection (CICP) and the National Biological Impact Assessment Program

(NBIAP) of the USA, was launched as an Internet-based bulletin board in late 1993 to provide researchers, extensionists, technical specialists, and producers, as well as others who may be interested, with current international IPM information. It is also structured to create a world-wide discussion and debate forum for strengthening and fostering IPM.

IPMnet offers nearly instantaneous, round-the-clock access to an increasing selection of IPM special reports, issues of the IPMnet NEWS, issues of RESISTANT PEST MANAGEMENT, technical information resources, a forum, and databases. The intent is to assemble and disseminate global information that will support not only IPM extension, research, and teaching, but technology implementation and policy development.

There is NO subscription fee, cost, or restriction to use IPMnet, other than for using Internet. IPMnet's co-sponsors want to provide information and services to as wide and varied a constituency as feasible. The only usage requirements are that: 1.) first-time contacts complete a brief registration form indicating professional interests and expertise, and, 2.) IPMnet users adopt a willingness to interact with others in the network. The professional profiles of IPMnet participants will help build an expertise database that can become a useful component of the network.

To connect with IPMnet via Internet, use any of several communication programs or links and select or key in: <telnet> then, at the prompt, key in: <cicp.biochem.vt.edu> and follow the on-screen prompts that will appear. In situations without access to telnet, contact CICP for a hard copy of the IPMnet registration form as well as to place a name/address on a list for future receipt of a hard copy of the IPMnet NEWS (if/when funds can be found to support printing and mailing costs).

CICP, Cornell University, NYAES, Geneva, NY
14456-0462, USA;
VOICE: 01-315-787-2252 FAX: 01-315-787-2276
E-MAIL: cicp@cornell.edu

IPMnet's co-sponsors believe that the bulletin board concept of global electronic information has great potential, but only if the community served participates. For IPMnet to fulfill its envisioned potential, individuals, plus international and national organizations need to actively take part in using and cooperatively supporting this initiative. That means sharing, as well as seeking,

information, offering opinions, and providing guidance. Any existing IPM-related databases or reports that could be shared with the international IPM community would be most welcome at IPMnet.

Also, the IPMnet NEWS is highly receptive to running a variety of articles relating to IPM, with full author credit. Research summaries, actual application procedures and results, technical studies, impediments, successes, and opinions are all welcome. (Please see contact address below.)

The co-sponsoring organizations invite your participation in IPMnet as well as suggestions for its improvement. The goal is to collectively support and strengthen IPM around the world and generate a positive force for global benefit.

For the co-sponsors,

A.E. Deutsch

E-mail: <deutsch@bcc.orst.edu>

IPMnet NEWS

(A.E. Deutsch, editor)

c/o Integrated Plant Protection Center, 2040 Cordley Hall
Oregon State University, Corvallis, OR 97331-2915, USA
Fax: 01-503-737-3080 Direct voice line: 01-503-737-6275

Microbial Control News From Australia

Since the Fifth International Colloquium on Invertebrate Pathology and Microbial Control was held in Adelaide (1990), Australia has played host to two meetings providing a forum for discussion on the future opportunities for BT in Australian agriculture. As expected, hot topics have included regulatory issues relating to the potential use of transgenic plants and integrated use of BT in cotton. BT products are continuing to be used in greater amounts throughout Australia with cotton the major user. Abbott is the major supplier of BT, and, according to Mick Tichon from Abbott, Australian cotton growers were the first to use the new Abbott DiPel LS product produced by a novel manufacturing process. DiPel ES, the major BT product used in Australian cotton, was approved for use on organic cotton in 1993. In addition to cotton, BT products are used extensively on crucifer crops in areas with resistance to chemical insecticides. In particular, DiPel formulations of BT *kurstaki* have been effective in controlling insecticide-resistant *Plutella xylostella*.

