

MINUTES OF THE FIFTH BUSINESS MEETING,  
SOCIETY FOR INTERVEBRATE PATHOLOGY,  
UNIVERSITY OF MINNESOTA, St. PAUL, U.S.A.  
AUGUST 30, 1972.

Present: Vago (President), Briggs (vice-president), Sparks (past-president), van der Laan (Secretary), Ignoffo (treasurer), Heimpel (trustee). 59 Members.

1. President Vago called the meeting to order at 10.00 a.m.
2. Minutes of the IVth Business Meeting were published in Newsletter III, no. 4, September 1971. St. Julien moved for approval, seconded by Bulla, unanimously carried.
3. President Vago gave the following report: This is the second report on the activity of the same team. As in the first one, it covers the realization of projects to the general meeting two years ago. The chief objects for the Society were for the past two years: stability of function, enlarging of the scope to adjacent sectors of research, and strengthening of its international character. Stability of function consisted of pursuing those actions which conform the Constitution and the Council. Such actions were first of all the holding of annual meetings. We organised in 1971 the first meeting of the Society outside the U.S.A., in Europe, at Montpellier, France. This meeting was in its character different from the previous ones as it was held in an European style. We hope that the participants have a favourable recollection of the atmosphere and accomplishments of the meeting. The second annual meeting that is presently taking place gathers us together once again in North America on the usual premises characterized by the excellent facilities offered by the A.I.B.S. I express here out thanks for the organisation to Dr. Marion Brooks.

A new honorary member was elected in 1971, and the 1973 meeting and prospects of further meetings were considered.

The Journal of Invertebrate Pathology developed rapidly and Newsletters were regularly issued.

These various activities of the Society will be treated by the members of the Council who are responsible for each sector. As President, I desire to concentrate on the two aspects regarding the development of the Society.

The enlargement of the field of actions of the Society was our greatest concern. These actions first consisted in personal contacts and conferences in some allied scientific areas, particularly in those of medical entomology and epidemiology. The joining of numerous specialists in invertebrate pathology and the preparations for the association of our Society with those of medical entomologists result from these various contacts.

These actions were also put in concrete form by the holding of joint meetings. Such was the Montpellier meeting, organized jointly with the International Organi-

zation for Biological Control. Moreover, a symposium on Comparative Immunology is taking place in the framework of our present meeting. I have been studying projects for holding regional meetings on transmission of microorganisms by invertebrates, adaptation of intracellular symbiots, virus genetics. These meetings will be managed under the auspices of our Society.

Some of those aspects acquired a more formal complexion owing to the fact that proposals were made by international organizations. Such is the case with the World Federation of Parasitologists on Dr. Laird's initiative. A joining without financial consequences favouring information exchanges of joint meetings was entertained by our Council.

Concerning the development of the international character of the Society, two trends are to be considered. The first one concerns contacts with countries in which up to now the Society was not represented or very little.

Our efforts first bore upon African, Middle-East and East European countries. The Society is now well-known in Africa and in the Middle-East. Practically, all people from these countries who are temporarily or provisionally active in Invertebrate Pathology are joining us. Students and young scientists are particularly concerned in these countries in which the information in invertebrate pathology is developing.

For East European countries, relations established with the Academies of Sciences from U.S.S.R., Bulgaria, Hungary, Roumania, has facilitated the joining of the Society by colleagues from these countries. These are openings that I projected in my President programme.

The second aspect of the development of the international character of the Society was directed to the formal recognition of this character. It seemed to us that the most efficacious way was to make closer relations with the international organizations of the United Nations and before all with the I.U.B.S. Contacts with the Secretary General of the I.U.B.S. ended to the agreement of the latter in order that the Executive Committee could examine from now the possibility for our Society to become the "Invertebrate Pathology" Section of this International Organization. The affiliation of SIP to the I.U.B.S. will be the best confirmation of its international character as well as of its role and importance among the organizations for Biology.

These various relations need long, difficult steps which had to be undertaken with diplomacy and caution. So, I leave lots of problems and tasks to my successor. Nevertheless, I believe that it is presently incumbent on an international Society as ours which is in charge of the development of a whole discipline, to enter upon that course. Effectively, all the fields of Biology start reaching a period characterized by general overtures and interpenetration of sciences. The different problems in relation with our activity will be presented now by the responsables of each commission of the Society.

