
AAVP Newsletter

American Association of Veterinary Parasitologists

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Annual Meeting Report From the Secretary Treasurer

American Association of Veterinary Parasitologists 1996 Annual Meeting

The Forty-First Annual Meeting of the American Association of Veterinary Parasitologists is history. Approximately 220 veterinarians, industrial and university parasitologists and students were in attendance in Louisville to participate in plenary lectures and specialized sessions for three full days. Social functions included a president's welcoming reception, a student party, and two social events sponsored by Pfizer and Merck. The Distinguished Parasitologist Award for 1996 was presented to Dr. Bonner Stewart of Louisiana State University for his considerable contributions to the field of parasitology, particularly parasites of swine. Dr. Lee Willingham of Copenhagen, Denmark received the AAVP Graduate Student Award in Parasitology.

The books on the meeting finances were officially closed on 1 October. Financially, the 1996 meeting was a success, due to tremendous support from industry and the large attendance. If you did not receive a copy of the proceedings, there is a small supply of booklets available from the Secretary. Thanks to all who helped make the 1996 meeting a success.

1997 Meeting: Preparations are underway for the 1997 meeting in Reno, Nevada 19-22 July, so mark your calendar. Parts of the program are already in place for what promises to be an exciting meeting. Reno will be a great host city, with many varied activities. The AVMA has promised a downtown location for the AAVP, and one that

should accommodate both our meetings and housing requirements. Hopefully, there will be sufficient warning for all to be able to have reservations in the meeting hotel.

1997 Dues: Enclosed in the newsletter is a form for submission of dues for 1997. The AAVP is still a great bargain, \$20 for regular members, \$10 for students. Keep your association healthy and pay your dues. If you have any questions about your dues status, call me (847 970-4514), fax (847 970-4560) or write (c/o Mallinckrodt Veterinary, Inc., 421 East Hawley Street, Mundelein, IL 60060).

Addresses and Telephone numbers: Please make sure to apprise the Secretary/Treasurer of any changes in your address, telephone or fax numbers. A committee has been formed to develop a Web site for the AAVP. If you have an e-mail address, please include it on your dues form. Keep the directory up to date!

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Election News: Many thanks to all who voted to keep me in this job for another two years. The privilege to serve the organization is mine. Tom Kennedy, Secretary/Treasurer, AAVP Mallinckrodt Veterinary, Inc., 421 East Hawley Street, Mundelein, IL 60060.

News in Brief

Veterinarians and Farm Animal Welfare

'This house believes that the veterinary profession has failed in its responsibility to protect farm animal welfare.' That was the motion put forward, and narrowly defeated, in a debate organized by the Scottish Metropolitan Division of the BVA and held at the Moredun Foundation for Animal Health and Welfare in Edinburgh recently.

Speaking for the motion, Mr. Les Ward, director of Advocates for Animals, said that the quest for increasing quantities of food at reduced cost had little to do with welfare and everything to do with profit. He argued that many of the current husbandry systems and farming practices were 'unsatisfactory and immoral'. He spoke of the contradiction between the veterinary surgeon's oath and the suffering experienced by farm animals supposedly under their care. The veterinary profession, he said, was unique in that the interests of its patients did not coincide with those of its clients and he called upon members of the audience to speak out for the protection of farm animals, rather than defend the status quo. 'The veterinary profession should act as reformers with a duty and responsibility to speak out and protect large numbers of innocent animals from pain, suffering, distress and death on the farm.' he said.

Speaking against the motion, Mr. Bob Young, spokesman for the BVA Animal Welfare Foundation said that the profession had a major responsibility to protect farm animals though it was still bound to operate within the law and the requirements of the profession. Animal welfare was, he said, fundamental to the veterinary profession, though the profession could not be held responsible for the welfare of every animal in the world. He suggested that there was unavoidable dominance of

man over animals and that the veterinary surgeon should act as 'an honest broker' between the needs of animal and man. Although emotional and financial considerations could not be disregarded, Mr. Young said that these were factors which should never be the primary consideration of the veterinary surgeon. He believed that veterinarians 'can and do improve farm animal welfare'.

Mr. Young went on to describe the activities of the profession with regard to animal welfare, both at an individual level and on a national scale, as well as the work undertaken by the BVA in this area. Real progress on farm animal welfare relied on healthy animals, sound practices, proven husbandry systems, and, importantly, close cooperation between the veterinarian and the farmer, he said. Mr. Young concluded that the veterinary profession, far from having failed in its responsibility, had, through its dedication to the treatment and prevention of disease, continued to uphold and improve animal welfare standards.

The meeting was chaired by Mr. Clive Hollands, a member of the Farm Animal Welfare Council, who commented that animal welfare meant different things to different people but the question for the meeting was 'how far has the profession achieved its aim of protecting the welfare of farm animals?' After questions from the floor, the debate was summed up by Dr. Gavin Strang, the shadow agriculture minister, who called for a vote. On a show of hands, the motion was rejected by 28 to 26, with seven abstentions. Excerpts from *The Veterinary Record*, June 22, 1996.

Research Support Found to Vary Among Species

Within the past three decades, dramatic shifts have occurred in the allocation of public resources for swine, dairy, beef and poultry research, making for an inequitable distribution among species.

George Orwell's 1945 classic satire on Stalinist Russia and communism, "Animal Farm", may appear far removed from U.S. agricultural policy, yet at least one possible parallel may be drawn: "All ag research is important, but some is more important than others."

Within the past three decades, dramatic shifts have occurred in the allocation of public resources for swine, dairy, beef and poultry research. The redistribution of these resources, personnel and funding for basic and applied research toward swine, in particular, appear to have occurred at the expense of poultry.

Scientist years - In 1966, the number of “scientist years” (SY) funded for beef, dairy, poultry and swine were 540, 595.7, 477.6 and 232.7, respectively. Approximately, 30 years later, the combined number of SY in these four commodity areas has declined by 16%. However, changes in SY vary greatly among these commodities. Dairy and poultry have received greater relative reductions with losses of 33 and 31%, respectively. Beef-associated SY have remained virtually unchanged (2%), while positions in swine have actually increased by 24%.

