sip

NEWSLETTER

society for invertebrate pathology

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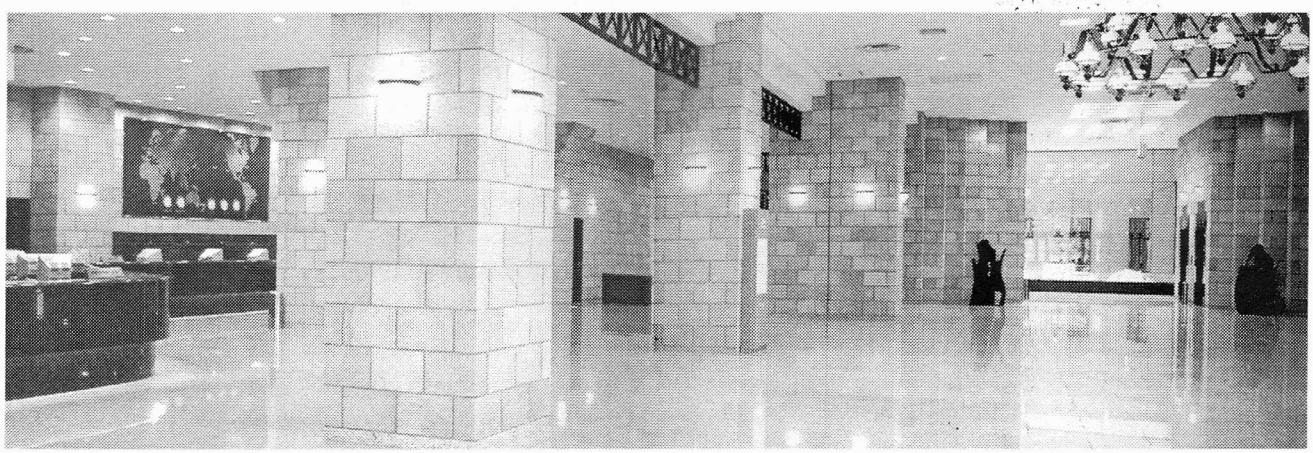
June 1998



Reception Hall, Green Hotel, Sapporo Japan

VIIth International Colloquium on Invertebrate Pathology and Microbial Control
&
IVth International Conference on *Bacillus thuringiensis*
Green Hotel Sapporo
Sapporo, Hokkaido, Japan
August 23-28, 1998

The scientific program, industrial exhibits, welcome party and banquet will all be held at the Green Hotel Sapporo. Unfortunately, the hotel for the Sapporo meetings has been changed from the Therme International Hotel Sapporo, to the Green Hotel Sapporo. The Green Hotel Sapporo is a large and modern hotel which has 900 guest rooms and located near the Makomanai Park where the 1972 Sapporo

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Olympic Games were held. In the neighborhood, there is a big convenient supermarket "SATY" where delegates and their companions can shop. Access from the New Chitose (Sapporo) Airport to the Green Hotel is also convenient by using the over 20 direct limousine buses daily.

The Organizing Committee has been most encouraged by the nice response to the announcement. Over 300 participants have registered by early-May and over 250 abstracts (invited or contributed papers/posters) have been received.

Plenary Sessions. Founders Lecture and Symposia: The Meetings Program is included with this Newsletter as Supplement. No. 1.

Additional registration details: As indicated in the Brief Announcement for SIP members, which was sent with the election ballots for the SIP Council, the Convention Hall was changed from Therme International Hotel Sapporo to Green Hotel Sapporo. Other hotels listed in the previous issue remain unchanged. The registration desk will be opened at the lobby of Green Hotel Sapporo on Sunday 23 August from 9:00 to 17:00.

Access to Sapporo: Participants traveling by plane will reach the New Chitose airport from Narita (Tokyo) airport or Kansai (Kanku) airport. Representatives of the ICIP Organizing Committee or Kinki-Nippon company will be present at the arrival gates for flights from these airports on Saturday and Sunday and will direct delegates to the shuttle bus for the Green Hotel or other hotels. Alternatively, some may prefer to take a JR train from the underground of the airport to Sapporo Station. This option will be much faster (36 min.) and more convenient.

***Shuttle bus leaving New Chitose Airport for Makomanai Subway Station**: The last stop is Green Hotel: The first bus leaves at 9:50 and the last two at 19:20 and 20:00. Between these times buses leave 20 and 50 min past the hour.

SIP NEWSLETTER
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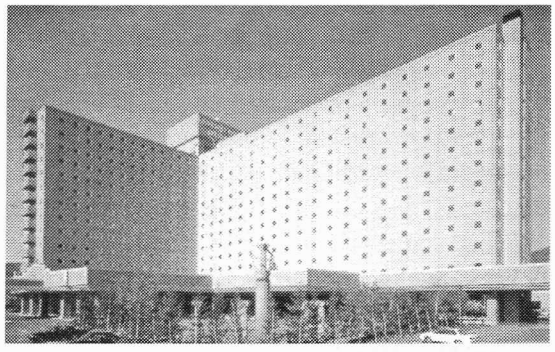
Submissions to the following sections are solicited:

Forum: More substantial articles on current issues of concern, limited to approximately five pages.
Letters to the Editor: Issues of concern can be brought to light 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. Submissions via e-mail or on computer disk (WP, MSWORD 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 next Newsletter is Sept. 15, 1998.



Green Hotel Sapporo

***Shuttle bus leaving Green Hotel for New Chitose Airport**: First bus leaves at 6:00 and the last at 16:00. Between these, buses leave every half hour.

Weather : The weather at this time of the year will be warm (about 25-30 C) and dry. However, it is sometimes cool at night. An umbrella may be useful in case of showers. You may need warm clothes for the hike at Mt. Tarumae (1,041 m above sea level). Hotels in Sapporo lack swimming pools, but we will go to Shikotsu Lake (excursion A) and those who wish can swim in this cool Lake. Please bring your bathing suit.

Important telephone numbers: Public telephones in Japan work essentially with telephone cards, although coin operated telephones are still available. You should purchase a phone card (Teleca) in the KIOSK of the station, drug store, hotel shop, etc. It will cost 500 yen for a 50 units card. You can make international calls from gray colored public telephones by dialing 001 followed by the country code (e.g.. USA & Canada, 1; UK, 44; France, 33; China, 86) without any need of operator assistance.

Important telephone numbers are:
- Police: 110
- Fire and emergency medical assistance: 119
- Convention hall (Green Hotel Sapporo): 011(Sapporo area code)-571-3111;Fax 011 572-3461
- Faculty of Agriculture, Hokkaido University:
  - Toshihiko lizuka: (Office) Tel. & FAX; 011-706-2423 (dial in)
  - Secretary's office: 011-706-2487 (only Japanese speaking)

Exchange: Foreign exchange is available at the airport (Narita, Kansai) and at Banks. There is no exchange at the Green Hotel Sapporo, but the information desk can provide details on where to exchange money. Major credit cards (VISA, MasterCard. American Express) are accepted everywhere. Hotels and restaurants can be paid with these credit cards.

Notice: In Japan, there is no tipping system (hotel, taxi cab, restaurant, coffee shop etc.). Traffic system in Japan is KEEP LEFT TO DRIVE, like England and Australia. Please watch out when you have to cross a road.