Whilst BT so often takes the limelight, Australia has seen some very encouraging developments with the use of *Metarhizium*. Andrew Rath reports that:

"Bio-Care Technology Pty Ltd has submitted the registration package for BioGreen(TM) Granules to the National Registration Authority (NRA). BioGreen was developed by the Department of Primary Industries and Fisheries Tasmania, for the control of the subterranean pasture scarab, *Adoryphorus couloni*, and has so far proved effective in pastures for over four years from one application. Registration is expected to take 18 months with the major delay being review by the National Health and Medical Research Council (NH&MRC). The NH&MRC has the prime task of setting MRLs, and even though we are seeking exemption from MRLs, the system cannot be speeded up! Once registered, BioGreen will sell for approximately \$A40/ha."

Crop Care Australasia Pty Ltd is another company actively involved in the commercial development of *Metarhizium* for use against sugarcane pests. *Metarhizium* has also received considerable media attention. Research by Richard Milner (CSIRO) in collaboration with IIBC on the use of *M. anisopliae* for locust control was widely publicised following a successful trial by the Australian Plague Locust Commission using *Metarhizium* in an oil spray over 10ha of land in western NSW.

Hopefully this positive outlook for microbial control will be reflected in the meeting sponsored by Crop Care: "Biopesticides - Opportunities for Australian Industry" at the University of Queensland, 9-10 June 1994.

Jane Drummond

Editor's note: See Members on the Move section for Jane's whereabouts and new address.

Canada Holds Workshop on Microbial Pest Control Agents

A wide range of selected experts from government, industry and academia, including 9 SIP'ers (see photo below), met between 8 - 11 May, 1994, at the Chateau Montebello on the shores of the Ottawa River in an effort to develop a scientific consensus on studies necessary to assess human health and environmental impact of microbial control agents. The workshop was organized by Agriculture and Agri-Food Canada's Food Production and Inspection Branch in response to the comments received regarding the regulatory proposals on registration and research permit guidelines released in November, 1993 (see SIP Newsletter, 26(1), pp 11-12). Experts participated in round table discussions with regulators from Agriculture

& Agri-Food Canada, Health Canada and Environment Canada. The three major broad categories covered were 1) Occupational, Bystander, Food Safety 2) Manufacturing Syndicate, Quality Assurance Issues 3) Environmental Fate and Effects. Although clear consensus was not always achieved, significant recommendations were made which should certainly help in the development of rational research permit and registration guidelines for microbial control agents in Canada.

The Editor



SIP Members Participating in a Recent Workshop on Microbial Pest Control Agents at Montebello, Quebec, Canada. From left to right: Joel Siegel, Cliff Bradley, Martin Erlandson, Ray Carruthers, Mark Goettel, Jean Irvin, Jeff Lord, Bill Kaupp and Max Arella.

Insect Pathology Heavily Represented at Brazilian Conference

More than 800 persons, representing 20 countries, including 100 invited national and international guests, attended the Fourth Symposium on Biological Control (SICONBIOL), 15 - 20 May, 1994 in Gramado, Rio Grande do Sul, Brazil. President of the Symposium was SIP member, Luis Clovis Belarmino, of EMBRAPA, Pelotas. The symposium included conferences, round tables, workshops, mini-courses and poster sessions. The overwhelming success of this conference illustrates the great interest and progress in biological control in Latin America. More than 20 Society for Invertebrate Pathology members were present. Of particular interest to SIP members were Round Tables on Biological Control of Soil Pests, Current Development in Baculoviruses, Biological Control of Parasites of Veterinary Concern, Advances in the Use of Fungi, Production and Formulation of Entomopathogens, and Entomopathogenic Bacteria

Applied to Control of Vectors. Plenary conferences were delivered on Use of Entomopathogenic Viruses, Biological Control of Grasshoppers, and the Role of Microbial Flora in the Interaction of Insects with the Environment. Short courses were given on Identification of Entomopathogens, Biological Control of Simuliidae and Culicidae, Biological Control with Nematodes, and Cellular and Molecular Biology of Entomopathogenic Bacteria. Over 100 posters, out of a total of over 300, described research on pathogens of insects and nematodes. In addition, progress in biocontrol in the "Cone Sul" (the South Cone) of South America was reviewed, focusing on Argentina, Uruguay, Chile, Paraguay, Bolivia and Brazil. The next Siconbiol will be held at Iguasu Falls in 1996.