The decline in the number of research projects (RP) in these commodity areas also follows a similar pattern. Once again, poultry (-59%) and dairy (-43%) have seen the largest percentage of decreases. The loss of RP for beef (-23%) and swine (-9%) has been more modest. The reductions in dairy allocations can be more easily justified than those received by poultry given changes in production, consumption and total commodity value. Support for this opinion is described in subsequent sections.

Funding ag research - Research allocations, including overhead, from the Cooperative States Research Service (CSRS) for the four major animal-based commodities are as follows: In 1966, beef, dairy, poultry and swine were allocated approximately \$14.1 million, \$13.9 million, \$10.3 million and \$6.5 million from CSRS. At that time, dairy, poultry and swine research received 99, 73.5 and 46.1% of the funding allocated for beef research. In 1994, CSRS allocations for dairy, poultry and swine represented 84.0, 63.1 and 66.9% of beef funds. Obviously, changes in the overall rate of growth for these research funds are significantly different for these four areas.

Total research funds (from the U.S. Department of Agriculture, other federal and state agencies) including overhead, are: In 1966, dairy, poultry and swine were allocated research funds that were equivalent to 100.6, 77.0 and 45.3% that of beef. Today, funding for dairy research represents 75.8% of the allocation provided for beef. Similarly, funds for poultry research have received a relative reduction and represent less than half the allocation provided for beef (\$185.8 versus \$92.1 million). This is not to suggest that ag research funding has declined; on the contrary, it has expanded. The point to make is, however, that the relative rates of increase within these four commodities has been vastly different (i.e., a 638% increase for swine versus a 316% increase for poultry).

Production/consumption trends - These apparent inequities are compounded when one examines them in the context of global, national and state trends of poultry production and consumption. From 1970 to 1995, global poultry production rose an astonishing 240%, a rate approximately eight times that of beef and almost double that of swine. During the same period, U.S. per capita poultry consumption increased by approximately 100%, while beef and pork consumption fell by 15 and 7%, respectively. Declines in dairy consumption are misleading. They primarily reflect the reduction in fluid milk consumption, particularly whole milk. Consumption of dairy products, i.e., cheese, has risen significantly. Poultry (98.1 lb.) consumption (carcass weight basis) in the U.S. now exceeds that of beef (96.8 lb.) and pork (67.3 lb.). On a boneless weight consumption basis, poultry and beef are essentially equal and pork consumption is approximately 23% less than poultry.

Do funding inequities exist? - I am not suggesting that a grand conspiracy has been formulated by state and federal ag policy makers to deprive poultry of its fair share of scientists and research funding, but something has happened in the past 30 years that has disproportionately reduced public resources for poultry research. In 1966 there were approximately 88 SY provided in poultry for every 100 in beef. By 1994, only 62 poultry SY

existed for every 100 in beef. During the same period, poultry research funding has dropped from \$77 per \$100 allocated for beef to only \$50. What makes these trends even more puzzling is the fact that they occurred while U.S. poultry production and consumption were exploding.

The apparent de-emphasis of poultry research in national and state agricultural policy may have its roots in priorities and attitudes of more than 100 years ago. In a report to the board of the New York Agricultural Experiment Station, director Peter Collier wrote these words in 1889, "It is not a little strange that in the establishment of agricultural experiment stations, the poultry industry should have been so utterly ignored. Were it an unimportant branch of agriculture, were the value of poultry products comparatively small, it would be different, but as everyone knows, their value stands second to scarcely any product on the farm ... " To some degree, Collier's statement could have been made in 1996 as easily as it was in 1889.

(The Hatch Act, which was passed by Congress in 1887, provides annual funding for agricultural research conducted at the nation's land-grant colleges. As a result of the act's passage, each state and territory established agricultural experiment stations to address state-specific problems. Experiment stations have a significant amount of independence in selecting the areas of agricultural research to pursue, and today most faculty members in U.S. colleges of agriculture receive a portion of their salary and research support from the experiment station.)

Possible reasons for differences - Historical societal attitudes. While I will readily admit that historical perceptions of poultry are not major factors that have led to the relative decline of publicly funded research for poultry, they may contribute to such an effect. Early images of poultry frequently focus on the farm housewife holding cracked corn in her apron and scattering it to her barnyard flock. The chickens were "women's work". The chicken flock was viewed as less significant. The term "chicken feed" to describe something cheap evolved out of this concept of

limited value. The cowboy astride his horse watching over a herd of longhorn cattle certainly conjures up more powerful images. Ironically, it was "butter and egg" money that kept many a farm solvent during the Depression. Clearly the individual value of a chicken was and remains far less than that of cattle or swine. The difficulty arises when, for example, the aggregate value of 7.34 billion broilers is not fully appreciated.

Cows and pigs are bigger. Because cattle and swine are larger animals, it might be suggested that additional resources are needed to cover the increased costs of conducting research with these species. Other arguments concerning the greater length of time required to study a trait in swine or cattle and the associated increase in costs have been made. There is some degree of validity to these points. However, the cost and time differential between large animal research and poultry is not as great as it would appear. Layer and breeder studies can require up to two or more years to complete. In addition, poultry research may utilize hundreds or thousands of birds, while many studies in cattle or swine may require only a few dozen animals.

Political forces. Tip O'Neil, former Speaker of the U.S. House of Representatives, once stated that all politics were local. Mobilizing grassroots political forces for some commodities would appear to be easier than for others. With a concentration into larger production units, fewer individual farms and ranches have poultry on-site. For example, in 1994, a total of 4,318 North Carolina farmers contracted with poultry integrators to produce poultry meat and eggs. Contrast those numbers with the 32,000 North Carolina farmers who have beef cattle. Although the value of beef production in North Carolina is only 9% that of poultry, the number of farms and potential voters outnumbers poultry by almost a 7.5 to 1 margin. Because beef cattle production occurs in the majority of legislative and congressional districts, some producer organizations have a pool of constituents throughout the country. These organizations can effectively influence resource allocations, particularly at the state level.

Another factor in local and state politics is the growing adversarial relationship between some contract growers and poultry integrators. Swine and cattle producers, even those with a few head, tend to be advocates for research related to their commodities. Complaints from growers that publicly funded poultry research only benefits the large integrator has a chilling effect on grassroots support for this commodity. The accuracy of the complaint is debatable; however, attitudes such as these create an environment that does not serve the broader interests of poultry very well.

