

ANNOUNCEMENT

FOURTH ANNUAL MEETING OF THE SOCIETY FOR INVERTEBRATE
PATHOLOGY, UNIVERSITY OF MONTPELLIER,
FRANCE.

The 4th Annual Meeting of the Society for Invertebrate Pathology will be held at the University of Montpellier, France on June 16-19, 1971.

This meeting will be devoted to the memory of Pasteur's work on insect diseases which took place in the south of France exactly one hundred years ago.

In conjunction with our meeting, The Commission of Insect Pathology and Biological Control of the "Organisation Internationale de Lutte Biologique" (O. I. L. B.) will organize a symposium on Epizootiology and Ecology of Insect Pathogens.

INFORMATION

Changing of the dates of International Meetings (second International Congress for Virology and Third International Colloquium on Invertebrate Tissue Culture) to be held next summer in Europe, led to modify the date of our next meeting initially scheduled for August 30- September 2, 1971. We hope that this new timing will facilitate the participation of the non-European members of the Society.

Participants are expected to arrive on Thursday June 15 or early on the following day, in order to register.

Opening addresses and business meeting will be held in the morning of June 16, while five scientific sessions are scheduled on June 16, (afternoon), June 17 and 18; on June 19, an excursion is planned. A definite program will be published in the next Newsletter which will appear in May.

LECTURES

The official languages of the Meeting are English and French. Members intending to submit a paper should complete the enclosed form and return it, not later than April 15, to the Chairman of the Program Committee. If necessary a selection will be made from the contributed papers. Although all papers dealing with invertebrate pathology will be considered, the Program Committee would like to emphasize the following topics:

- Comparative Pathology
- Pathology of Insect Pests
- Pathology of Marine Invertebrates

If any member or group is interested in organizing a special symposium or seminar, please inform the Program Chairman as soon as possible and not later than April 15. Facilities will be provided to organize these sessions.

TRAVEL ARRANGEMENTS

Montpellier may be reached in several different ways: by plane, train, bus or automobile. There are two daily flights from Paris airport to both Nîmes and Montpellier airports. Transportation will be arranged from Nîmes and Montpellier airports and Montpellier railway station, to the university. Detailed information will be given in the definite Program in the Newsletter of May.

REGISTRATION AND HOUSING

Please fill out the enclosed form for advanced registration and housing. There will be no possibility for university housing since the students will be still on the campus at this time of the year. Participants will be housed in different hotels of the city. Early application (not later than April 15) ensures good accommodation. Well equipped camping sites are available on the sea shore (approximately 20 km from Montpellier).

Applications for registration, papers to submit and accommodation should be sent to Dr Max Bergoin, 4th Annual Meeting of the S.I.P., Station de Recherches Cytopathologiques, 30 - Saint Christol-Les-Alès, France.

From The Editor:

To All Members of the Society.

At the annual meeting of the Society of Invertebrate Pathology in College Park, Md., USA, Dr John Harshbarger resigned from his position as editor of the S.I.P. - Newsletter. I was asked to succeed him in this function and accepted, as can be learned from the last issue of the Newsletter.

However, it will be impossible for me to do this work satisfactorily without the aid of all members. For this reason, I sent out a circular to colleagues in various parts of the world and asked them whether they were willing to act as correspondents for our periodical. I am intending to publish a list of these correspondents in a later issue. If someone has information that, he thinks, is pertinent to the Newsletter, he should report this to his nearest correspondent, or directly to me. The following items may be of interest:

1. News relating to the Society, its members and to the field of invertebrate pathology in general.
2. Short reports on research projects which are of general interest to invertebrate pathologists.
3. Reports on laboratories, personalities and events (e.g. meetings).
4. Information on such areas as recruiting.
5. The type of positions that your students accept after having obtained their degrees.

Announcements in the Newsletter can be made in English, French or German. We are intending to publish the Newsletter approximately five times per year.

Leo van der Geest, Editor
Laboratorium voor Toegepaste Entomologie
Linnaeusstraat 2B
Amsterdam, The Netherlands.

MEETINGS

The International Symposium on Invertebrate Tissue Culture will be held in Bratislava, Czechoslovakia on June 18-22, 1971.