4. Secretary reported that during the period July 15 until July 15, 1972 the number of regular members increased from 269 to 315, thus bringing the total number of members up to 556, an increase of 12 per cent since 1972. Many new members came from France, as a result of the Montpellier meeting.
5. Treasurer gave account of present financial situation. The Bank account per June 1 amount total \$ 676,99, but since the costs of the last Newsletter has been paid, only \$ 250,- is left. About 10 per cent of members are in arrear with payment. Treasurer's report has been asked for approval by Tinsley, seconded by Cheng, carried unanimously. New Council will appoint an Audit Committee. An Audit Committee by Drs. Briggs and Hostetter verified the financial records as stated in Montpellier's meeting. They were found in order.
6. The Chairman of the Membership committee, Dr. Hurpin send a report, which was read by the Secretary. Propaganda and recruitment was done along two directions:
  - a. to colleagues in Eastern Europe, b. to colleagues in the field of medical entomology: St. Julien asked to extent our activities also to China. Moved to New Council.

7. The Program Director - 1971 reported that in Montpellier 155 persons from 24 countries attended the Meeting.
8. Publication Committee: Dr. Cheng read following report:

Other than an extremely busy year for the Journal of Invertebrate Pathology, this has been a quiet year for the Publications Committee. The primary reason for this, as all will recognize, is because of the general economic state in this country and abroad and publishers are not as eager to invest funds in a variety of projects that would not have confronted any difficulty in past years.

J.I.P. The Journal continues to grow. From July 1, 1971, to July 31, 1972, we processed 210 manuscripts for review and by far the majority of these were published or are in the process of being published. Specifically, 27 out of the 210 manuscripts processed were rejected.

In following our established policy, each manuscript was reviewed by at least two reviewers, usually members of the Editorial Board, although the use of non-member authorities is increasing. A partial reason for this is because the Journal is receiving increasingly more manuscripts that lie beyond the more established areas such as insect virology and bacteriology and molluscan pathology. This is a healthy sign that the discipline of Invertebrate Pathology is rapidly broadening out to cover increasingly more groups of invertebrates and a variety of pathobiological topics. It is our intent to continue to encourage the broadening of the overall discipline.

It is also of interest to know that the return addresses of the authors have shifted significantly. A cursory analysis has indicated that approximately 97% of the authors during the first five years of the Journal were affiliated with colleges of Agriculture of Universities or with state and federal agricultural research units. On the other hand, during the past three years, some 30% of the authors have departments of biology or medical schools as their return addresses. This again reflects the broadening of the discipline.

The officers of Academic Press continue to cooperate in every way possible. Their primary concern, as I have reported to the Editorial Committee, is with the relatively low number of subscription, especially by libraries. The total subscription stands at 870 and most of these are individual subscriptions at reduced rates (because of membership in SIP). I have been asked by Academic Press to ask all of the members of the Society to request that their institutional libraries subscribe to the Journal. The profit from the Journal now stands at slightly better than 1%. They can do better by placing the investment in a savings account.

Other Publications. Because of the retrenchment by publishing companies, the appearance of Andre Paillot's "Les Infections chez les Insectes" translated by Dr. Martin Shapiro has been delayed. Although a company had agreed to publish the translation, they have since hesitated because of the cost of reproducing the illustrations in the original text. The committee is still working on this matter.

Although not officially affiliated with SIP, the annual series entitled Current Topics in Comparative Pathobiology has appeared, with the first volume (1971) including the last scientific treatise by the late Professor E.A. Steinhilber, coauthored with Professor Y. Tanada of Berkeley. Volume 3, scheduled for 1973, will include papers by former students and associates of Professor L.A. Stauber of Rutgers University, a charter member of SIP, in honor of his retirement. Volume 4, scheduled for 1974, will include the proceedings of the SIP-sponsored "Symposium on Invertebrate Immunology" being organized by Drs. E.L. Cooper and M.R. Tripp at this year's meetings. The 1975 (Volume 5) is also of considerable interest to invertebrate pathologists. It will include definitive reviews by international authorities on various phases of the biology of the Microsporidia. This volume is being arranged by Dr. Victor Sprague of this Society.

Current Topics in Comparative Pathobiology welcomes contributions in any area of pathobiology as it pertains to both vertebrates and invertebrates. These should be lengthy critical reviews and not research reports. Interested individuals should contact Dr. Cheng for further details.