The Assistant Editor



Society for Invertebrate Pathology members attending the 4th Siconbiol, Gramado, Brazil. L to R: Top Row: F. Priest, B. Magalhaes, B. Fridlender, C. McCoy, S. Alves. 2nd row: I. de Souza, D. Roberts, R. Humber, R. Daoust. 3rd row: A. Yousten, P. Vilarinhos, S. Lecuona, D. Sosa-Gomez, R. Pereira. 4th row: C. Cavados, J. Maruniak, F. Moscardi, R. Granados. Bottom row: D. Capalba, E. Davidson, R. Gomes Carneiro, L. Belarmino

MEMBER NEWS

New Members

We wish to welcome the following new members who joined us between January and May of 1994.

Ismail Abdelnamid
Lalithanjali D Amarasinghe
Maria Anagnou-Veroniki

Soraya Leal
Roger V Lee
David B Levin

Elizabeth Baquerizo
 Anthony David Barker
 Israel S Ben-Ze'ev
 Frederick S Betz
 Annika Bronnvall
 Eva Bylen
 E Alan Cameron
 Angela Cristina Cavallaro
 Ho Yul Choo
 Richard S Cowles
 Alberto Danielli
 Armelle Delecluse
 Latife Drif
 Jinping Du
 Jacques Fargues
 Jerry Feitelson
 Elisabete T L Figueiredo
 M J Furlong
 Barbara Giordana
 Christel Girard
 Dawn Heather Gouge
 Nigel Graham M Hague
 Ahmed Raouf Hamed
 Birgit Hass
 David G Heckel
 Catherine A Hill
 Casey W Hoy
 Johannes A Jenie
 Desmond R Jimenez
 Thomae Kakouli
 Christiaan Kooyman
 Albrecht Koppenhofer

John Sudheer Miduturi
 Richard W Miller
 Nobuhiko Nakashima
 Mamdouh I Nassar
 Sergio Orduz
 Olga I Ozino
 Silvia Ivanova Pacheva
 Sakol Panyim
 Arne Peters
 Jeff D Pinkham
 Gamini Ratnasinghe
 Christopher I Riegel
 Marc Rougier
 Patrick Sanz
 Ryoichi Sato
 Anke G Schirocki
 Rudi Segers
 Bernhard Speiser
 Brad Stiles
 Patricia S Stock
 Shanthi Surapaneni
 Mark Ticehurst
 Rob W H M Van Tol
 Claire Vidal
 Antonia Volgyi
 Rudolf Wegensteiner
 Jacqueline Wijbenga
 Trevor Williams
 Landa Zdenek

parent company. He is responsible for research management and intellectual property rights. Axis Genetics is developing recombinant DNA technology for control of plant pests and diseases (see "Agricultural Genetics Company Forms Subsidiary Companies" under **Microbial Control News**). His new address is: Axis Genetics Ltd., Babraham, Cambridge CB2 4AZ UK. PHONE: (0223) 837622 FAX: (0223) 837604

DR. JANE DRUMMOND is literally "on the move" as she is presently on a 7-month sailing voyage from Panama to New Zealand. She has arranged to meet up with local entomologists on many of the central South Pacific Islands to search for entomopathogenic fungi. Her contact address until November is C/O Soren Larsen, Squaresail Pacific, P.O. Box 32247, Devonport, Auckland, New Zealand. FAX: 64-9-445-9044.

DR. GRAHAM THURSTON recently joined the Canadian Forest Service - Maritimes on a two-year Visiting Scientist Fellowship. He will be researching the use of entomopathogenic nematodes and fungi for the control of forest insect pests. Prior to this position, Graham was doing post-doctoral work in Dr. Harry Kaya's lab at UC Davis, where he was working with entomopathogenic nematodes and insect stress. His new address is: Canadian Forest Service - Maritimes, P.O. Box 4000, Fredericton, NB Canada E3B 5P7
 EMAIL: GThurston@FCMR.Forestry.CA
 PHONE: (506)452-3026 FAX: (506) 452-3525