The International Organization for Biotechnology and Bio-engineering organizes a conference on Bio-engineering in Biological Control of Insects to be arranged in Helsinki, Finland, in June 1971. The preliminary programme contains the following points:

1. General aspects of Insect Control
2. Production and Methods of Application
3. Bioassay and Standardization
4. Cultivation of Insects and Insect Cells

Local Organizing Committee: Prof. H.G. Gyllenberg, Miss Gunnel Carlberg, Mr. J.J. Laine (secretary), Department of Microbiology, University of Helsinki, Finland.

The International Congress of Virology will be held in Budapest, Hungary, from June 27 - July 3, 1971.

The 23rd International Apicultural Congress will be organized in Moscow, U. S. S. R. on August 27 - September 2, 1971. A special section of this congress will deal with bee diseases. More information can be obtained through the Secretariat of the Organizing Committee, Ministry of Agriculture of the U. S. S. R., Orlikov per 1/11, Room 832, Moscow I-139, U. S. S. R.

Journal of Invertebrate Pathology.

In 1971, volume 17 and 18 of the Journal of Invertebrate Pathology will be published. The price to institutional subscribers is \$ 27, -- per volume and to members of the Society \$ 10, -- per volume.

Postage outside the USA and Canada is an additional \$ 2, 40 for the year for either type of subscription.

Registration of Nuclear Polyhedrosis Virus of *Heliothis zea*.

From the Federal Register (vol. 35, no. 230, December 9, 1970) we learned, that at the request of the International Minerals and Chemical Corporation at Libertyville, Ill., a temporary exemption from requirement of a tolerance is established for residues of nuclear polyhedrosis virus of *Heliothis zea* in or on cottonseed. The conditions of this temporary exemption are the following:

1. The insecticide will be used in accordance with the temporary permit issued by the U. S. Department of Agriculture.
 2. Each lot of active viral insecticide shall have the following specifications:
 - a. Level of bacterial contamination as determined by an aerobic plate count on trypticase soy agar will not exceed 10^7 colonies per gram of active material.
 - b. Absence of any pathogen (*Salmonella*, *Shigella*, *Vibrio*, etc).
 - c. Safety to mice (intraperitoneal injection; feeding tests).
 - d. Integrity of the viral product as determined by standardized serological tests.
- The temporary exemption will expire on December 1, 1971.

TEKTITE II PROGRAM.

John A. Couch (Biological Laboratory, National Marine Fisheries Service, Oxford, Md, USA) spent three weeks on the bottom of the ocean near the Virgin Islands as an aquanaut for the Tektite II Program. He was willing to write a short evaluation of his experiences.

The tools available to researchers in comparative pathology are many and varied. Perhaps one of the least obvious is the use of equipment that allows one to stay for extended periods beneath the sea where so many species exist that are of interest to the comparative pathologists. Usually SCUBA diving is considered to be most useful to the marine ecologists, behaviorists, or ichthyologists. However, during the summer of 1970 I, as a parasitologist and sometimes as a pathologist, had the opportunity to spend three weeks beneath water 30 to 70 feet deep in the Caribbean Sea off St. John, Virgin Islands. As one member of the Tektite II (man-in-the-sea) program, I had not only SCUBA equipment available to me but also an undersea habitat which included a living and working area with microscopes and other equipment that allowed me to study marine invertebrates almost completely in situ.

Tektite II consisted of several underseamissions of teams of marine oriented scientists. Each team consisted of two men who had submitted a proposed study in their areas of specialisation. F.G. Hochberg and I planned to study aspects of the ecology of cephalopods and crustaceans which included parasite and disease conditions recognizable in situ.

During our three week stay underwater, we came to fully appreciate the technique of saturation diving as a potential and actual tool for any qualified marine scientist regardless of his specialization. Some of the subjects related to parasitology and pathology that we observed firsthand were:

- (1) the effect, distribution, prevalence and site of attachment of certain isopods parasitic on reef fishes;
- (2) parasite fauna and organ condition of species of Octopus (that were brought into the work area of the habitat, freshly examined and biopsied without killing the subject);
- (3) the role of symbiotic cleaning fish and shrimp in natural parasite and disease control (particularly tegumental) in fish populations;
- (4) the real survival chances of invertebrates or fishes handicapped with traumatic lesions or disease caused lesions; and
- (5) an appreciation of mortality in natural invertebrate populations. These are but a few examples of observations made from a tremendous range of possibilities for observational, quantitative, and experimental studies in situ on marine populations.