Vertical integration/consolidation. U.S. poultry meat production occurs almost exclusively in vertically integrated companies. A system such as vertical integration (VI) allows one company to manage all phases of production, and by doing so, enhances efficiency and lowers costs. With VI, the poultry industry has seen a consolidation of production into fewer, but larger companies. Today the top 20 broiler companies control approximately 80% of the market. Some have argued that these large agri-businesses do not need publicly funded research and that other commodities should receive preferential funding, an event that I claim has already occurred. If the size of these companies has somehow reduced their need for publicly funded research, why is the same not true for other commodities? For example, IBP, Inc., which exclusively processes beef, had sales in 1995 of approximately \$12.7 billion dollars. The most visible poultry processor, Tyson Foods, Inc., had sales of \$5.5 billion, less than half of those generated by IBP. In addition, swine production has seen a rapid increase in VI in the past decade and relative increases in research funding for this commodities have occurred at a rate two times that of poultry.

While VI poultry firms frequently have researchers on their staffs, the vast majority of “basic” poultry research occurs in the public, not the private sector. Privately funded corporate research routinely focuses on “applied” research, which is conducted to find solutions to immediate problems. Whether the end user of research is a large VI company or a small producer, the need for that

research is the same. From a simplistic perspective, the chicken does not know if it is raised in a VI or independent grower environment. Another point of concern is where will the poultry nutritionists, geneticists and physiologists of the future be trained if the relative support for poultry research at land-grant universities continues to decline.

Commodity value. In 1995, the value of the U.S. beef industry was approximately \$34.0 billion. By comparison, dairy, poultry and swine were valued at approximately \$19.5 billion, \$18.6 billion and \$10.1 billion, respectively. One argument that can be made is that, because beef generates roughly 45% more value than poultry, it should receive a greater proportion of research funding. Up to this point I have no disagreement. The “total value” argument breaks down when allocations for poultry are compared to either dairy or swine. Based upon the total value concept, poultry and beef have received a disproportionately lower amount of funding. If 1994 total funding was based solely on commodity value, beef research would receive approximately \$213 million (versus \$186 million), dairy research would be reduced to \$122 million (versus \$141 million), poultry research would receive an increase to \$116 million (versus \$92 million), and swine research would have a reduction to \$63 million (versus \$96 million), respectively.

Based on these assumptions, dairy is over funded by a modest 16%, while swine has received excess funding in the amount of 52%. If SY were also allocated strictly on a commodity value basis, beef would receive an additional 111 SY and poultry an additional 20 positions. In contrast, dairy would lose 32 positions and SY devoted to swine would be cut by 99, a 34% reduction. As was observed with research funding, allocation of SY for both dairy and swine exceed their relative market value.

Regionalization. Following World War II, poultry production, and, in particular, broiler production, became concentrated in the Southeast. Today more than 85% of broilers are produced in the southeastern quadrant of the U.S. As production became regionalized, many states outside this region witnessed a decline in their local poultry

industry. Reflecting these changes at the state level has been the demise of poultry science departments at land grant universities. In 1960, there were 44 poultry science departments; today there are less than 12. In contrast to the approximately 75% reduction in poultry science departments since 1960, there has been a 190% increase in poultry consumption. Since the majority of resources are allocated at the state experiment station level, the downsizing of the poultry industry within a state inevitably leads to a reduction in funding. As the number of poultry science departments declined nationally, in response in part to regionalization, merger into animal science departments was typical. Because animal science department heads and directors of experiment stations would be aware of declining public support for poultry in these states, poultry positions were in time filled by swine and ruminant affiliated scientists. I agree that this is prudent policy. Economic forces should alter an institution's mission and by doing so influence the allocation of its resources. Having said that, let me focus on what, in my opinion, has been the primary basis for the relative loss in public funding of poultry research.

The commodity income/research allocation paradox. The reallocation of experiment station positions and funding for poultry, in those states with a limited poultry presence, is understandable. It is the absence of significantly greater resources and positions in states that have had a rapidly growing poultry industry for decades that I believe has contributed most to the de-emphasis of poultry research on a national basis. Poultry production in a number of eastern and southeastern states has doubled or tripled in the past decade alone. Yet in some of these states, the allocation of resources and personnel for poultry has remained stagnant or has even declined. One could question why the number of positions and research funding for poultry do not more accurately reflect the relative economic importance of this commodity in many southeastern states. For example, three such states, which are each ranked in the top five nationally in poultry production, had a combined research expenditure for

poultry of \$10.1 million in 1994. In each state, poultry was the number one agricultural commodity, ranging from approximately 30 to 57% of cash receipts from farming. In these same states, almost \$15 million was expended for beef and dairy research. In one state, poultry generated approximately five times the income of beef and dairy combined, yet poultry received 36% less research funds.

In their defense, experiment station directors frequently inherit programs and personnel from previous administrations that effectively limit their ability to make rapid programmatic shifts. University-based organizations tend to change by evolution rather than by revolution. The pre-existence of popular, although economically insignificant programs, the presence of tenured research faculty and local and state political realities all impede the ability to scale-up or downsize a program. Adjustments in program emphasis require long-range planning and the ability to "hit an ever moving target". As has been the case in swine, small gains over several years result in substantial reallocation of resources.

Conclusions - Publicly-funded ag research is essential for any commodity. The equitable distribution of those funds is challenging. The ability of state experiment stations to function with a high degree of autonomy provides an opportunity for decision making to be based on state needs and not some poorly defined federal mandate. Current national funding trends suggest that some commodities (i.e., swine and dairy) may have received resources at a rate that does not accurately reflect their value. It also appears that poultry and beef research are relatively underfunded. On the whole, beef has fared far better than poultry over the past 30 years. Obviously, commodity value should not be the sole criteria in the allocation of research funding. However, each state must examine its own commodity funding in light of the economic impact that is associated with that commodity, now and in the future. It is not an easy task.