Latest information is available at the meeting and SIP Homepages:

"http://shin.agr.hokudai.ac.jp"
"http://sip.home.ml.org"

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Microbial Control Division Workshop

The Microbial Control Division is sponsoring a Workshop at Sapporo entitled **"Recent Advances in Microbial Control Products,"** organized by Denis Burges and John Vandenberg. The purpose of the Workshop is to acquaint SIP members with activities on the leading edge of microbial control product registration and marketing.

We invite representatives from companies or government agencies to participate by giving an update on products that are newly marketed, recently registered, nearing registration, or in the "pipeline". **We especially encourage representatives from Asian and Pacific Rim countries to participate, although presentations from companies around the world are welcome.** This is an excellent opportunity

for companies to highlight recent work to an audience of microbial control researchers and professionals. Anyone interested in giving a short presentation at this workshop, should contact:

John D. Vandenberg
E-mail: JDV3@CORNELL.EDU
Fax: 607-255-2459
Mail: USDA-ARS, US Plant, Soil & Nutrition Lab.
Tower Road, Ithaca, NY 14853, USA

Division on Microsporidia Workshop

The Division on Microsporidia will conduct a workshop at the SIP meeting in Sapporo, Japan. The topic will be "Microsporidian Cell Biology". Organized by Division Vice-chair Andreas Linde, recent findings on the cell biology of microsporidia and their interaction with host cells will be presented, as well as current knowledge on the spread of microsporidia within the host organism. In addition, cell culture techniques will be discussed by Drs. T. Kawarabata, C. Yasunga, and H. Iwano. A. Linde will make an introductory presentation and an open discussion will follow.

FROM THE PRESIDENT

Spring is now upon us, at least in the Northern Hemisphere, and that means our annual meeting is only a few months away. Plans for the meeting are nearly complete, and in this column I will update you on the meeting and several other matters of significance to the Society.

International Colloquium and Bt Conference. The program has now been finalized for the VII International Colloquium on Invertebrate Pathology and Microbial Control, to be held August 23-28, in Sapporo, Japan, and held in conjunction with the IVth International Conference on *Bacillus thuringiensis*. As part of this Newsletter mailing, you will find a copy of the program.

I thank Toshi Iizuka and Hisanori Bando and their organizing committee, who had responsibility for the overall program, and André Klier and David Ellar, who organized the Bt conference, for the fine efforts. Mark Goettel and Peg Johnson also deserve thanks for getting the program out in a timely manner.

The program consists of approximately 300 presentations, and will provide an in-depth review of the current status of most of the sub-fields of our discipline. At this time, more than 300 participants have registered for the meeting. For those who have not registered, there is still time. I will note that while it may not be good for the world economy, the Yen has slipped further in value versus most of the G7 currencies, thereby making the meeting cheaper, and thus an even better value than it was just a few months ago. The hotel at which the meeting will be held has been changed from the Therme Hotel to the Green Hotel. The Green Hotel is somewhat cheaper and larger than the Therme. I am looking forward to seeing many of you there.

New Society Officers. The election results are in and congratulations are now due to the following new officers. Juerg Huber, President; James Harper, Vice President; Ann Hajek, Secretary; Ted Andreadis, Treasurer, and Leellen Solter and David Ellar as Trustees. The vote tallies in many cases were close. I thank all those who ran for the willingness to take on the additional responsibilities that come with running the Society. I also congratulate Jaroslav Weiser and Donald Roberts, who were elected as Honorary Members of the Society.

Management Services. Over the past few months, the SIP Council evaluated bids from several management service providers. After careful consideration of these bids, the Council decided unanimously to award our service contract, effective April 1, 1998, to Ms. Margaret "Peg" Johnson of Gainesville, Florida. Peg has been a member of the Society for several years, and will now take on the title of Executive Secretary in her position as management services provider. Peg will be working closely with the Council and Committee and Division Chairs, and welcomes ideas from all members regarding provision of efficient and convenient services to all SIP members.

Condolences. On behalf of the Society, I send condolences to the families and colleagues of Society members Susumu Maeda, Bill "Mac" McCarthy, and Norman Dubois, who passed away recently. Their deaths were unexpected, with Susumu being 48, Bill 56, and Norman 61. You will find their obituaries later in this Newsletter.

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1999 SIP Meeting. In the last Newsletter I noted that the 1999 SIP meeting will be held at the University of California, Irvine, but that the dates had not been selected. After consulting with potential members of the Organizing Committee, the UCI Conference Office, and several SIP members, the dates of August 22-27, which occur during the last full week of August, were selected as the time for the meeting.

Irvine is a lovely area, only a few miles from the resort towns of Newport Beach and Laguna Beach. The weather at that time of the year is typically excellent. My concern is that many people will come, but may find the beaches and other recreational activities more attractive than the meetings (NOT, I hope, as U.S. teenagers are fond of saying).

Here is a quote about the area from a current novel "The Cobra Event" by Richard Preston, which deals with using the *Autographa californica* MNPV as a biological warfare agent - "Think of California. Think of the best beach in California. It might be Malibu Beach. No - those little sculpted coves at Laguna Beach. Yes. He tried to imagine himself lying on his back on the warm sand at Laguna, the smell of the salt air, the cries of the seagulls, the *whush-haaa* of the surf, the sun falling into the Pacific Ocean...So many ... opportunities.." Sounds like a potential SIP member. Though the local communities have put significant restrictions on large beach parties, I will do my best to arrange a beach barbecue so that we can watch the sun set behind Catalina Island.

Now its on to Sapporo, then UC Irvine in 1999, followed by Guanajuato, Mexico in 2000.

Brian A. Federici

1998 FOUNDER'S LECTURE

This year, the Society will sponsor its 17th Founder's Lecture. Beginning in 1982, the Society has recognized individuals who have contributed to the genesis and development of scientific effort and accomplishments identified as invertebrate pathology. In 1998, the Founders' Lecture Committee has chosen to honor Dr. Karl Maramorosch as Honoree and Dr. Jun Mitsuhashi as the Founders' Lecturer.

Dr. Karl Maramorosch

1998 Founders' Lecture Honoree

Karl Maramorosch, professor emeritus of entomology and "Robert L. Starkey Professor of Microbiology" at Rutgers-The State University of New Jersey, has been selected as our 1998 Founders' Lecture honoree. Dr. Maramorosch is widely regarded as one of the most outstanding research biologists in the world today. His research interests span the areas of invertebrate cell culture, comparative virology, entomology, plant pathology, parasitology, and medicinal plants. His work in various aspects of invertebrate cell culture has had profound impact on the advancement of basic research in invertebrate pathology.

Dr. Maramorosch was born in Vienna, Austria in 1915. When he was three years old, his parents

returned with him and his older brother and sister to the family farm that, from 1918 till 1939, was located in southeastern Poland. Karl's father, a graduate of Vienna's Agricultural University (Hochschule fur Bodenkultur) owned the 800 acre farm where Karl spent all summers, becoming familiar with farming corn and potatoes, which in that warmest region of Poland were staple food of the population.