MEMBERS ON THE MOVE

DR. JAMES E. "BUD" WRIGHT has joined Troy Biosciences, Inc. (Fermone Corporation), Phoenix, AZ as Vice President. He will also be Director of Research and Development with emphasis on the development and commercialization of biorationals for biological insect control, such as Naturalis-L. Dr. Wright was previously with the U.S.D.A. where he served in many research and administrative capacities including the National Program Director for Entomological Sciences in the U.S. and International areas. Bud's new address is: Troy Biosciences, Inc., Fermone Corp., 2629 North 37th Drive, Phoenix AZ 85009 USA
 PHONE: 602-233-9047 FAX: 602-254-7989

DR. PAUL RODGERS recently joined the Agriculture Genetics Company subsidiary, Axis Genetics, from the

PUBLICATIONS

Back Numbers of *Mosquito News*

I have a run of *Mosquito News* which is surplus to requirements. The run is from 1971, Volume 31, No. 1 to 1983, Volume 43, No. 1. and is complete, except for 1974, Volume 34, No. 4. I will send the journals to anyone who is prepared to pay the costs of carriage. Please contact:

Dr. J.B. Carter, School of Biomolecular Sciences, Liverpool John Moores University, Byrom Street, Liverpool, L3 3AF, UK. PHONE: 051-231-2041

The Biopesticide, *Bacillus thuringiensis*, and its Applications in Developing Countries. H.S. Salama, O.N. Morris and E. Rached, eds. 1993. 339 pages.

This book presents the contributions of the international workshop by the same title held in Cairo during 4-6

November, 1991. Sections include: *Bacillus thuringiensis* utilization in developing countries; production and utilization constraints of *Bacillus thuringiensis* in developing countries; and commercialization of *Bacillus thuringiensis*. Chapters are authored by experts from Tunis, Egypt, Italy, Switzerland, Thailand, China, Canada, Taiwan, the Phillipines, the USA, the UK, Rwanda, Brazil, Mexico and India. Chapters focus on practical techniques in production of this microbial insecticide.

Copies are available from the National Research Centre, Cairo, Egypt and the International Development Research Centre, P.O. Box 8500, Ottawa, Canada K1G 3H9

Microbial Control of Pests and Plant Diseases 1970-1980.
H.D. Burges (ed). 949 pp. Academic Press, London.

This book is still in print and is available from local book sellers or Academic Press, Marketing Department, 24-28 Oval Rd, London NW1 7DX, UK. Orders are accepted for payment by credit card, mail, Fax (44 081-309 0807) or phone (44 081-300 3322).

POSITIONS AVAILABLE

Graduate Studentship

Seeking an innovative graduate student to pursue a Masters degree at the Entomology Research Lab, Department of Plant & Soil Science, University of Vermont. Based in the heart of the Green Mountain State, join a dynamic team of researchers investigating novel methods of greenhouse pest management. Assistantship immediately available for 2 years; may be opportunities to extend the research program to the PhD level. Research to address compatibility of entomopathogenic fungi with other components of an IPM strategy. Background experience in one of the following a requirement: microbiology, mycology, entomology or biological sciences. Send a cover letter with a brief statement of interests, curriculum vitae and three letters of reference by July 15 to: Dr. Michael Brownbridge, Entomology Research Lab, University of Vermont, P.O. Box 53400, Burlington, VT 05405-3400, USA. TEL: (802) 658-4453; FAX: (802) 658-7710; E-MAIL: M_BROWNBRIDG@UVMVAX.uvm.edu

Postdoctoral Position

Postdoctoral position available immediately at competitive salary for the study of the molecular biology of an

entomopoxvirus from a parasitic wasp. The virus encodes protein(s) that disrupt the cellular defences of the insect host into which the wasp lays her eggs and introduces the virus. Knowledge of molecular biology techniques are required and should include, sequencing, Northern, Southern and Western hybridization techniques. Practical experience with PCR and cDNA library construction very desirable. Appointment renewable after one year pending availability of funds. Specific project within the above context open to interest and initiative of postdoctoral associate selected. Contact Dr. P.O. Lawrence, Dept of Entomology, P.O. Box 110620, Univ. of Florida, Gainesville, Fl. 32611-0620. Phone (904) 392-1901, ext 127; Fax: (904) 392-0190; e-mail pol@gvn.ifas.ufl.edu

LETTER TO THE EDITOR

Dear Mark:

Congratulations on your editorial, (Science, Patents and Industry, Vol. 26 (1) p.10). That needed saying and I support your views, but let's be fair to industry. In a capitalist world (and the alternatives aren't promising at present) industry makes profits by possessing and exploiting unique knowhow. I don't have a problem accepting that industry should own exclusive rights to research data it has financed.