Finally, the record of scientific achievement demonstrates that public resources allocated for poultry

research have been well spent. Few, if any, commodities have seen the level of improvements in growth rate, feed efficiency and reproductive performance (i.e., table eggs production) that have occurred in poultry. These advances are directly associated with the information generated from poultry-related research. As U.S. taxpayers demand greater and greater accountability, poultry research has already established a quantifiable record of maintaining the public trust. Investment in poultry research has paid dividends not only for the producer and processor, but the consumer as well. Additional resources would stimulate even greater achievement. By Sam Pardue, Feedstuffs, August 26, 1996, volume 68, number 36.

Clinical News

Diagnosis of *Giardia* Infections

We agree with Faubert that assays to detect *Giardia* antigen in faeces have the potential to improve diagnosis. Indeed, in our experience, such kits are now widely used in preference to conventional microscopy. Such assays have been more widely evaluated than discussed by Faubert², however, and he is incorrect in stating that only one commercial kit has been the object of comparative studies published in refereed scientific journals.

In 1993, we published³ the results of a field and laboratory evaluation of a commercial ELISA (GIARDIA CELISA, Cellabs Diagnostics, Brookvale, Australia), which is available in numerous countries. We compared the kit's ability to detect *Giardia* coproantigens in humans and in dogs. The sensitivity and specificity, in humans were 100% and 91%, respectively. The kit did not perform as well for the detection of canine infections, and the reasons for this are the subject of continuing studies.

We observed an excellent correlation between visual and spectrophotometric analyses showing that the CELISA is able to perform very effectively under field conditions. The robust nature of the kit was also illustrated by the fact that it was used in environments quite distinct from those found in the laboratory, and that it required only a minimal amount of scientific equipment to operate.

References

1. Faubert, G.M. 1996. *Parasitology Today* 12:140-145.
2. Thompson, R.C.A., Reynoldson, J.A., and Mendis, A.H.W. 1993. *Advances in Parasitology* 32:71-160.
3. Hopkins, R.M. et al., 1993. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 87:39-41.

R.C. Andrew Thompson and Richard M. Hopkins, WHO Collaborating Centre for the Molecular Epidemiology of Parasitiv Infections, School of Veterinary Studies, Murdoch University, WA 6150, Australia. Reprinted from *Parasitology Today*, October 1996, Vol. 12, no. 10 [136] p412.

Reply to "Diagnosis of *Giardia* Infections"

It is unfortunate that I neglected to include the paper by Hopkins et al. in my review on the immune response to *Giardia*. I would like to apologize for my oversight to the authors and readers. It is interesting to see that in using a different commercial kit, Hopkins and co-workers have found a sensitivity and specificity that is similar to our results. These results reinforce the reliability of commercial kits in the detection of *Giardia* coproantigens in human giardiasis. Unfortunately, it appears that their performance is less spectacular in animal giardiasis. In our hands, the ProSpecT coproantigen kit (Alexon, CA, USA) was not very sensitive in detecting giardiasis in cattle.

Gaetan Faubert, Institute of Parasitology, McGill University, MacDonald Campus. 21111 Lakeshore Boulevard, Sainte Anne-de-Bellevue, Quebec, Canada H9X 3V9. Reprinted from *Parasitology Today*, October 1996, Vol. 12, no. 10 [136] p412.

Committee News

Nominations Committee

This is a report of the nominations committee of the American Association of Veterinary Parasitologists. One hundred fourteen ballots were returned. Of these, 60 persons voted for Lou Gasbarre for vice president and 54 for Anne Zajac. Tom Kennedy received 114 votes for secretary-treasurer, Tom Klei received 85 votes and

Ron Fayer received 47 votes for nominations committee.

The elected officers are therefore: Lou Gasbarre, Vice President; Tom Kennedy, Secretary-Treasurer; and Ron Fayer and Tom Klei, nomination committee members.

The remaining members of the nomination committee are Linda Mansfield and Thomas M. Craig, whose terms end in 1997, and Bert Stromberg and Kevin Kazacos, with terms ending in 1998. Submitted by the Nominations Committee.

Federation of Societies for Parasitology - 1996

The annual meeting was held in conjunction with the American Society of Parasitologists meeting in Tucson, AZ, June 10, 1996. Dr. Charles Sterling attended for AAVP. The member societies are: AAVP, The American Heartworm Society, The American Society of Parasitologists, the American Society of Tropical Medicine and Hygiene, The Canadian Society of Zoologists, The Entomological Society of America, The Helminthological Society of Washington, The Society of Nematologists, The Society of Protozoologists, The Society of Vector Ecologists and The Wildlife Disease Association. The major issue is the establishment of a Political Action Network in each of the affiliate societies.

The AAVP is establishing a Political Action Network (AAVP-PAN). The goal is to keep a group of individuals informed about issues of importance to parasitology and science in general. This information is provided from the Federation to a contact person within each affiliate society. This information will then be distributed to individuals who are chairs of a region and the regional chairs, in turn, send the information to individuals who are willing to contact their legislators or other individuals involved in the decision making process on issues, such as specific legislation that may be important to parasitology and/or science in general. These individuals may also choose to share these issues with colleagues or a contact list of their own.

The AAVP-PAN is under development as an e-mail distribution system, primarily because of the ease and speed of disseminating the information. The U.S. is divided into five (5) regions (Northeast,

Southeast, Central, East Central and West) with an individual identified as the regional chair. These individuals have been asked to recruit additional members in their region. Then, when I receive an alert I will forward the information to the regional chairs and they, in turn, will send it along to all members in their region. We will have sign-up sheets at the registration table to help in the recruiting process. Respectfully submitted, Bert Stromberg.

Education Committee Report - 1996

The primary item on the education committee's agenda has been the finalization of our Report on Teaching Veterinary Parasitology, which actually began back in 1990. We intend to send a letter explaining the report and a summary to all of the Deans of Veterinary Colleges in North America and the full report will be sent to an individual involved in the parasitology teaching program. The report is intended to emphasize the importance of teaching veterinary parasitology in the veterinary curricula as well as to provide guidance in designing and teaching veterinary parasitology.