9. Report Newsletter: Four issues, with total number of 61 pages were published. The correspondents, however, in majority failed to send in items.
10. Nomination Committee: Report of Chairman Dr. Welch is read by Secretary.
11. Teller's Report: Teller's committee reported about election, has been announced already in Newsletter IV, no. 4: Briggs, President, Reimpel, vice-president, Y. Tanada, Treasurer, Bergoin & Martignoni Trustees.
12. Divisions Committee: Chairman, Dr. Martignoni reports that no applications were received.

#### New Business.

1. Secretary reports no progress in proposal to changes of Constitution (see Minutes 4th Business Meeting). Moved to New Council.
2. Affiliation U.I.B.S. President gave further details (see also President's Report). As U.I.B.S. is the only official world organisation of Biological Science (derived from UNESCO), it is very important that S.I.P. becomes affiliated. There is a good chance that it will be realized in 1973, and that we will become the administrator of a Section of U.I.B.S. We are as international organisation fully qualified.
3. Association World Federation of Parasitology (see also President's Report). Decision should be made by New Council. Advantage to joint session in 1974 Munich Congress is suggested.
4. A.I.B.S. affiliation. Representative of S.I.P. to A.I.B.S. (Vice-president Briggs), explained at large the advantages of this affiliation.  
Next meeting will be: 1973, Amherst, Mass; 1974, Phoenix, Arizona; 1975, Corvallis, Oregon.
5. Proposals from each 10 members were received by Council to the appointment of 3 new honorary members. Council considered these proposals as valid. Carried to new Council for early action.
6. Next meeting of S.I.P. together with next Colloquium on Insect Pathology and Microbial Control (I.O.B.C.) will be in Oxford, 3-7 September 1973. Dr. Tinsley gave details on program, accommodation, excursions.
7. Meetings S.I.P. in 1974 and 1975. In 1974, S.I.P. will meet twice:
  - a. with A.I.B.S. in June, in Phoenix, Ariz.;
  - b. with World Fed. Parasit. in Munich (Germany) later in that year.
 P. Faulkner announces that Canada considers to invite S.I.P. in 1976.

#### Change of office.

President Vago handed gavel to Vice-President Briggs and thanked Secretary van der Laan.

#### PATHOLOGUE

Members who attended the annual meeting in Minnesota were relieved, as the lunch hour arrived, to have the President of the Society adjourn the plenary session without a Presidential Address. I hasten to add that this humanitarian act was difficult for one who had suffered many hours preparing what he thought to be wise words for an inspired audience. During the next 24 months I plan to use ideas from the ghost of that Presidential Address to help me keep the proper perspective on how the Society should develop and serve its members.

Four years ago, at the first annual meeting of the Society, we began to understand the idea of an international society dealing with invertebrates in the broadest sense of the word. The two administrations since that time have confirmed the convictions of the founders of the Society to assure its breadth in subject matter and international character. Dr. Vago has provided the essential leadership internationally to assure a conspicuous place for invertebrate pathology--as an associate in the World Federation of Parasitologists and with the initiation of the procedures to serve invertebrate pathology interests throughout the world as an element of the International Union of Biological Sciences. These new horizons internationally have been matched by his meticulous care in identifying the role of invertebrate pathologists in ecological matters where microorganisms can be considered as alternatives to chemical pesticides, where the pathology of invertebrates is now appreciated as an indicator of environmental change, and in the husbandry of invertebrate animals.

It is not by chance that all of our Presidents to date-- Professors Steinhaus, and Vago--pursued and achieved goals that are specifically stated in the objectives of the Society for Invertebrate Pathology. This fidelity to purpose is expected of each administration. With a new Vice President, the President-elect, a fifth administration is now on the horizon and it will have its own character. For the immediate future I expect to continue the development of the international dimensions of the Society, first by meeting our responsibilities to our new international affiliations, and second by assisting invertebrate pathologists and their colleagues in regions to organize, according to their needs, as elements of the Society for Invertebrate Pathology as an international entity.

It appears that I am suggesting and attempting a paradox--furthering the international character of the Society, while at the same time encouraging regionalization for local identification of invertebrate pathologists. For international communication, cooperation, and service, the international character is essential; for communication and addressing challenges of a specific geographical nature, and assuring a greater frequency of accessible meetings to the largest membership, regional identification will assist us.

