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## Book Reviews

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## BOOK REVIEW . . .

**Sarcocystosis of Animals and Man**, J. P. Dubey, C. A. Speer, and R. Fayer. CRC Press, Inc., Boca Raton, Florida, U.S.A. 1989. 215 pp. \$99.00 U.S.

As stated by the authors, *Sarcocystis* spp. are among the most prevalent parasites of livestock. In this book the authors provide the most comprehensive review to date of the structure, life cycles, pathogenesis and epidemiology of the genus *Sarcocystis* and sarcocystosis of man and animals including the techniques most commonly used to diagnose these parasites.

The book is divided into 16 chapters. In the first, which occupies almost half the book and I consider the best chapter, the authors bring together their vast combined research experience to give the readers the most lucid and comprehensive account of the life cycle, ultrastructure and pathogenicity of *Sarcocystis* spp. and the immune reaction of the host. The section on ultrastructure is amply illustrated with excellent electron micrographs and diagrams. The second chapter brings together experimental techniques that researchers and diagnosticians will find useful in the study of sarcocystosis.

The next 13 chapters list the individual spe-

cies that are known to occur in the various domesticated animals, man and other primates, wild ruminants, reptiles and fish. The structure, life cycles, pathogenicity, etc. of *Sarcocystis* spp. listed are briefly described and illustrated with light and electron micrographs. Tables comparing the developmental stages of the different species and their pathogenic effects on their respective hosts greatly enhance the value of these chapters for the diagnostician.

In the two and a half pages which form chapter 16 the authors list and describe the species of the genus *Frenkelia* and their pathogenicity. They also include a table and diagram with some of the characteristics of other related cyst-forming coccidia with isosporan oocysts.

The authors delve into literature from around the world, providing the reader with 700 references. Parasitologists and veterinarians will find this a valuable source of information on the many complex problems one encounters when dealing with *Sarcocystis* spp. and sarcocystosis.

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**M. A. Fernando**, Department of Pathology, University of Guelph, Guelph, Ontario, Canada N1G 2W1.

## BOOK REVIEW . . .

**Toxoplasmosis of Animals and Man**, J. P. Dubey and C. P. Beattie. CRC Press, Inc., Boca Raton, Florida, U.S.A. 1988. 220 pp. \$145.00 U.S.

This comprehensive text summarizes the vast database (over 15,000 papers) available on *Toxoplasma gondii*, a common and ubiquitous protozoan parasite of warm-blooded vertebrates. *Toxoplasma gondii* infects man and many animals; the extent of infection in man is evident in its worldwide prevalence (greater than 500,000,000 persons infected). Although most infections are asymptomatic, serious disease and/or death may result in man and many species of domestic animals. The parasite is now recognized as an important member of the complex of opportunistic disease agents affecting humans with the acquired immune deficiency syndrome (AIDS).

This text is comprised of 15 chapters including an excellent introductory chapter that summarizes the biology of the organism. Chapters that follow detail *T. gondii* infections in the different host species, including man, sheep, goats, pigs, cattle, cats, dogs, equids, water buffalo, camels, birds, nonhuman primates and miscellaneous animals. The chapter on toxoplasmosis in man is exhaustively thorough, and

includes important information on prevalences, epidemiology, symptoms, diagnosis, treatment, and control. The last chapter deals with the taxonomy of *T. gondii*, and *Toxoplasma*-like organisms of disputed classification or unknown affinities. The book contains an extensive bibliography with 1,150 literature citations, and numerous high quality illustrations, photographs, photomicrographs and electron micrographs, supporting information provided in the text. Much information is provided in well organized tables, allowing the reader to locate and compare data on many different subjects easily and efficiently.

This text should serve as a useful, perhaps indispensable, reference treatise for students, teachers, research scientists, veterinarians, physicians, and other professionals. The authors are internationally recognized for their excellent research on toxoplasmosis. They have organized an almost inassimilable quantity of information into a concise, well-written, high quality publication. I recommend it highly to all who have an interest in *T. gondii* and toxoplasmosis.

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**Byron L. Blagburn**, Department of Pathobiology, 122 Greene Hall, College of Veterinary Medicine, Auburn University, Alabama 36849, USA.

## BOOK REVIEW . . .

**Fish Viruses and Fish Viral Diseases**, Ken Wolf. Cornell University Press, 124 Roberts Place, Ithaca, New York, USA. 1988, 480 pp. \$57.50 U.S.

The long awaited volume on viruses and viral diseases of fish is now available. Only Ken Wolf could have written this book. He, more than any one, was responsible for introducing modern methods of virology to the study of the fish viruses. Since it is the first book of its kind, it becomes the definitive text in the field. It is my impression that this book is aimed at the serious scientist. However, it is so well-organized and clearly written that anyone concerned with viruses and viral diseases of fish will appreciate this work. There are numerous, carefully selected illustrations which enhance the written text, providing additional detail and understanding to the reader. Each chapter is provided with complete and up-to-date references on the agent(s) discussed.