The letter to the Dean will explain the process and the purpose of this report and a list of learning objectives for a course in veterinary parasitology. It will also identify the other materials that are being sent to an identified individual who teaches parasitology in their college. The pack of information that will be sent to the parasitologist will include the learning objectives, economic importance summary, questions from past National Board Examinations and principle discussion topics. These topics include: What is it; How does an animal get it; What harm does it cause; How does a veterinarian prevent or treat it.

This information is designed to draw attention to the importance of teaching parasitology, to offer some guidance on how it might be positioned in curricular revision and provide information for use in designing a veterinary parasitology course. This material will be sent out by the end of the summer.

The other challenging area that was brought forward last year was how should the AAVP address information exchange and utilize the electronic superhighway. Should the AAVP go online? Suggestions have included having an online membership directory, an electronic journal, a list serve to allow interested individuals to ask questions and have multiple responses, reference lists and perhaps teaching materials (lecture notes). The development of a web page is being considered by an ad hoc committee, chaired by Dr. Charles Courtney, University of Florida. The committee will meet during our annual meeting to identify future goals and issues to be addressed during the next year. Respectfully submitted, Bert Stromberg.

Graduate Student Questionnaire

A short questionnaire was sent to the 27 graduate students on the AAVP membership list. They were asked what functions of AAVP were most important to graduate students, how the Association could better serve them and how might student membership be increased? Only four students responded to the questionnaire. Learning of employment opportunities was given by all as the most valuable function of AAVP. Opportunities to present their work, to interact with experienced professional parasitologists and to become familiar with current research were also mentioned as important to students. Students were particularly interested in practical knowledge and suggested holding workshops on employment opportunities (academia, industry, etc.), grant writing and new techniques in research, diagnostics and teaching. They saw the Association as instrumental in facilitating contact between students and future employers through continued postings in the newsletters and the use of a notice board at the meetings. Several students mentioned the possibility of a web page to handle time-sensitive information. This is especially important to those in foreign countries. Sponsoring programs or sending posters to graduate schools and veterinary schools about the Association and parasitology as a career was suggested to promote student interest. The AAVP Student Travel Grant was

seen as a positive action to encourage student activity. Submitted by Carla Siefker.

Positions Available

Postdoctoral Position, Department of Pathobiology, University of Pennsylvania

A postdoctoral position is available to join a new project that seeks to identify the neurons controlling the infective process in *Haemonchus contortus* parasitism. *Haemonchus contortus* is an economically important nematode of domestic livestock and a model species representing the trichostrongyle nematodes, a group of major importance in veterinary medicine. An interest in nematode development and neurobiology is desirable, as is experience in electron microscopy. Candidates should send a curriculum vitae and request three letters of recommendation to be sent to: Dr. G. A. Schad, School of Veterinary Medicine, University of Pennsylvania, 3800 Spruce St., Philadelphia, PA., 19104-6050, Schad (e-mail) schad@pobox.upenn.edu, (tel) 215-898-6680, (fax) 215-898-9923. The University of Pennsylvania is an equal opportunity/ affirmative action employer.

Assistant Dean for Research and Professor

Position Announcement #912900, Institute of Food and Agricultural Sciences (IFAS), Salary: Commensurate with qualifications and experience, Position Open To: December 12, 1996. Duties and Responsibilities: The Assistant Dean will assist the Dean for Research/Director, Florida Agricultural Experiment Station, in administering, the food, agricultural and natural resources research programs of the Institute of Food and Agricultural Sciences, University of Florida. This includes coordination of the statewide Experiment Station research activities and faculty in 21 departments, 13 research and education centers, 6 multi-disciplinary centers, the School of Forest Resources and Conservation, and the College of Veterinary Medicine. The research faculty of 390 FTE is administered with an annual budget of \$91 million. The Assistant Dean will work with faculty, another Assistant Dean for Research,

Department Chairs, Directors of Research and Education Centers (RECs), and the offices of the Deans for Extension and Academic Programs in the development, coordination, and administration of statewide research programs of the Florida Agricultural Experiment Station. The Assistant Dean will serve as a coordinator between various programs in on-campus IFAS departments and statewide RECs as well as represent the Dean with the various agricultural and natural resources clientele groups in the State. This includes oversight of the CRIS system, management of commodity support funds, and leadership of international research activities. In addition, the Assistant Dean will be assigned specific program and function responsibilities in accord with the needs of the agricultural and natural resources research program and with his/her interest and expertise. The Assistant Dean will be tenured in an academic department.

Basic Qualifications: Earned doctorate degree in a food, agricultural, natural resource, or closely related scientific field. Outstanding research background, familiarity with Agricultural Experiment Station operations, and demonstrated administrative competency. Administrative experience at the departmental level preferred.

Application Information: Applicant must submit a letter of interest, a resume of training, experience, and publications, and the names and addresses of five (5) references no later than December 12, 1996. Candidates must accept and promote the Affirmative Action Plan of the University of Florida.

Those desiring to nominate candidates should do so by November 12, 1996. Women and minorities are encouraged to apply.

Other Information: The city of Gainesville has a population of 125,000 and a broad selection of cultural and recreational offerings. The University of Florida has an enrollment of 40,000 students and it is widely recognized for the breadth and quality of its academic programs. The University of Florida is a member of the American Association of Universities (AAU) and National Association of

State Universities and Land Grant Colleges (NASULGC).

Refer to Position #912900. Return inquiries to: Dr. Jerry M. Bennett, Search Committee Chair Agronomy Department, PO Box 110500, Gainesville, FL 32611-0500, Phone: (352) 392-1811 Fax: (352) 392-1840, E-mail: JMBT@GNV.IFAS. UFL.EDU or Pete Hansen, University of Florida, Dept. of Dairy and Poultry Sciences, PO Box 110920, Gainesville, FL 32611-0920, Phone: (352)392-5590, FAX: (352)392-5595, email: Hansen@animal.ufl.edu.

Veterinary Parasitologist, School of Veterinary Medicine, Purdue University

The Department of Veterinary Pathobiology, Purdue University School of Veterinary Medicine, invites applications for a faculty position at assistant or associate professor level in veterinary parasitology. The ideal candidate will possess a DVM or equivalent degree and a PhD degree in veterinary parasitology. Postdoctoral experience in veterinary parasitology is preferred. The successful candidate will be expected to share the teaching of parasitology to professional and graduate students and share duties of the clinical parasitology laboratory.