After obtaining his baccalaureate degree from the local high school at the top of his class, Maramorosch went to the Agricultural University ("SGGW") in Warsaw, where he graduated magna cum laude in 1938, with a degree of Agricultural Engineer (MS equiv.). He married his college sweetheart Irene Ludwinowska and decided to earn a Ph.D. degree in Poland, but the outbreak of World War II in September 1939 interrupted his plans.

He and his wife crossed into Rumania, only 10 miles from his father's farm, where they were promptly interned in Polish refugee camps. By 1943 Karl obtained permission to leave the camp to enlist in a Ph.D. program at Bucharest Agricultural University, specializing in plant pathology. Six weeks before obtaining the degree, thanks to the help of the U. S. Agricultural Attachee of the U. S. Mission, the Maramorosches were able to escape from Rumania to Sweden. There Karl obtained a first preference immigration visa as a "skilled agriculturist" and 55 years ago, moved to the United States.

In the U.S., he started working as a technician at the Brooklyn Botanic Garden, with Prof. Lindsay M. Black. Encouraged by him, Karl applied to Columbia University where he obtained his Ph.D. degree in 1949. The same year he was accepted by Dr. L. O. Kunkel as assistant in the Plant Pathology Department at Rockefeller University in New York City, where he advanced from assistant to associate during the years 1949-1961. He then accepted a position as Senior Entomologist and later became Program Director of Insect Physiology and Virology at the Boyce Thompson Institute for Plant Research, Yonkers, N. Y. where he worked until 1974.

From 1974 to the present, he has been on the faculty of Rutgers-The State University of New Jersey as professor II (Distinguished Professor). He was named Professor (Robert L. Starkey Professor of Microbiology) 1983-present, and Professor of Entomology, 1985-present.

His many contributions to our understanding of viruses and their interactions with insect vectors are evidenced in his books dealing with invertebrate cell culture, which include more than 80 volumes, published by Academic Press, CRC Press, Wiley-Interscience, Springer, Prager, Society for In Vitro Biology and Science Publishers.

For the past 25 years Maramorosch has been an editor of Advances in Virus Research, the most cited and prestigious review publication dealing with all areas of virology. In addition to 7 volumes of Advances in Cell Culture, he also founded and edited, jointly with Hilary Koprowski, 8 volumes of Methods in Virology, published by Academic Press. He has lectured widely and his fluency in several languages has been an asset when he served as visiting professor in Armenia, China, Germany, India, Japan, Kenya, Netherlands, Poland, Romania, Russia, Uzbekistan and Yugoslavia.

Dr. Maramorosch's professional affiliations and activities include the American Phytopathological Society (Fellow); Entomological Society of America (Fellow); Indian Virological Society (Hon. Fellow); AAAs (Fellow); New York Acad. Sciences (Fellow), (Recording Secretary, 1980-1982, Vice President 1981-1983); National Academy of Sciences India (Hon. Fellow); Leopoldina Academy, Halle, Germany; Microscopy Society of America; Society of Invertebrate Pathology; Society of In Vitro Biology (Board Member); American Council on Science and Health (Board of Sci. & Policy Advisors); Phi Beta Kappa Award in Science Committee; Tropical Medicine & Parasitology NIH Panel 1972-1976; American Institute of Biological Sciences; American Society for Virology.

Honors and awards in addition to those mentioned above include Predoctoral Fellow, American Cancer Society 1947-1949; Cressy Morrison Prize, N. Y. Acad. Sci. 1951; AAAS Prize & Campbell Medal 1958; Honorary Member, Mendel Society 1963; Member, Exec. Committee Virus Classification; President, First (1969), Second (1973), Third (1977) and Fourth (1982) Intern. Conference Comparative

Virology; Senior Fullbright-Hays Professorship, Yugoslavia 1972 and 1977. Award of Merit, American Phytopathology Society 1954; President, Tissue Culture Association N. E. Branch; Entomol. Soc. America Ciba-Geigy National Award in Agriculture 1976; Wolf Prize in Agriculture, 1980; American Institute of Biological Sciences Distinguished Service Award 1983; NIH Fogarty Intern. Center-Biomedical Exchange Program with Poland 1985; Santokba Durlabhji Award, India 1993; Founders Lecturer, SIP, Adelaide, Australia 1990; Waksman Award and Medal, Theobald Smith Society, ASM 1978; Award of Asian Indians in America Assoc. 1981; President, Rutgers Sigma Xi Chapter 1978-1979; Alfred Jurzykowski Prize in Biology 1981; President, Intern. Assoc. Medicinal Forest Plants, 1991- ; Japan Soc. Promotion of Science Dist. Professorship in Japan, 1980; ASM Honorary Lectureship Award 1978.

Dr. Jun Mitsuhashi
1998 Founders' Lecturer

Dr. Jun Mitsuhashi will present the 1998 Founders' Lecture honoring Dr. Karl Maramorosch in Sapporo, Japan. He was selected for this honor for several obvious reasons. As a close colleague of Dr. Maramorosch for many years, he is intimately familiar with his work, and he and Dr. Maramorosch are co-authors on many publications. Dr. Mitsuhashi's fundamental studies on insect cell culture and their use in studying plant and insect pathogens have significantly advanced the abilities of invertebrate pathologists throughout the world to make fundamental discoveries that would not have been possible without the tools and techniques he pioneered.

Dr. Mitsuhashi was born in Tokyo, Japan in 1932. He graduated from the University of Tokyo (Faculty of Agriculture) in 1955 and received his doctorate in agricultural sciences from the same institution in 1965. Immediately following graduation, he joined the National Institute of Agricultural Sciences as a research entomologist. Later he moved to the Forest Research Institute as Chief of the Laboratory of Insect Pathology. In 1988, he was invited by Tokyo University of Agriculture and Technology to join them as professor of applied entomology, and he taught and conducted research at that institution until his retirement in 1996. He continues his work in retirement at the Tokyo University of Agriculture, serving as professor in charge of cell biology, and conducts research on insect cell culture.

Dr. Mitsuhashi's major contributions to invertebrate pathology have been in the area of development of insect cell culture technology and the use of insect cell cultures for studying the replication processes of insect viruses and insect vectored plant viruses. In his early work, he established methods for the successful culture of cells of leafhoppers that served as vectors of plant viruses. In this work, while under the supervision of and in collaboration with Dr. Maramorosch, he developed the well known "MM" (Mitsuhashi/Maramorosch) medium. It was in this work that he was the first to determine the essential role of fetal bovine serum for insect cell proliferation. Using his cultured leafhopper cells, he was the first to successfully infect insect cells with vectored plant viruses.

Later, Dr. Mitsuhashi began work with Chilo iridescent virus and was able to infect his insect cell cultures with CIV. In order to improve insect cell cultures as research tools, he conducted further studies on their nutritional requirements and determined the essential roles of amino acids, vitamins and sugars. At

the same time, he developed many specific cell culture media. Among them, MGM-450 can be used to culture cells of a variety of insect species. MTCN-1601 is based on sea water and is the cheapest medium to prepare, while MTCM-1520 is a chemically defined medium. Over his 35 years of work on insect cell culture, Dr. Mitsuhashi has established 20 different continuous cell lines from selected Lepidoptera, Diptera, and Coleoptera.