Regular dialogue between the President and the membership is a creative activity in which I wish to engage throughout the months to come. We will attempt to utilize the Newsletter and other media for communications as necessary.

Service to its membership and to the international community-at-large is the direction in which the Society will continue to move. I look forward to hearing from you.

John D. Briggs  
President

## OFFICERS

President: Dr. J.D. Briggs, Dept. of Zoology and Entomology, The Ohio State University, 1735 Neil Ave, Columbus, Ohio 42310, USA.

Secretary: Dr. Marion A. Brooks, Dept. of Entomology, Fisheries and Wildlife, University of Minnesota, St. Paul, Minnesota 55101, USA.

Treasurer: Dr. Y. Tanada, Dept. of Entomology, University of California, Berkeley, California 94720, USA.

Newsletter Editor: To be appointed. News items can be sent to the former editor who will forward these. Former editor: Dr. L.P.S. van der Geest, Laboratorium voor Toegepaste Entomologie, Linnaeusstraat 2B, Amsterdam, The Netherlands.

Vth INTERNATIONAL COLLOQUIUM ON INSECT PATHOLOGY  
With ANNUAL MEETING OF THE SOCIETY FOR INVERTEBRATE PATHOLOGY

A brochure announcing the programme for the meeting which is to be held in Oxford, England in September 1973 will be distributed during December this year. It will contain full details of the arrangements for submission of papers and reservation of accomodation. Any advance enquiries should be addressed to Miss M.K. Arnold, Secretary ICIP/SIP Meeting, Unit of Invertebrate Virology, Commonwealth Forestry Institute, South Parks Road, Oxford OX1 3RB, England.

## INTERNATIONAL CONFERENCE ON COMPARATIVE VIROLOGY

The 2nd International Conference on Comparative Virology will be held on August 27, 28 and 29, 1973, at Mt. Gabriel, Qué., Canada.

Emphasis will be on virus evolution and oncogenic viruses. The Conference is sponsored by the University of Montreal and McGill University. Prof. Edouard Kurstak (U. Montreal) and Dr. Karl Maramorosch (Boyce Thompson Institute) who have organized the First Comparative Virology Conference at Mt. Gabriel in 1969, will be the joint chairmen of the Second Conference. They are being assisted by an Advisory Committee, headed by Dr. André Lwoff (Cancer Institute, Villejuif, France) and Dr. Joseph L. Melnick (Baylor University, Houston, Texas, U.S.A.). Further details concerning the program, housing, and registration can be obtained from:

Prof. E. Kurstak, Dept. Microbiology and Immunology, Faculty of Medicine, University of Montreal, P.O. Box 6128, Montréal 101, Qué., Canada.

## CONFERENCE ON REGULATION OF INSECT POPULATIONS BY MICROORGANISMS

The New York Academy of Sciences has organized a conference on the regulation of insect populations by microorganisms. This meeting was held on October 4, 5 and 6, 1972. Papers were presented on the following topics: Theory and Application of Insect Control, Means for Insect Regulation, Biological Factors affecting the Success of Microbial Insecticides, Procedural Factors affecting the Success of Microbial Insecticides and Establishment of Priorities.

SOUVENIRS OF THE ANNUAL MEETING OF THE SOCIETY FOR INVERTEBRATE PATHOLOGY,  
MONTPELLIER, 1971

by S. HASAN, PAKISTAN

... It was a typically mediterranean evening when we finished our day's programme and came in the heart of the deep cleft mountains of "Cevennes". We all gathered together on the terrace of an isolated inn impeccably placed to take advantage of the landscape and felt ourselves surrounded by the beauty of the site. In front of us were the blue summits of the mountains heavily vegetated with chestnuts and mediterranean oaks and deep below ran a mountain stream joined at many places by hanging torrents.

The sun was going progressively behind the mountains and the sky became like a flame of unlimited dimension, when our host, the president C. VAGO, welcomed us with the following words which I think to be interesting for all our colleagues to recall here as truly as possible.