Wolf's long and distinguished career in the field has provided him with the background to write a masterful introduction which chronicles much of the history of fish pathology, emphasizing the viruses and viral diseases. The introductory chapter denotes many of the scientists, past and present, and the significant roles they played in the study of diseases of fish.

The material is provided to the reader in an interesting fashion. Rather than presenting it by groups of related viruses, as is often done in such texts, Wolf has chosen to discuss the agents and diseases they cause under six headings as (1) isolated viruses and resulting diseases (subdivided into viruses of high, moderate and low virulence), (2) viral infections of indeterminate pathogenicity, (3) those visualized but not iso-

lated, (4) virus-like agents, (5) chlamydial infections, and (6) nonviral conditions, agents and artifacts.

Contained under these six divisions are 63 chapters describing the known viral diseases, their causative agents and related conditions. The format of each chapter follows the same general scheme where possible and includes the disease, the causative virus, history, pathology, properties of the agent, transmission and incubation, host(s), geography, distribution, immunity and control. There is a wealth of information contained in those sections describing the rhabdo- and birnaviruses of fish and many will appreciate Wolf's efforts to sort out the confusion which exists among the herpesviruses. A number of viruses have been included in which descriptions are abbreviated because available information is limited. I am pleased that he did this because it provides a base to build upon for future descriptions and hopefully a second edition at an appropriate time. Many readers will also appreciate the chapter in the appendix section describing cell culture and cell culture techniques. Although concise, it is complete and the methods described are clear and understandable.

Publication and release of this book corresponds approximately with Ken Wolf's retirement from the U.S. Fish and Wildlife Service. His research and many publications have been appreciated, but perhaps this book is his most important contribution.

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**J. L. Fryer**, Department of Microbiology, Oregon State University, Corvallis, Oregon 97331, USA.

## BOOK REVIEW . . .

**Trichinellosis: Proceedings of the Seventh International Conference on Trichinellosis**, edited by Charles E. Tanner, Antonio R. Martinez-Fernandez, and Francisco Bolas-Fernandez. Consejo Superior de Investigaciones Cientificas Press, Madrid, Spain. 1989. I.S.B.N. 84-00-06985-4. Available from Instituto Lopez-Neyra of Parasitology, Ventanilla II, 18001 Granada, Spain. 507 pp. \$30.00 U.S. + postage.

This 507-page volume contains papers presented at the Seventh International Conference of Trichinellosis held 2 to 6 October 1988 in Alicante, Spain. The Conference, sponsored quadrennially by the International Commission on Trichinellosis, is a major clearinghouse of information on all aspects of this persistent zoonotic disease. The Proceedings consists of a preface, author and subject indices, a table of contents and a list of conference participants. Included is the text of the keynote address by E. J. Ruitenberg, President of the International Commission. Some 120 full-length papers in English are organized into 11 categories including physiology, biochemistry and molecular biology, host-parasite relationships, parasite genetics and speciation, experimental immunology, applied immunology, experimental pathology, clinical pathology, transmission in domestic animals, transmission in wild animals, public health, and chemotherapy.

The sections of particular interest to wildlife disease workers include papers on *Trichinella* spp. transmission in wild animals in Yugoslavia, the Federal Republic of Germany, and Spain. In Yugoslavia, the prevalence rates in wild carnivores were 47% for lynx, 44% for wolf,  $\leq 32\%$  for red fox, 7% for brown bear, 5% for wild cat, and  $<1\%$  for European badger. Muscle larvae also were found in cricetid and murid rodents, which appeared to explain the high prevalence in the red fox. On the contrary, in the Federal Republic of Germany only 1 of 3,889 red foxes was positive. No infections were found in a variety of other carnivores (badger, marten, polecat, mink), lagomorphs, insectivores, or rodents, including 1,162 muskrats.

An epidemiological survey in southern Spain implicated wild boar (*Sus scrofa ferus*) as a source of human exposure. Although the prevalence of trichinellosis was  $<1\%$  in hunter-killed boars, this was considered to be an important sylvatic focus of the disease. In the Spanish Province of Granada, 3% of 69 wild boars were digestion positive for *Trichinella spiralis*. Only 1

of 247 dogs was positive, and none of 18 species of birds of prey (owls, hawks, falcons) was infected. In southern Italy, outbreaks of human trichinellosis were attributed to the use of wild boar meat. This species was considered to be the major epidemiological link between the sylvatic and synanthropic forms of the disease in the region. Use of fox or dog carcasses for feeding boars under field conditions was thought to be the initial source of exposure. In Poland, sausage prepared from wild boar meat was responsible for a clinical disease outbreak in three patients. In Greenland, at least 630 cases of human trichinellosis have been contracted from consumption of polar bear and walrus meat over a 13-yr period.