In 1968, Dr. Mitsuhashi received a recognition award from the Japanese Society of Applied Zoology. In 1980, he was given an award of recognition by the Japanese Society of Agronomy.

The Founders' Lecture Committee
James D. Harper, Chair
Richard Daoust, David Ellar, Tony Sweeney

MICROBIAL CONTROL NEWS

A Bt toxin-Chitinase Transgenic Interaction

Expression of chitinase in the insect gut normally occurs only during molting, when the chitin of the peritrophic membrane is presumably degraded. Thus, insects feeding on plants that constitutively express an insect chitinase gene might be adversely affected by an inappropriately timed exposure to chitinase. This hypothesis was tested by introducing cDNA encoding a tobacco hornworm (*Manduca sexta*) chitinase into tobacco via Agrobacterium-mediated transformation.

A truncated but enzymatically active chitinase was present in plants expressing the gene. Segregating progeny of high-expressing plants were compared for their ability to support growth of tobacco budworm (*Heliothis virescens*) larvae and for feeding damage. Both parameters were significantly reduced in budworms fed on transgenic tobacco plants expressing high levels of the chitinase gene. This result illustrates that an insect chitinase transgene can enhance plant resistance to budworm neonates feeding on tobacco.

In contrast, hornworm larvae showed no significant growth reduction when fed on the chitinase-expressing transgenic plants. Why hornworm larvae were not affected is unclear. One possible explanation is that the concentration of the enzyme was too low to negate inactivating mechanisms likely present in this homologous system, given that the specific activity of the truncated form is about one-fourth that of the full-length enzyme.

Interestingly, however, both budworm and hornworm larvae, when fed on chitinase-expressing transgenic plants coated with sub-lethal concentrations of a *Bacillus thuringiensis* toxin, were significantly stunted relative to larvae fed on control plants having only the *Bt* treatment. Foliar damage was also reduced. For tobacco hornworm, the effect was seen on transgenic plants having a foliar coating of 288 ng of *Bt* toxin per gram fresh weight.

A similar *Bt* toxin-chitinase transgene interaction was observed with the tobacco budworm. Chitinase expressing plants coated with 360 ng of toxin per gram fresh weight exhibited a 56% reduction in their mean foliar damage index relative to nontransgenic controls, and the biomass of surviving larvae was reduced by 89%.

This observation suggests the *Manduca* chitinase gene could also be useful for potentiating the effectiveness or increasing the spectrum of *Bt* insect control proteins. It may have utility as a companion transgene, which, when engineered into a plant together with a *Bt* gene, enhances the effectiveness of the *Bt* gene. Alternatively, a crop cultivar expressing a chitinase transgene might be used to potentiate the action of a foliar *Bt* application. This approach would provide an alternative to full-season exposure to transgene encoded *Bt* toxin, which raises a management issue regarding the development of insect resistance.

Further exploration of the potential for insect control by the Manduca or other chitinases, alone or in combination with other genes for insecticidal proteins, is warranted.

Reference:
Ding, X. *et al.* 1998. Insect resistance of transgenic tobacco expressing an insect chitinase gene. Transgenic Research 7:77-84.

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This article was extracted from the June, 1998
NBIAP/ISB News Report
(news@nbiap.biochem.vt.edu)

MEMBERS ON THE MOVE

Moving?

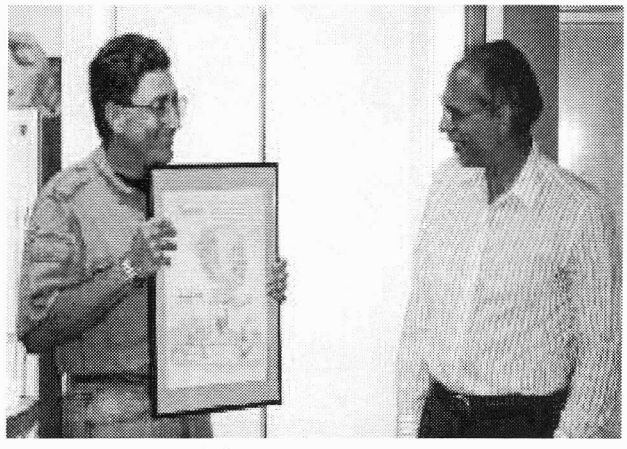
Please prepare a paragraph including information about past and present postings, new address, telephone, fax and E-mail address and send to your Newsletter Editor for inclusion in the Members on the Move section in the next issue of the Newsletter. Editor's address can be found on page 2.

Also, please inform the SIP Office of your new address. The address of our new SIP Office can be found on page 18.

MEMBERS IN THE NEWS

Albert H. Undeen, insect pathologist, microsporidia germination expert and acclaimed runner has retired from the USDA, ARS Center for Medical, Agricultural, and Veterinary Entomology lab after 17 years of distinguished service. Al's research has focused on the development of safe and economical methods for using pathogens in the control of mosquitoes, black flies and other insects that are important vectors of human and animal diseases.

Al spent his formative years in the military as a naval aviator before pursuing a life of science. He received his Ph.D. in 1973 from the University of Illinois. He served as Assistant Professor and Deputy Director, Research Unit on Vector Pathology, Memorial University of Newfoundland, St. John's, Newfoundland, Canada from 1976-80. From 1980 until 1997 he served as Research Entomologist at the USDA/ARS in Gainesville, FL. Al has been a member of SIP since 1969.



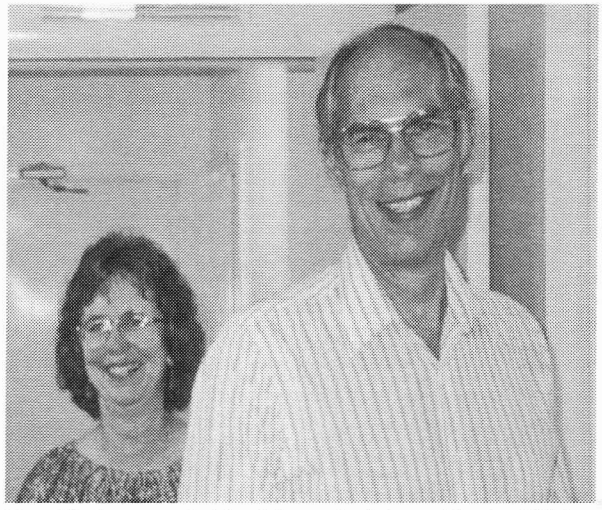
Jimmy Becnel (left) presenting Dr. Undeen (right) with an honorary caricature depicting his love for running and spore germination at his retirement party in October 1997.

Dr. Undeen's research accomplishments span many facets of insect pathology. He determined the infectivity of the microsporidium *Nosema algerae*, on the mosquito *Anopheles stephensi*, a major vector of malaria in Asia. He developed a method for mass production of *Nosema algerae* spores. He performed the first laboratory and field evaluations of Bti against nuisance simuliids in North America and against the vector of onchocerciasis in Africa. Through correlation analyses between stream width, discharge, and downstream carry of Bti in field tests, he devised a method for estimating the quantities of Bti formulations required in small streams based solely on stream width.

Al is best known for his extensive work on the germination mechanism of microsporidian spores. He developed a new theoretical model of the mechanism of microsporidian spore germination as well as several

means by which to inhibit germination. Most recently, he published a chapter on "Research Methods for Entomopathogenic Protozoa" in *Manual of Techniques in Insect Pathology* (L. Lacey, Editor).