For those certain qualified researchers in experimental and comparative pathology, epizootiology, and parasitology, the use of diving techniques and undersea laboratories (habitats) for extended periods of study may well become just another standard tool in their future, if they are willing to take advantage of this area of technology.

Insect Pathology in Israel.

A unit, mainly dealing with entomogenous fungi and their use in biological control of insect pests, has been set up within the Department of Plant Pathology and Microbiology of The Hebrew University in Israel. Dr. R. G. Kenneth, Senior Lecturer in Plant Pathology and Mycology, leads the unit and is assisted by Mr. Y. Olmert, M. Sc. (Agr.). Two graduate students are presently engaged in work on their masters' theses.

This is the first time in Israel that a serious effort is being made in this particular field. Present investigations are on the following subjects:

1. The effect and diversity of entomogenous fungi found in Israel and their identification (1).
2. Means for the control of the Egyptian cottonworm Spodoptera littoralis (Boisd.) by fungi (2).
3. Means for the control of the Cyprus Pine Processionary caterpillar Thaumetopoea wilkinsoni Tams by fungi (with I. Halperin, M. Sc. (Agr.), Volcani Institute of Agric. Res.).
4. Entomogenous fungi and the control of various insects and mites.

It was found in these investigations that many species of fungi attacking insects and mites are common in this country, such as Beauveria bassiana, Metarrhizium anisopliae, Verticillium spp. and numerous species belonging to the Entomophthoraceae. Some are responsible for natural epizootics. Promising results by infection under laboratory and quasi-natural conditions on the pine processionary caterpillar were obtained. This year, field experiments are planned for the processionary caterpillar and for the Egyptian cottonworm.

Literature:

- (1) Kenneth, R., G. Wallis, Y. Olmert and I. Halperin. A list of entomogenous fungi in Israel. Israel Jour. Agric. Res. (submitted).
- (2) Kenneth, R. and A. Zelcer (1969). Entomogenous fungi for control of the Egyptian Cottonworm (Spodoptera littoralis (Boisd.) in Israel. Proc. 2nd Israel Congress Pl. Pathol., 37.

I. Harpaz, Chairman
Department of Entomology
Faculty of Agriculture
The Hebrew University of Jerusalem
Rehovot campus, Israel.

NEW BOOK

The New Book on Microbial Control of Insect and Mites, edited by H. D. Burges and N. W. Hussey will be ready for publication at the end of february 1971.

The book, which will contain over 800 pages, will have the following chapters:

1. Introduction (H. D. Burges and N. W. Hussey);
2. Identification of Pathogens (J. Weiser and J. D. Briggs);
3. Use of Bacteria for Microbial Control of Insects (L. A. Falcon);
4. Use of Viruses for Microbial Control of Insects (G. R. Stairs);
5. Use of Fungi for Microbial Control of Insects (D. W. Roberts and W. G. Yendol);
6. Use of Protozoans for Microbial Control of Insects (R. E. McLaughlin);
7. Possible Use of Rickettsiae for Microbial Control of Insects (A. Krieg);
8. Use of Nematodes for Microbial Control of Insects (G. O. Poinar);
9. Micro-organisms as Sources of New Insecticidal Chemicals: Toxins (O. Lysenko and M. Kucera);
10. The Protein Crystal Toxin of Bacillus thuringiensis: Biosynthesis and Physical Structure (J. R. Norris);
11. The Protein Crystal Toxin of Bacillus thuringiensis: Biochemistry and Mode of Action (K. E. Cooksey);
12. The Thermostable Exotoxin of Bacillus thuringiensis (R. P. M. Bond, C. B. C. Boyce, M. H. Rogoff and T. R. Shieh);
13. Determination and Significance of the Host Spectrum of Bacillus thuringiensis (A. Burgerjon and D. Martouret);
14. Synergism of Micro-organisms and Chemical Insecticides (G. Benz);
15. Microbial Control of Mites and Ticks (J. J. Lipa);
16. Microbial Control of Aphids and Scale Insects (M. Gustafsson);
17. Microbial Control of Termites (A. E. Lund);
18. Microbial Control of Arthropods of Medical Importance (M. Laird);
19. Influence of Environment and Modern Trend in Crop Management on Microbial Control (J. M. Franz);
20. Possibilities of Pest Resistance to Microbial Control Agents (H. D. Burges);
21. Interactions between Pathogens (A. Krieg);
22. Safety of Insect Pathogens for Man and Vertebrates (A. M. Heimpel);
23. The Safety of Pest-insect Pathogens for Beneficial Insects (L. Bailey);
24. Production of Pathogens in Artificial Media (T. Dulmage and R. A. Rhodes);
25. Production of Arthropod Pathogens in Living Systems (C. M. Ignoffo and W. Hink);
26. Economics of Microbial Control (H. T. Dulmage);
27. Standardization and Assay of Microbial Insecticides (H. D. Burges and E. M. Thomson);
28. Formulation of Microbial Insecticides (T. A. Angus and P. Luthy);
29. Perennial Laboratory Culture of Disease-free Insects (T. J. Helms and E. S. Raun);
30. Strain Improvement and Preservation of Virulence of Pathogens (K. Aizawa);
31. Aposymbiosis, a Possible Method for Antimicrobial Control of Arthropods (A. Krieg);
32. Co-ordination of International Effort and Industrialization (P. Grison);

33. Past Achievements and Future Prospects (H. D. Burges and N. W. Hussey).
Appendix 1. Key Publications (A. Krieg);
2. Information Sources and Literature Searching in Biological Control (J. R. Norris);
 3. Information Services (E. A. Steinhaus);
 4. World Teaching Facilities in Insect Pathology (L. P. S. van der Geest and P. A. van der Laan);
 5. Insect Pathogens available for Distribution (L. P. S. van der Geest and P. A. van der Laan);
 6. Sources of Special Materials (L. P. S. van der Geest and P. A. van der Laan);
 7. A Bibliography on Diseases of Medically Important Arthropods 1963-1967 with some Earlier Titles Omitted from Jenkins' 1964 list (M. Laird)

EXPERIMENTATION SUR LES VIROSES D'INSECTES EN VUE DE LA LUTTE CONTRE
LES RAVAGEURS DU COTONNIER AU TCHAD

par P. ATGER, entomologiste à la station IRCT de Bébédjia au Tchad

Introduction:

L'amélioration de la culture cotonnière au Tchad, bien que récente, pose déjà des problèmes de protection phytosanitaire.

Ce n'est pas sans une certaine appréhension que depuis 1960 nous avons vu le rythme des traitements passer de 2 à 5. Dans le même temps on a constaté (Brader, Cot. Fib. Trop., s. pr. 1970) une diminution de la sensibilité des populations naturelles de ravageurs vis à vis des insecticides.

L'expérience déjà ancienne de certains pays, tels que les USA, nous a conduit à orienter nos recherches vers une application plus rationnelle des moyens de lutte, en particulier par l'utilisation des germes entomopathogènes. Dans cette optique, nous avons développé, depuis 1966, l'étude des viroses d'insectes.

Deux ravageurs sont importants au Tchad: Diparopsis watersi Roths et Héliothis armigera Hb. (Lepidoptera, Noctuidae).

Pour le premier, nous connaissons deux maladies à virus. L'une: virose cytoplasmique intestinale, a été trouvée en Côte d'Ivoire (Angelini et Vandamme, Cot. Fib. Trop., 19 : 265, 1964) mais jamais rencontrée au Tchad.

L'autre: virose nucléaire, a été mise en évidence au Tchad (Atger, Cot. Fib. Trop., 24 : 205, 1969) mais est très difficile à multiplier. Pour ces raisons, aucune de ces deux viroses ne peut actuellement être retenue pour la lutte contre Diparopsis.