The successful candidate will be expected to develop an independent research program capable of attracting extramural funding, participate in collaborative research, and direct graduate students. Purdue University offers ample opportunity for research collaboration in the biomedical sciences. The Department of Veterinary Pathobiology has active programs in immunology and infectious diseases, anatomic and clinical pathology, and epidemiology and public health. Facilities and expertise are available for transmission and scanning electron microscopy, image analysis, flow cytometry, monoclonal antibodies, and molecular biology. Collaborative arrangements exist with pharmaceutical companies, governmental and independent research institutes, the Indiana Department of Natural Resources, and the Indiana/Purdue Animal Disease Diagnostic Laboratory.

Qualified candidates should send a curriculum vitae, a statement of career goals, teaching and research interests, and the names of three references to: Dr. H. Leon Thacker, Head, Department of Veterinary Pathobiology, 1243 Veterinary Pathology Building, Purdue University School of Veterinary Medicine, West Lafayette, IN 47907-1243. Applications will be screened beginning February 1, 1997, and will continue until the position is filled. Rank and salary will be commensurate with qualifications and experience. Purdue University is an equal opportunity/ affirmative action employer. Women and minority applicants are encouraged to apply.

Assistant Editor AVMA Journals

Immediate opening for a full-time Assistant Editor at AVMA headquarters, located in progressive, growing, Chicago suburban area. Applicants should be able to communicate and work effectively with contributors to the American Journal of Veterinary Research and the Journal of the American Veterinary Medical Association. Opportunity to be involved with the leading edge of biotechnology and veterinary medicine. Position requires a veterinary degree. Candidates should have research experience and demonstrated proficiency in scientific writing/editing. Applications should include a letter indicating special qualifications and scope of experience, curriculum vitae and a list of three references. Competitive salary. Nominations of potential candidates are also encouraged. Direct correspondence to Dr. Janis H. Audin, Editor-in-Chief, American Veterinary Medical Association, 1931 North Meacham Road, Suite 100, Schaumburg, Illinois 60173-4360.

AVMA Assistant Director Education and Research Division

Immediate position available for a full-time Assistant Director of the Education and Research Division at AVMA headquarters, located in progressive, growing, Chicago suburban area. The successful applicant will work in a division that implements AVMA policies and projects concerning

education, research, animal welfare, euthanasia, specialty board certification and continuing education. The position required effective staff work with AVMA councils and committees, and calls upon communications skills for responding to questions and concerns from AVMA members and the public. Requires a veterinary degree. Candidates with Ph.D. and/or specialty board certification will receive preference. Applications should include a letter indicating special qualifications and scope of experience, as well as a curriculum vitae and a list of three references. Competitive salary. Nominations of potential candidates and applications are encouraged by August 15, 1996, but will be accepted thereafter until the position is filled. Direct correspondence to Dr. Janet D. Donlin, Associate Executive Vice President, American Veterinary Medical Association, 1931 North Meacham Road, Suite 100, Schaumburg, Illinois 60173-4360.

Database Information

URL of the Month. Hot Sites for Your Hotlist!

Need some equipment cheap? "Lab Trader" has listings of used lab equipment for most areas of biomedical science. Check out:
<http://www.labx.com/>.

The National Institute of Allergy and Infectious Disease (NIAID) has a web information center especially for extramural scientists at <http://www.niaid.nih.gov/ncn/main.htm>.

Find "All the Virology on the WWW" at <http://www.tulane.edu/~dmsander/garryfavweb.html>

The Belgian Coordinated Collections of Microorganisms is involved in distributing biological material from their collections of bacteria, fungi and plasmids and can be found at <http://www.belspo.be/bccm>.

The USDA CRIS (Current Research Information System) database of research activities can now be accessed at <http://cristel.nal.usda.gov:8080>.

The Board of Education of the ASM invites you to become part of their Science Education Network, a database of scientists who have identified themselves as willing to participate in

activities to enhance public education in science. Volunteers can sign up on line at <http://www.asmus.org/edusrc/edu41a.htm>.

The Food and Drug Administration has published the Final Rule of the Animal Medicinal Drug Use Clarification Act of 1994 (AMDUCA) in the November 7, 1996 issue of the Federal Register. This final rule becomes effective December 9, 1996. The full text of the final rule is available on the FDA Center for Veterinary Medicine web page at: <http://www.cvm.fda.gov/>.

Free Web-based Medline Searches

Just found a site providing free web-based MEDLINE searching. All they ask for is a name and e-mail address. It appears to be sponsored but there are no advertisements on the site (yet). Submitted by Michael Hogarth, M.D., UC-Davis Medical Informatics

Book Reviews

The Biology of Disease Vectors, edited by B.J. Beaty and W.C. Marquardt, 1996. 632 pages. U.S. \$70. plus \$4. for shipping; add \$20. for outside the U.S. Order from University Press of Colorado, P.O. Box 849, Niwot CO 80544. The University Press of Colorado, 1996.

The Biology of Disease Vectors is a compilation of chapters authored by 45 contributors who represent traditional entomology and the rapidly developing area of molecular biology of disease vectors. Provided is a blend of basic and molecular information about arthropods as disease vectors of medical and veterinary importance in five sections and thirty-five chapters that address: (1) introduction to arthropods, (2) molecular biology, (3) biology, physiology and development, (4) population genetics and molecular systematics, and (5) surveillance and control of vectors.

This book is based on the two-week course Biology of Disease Vectors first offered at Colorado State University from 1990 through 1993, and then at the Institute of Molecular Biology and Biotechnology on Crete in 1994. These courses were initiated in 1989 with the support of the John

D. and Catherine T. MacArthur Foundation for the Network on the Biology of Parasite Vectors to train a new generation of vector biologists by introducing molecular biologists to medical entomology, to provide molecular concepts to medical entomology, and to develop a worldwide network of vector biologists. The intent of this multiauthored book is to reach a larger audience with a professional interest in disease vectors and to complement rather than replace other entomology texts.