The question of open discussion at meetings is important for the society. Industry representatives have long attended professional societies' meetings without contributing original research results, but I can accept this providing they are a minority. After all, they do pay their fees and sometimes they offer the society corporate sponsorship - maybe they should pay a bit more if they aren't going to speak?

I am confident that research papers from industry tell the truth and I hope they tell nothing but the truth, but I doubt if they tell the whole or most interesting truth. I do not attend SIP meetings to hear platitudes from companies about how wonderful their latest products are, although I put up with it. Still, if the platitude level rises much higher, I may, indeed, want to stay at home.

The threat of litigation for breaking confidentiality is depressing, but not unique to invertebrate pathologists. We should blame human greed and the lawyers who encourage it, not commerce *per se*. Litigation must be a bad way to proceed because research organizations don't have any money! The financial penalty would destroy the

research base the litigant depends on, but lawyers won't worry about that. If researchers really can't keep secrets, industry would do better to retaliate with a threat to their next grant than with a lawsuit: researchers would soon fall into line if their grants were cut.

However, is there really such a difference between industry and we supposedly high-minded public researchers? Scientists are shrewd people; they understand well not to tell all until the paper is safely in press: competition for research grants is pretty commercial business. It is not confidentiality that poisons the air, but corporate greed. Industry is welcome to its secrets, providing it leaves the environment clean for me: after all, we all have to live in it.

Chris Prior, IIBC, U.K. (This is a personal view.)

Available from the Division on Microbial Control

Slide Atlas of Microbial Control Featuring 200 color slides and a 28-page legend covering selected examples of microbial control projects, application techniques, bioassay, and production and formulation of microbial control agents. U.S. \$50 + \$5.00 for overseas delivery.

Directory of Industries Involved in the Development of Microbial Control Products. The original Directory published in 1991 contains 35 pages of information with indexes of pathogens, target hosts, crops and habitats, companies and addresses, and trade names. Over 40 companies and 60 products are listed. Supplement No. 1 was published in 1993; Supplement No. 2 in 1994. Directory with Supplements U.S. \$5.00.

These can be obtained by sending a check, U.S. money order, or an international bank draft (drawn on a bank with U.S. affiliations) payable to the Society for Invertebrate Pathology to Dr. John Vandenberg, USDA-ARS Plant Protection Research Unit, U.S. Plant, Soil & Nutrition Lab., Tower Road, Ithaca, NY 14853 U.S.A.

Editor's Note

Membership Directory

Included with this Newsletter is Supplement No. 1, the Membership Directory for 1994-1995. The next Directory will be published in 1996. For the first time we are including EMail addresses. If you find an error, wish to include your EMail address, or if your address has changed, please inform me and I will publish the information in future Newsletters.

The Editor

NEWS FLASH!

Election Results for SIP Officers & Honorary Members

Ballot papers received by 1 June, 1994 were counted by the Tellers Committee on 6 June. A total of 346 ballot papers were returned by members in good standing, of which 9 had to be discarded as spoiled.

The results of the election are given below. The successful candidates will assume their new responsibilities at the Society's Annual General Meeting in Montpellier.

President	Robert R. Granados
Vice-President	Brian A. Federici
Secretary	Wendy D. Gelernter
Treasurer	Harry A. Kaya
Trustees	Mark S. Goettel Isabelle Thiery

The following candidates for Honorary Membership were also elected by the membership.

Dr. H.D. Burges
Dr. H. de Barjac
Dr. M. E. Martignoni

We would like to convey our congratulations to all successful candidates and to express our commiserations to those who were not elected but who nonetheless permitted the Society to conduct its democratic process.

Tellers Committee

Chris Payne
Tariq Butt
Norman Crook