Al has retired to his dream home in the mountains of North Carolina where he and his wife, Veda, lead an active life of gardening and working on the their land.



Dr. Undeen and his lab technician, Genie White, enjoying the retirement party festivities.

NEWS ITEMS

USDA-ARS Collection of Entomopathogenic Fungal Cultures Is Now Available Online

The current catalog of the USDA-ARS Collection of Entomopathogenic Fungal Cultures (ARSEF; Ithaca, NY) is now available online in Adobe Acrobat (*.pdf) format at the collection's website: **http://www.ppru.cornell.edu/mycology/Insect_mycology.html**.

PDF files are available for the entire catalog (body and all five indices) as well as separate files for the body and each of the indices. In recognition of the fact that many users are interested primarily in only a few major fungi, special catalogs have been prepared for each of the four most important genera of entomopathogenic hyphomycetes -- *Beauveria, Metarhizium, Paecilomyces,* and *Verticillium.* Background and ordering information on the collection is also included. A special catalog covering the ARSEF collection's accessions of the Entomophthorales should be added to the web page soon.

We anticipate being able to include interactive searching of the ARSEF accession data will be made available soon.

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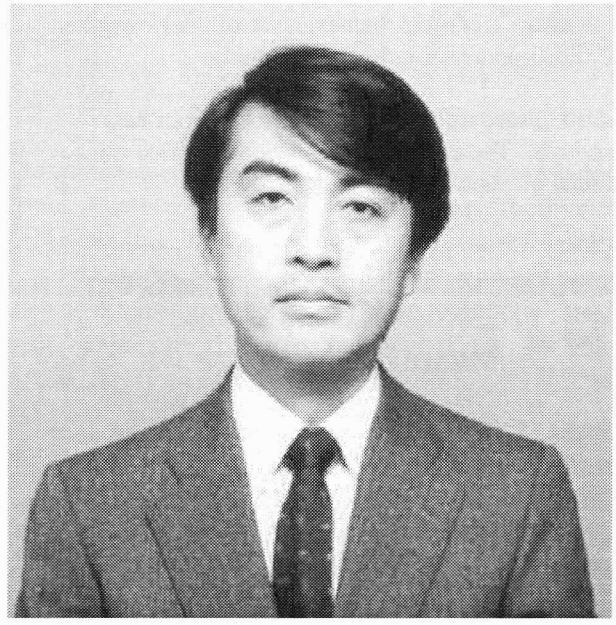
OBITUARIES



SUSUMU MAEDA
1950-1998

Professor Susumu Maeda died unexpectedly in his sleep on March 26, 1998, in Japan just a few weeks short of his 48th birthday. Professor Maeda was a

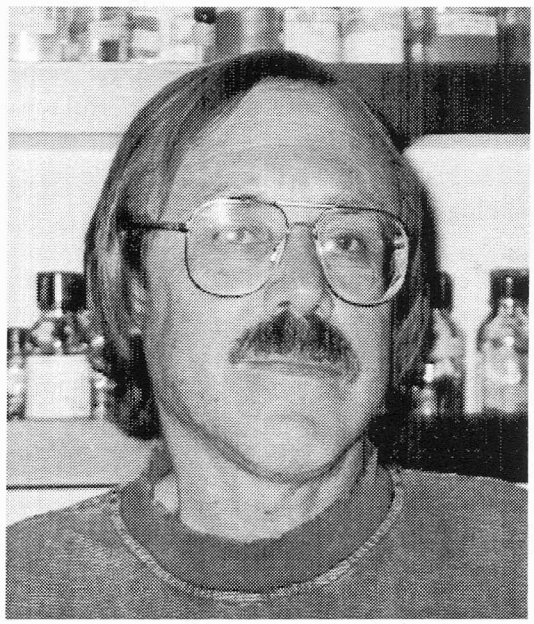
member of the Department of Entomology at the University of California, Davis, as well as Director of the Laboratory of Molecular Entomology and Baculovirology, The Institute of Physical and Chemical Research (RIKEN) in Tokyo, Japan.

Professor Maeda received a Bachelor of Agriculture degree from the Faculty of Agriculture, University of Tokyo in 1975, a Master of Agriculture degree from the School of Agriculture, University of Tokyo in 1978, and a Doctor of Agriculture Degree from the University of Tokyo in 1983 for a thesis entitled "Studies on a densonucleosis virus of the silkworm, *Bombyx mori.*" During his professional career he was Assistant Professor in the Laboratory of Applied Entomology at Tottori University in Japan, specialist in the Department of Entomological Sciences at the University of California, Berkeley, and visiting scientist at the Zoecon Research Institute in Palo Alto, California. He was appointed Assistant Professor in the Department of Entomology at UC Davis in July, 1988, and promoted to Professor in July, 1997.

Professor Maeda's research dealt with three major areas of baculovirology, (1) the isolation and characterization of insect viruses, (2) virus-host interactions, and (3) the molecular manipulation of baculoviruses for improved insect control and as expression vectors for production of useful proteins. The innovative *in vivo* expression technology that he developed using silk worms made it possible to produce large amounts of eucaryotic proteins for human and veterinary uses without the need for sophisticated cell culture systems.

In 1992, Professor Maeda received a National Award from the Japanese Society of Agronomy as one of the top scientists of the year for his outstanding scientific contributions using recombinant baculoviruses. Perhaps his most noteworthy appointment was as Director for the Laboratory of Molecular Entomology and Baculovirology, at The Institute of Physical and Chemical Research (RIKEN) in Tokyo, Japan, an appointment Professor Maeda held simultaneously with his appointment at UC Davis. The appointment at RIKEN is among the highest honors in Japan. Owing to his scientific contributions, and generous and friendly personality, Professor Maeda will be missed and not easily replaced. His legacy to science will continue through his numerous postdoctoral scholars and graduate students trained in his laboratory.

A scholarship in Professor Maeda's name has been established at the Department of Entomology, University of California, Davis, to help support graduate and undergraduate students in the area of insect molecular biology. Contributions to this fund are welcome.



WILLIAM J. McCARTHY
1941-1998

William J. McCarthy, 56, Insect Pathologist in the Department of Entomology at Pennsylvania State University, University Park, Pa, and of rural Port Matilda, Pa passed away Saturday, March 28, 1998, at his home. Bill or "Mac" as he was known to many SIP members, was born June 27, 1941, in Mamaroneck, N.Y. and was married to Jessiann Dortch, who survives him along with his two children, a daughter, Shannon Natalie, a student at Penn State, and a son, Brendan William, at home. Bill earned his bachelor's degree in biology from the University of Delaware, and a doctorate in biochemistry from New York University. He did postdoctoral work at Boyce Thompson Institute. Bill's early research focussed on insect viruses, and he worked on both entomopoxviruses and baculoviruses. Over the years,

his research shifted to the mode of action of *Bacillus thuringiensis*, where most recently he was studying the effects of activated endotoxins on midgut epithelial cells *in vitro*.