"You may be surprised that the Society Banquet is not organized, as usual, on the University campus or, at least, in the Université town. There are of course in Montpellier many pleasant restaurants which would welcome us. However, this occasion is an opportunity to bring you to this region of the "Cevennes Mountains" and to ask you to contemplate during a few minutes the beautiful landscape which has a particular significance for Invertebrate pathologists. In fact, this region is a holy place of Invertebrate Pathology; hundred years ago, from 1865 to 1870, Pasteur's experiments on the two wellknown diseases of Bombyx, pebrine and flachery, were conducted here.

You can see some isolated buildings on the slopes of the mountains. In these old farms there was traditionally, a room, called the "magnanerie", which was devoted to the rearing of silkworms. In this country, this industry was practised in almost all the farms and it is in some of these isolated farms that Pasteur made his observations. Probably indeed, one or another of these buildings in front of you was the place where the famous scientist worked. A few miles behind us in his house at "Pont Gisquet" near Ales he wrote up or dictated, when paralysed, his findings.

Most of his results were accepted enthusiastically as was the demonstration of the efficiency of selection against Nosema bombycis. Others caused violent discussions.

One of these controversial problems is particularly linked to this region. Pasteur, among his observations on the flachery, examined the action of the dust from rearings which had suffered from the disease for many generations. He observed that the infection of this dust by the insects led, in few hours, to paralysis and sudden death, without the presence of germs in the intestine. He could not explain these observations, but he thought the mortality was due to a toxin. These phenomena remained unexplained and Pasteur's observations were criticized.

Researches conducted hundred years later in the same rearing houses as visited by Pasteur confirmed the paralysis and the toxic action of the dust from sick rearings and, also, the delay period found by Pasteur. Modern bacteriological techniques led to isolation of a bacterium, B. thuringiensis alesti, containing toxic and resistant endocrystals. These results provided a confirmation of Pasteur's observations and showed that this eminent scientist had made the first statements on the action of Bacillus thuringiensis today a pathogen wellknown to all invertebrate pathologists.

I don't think you can leave this place without knowing that, besides Pasteur's work whose centenary we celebrate today, this land has been the site of other investigations in invertebrate pathology.

You may not know, for instance, that the name of Paillot is closely linked to this region. Most of his fundamental work in invertebrate virology was performed near here. Later, Toumanoff who died a few years ago and whose work is known to many of you, came here often to study bacterial strains pathogenic to insects.

Even today, active research in the field of invertebrate pathology continues in this region. Those working in biological control or invertebrate bacteriology certainly know the Anduze strain of Bacillus thuringiensis. This strain, utilized also in industrial preparations, has been isolated near the small town of the same name which you see on your left. Finally, behind you is located the St-Christol Research Laboratory which is devoted to comparative pathology and mainly to invertebrate pathology and in which most of you virologists, bacteriologists, mycologists or phytopathologists have correspondants and friends.

As the contours of the mountains disappeared into the darkness an unforgettable evening commenced re-uniting at this "Crossroads" of invertebrate pathology nearly 200 colleagues and friends from 32 countries.

AWAKENED INTEREST IN MICROBIOLOGICAL CONTROL IN SCANDINAVIA (DENMARK, FINLAND, NORWAY AND SWEDEN)

In 1968 a working group for microbiological control of Scandinavian pest insects and mites was constituted by the Scandinavian Agricultural Research Workers' Association. Since the establishment, the working group has met once a year in order to promote and coordinate Scandinavian research and field work on microbiological control for agricultural and forestry pest arthropods. At present the group has eight members:

Lic. agro. Ove Berendt  
Statens plantepatologiske Forsøg  
zoo. afd.  
Lottenborgvej 2  
DK-2800 Lyngby, Danmark.

Forskn.ass. Henrik Pettersen  
Det Norske Skogforsøksvesen  
Avd. skader på skog  
Boks 62  
N-1432 As-NLH, Norge.

Fil. lic. Gunnel Carlberg  
Mikrobiologiska institutionen  
Helsingfors Universitet, Viikki  
SF-00710 Helsingfors, Finland.

Fil.lic. Reinhold Charpentier  
Zoologiska institutionen  
Helgonavägen 3  
S-223 62 Lund, Sverige.

Docent Matti Nuorteva  
Inst.f. Lantbruks- och Skogszoologi  
Helsingfors Universitet, Viikki  
SF-00710 Helsingfors, Finland.

Bitr.prof. Hubertus H. Eidmann  
Skogshögskolan  
Avd.f.skogsentomologi  
S-104 05 Stockholm 50, Sverige.