The first section of 12 chapters introduces the traditional classification, morphology, and life cycles of arthropod vectors. Functional phenomena such as *hematophagy*, *host-finding*, *blood meal digestion*, *parasite fighting*, *vector behavior*, *receptor physiology*, and *receptor specificity* are presented with an exhaustive literature review in chapter 3 on vector behavior. Natural cycles of vector-borne pathogens is well-illustrated in chapter 4, and these first chapters then serve as the basis for more detailed discussion of the major vectors, especially the anopheline and culicine mosquitoes. Understandably, most attention is given to the malarias as transmitted by the anopheline mosquitoes as well as the biology of *Anopheles gambiae*, a major vector of malaria and probably the most important vector of a human pathogen worldwide. Laboratory models for filariasis (*Wuchereria bancrofti* and *Brugia pahangi*) are briefly described. Development of filarial nematodes, such as the causative agents of human lymphatic filariasis and the dog heartworm *Dirofilaria*, is briefly described in culicine mosquitoes with more emphasis given the arboviruses, many of which are also listed in tabular form. Filarial nematodes transmitted by the simuliids (black flies) and the culicids (midges) are included in tabular form with other disease agents. The psychodids (sand flies), the hemimetabolic vectors including true bugs and lice, some of the cyclorrhaphan flies, including *Glossina* or tsetse, *Ctenocephalides felis*, the cat and dog flea, and the ticks are characterized along with their associated disease-causing agents, none of which are nematode

parasites, are also tabulated. Reviews and extensive bibliographies are also provided.

Section 2 presents molecular and mathematical techniques developed within the past two decades that allow investigation and application of new approaches and novel control methods to suppress vectors of disease agents. The molecular genetics of vectors is an extensive presentation on the emergence of genome studies and the more global approach of genomic analysis. Studies of the genome organization of selected vectors, *Aedes aegypti* and *Anopheles gambiae*, are discussed, including the strategies, initial findings and future prospects for mapping disease vectors and vector competence, parasite-vector interaction, population and vector control evaluation, and speciation. Genome mapping for morphology, resistance markers, biochemical markers and genetic variability in natural populations is well reviewed and also presented as a table along with figures of the linkage maps of *Aedes aegypti* and *Anopheles gambiae*. A succinct conclusion and an extensive literature review are also provided. Genetic manipulation of vectors, including genes associated with vector competence and genetic engineering of insects that are refractory to parasite infections or incapable of transmission, requirements for efficient transformation systems such as methods of DNA delivery and strategies that interfere with arbovirus infection of arthropods are given. Molecular techniques to facilitate analysis of gene structure and expression in the vector focus on mosquitoes for their vector competence and resistance. Methods for isolating and defining gene expression, viz., hematophagy, vector competence, and insect resistance, are correlated with other chapters.

Section 3, with eight chapters, is an informative coverage of arthropod development and physiology as a basis for current and future research to better control arthropod vectorization. Detailed descriptions are given of processes such as adult female requirements for blood and regulation of egg development, functions of molting (ecdysone, ecdysteroids) and juvenile hormones, pathogen manipulation of mosquito hormones for parasite

advantage, interaction with the gut epithelium that determines vector competence and host specificity and the gut as a gateway and habitat for pathogens, and the peritrophic matrix (PM) as a barrier to pathogen penetration. The role of salivary glands and the facilitation of rapid and efficient feeding with saliva is addressed along with initial metabolism of blood to allow transmission of pathogens as well as nonblood feeding and the pharmacologic properties of saliva. There are tables on platelet inhibitors attributed to apyrase, a 5' nucleotidase gene family and its activity proportionate to probing time, secretion of vasodilators such as maxadilan, and on anticoagulant factors. The fat body is presented as the principal tissue for intermediary metabolism. Energy metabolism, food requirements, digestion, and absorption for synthesis of reserves, starvation, flight, reproduction, hormone regulation, immune response, lack of Ag-Ab complementarity, and possession of a specific defense mechanism allow susceptibility, resistance, and refractoriness to parasite pathogens along with cuticular and gut barriers. Tables are presented on hemolymph components, including hemocytes, and the humoral antibacterial and antifungal action of dipterocins and cecropins with recognition and evasion or suppression of the immune system.

Section 4 addresses population biology as a tool with simple mathematical methods to measure the dynamics of vector capacity of populations, density, age composition for vector control, methods for measuring biotic parameters, host-biting habits, feeding frequency, and daily survival. DNA-based molecular population genetics and molecular taxonomy and systematics are given. A table on the number of species in major arthropod orders that feed on vertebrates is given. Proteins as markers, DNA hybridization, and PCR amplification are presented as improved tools for ecological and epidemiological studies.

In section 5, collecting methods for vector surveillance are illustrated with photographs. Designs for collection of all stages of arthropod vectors are given. Environmental management is also presented for significant vector control as are

chemical control measures with a table on classification of pesticides and a selection of insect growth regulators (IGR) and the issue of insecticide resistance, its detection and mechanism of action, strategies using single vs more than one insecticide, use of molecular approaches as with organophosphate-resistance and the status of resistance in arthropod vectors by insecticide class. Biological control of mosquitoes includes nematodes, vertebrate and invertebrate predation, a table on the sterile-insect technique and a review and history of mosquito control in Germany using microbial agents. Rearing and containment of mosquito vectors and design and operation of an insectary is presented.

This is a very good reference book that incorporates the newer dimension of molecular biology on control of arthropod vectors. Highlights seem to me to be the discussion of vector-parasite interactions and those morphologic, physiological and epidemiologic phenomena of vectors that are being tapped to establish control. Mosquitoes and viruses are especially emphasized because of their worldwide human and even veterinary implications. Several extensive reviews and tables serve as ready references for the researcher, teacher and student. Although there is slight attention paid to the nematodes and, therefore, perhaps to the interests of nematologists, this text is intended to be a resource for epidemiologists, entomologists, microbiologists and even parasitologists in human medicine, and I believe it meets that objective. Reviewed by: Robert M. Corwin D.V.M., Ph.D., Professor, Veterinary Pathobiology, College of Veterinary Medicine, University of Missouri, Columbia MO 65211.

Future Meetings

World Association for the Advancement of Veterinary Parasitology

World Association for the Advancement of Veterinary Parasitology will hold its 16th International Conference in Sun City, South Africa 10-15 August 1997. This is the first announcement and call for papers.