Bill's life was an inspiration. Struggling with Post Polio Syndrome for the last 20 years, he was never used it as an excuse or asked for special exceptions. He went through life with a remarkable sense of reality, and at the same time with a quick wit and sense of humor that not only put his life in perspective, but brought a great many smiles and laughter to those fortunate enough to enjoy his personality. Those who knew Mac will remember an enormously intelligent man with a wonderful sense of humor. While a dedicated scientist, Bill was very devoted to his wife and children, and made sure they received highest priority in his life.

Memorial contributions may be made to the American Lung Association, 205 E Beaver Ave., State College, Pa, 16801 or the F.I.S.H. Youth Group, State College Presbyterian Church, 132 W Beaver Avenue, State College, Pa, 16801.

NORMAND R. DUBOIS
1938-1998

Dr. Normand R. Dubois died suddenly at his home on May 29th, 1998 at the age of 61. Dr. Dubois was born in Lewiston, Maine, in 1938. He received a Bachelor of Arts degree in biology from Providence College in 1960, and a Doctor of Philosophy degree in microbiology from the Dept. of Plant and Soil Science, University of Massachusetts at Amherst, in 1977.

Dr. Dubois worked for the USDA Forest Service for over 35 years, the majority of that time at the Northeastern Center for Forest Health Research in Hamden CT. He was an active member of the Society for Invertebrate Pathology, the American Society for Microbiology, and the Entomological Society of America. Dr. Dubois' research was focused on *Bacillus thuringiensis*, particularly on laboratory and field evaluation of B.t. strains for use in forestry, an area in which he was internationally renowned.

Besides his devoted wife Eileen, he leaves sons Marc and David and a daughter, Deborah. Norm's warmth, wit, and humor were a delight to all around him and he will be sorely missed. Memorial contributions may be made to the New Haven Legal Assistance Association, 426 Water Street, New Haven CT 06510, or to the American Heart Association, 5 Brookside Drive, Wallingford CT 06492.

PUBLICATIONS

A Color Atlas of Parasitology
by John T. Sullivan

Designed mainly as a teaching aid, the atlas includes 101 plates of parasites and their vectors, containing 574 individual photographs, all but 6 in color. The book is spiral bound and covered with a sheet of clear 10-mil plastic. Printed on an inkjet printer at 360 dpi, the images, although by no means journal quality (or for that matter, journal cost), clearly show diagnostic features important for parasite identification. A brief explanatory text accompanies each plate on the facing page, emphasizing major characteristics of the parasite's structure, life cycle, and medical significance.

The majority of the photographs are of commercially available microscope slide specimens, making this atlas an ideal companion to laboratory courses in parasitology. Use of this resource should all but eliminate the frequent complaint "I don't know what I'm supposed to be looking for." It also may be handy as a quick review source for examinations and as a benchtop reference. Reasonably priced, this atlas is quite affordable for students.

To order individual copies, send a check for $30.00 plus $1.50 shipping, made payable to "U.I.W.," to:

Parasitology Atlas, Box T-2
University of the Incarnate Word
4301 Broadway
San Antonio, TX 78209, USA

Allow 2 weeks for delivery by mail. Institutional orders should be coordinated in advance to ensure availability.

A fuller description of the atlas may be viewed at the following web site:
http://www.geocities.com/SunsetStrip/Venue/2851/parasitology.html .

Advances in Solid State Fermentation
Edited by S. Roussos, B.K. Lonsane, M. Raimbault, G. Viniegra-Gonzalez
Proceedings of the 2nd International Symposium on Solid State Fermentation FMS-95, Montpellier, France

This book covers a wide range of studies in the field of Solid State Fermentation (SSF). The work begins with a collection of useful definitions followed by contributions on biomass estimation and the kinetics of fungal growth on solid substrates. Key articles are included on engineering and SSF reactor design and agro-industrial waste upgrading, followed by papers on enzyme technology by SSF processes and secondary metabolites and biopesticides. The book concludes by considering the latest SSF applications.

Contents:

Forward. Preface. General Introduction on FMS-95. Basic Aspects and Parameters Measurements. Bioreactors and Mathematical Models. Upgradation of Agro-industrial Products/Wastes. Enzymes Production and Applications. Secondary Metabolites and Biopesticides. Edible Mushrooms/Fungi. Newer Applications. History of Solid State Fermentation at ORSTOM. List of Delegates. Subject Index.

1997, 672 pp.
Hardbound, ISBN 0-7923-4732-3
Price: NLG 495.00/GBP 178.00/USD 292.00

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Atlas of Entomopathogenic Fungi from Taiwan by S.S. Tzean, L.S. Hsieh and W.J. Wu

A survey of entomopathogenic fungi was conducted in Taiwan from 1988 to 1996. A total of 831 fungal-infested cadavers of insects, spiders, and mites were collected from varied habitats in different altitudinal zones. From these specimens, 24 genera consisting of 66 species belonging to the Zygomycota, Ascomycota and Deuteromycota were isolated and identified. Among them, there are four new species [*Nomuraea viridulus* Tzean *et al.*, *Gibellula unica* Tzean *et al.* (=*Gibellula dimorpha* Tzean *et al.*)], one new variety (*Gibellula clavulifera* var. *major* Tzean *et al.*), one new combination [*Nomuraea cylindrospora* (Chen *et al.*) Tzean *et al.*], and 37

newly recorded species from Taiwan. All of the recorded species are described and illustrated, and keys to genera and species are provided. Of these arthropod fungal pathogens, the genus *Paecilomyces* was most prevalent, with a relative occurrence frequency of 18%, followed in descending order by the genera *Aschersonia, Beauveria, Gibellula* and *Nomuraea,* which had relative occurrence frequencies of 15%, 11%, 6% and 5%, respectively. These arthropod fungal pathogens usually had a relatively broad but differential host range, except *Aschersonia* which selectively attacks scale insects and whiteflies (Homoptera), while *Gibellula* strictly parasitizes spiders (Arachnida).

Price: $US 50, including surface postage and handling. To order the book, please contact:

S.S. Tzean
Dept. of Plant Pathology and Entomology
National Taiwan University
Taipei, 10617, Taiwan
E-mail: sst@ccms.ntu.edu.tw

Microsporidia (Protozoa): A Handbook of Biology and Research Techniques

A new manual entitled "Microsporidia (Protozoa): A Handbook of Biology and Research Techniques" has been published on the Internet as a Southern Cooperative Series Bulletin (No. 387). Dr. A. H. Undeen (retired, ARS) prepared this book as part of a three-year collaborative project under the auspices of the Protozoa Subcommittee of the Southern Regional Project S-265 "Development of Entomopathogens as Control Agents for Insect Pests". The impetus for preparing the manual was the necessity for a general methodology text to serve the needs of a rapidly growing number and diversity of scientists and researchers who are working with or affected by these parasitic protozoa. The handbook represents one of the first Southern Bulletins published on the Internet and can be accessed through the SIP homepage or directly at http://www.msstate.edu/org/saaesd.

Abstract: Not too long ago, microsporidia (Protozoa: Microsporidia) were looked upon as a small group of pathogens of interest to bee keepers, the silk industry and a few scientists devoted to research on their basic biology. That situation has been undergoing a rapid change. This manual was conceived from the need for a general methodology text to serve the needs of a rapidly growing number and diversity of people who are working with these parasitic protozoa. The contents of this manual introduce the microsporidia and provide a guide to common, and some less common techniques used by microsporidiologists.