Amanuensis Torgeir Edland  
Statens plantevern, zoo.avd.  
N-1432 As-NLH, Norge.

Agronom Gunnar Svensson  
Statens Växtskyddsanstalt  
S-171 07 Solna 7, Sverige.

The following lists and directions have been prepared by the working group:

- (1) A list of Scandinavian research concerning microbiological control agents, insect pathology and/or insect tissue culture.
- (2) A list of papers on this field published since 1964. A supplemented list (1963-1972) with English translations of the titles will be available for distribution in 1973.
- (3) Instructions for fixation and embedding of insects for electron microscopic and light microscopic identification of insect pathogens.
- (4) Directions concerning how and where Scandinavian insect pathogens may be sent for identification.
- (5) Proposal of a uniform assay technique for commercial Bacillus thuringiensis preparations against Scandinavian phytophagous insects.

At several meetings, the working group has thoroughly discussed the establishment of a programme of collection and examination of pathogens on the most important Scandinavian pest insects. Such an inventory is urgently needed, but unfortunately it cannot be performed because of lack of personal and institutional resources. Although various specialists - both Scandinavian and foreign - are able to identify a certain amount of Scandinavian insect pathogens, there is a great need for a Scandinavian centre, with personnel and equipment not only for preliminary diagnosis and grouping of the material, for fixation and sampling, for registration and distribution to specialists, but also for basic studies and mass production on the semi-scale of insect pathogens. In order to develop microbiological control methods in Scandinavia, it is essential that the availability of technical equipment and

qualified personnel is considerably increased.

Finally the working group is interested in the realization of sound and unitary regulations concerning the import, manufacture and use of microbiological materials for pest control in Scandinavia. In order to initiate a biological approach to future legislation, the working group is preparing an address to the Scandinavian authorities. This address will contain an analysis of the Scandinavian situation as well as informations on existing regulations in Canada, France, U.S.A., U.S.S.R. and West Germany.

For "The Working Group for Microbiological Control of  
Scandinavian Pest Insects and Mites"

(Reinhold Charpentier)

---

#### AMERICAN TYPE CULTURE COLLECTION

The United States Federation for Culture Collections has been established to provide improved liaison between collectors and users of collections of living cultures of microorganism, viruses and cell lines. Individuals interested in joining the Federation are urged to participate. They can do so by submitting annual dues (\$4.00) to the Secretary, Dr. S.S. Kalter, Southwest Foundation for Research and Education, P.O. Box 28147, San Antonio, Texas 78284. (Affiliate (\$10.00) and sustaining memberships (over \$10.00) for interested organizations are also available.)

Members are entitled to receive the Newsletter of the USFCC, currently published twice a year by the American Type Culture Collection. This publication carries items of interest to managers and users of culture collections and proceedings of the Federation.

---

#### ADVERTISEMENT

Two positions open Jan., 1973: (1) Biochemist, with experience in enzymes and DNA-RNA. (2) Pathobiologist-electron microscopist. Candidates must have a Ph.D. Experience with marine animals and cancer desirable. Both positions call for the conducting of research in the latter area under an institutional (NIH) biomedical award, as well as teaching. Please send inquiry and resumé, and have three letters of recommendation forwarded, by Dec. 1, 1972, to: Dr. Satya P. Sood, Chairman, Division of Natural Sciences, University of Hawaii at Hilo, Hilo College. P.O. Box 1357, Hilo, Hawaii 96720 U.S.A.

---

#### CORRECTIONS TO MEMBERSHIP LIST

The following persons listed as regular members are charter members:

Dr. Thomas A. Gochnauer and Dr. J.S. Pillar.

The following persons, listed as student members, are regular members:

Dr. William Bode, Dr. Harry K. Kaya, Dr. Jorge K.L. Leong, Dr. Jean Claude Veyrumes, Dr. E. Vivier, Dr. Thomas Jing-Ju Wang and Dr. Rosalie Watkins.

---

#### CHANGES OF ADDRESS

J.S. Pillai, Department of Entomology, University of California, Riverside, California 92502, USA (Until July 1973).

Donald P. Harlan, USDA, ARS, US Delta States Agricultural Research Center, P.O. Box 225, Stoneville, Mississippi 38776, USA.

Clayton B. Beegle, Department of Zoology and Entomology, Iowa State University, Ames, Iowa 50010, USA.