The Parasitological Society of Southern Africa, the host organization, is proud to invite veterinary parasitologists from all over the world to attend the first ever WAAVP International Conference on the African continent. Theme: Veterinary Parasitology into the 21st Century. The theme is two-pronged, as reflected in the logo. In the developed nations the current emphasis is very much on hi-tech aspects. The conference will be an ideal time to assess progress and state expectations in this field as we enter the 21st century. Much of this technology can be implemented in developing nations, but financial constraints often dictate that alternative control strategies are adopted. The proposed subthemes are: Hi-tech: development of novel vaccines, application of molecular biology in veterinary parasitology, immunology and host-parasite interactions, alternatives to animal experimentation in parasitology, new systems for animal maintenance, remote scanning and satellite surveillance, developing countries: sustainable parasite control strategies, socio-economic impact of parasitic disease, managing parasitic disease in developing countries, ticks and tick-borne disease control, and parasites of working animals. These subthemes will be addressed in plenary papers, submitted papers, workshops and poster sessions.

Other workshops may include: antiparasitic testing guidelines; teaching of veterinary parasitology; resistance to parasiticides; wildlife parasitology; and control of nematode growth and development.

XVIII Symposium of the Scandinavian Society for Parasitology, 2nd Announcement

The Scandinavian Society for Parasitology will have a symposium in Ronne * Bornholm * Denmark on 22 - 24 May 1997. General topics will include: vaccines, gene technology, fish parasitology, zoonotic parasites, human parasitology, parasites in wild fauna, veterinary parasitology, host-parasite relationships, parasites and the allergic response, immune responses to parasites, ectoparasites and vector biology, drug development and resistance, nutritional aspects of

parasite infection, and opportunistic parasites in immuno-compromised hosts. There will be a special mini symposium on Human and Veterinary Tropical Parasitology. For information please contact the Symposium Secretariat: Danish Bilharziasis Laboratory, Jaegersborg Alle 1 D, DK-2920 Charlottenlund. att.: Symposium Bornholm Denmark, phone: +45 39 62 61 68, fax: +45 39 62 61 21.

Enclosures

Dues Form for 1997

Enclosed you will find forms for 1997 dues. These should be sent with your check to: Dr. Tom Kennedy, Mallinckrodt Veterinary, Inc., 421 East Hawley Street, Mundelein, IL 60060, USA.

Future Meetings of the AAVP

1997 - July, Reno, Nevada

1998 - July, Baltimore, Maryland

1999 - July, New Orleans

2000 - Salt Lake City, Nevada

The American Association of Veterinary Parasitologists

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The American Association of Veterinary Parasitologists Newsletter is published three times each year with issues in February, June and October. Contributions to the Newsletter are welcome and should be submitted by the 15th of the month prior to each date of issue.

American Association of Veterinary Parasitologists (Founded 1956)

Affiliated with the American Veterinary Medical Association

MEMBERSHIP APPLICATION FORM

The objectives of the AAVP and its requirements for membership (Articles II and III of the AAVP Constitution are:

Objectives: "The objectives of the organization shall be to provide for the association of persons interested in the advancement of veterinary parasitology, and for the presentation and discussion of items of common interest, and to further scientific progress by education and research in veterinary parasitology. This association is organized exclusively for scientific and educational purposes within the meaning of section 501(C)(3) of the Internal Revenue Code. Notwithstanding any other provision of this constitution, the Association shall not carry out any other activities not permitted to be carried out by an organization exempt from Federal Income Tax under section 501(C)(3) of the Internal Revenue Code".

Membership "Section 1: Members shall consist of those individuals qualified by background, education and interest in veterinary parasitology. Section 2: New members, except honorary and emeritus, shall be admitted by the Secretary-Treasurer with approval of the Executive Committee, after filing application for membership to the association. Section 3: Honorary membership shall be awarded by the Association to persons who are not members of the Association in recognition of outstanding and sustained achievements in veterinary parasitology. Candidates for honorary membership shall be recommended to the awards committee by any member. Nomination for honorary membership shall be made by the Awards Committee to the membership and election shall be by majority vote at the annual meeting. Honorary members shall not be eligible to vote and shall not be assessed dues. No more than 2 honorary members shall be elected ion any one year period. Section 4: Upon retirement a member may become an emeritus member on approval of the Executive Committee of a written request to the Secretary-Treasurer for such status. Emeritus members shall retain voting rights but shall not be assessed dues. Section 5: Forfeiture of membership will occur where dues are not paid for at least two consecutive years. A member who has forfeited membership by nonpayment of dues must reapply for membership. Section 6: Expulsion of a member may occur if a motion for expulsion is presented by the Executive Committee at the annual meeting and passed by four-fifths of the members present and voting. The member is to be informed in writing of such a motion at least two months in advance of the annual meeting at which the motion is to be presented. Section 7: The Executive Committee may annually invite any firm, association, corporation, institution or subdivision thereof, to become a corporate associate member, for financial support of the Association."

Should you wish to become a member of the AAVP, please provide the following information and send this form and a check (regular membership \$20.00, student membership \$10.00: US Currency) payable to AAVP, to the Secretary Treasurer at the address given below.

_____		_____
Name and Academic Degree(s)		Institutional/Business Affiliation
_____		_____
Mailing Address (Official/Lab)		Title
_____		_____
_____	_____	_____
Phone Number	FAX Number	E-mail address
_____		_____
Research Interests		Parasites Maintained or Have Access To

If you wish a proceedings from the 1996 AAVP Meeting in Louisville , KY check this box.....•

AAVP Officers

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**AMERICAN ASSOCIATION OF
VETERINARY PARASITOLOGISTS**

1997 MEMBERSHIP RENEWAL

Please consider this letter as notice for the payment of dues to the AAVP for 1997. Please complete the form and return it to me at the address below. Please pay your dues promptly. The success of the AAVP is at least in part dependent on fiscal survival.

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Dues: \$20.00 (\$10.00 for students) Make check payable to the American Association of Veterinary Parasitologists (AAVP).

**Return to: Dr. Tom Kennedy, Secretary/ Treasurer, AAVP
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421 East Hawley Street
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