The introductory section emphasizes the biology and taxonomy of the Phylum Microspora. Within the last few years, discoveries have been made that have just begun to reveal the biological and ecological complexity of this group of apparently simple, single-celled organisms. At the same time, the microsporidia have been introduced into the world of medicine. Before the advent of acquired immunodeficiency syndrome, only a few cases of microsporidioses had been found in humans, all of them in immunologically compromised individuals or in immunoprivileged tissues. The majority of procedures presented here concerns the spore--the life stage most commonly encountered. It is our intention that adequate textual information is included for practical purposes. The understanding of the biology, chemistry, and physics of the processes being described is beyond the scope of this handbook and, in many instances, beyond current knowledge.

In Preparation: Bioassays of Entomopathogenic Microbes and Nematodes
by A. Navon and K.R.S. Ascher (eds.)

Contents:
1. Bioassays of *Bacillus thuringiensis* (A. Navon,S. Braun, O. Skovmand, N. Becker)
2. Bioassays of entomopathogenic viruses (K. Jones)
3. Bioassays of entomogenous fungi (T. Butt and M. Goettel)
4.Bioassays of microsporidia (J. Maddox, W. Brooks and L. Solter)
5.Bioassays of entomopathogenic nematodes (I. Glazer and E. Lewis)
6.Statistical and computational analysis of bioassay data (R. Marcus and D. Eaves).

The publisher: Kluwer Academic (The Netherlands) **The expected date of publication is early 1999.**

Formulation of Microbial Biopesticides, Beneficial Microorganisms, Nematodes and Seed Treatments. Edited by H.D. Burges, 1998. Kluwer Academic 450pp. ISBN 0 412 625 2.

Formulation vies with genetic engineering as one of the two most important recent areas of progress in developing microorganisms for use in agriculture and forestry. The subject has not previously been comprehensively covered at book length. Early formulation, stylised from that of chemicals, led to many initial failures. This book goes back to basics, i.e., ecological and biological knowledge, to analyse the special requirements when formulating microorganisms and to build up a detailed account of modern formulation technology. The function of the organisms in nature is examined with a view to bettering natural performance by mass producing their survival stages. These stages are optimised for storage and effectiveness, then mixed with carriers, supplemented by a wide range of additives that further improve efficiency and survival during harvest, storage and application, as well as protect and nurture the organisms afterwards while they lie in wait to take effect. There are 15 authors, all widely experienced in their own fields.

The scope of the book is wide, spanning ten chapters. The scene is set by a description of application technology and machines, which depend heavily on formulation to improve efficiency. Bacterial and viral insect pathogens attack perorally and must be eaten to take effect. These organisms are used to control mainly chewing, foliar pests and pose the demanding task of creating an even, palatable cover over the foliage or to control larvae of vectors of human disease in water bodies. This task is particularly challenging for sprays because of the particulate, live and/or proteinous nature of the organisms. The ultimate in efficacy - systemic formulation - is obtained by the formation of the toxins of *Bacillus thuringiensis* in the tissues of transgenic plants.

While the application target of these peroral pathogens is the insects' food, sprays of entomopathogenic fungi target the insects themselves because the fungi attack through the insect cuticle, so can control sucking as well as chewing insects. Although more susceptible to the environment than bacterial spores, dry fungal conidia formulated in oil provide a breakthrough enabling their use in arid climates. The insect pathogens have led progress in formulation for sprays, but the fungi are also formulated for use in the moist environment of soil. However, formulations for soil have mainly been developed for three other types of organisms those to control plant diseases, to control weeds and to improve plant growth largely with nitrifying organisms.

Seeds can be used as vehicles, taking formulation into another industry, seed treatment. Entomopathogenic nematodes set the formulator the most demanding task, to preserve mobility and the power of search. Each chapter considers research needs and probes the future, both assessed overall in the final chapter. Because these varied areas progressed largely independently, intensive cross-referencing between chapters has been inserted to cross fertilise information between them.

Momentum for progress comes mainly from research interest and from design of products for sale. In this book, great attention has been paid to the needs of cost effectiveness and user acceptance. The book is designed for a wide readership. Thus readers new to the field as served by many practical illustrations, also experienced workers by in-depth analysis of available data and a bewildering array of additives in tables and appendices, including failures. These analyses and models have enabled the best additives to be assessed in a concise text. Great effort has been devoted to making the book reader-friendly.

This book attracted great interest at the meeting on the future of the use of fungi in April, 1998, at Southampton, UK. The themes of the meeting showed remarkable parallels in trends of modern thinking with the underlying philosophy of the book. For example, both bring together the relatively independent disciplines of microbial insecticides,

plant disease antagonists, microbial herbicides and beneficial organisms added to the soil. Both emphasise the need to involve the ecology of the microorganisms and their targets. Both show the importance of focusing research towards industrial products, taking into account all aspects, including registration. Both recommend the assembly of integrated systems benign to the environment. At the meeting only the fungi were of course considered, but scientists and others involved in research and development in the different disciplines reacted vigorously together.

H.D. Burges

Formulation of Microbial Biopesticides, Beneficial Microorganisms and Nematodes
by H. Denis Burges (ed.)

Table of contents:

November 1998: 234 x 156: approx. 450 pp: 100 line illus, 50 halftone illus. Hardback: 0-412-62520-2: approx. £75.00.

Http://www.chapmanhall.com

Journal of Invertebrate Pathology Back Issues

The following issues are available from the Newsletter Editor, Mark Goettel, for the cost of shipping from Lethbridge, Alberta, Canada:

7, 1965; 10 (2), 1968; 11, 1968; 12 (2,3 {2copies}), 1968 13-18, 1969-1971 {2 copies vol 15}; 21, 1973; 34 (3), 1979 35 (2), 1980; 36 (2), 1980; 39 (3), 1982; 40, (2,3), 1982; 51, 1988; 52, (1,2); 53-56, 1989-1990. Please contact the Editor if you are interested.

POSITIONS WANTED

Ph.D., with 15 years of experience in the field of biological and microbial control seeks new job opportunities. Feb. '83 - Dec. '84 involved in a research project "Biological pest control in Egypt" between NRC, Egypt and USDA. Dec. '84 - '91 worked on the isolation, culture, production, and bioassay of B.t. strains against field and stored product insect pests. Dec. '91 - July '94 worked on the isolation, production and use of PCR in B.t. characterization under a Doctoral fellowship at Agriculture & Agri-Food Canada Cereal Research Centre, Winnipeg, MB. Isolated some new strains of B.t. with activities against some coleopteran stored product insect pests.

I have the ability to carry out multidisciplinary research projects and have a good working knowledge of English. I have a broad interest in microbial

control, pathogens, biochemistry, biotechnology and agricultural research. Am willing to travel.