En ce qui concerne Héliothis, c'est en 1967 que le Dr. KNAPP (Supervisor, Field Entomology, IMC Libertyville, Illinois, USA) nous a adressé une formulation poudreuse contenant $4 \cdot 10^9$ PIB d'Héliothis zea (PIB = Polyhedral Inclusion Bodies) par gramme. Cette préparation testée dans des essais de plein champ et au laboratoire s'est révélée peu efficace vis à vis d'H. armigera.

Nous avons alors prospecté les cotonneraies jusqu'à ce que nous trouvions une chenille d'H. armigera présentant les symptômes classiques d'une maladie à virus du type virose nucléaire. A partir de cet échantillon nous avons pu multiplier aisément une souche virale très pathogène dans les conditions locales.

Expérimentation:

Les essais de laboratoire nous donnant 100% de mortalité nous avons entrepris en 1969 une expérimentation de plein champ. Pour ce faire nous avons appliqué une suspension aqueuse de virus préparée à partir de broyat de chenilles mortes virosées et titrant 10^{10} polyèdres par ml. La dose par hectare et par traitement étant de 10^{11} polyèdres; à raison de 5 traitements pendant la campagne. Le virus d'Héliothis a été mis en comparaison avec Endrine/DDT sur des parcelles de $\frac{1}{2}$ ha chacune. Les résultats sont consignés dans le tableau no. 1.

Tableau no. 1: Résultats comparatifs de traitements à base d'insecticide et de virus en 1969. Rendements de coton en Kg/ha.

	Endrine/DDT	Virus
<u>Brousse:</u>		
Lobi-poste	940	590
Ma'nani	443	315
Goré	2060	1745
<u>Station:</u>	1240	282

Les résultats ci-dessus nous semblent assez significatifs. En particulier dans les champs de brousse où l'influence néfaste des traitements insecticides sur l'équilibre naturel ne s'est pas encore fait sentir. Nous pensons en effet, que les manifestations du virus ne sont pas spécifiquement organiques mais qu'elles permettent la libre activité des parasites et des prédateurs.

Par ailleurs, il faut noter que le parasitisme n'a pas toujours été à dominance l'Héliothis, mais qu'en fin de campagne il y eut une attaque importante de Diparopsis. Or la spécificité du virus déjà limitée entre H. zea et H. armigera l'est encore plus avec Diparopsis. Cet aspect du problème ne peut être négligé au Tchad où Diparopsis est aussi important, sinon plus, qu'Héliothis.

C'est pourquoi en 1970 nous avons ajouté aux suspensions virales une dose faible d'un insecticide reconnu peu actif vis à vis d'Héliothis et destiné à éliminer les populations de Diparopsis. A la suspension titrant 10^{10} polyèdres par ml. nous avons ajouté de l'endrine (produit abandonné par le Tchad depuis 1966) à raison de 300 gr de matière active par ha, ce qui représente les 2/3 de la dose habituellement proposée. Nous avons comparé ce mélange au Péprothion (DDT-Endosulfan-Méthylparathion) produit actuellement vulgarisé au Tchad. Tout en admettant le danger d'une telle intervention, l'association virus-endrine a été appliquée sur avertissement et nous a donné d'excellents résultats (tableau no. 2).

Tableau no. 2: Résultats comparatifs de traitements à base d'insecticide et de virus en 1970. Rendements de coton en Kg/ha.

	Péprothion	Virus-endrine
<u>Brousse:</u>		
Bébédjia	1126	1202
Donara	927	1018
Ma'nani	403	421
<u>Station:</u>		
1ère récolte	824	961
2ème récolte	928	737

L'association virus-endrine donne dans la plupart des cas les meilleurs rendements.

Il est toutefois intéressant de considérer les résultats sur Station où nous avons pu séparer les deux récoltes. La première récolte correspond à la production de base du cotonnier; celle-là même, soumise aux attaques d'Heliothis qui apparaît surtout en début de campagne. La deuxième récolte, par contre, subit une nette diminution montrant ainsi que Diparopsis, particulièrement abondant en fin de campagne, n'est pas atteint par le virus.

Conclusion:

Ces résultats bien que incomplets, nous laissent supposer que l'application de virus peut être envisagée dans des zones où l'équilibre naturel n'est pas encore ou peu perturbé par un excès de traitements insecticides. Il suffit pour cela d'établir un programme de lutte intégrée basé sur une meilleure connaissance des biotopes naturels et sur la dynamique des populations de ravageurs au sein de ces biotopes.