Atef Sayed Abdel-Razek
National Research Centre
Dept. of Plant Protection
El-Tahrir Street, Dokki
Cairo, Egypt
Tel.: (202) 382-4653
Fax: (202) 337-0931

FUTURE MEETINGS & WORKSHOPS

OECD Workshop, Sustainable Pest Management, "Safe utilization of new organisms" Montreal, Quebec, Canada, September 27-30, 1998

The workshop will aim at identifying issues and needs for research in OECD countries to ensure sustainability of agricultural systems using new organisms. The workshop will address policy and regulations for introduction and use of biological control agents in OECD countries and will focus on Research and Development needs for the safe exploitation of microbials, invertebrates and transgenic organisms.

Invited speakers will present short discussion papers on the following subjects:

- Policy and regulations for registration of microbial organisms
- Industrial challenges and opportunities for safe utilization of microbial organisms
- Research challenges and needs for safe utilization of microbial organisms
- Research challenges and needs for safe utilization of predators and parasitoids
- Research challenges and needs for safe utilization of transgenic organisms

Each discussion paper will follow with a discussion period. Workshop Proceedings will be prepared. The workshop will take place at Mount Orford in the Eastern Townships of Quebec. This is an opportune time to visit eastern Canada and enjoy the beautiful Fall colors. The final registration details/costs are not available at this time. The number of participants will be limited. For more information, contact:

Dr. Robert Trottier
E-mail: ipmcanada@videotron.ca
Fax: 819-772-1197.

Regional Symposium for Applied Biological Control in Mediterranean Countries, Cairo, Egypt, 25th - 29th October, 1998

This symposium is being organized by the Center of Biological Control, the Faculty of Agriculture at Cairo University and the Ministry of Agriculture. It will take place in the International Center of Agriculture in Cairo Nady El Seid Street, Dokki, Cairo, Egypt.

Prof. M.F.S. Tawfik, President
Dr. S.A. El Arnaouty, Secretary General
Center of Biological Control
Faculty of Agriculture, Cairo University
Giza, Egypt.
Tel: (202) 569-5686
Fax: (202) 569-5686 & (202) 570-2134
E-mail: lec@brainy1.ie-eg.com

PAST MEETINGS & WORKSHOPS

British Mycological Society International Symposium on "The Future of Fungi in the Control of Pests, Weeds and Diseases". Southampton University 5-9th April, 1998.

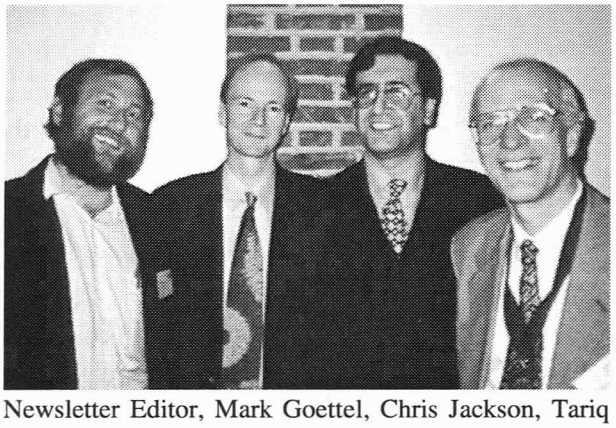
The meeting attracted over 320 delegates from over 30 different countries including Austria, Australia, Belgium, Brazil, Bulgaria, Canada, China, Columbia, Denmark, Egypt, Finland, France, Germany, Hungary, India, Iran, Ireland, Israel, Italy, Japan, Kenya, Korea, Mexico, The Netherlands, Nigeria, Norway, Saudi Arabia, Slovakia, South Africa, Spain, Sweden, Switzerland, Taiwan, Trinidad, UK, and USA. Representatives were present from universities, research institutes, extension services, government agencies and industry. There were 58 oral presentations, 100 posters and 2 workshops.

The meeting provided an opportunity to bring together mycologists of all persuasions to review and question the role of fungi in the control of pests, weeds and diseases. The structure of the meeting was excellent, the themes meshed together well and each topic acted as a springboard for the next topic. The main themes were: Pathogenesis, Toxins, Ecology, Production, Formulation and Application, Progress, Problems and Potential, and Risk Assessment and Registration. There was a tremendous input by two EU-funded COST action groups.

The organizers achieved most of their goals: integration of disparate disciplines, critical appraisal of fungi as biocontrol agents, exchange of ideas, initiation of communication and cooperation between groups which would not have met before, and promotion of mycology as a whole. Problems in the development of fungal biocontrol agents became more lucid and several priority areas for research were identified.

Judging from the extremely positive feedback, delegates found the meeting timely, valuable and highly stimulating.

Chris Jackson and Tariq Butt



Newsletter Editor, Mark Goettel, Chris Jackson, Tariq Butt and British Mycological Society President, Professor Alan D.M. Rayner at Southampton

NEWS FLASH !

Election results:

President:	Juerg Huber
Vice President:	James Harper
Treasurer:	Theodore Andreadis
Secretary:	Ann Hajek
New Trustees:	David Ellar
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Honorary Membership	Jaroslav Weiser
	Donald Roberts

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Note: Toll Free numbers for Canada & U.S.A. only

EDITOR'S NOTES

With the switch of Management Services from FASEB to Peg Johnson, the Newsletter will now be printed in Gainesville, Florida. The printing method will be slightly different in that camera-ready copies and blue lines will no longer be used; the Newsletter will be printed directly from disk. Although we expect the overall quality to increase, please bear with us in the unlikely event that this issue is not up to

standards. We will try to remedy any difficulties in time for the October Newsletter.

Delivery times have now much improved. **If you receive this Newsletter after 20 July, we'd like to hear from you.** The only way we can improve delivery times is if know where the problem areas are.

Many thanks to all those who contributed to this issue of the Newsletter. Karen Toohey did the typing and layout. Special thanks to Peg Johnson for her patience as we get accustomed to this new format.

The Editor

Deadline for next issue. Please submit all material by **September 15, 1998**, for publication in the October, 1998 issue.

Hope to see you in Sapporo! Don't forget to bring the meetings program (Supplement 1 of this Issue) with you as only limited numbers will be available at the meetings.

1997 Slide Atlas of Basic Invertebrate Pathology

Credit Card Payments Now Available!

Copies of the "1997 Slide Atlas of Basic Invertebrate Pathology" are still available. Previously, the Society produced a slide atlas in 1984 entitled "Color Slide Atlas of Invertebrate Pathology" and in 1992, the Society's Division of Microbial Control compiled an atlas, centred around microbial control, which was entitled "Color Slide Atlas of Microbial Control." **The new slide atlas** is about **basic invertebrate pathology** and includes 200 slides, 40 from each of the major groups generally included in this field of study (viruses, bacteria, fungi, protozoa, nematodes). Slides include transmission and scanning electron micrographs, light micrographs, histology sections, pictures of pathogens, infected, dead, and healthy hosts, and life cycle schematics. Figure legends describing each slide are included with each slide set.

The Slide Atlas costs **$60 (U.S.).** Please pay using a check or money order made out to "Society for Invertebrate Pathology." **If you pay with a check, the check must be drawn on a bank with a U.S. affiliation.** If paying by Credit Card, please fill out the credit card information below.

Mail this order form and your payment to: Society for Invertebrate Pathology, 4300 NW 23rd Ave., Suite 78, P.O. Box 147050, Gainesville, FL 32614-7050, USA; Fax (352) 374-5966; Toll Free Fax (U.S. Only) 1-888-684-4682.

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