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New Member.

Michael Fowler
Entomology Division D. S. I. R.
Private Bag
Nelson, New Zealand.

POSITION WANTED

Loris William Hughes
New Mexico State University
Department of Biology, Box 3AF
Las Cruces, New Mexico 88001, U. S. A.

Desires a teaching and/or research position. Qualified for insect pathology, insect microbiology, virology, immunology and biological control.

M. Sc. from the University of New Mexico, Las Cruces, 1968.
Thesis: "The Soluble Antigens of Pasteurella pestis".

Ph. D. from the University of New Mexico, Las Cruces, expected June 1971.
Dissertation: "Host-Parasite Relationships of Nuclear Polyhedrosis Virus and Heliothis zea."

Curriculum vitae available.

New degrees awarded

In June 1970, Charles R. George obtained the Ph. D. degree from Cornell University, Ithaca, N. Y., USA. Dr. George has accepted an assistant professorship at North Carolina Central University in Durham. The title of his thesis is: The effect of malnutrition on growth and mortality of the red rust flour beetle Tribolium castaneum parasitized by Nosema whitei.

Recently, Harry K. Kaya received the doctoral degree from the University of California at Berkeley, Calif., U. S. A. He submitted a thesis entitled: Toxic factor produced in virus-infected armyworm larva: effect on the parasitoid, Apanteles militaris (Walsh) (Hymenoptera: Braconidae). He has accepted the position as assistant entomologist at the Connecticut Agricultural Experiment Station.

Cornell University, Ithaca, NY, U. S. A.

Dr. John P. Kramer has been awarded a research grant of about \$ 20,000 for a 3-year period from the National Institute of Allergy and Infectious Diseases of the National Institutes of Health for continuing studies on microsporidian infections in muscoid flies.

IVth. ANNUAL MEETING OF THE SOCIETY FOR INVERTEBRATE
PATHOLOGY

Montpellier, France. June 16-19, 1971.

Registration and Housing Application

REGISTRATION

print or type

Last name.....First name.....initial.....

Mailing address.....

.....

(street)

(city)

(country)

Institution.....Position.....

Accompanied by (family).....

Registration fee (French currency only) 100,- F () spouses 60,- F ().

Make check payable to: Réunion annuelle Société de Pathologie des Invertebrées, and mail this form with the fee, not later than April 15 to Dr Max Bergoin, 4th Annual Meeting of the SIP, Station de Recherches Cytopathologiques, 30 - Saint-Christol-Les-Alès, France.

The registration fees will be refunded upon timely request if you are not able to attend the Meeting. The fees may also be paid at the arrival.

Travel arrangements Date of arrival, June..... at.....^{am}/_{pm}
at.....(airport, railway stat., by car)
Date of departure.....

HOUSING

All housing will be in hotels

<input type="checkbox"/> <u>First category</u>	<input type="checkbox"/> <u>Second category</u>	<input type="checkbox"/> <u>Third category</u> ¹
single room 50-60 F	single room 30-40 F	single room 20-25 F
double rooms 60-80 F	double rooms 40 -50 F	double rooms 30-35 F
<input type="checkbox"/> double rooms	room-mate preference.....	
<input type="checkbox"/> single room	<input type="checkbox"/> camping	

¹Generally no bath. Please reserve for nights: 15/16 16/17 17/18 18/19
others

PAPER SUBMITTED FOR PRESENTATION AT THE IVTH ANNUAL MEETING OF THE
SOCIETY FOR INVERTEBRATE PATHOLOGY

If you wish to present more than one paper, please photocopy this form before filling out and return a form for each paper.

Name (s) of author (s).....

Professional address.....

.....
Title of paper.....

.....
Time for presentation will be 10, 15 or 20 minutes. Projection equipment required: 5 x 5 cm slide projector; 8 x 10 cm slide projector; movie projector. Please, underline what is desired.

Abstract. Please submit an abstract of approximately 150 words which will be used by your program Chairman in assigning your contribution to a specific section. The available abstracts of all presented papers will be published in the May issue of the Newsletter.