The epidemiology of *T. spiralis* in Illinois swine herds was evaluated as part of a statewide trichinellosis control program. A pooled digestion technique was used to identify infected herds, which then were screened individually with an ELISA (enzyme linked immunosorbent assay) test to eliminate reactor pigs. Wildlife trapping was conducted on infected premises to identify reservoir hosts and reduce possibilities for subsequent re-exposure of pigs. Seven to 15% of the raccoons tested positive, with smaller numbers of infected foxes and opossums. Prevalence of *Trichinella* spp. in rats was low, but feral housecats were frequently infected.

Another area of interest that received considerable attention during the Conference was the question of speciation in the genus *Trichinella* and the existence of racial variants or geographic strains of the parasite in wild and domestic animal populations in different regions. The use of isozyme banding patterns for recognizing sylvatic forms from different hosts and for distinguishing them from strains adapted to domestic animals or humans emerged as a relevant procedure for classifying the variety of *T. spiralis* isolates occurring in nature.

The desirability of maintaining living isolates of *T. spiralis* for reference purposes and the need to develop methods for maintaining repositories of infective (muscle) larvae for experimental purposes were addressed by several contributors. Cryopreservation of muscle larvae appeared to be a successful alternative to maintenance of the parasite in experimentally infected rodents.

In summary, it would be difficult to visualize a more up-to-date overview of the current status of research on the biology of *Trichinella spiralis* and clinical aspects of trichinellosis. Although

the examination copy contained some unfortunate typographical errors, misspellings and smudged copy, these do not detract materially from the usefulness of the volume. The unevenness in quality of the typography is not unexpected in view of the photographic method used to reproduce manuscripts submitted by their authors. On balance, this book should be in the

hands of anyone interested in this unique parasite.

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**David E. Worley**, Veterinary Molecular Biology Laboratory, Montana State University, Bozeman, Montana 59717, USA.

## BOOK REVIEW . . .

**Game Ranch Management**, J. Du P. Bothma (ed.). J. L. van Schaik (pty) Ltd., Libri Building, Church Street, Pretoria, Republic of South Africa. 1989. 672 pages, 136 illustrations, 8 color photographs. Price approximately \$45.00 U.S.

*Game Ranch Management* is the work of 18 contributing authors, all from South Africa and many from the University of Pretoria, where the editor holds the Wildlife Management Chair. The introduction states that the science of game ranch management is only 25-yr-old, has been primarily developed within South Africa at the University of Pretoria, and has "developed into a powerful science." Some may question this parochial tone, but the book itself is evidence that outstanding work in game ranch management has been done in the Republic of South Africa.

Game ranching is a large and growing industry, not only in South Africa but in a number of other nations in southern Africa (Zimbabwe, Namibia and Botswana in particular) and appears to be developing in North America. This book will probably become a classic text for Africa and will be valuable to anyone interested in raising and keeping wild animals.

The first two brief chapters on "Game Ranching and Nature Conservation" and "Important Ecological Principles" set the tone for the book. Although game ranching is an animal production industry, and as such has controlling economic and consumer interests, at its best it may retain strong concern for the conservation ethic and balanced management of both habitat and game animals. The conclusion of the chapter on predators states "Predators on a game ranch are a great asset and ought to be protected and encouraged." This is an enlightened point of view compared to that of the traditional game keeper or livestock rancher. More than a little ecology and modern wildlife management can be found in the chapters on "Vegetation Types," "Veld Management," and "Game Ranch Planning." Although these chapters are not specifically applicable to North America, the principles are applicable, and it is gratifying to see them clearly set down in a book for a general audience.

I found the organization of the subsequent chapters (Game, Ostriches, Gamebirds, Preda-

tors, Harvesting Game, Game Counts, Trophy Hunting, Rifles, Handling of Trophies, Hunting for Meat, Game Capture, Game Purchasing, Transportation of Game, Keeping Game in Temporary Captivity, Feeding and Carrying Capacity, Mineral Deficiencies, Veld Management, Ranching in Arid Regions, Monitoring and Conclusions) to be somewhat confusing and in places repetitious or overlapping. *Game Ranch Management* is not meant specifically for the veterinarian or wildlife professional and does not claim to be a text book. The coverage of diseases and parasites of wild animals was brief and superficial. No mention of sanitary procedures or isolation of affected animals was found in the comments on salmonellosis. Even a lay audience, for which the book is intended, could comprehend and put into practice more information on various diseases, samples needed for a diagnosis, and preventive and treatment procedures.

The chapters on game capture and transportation are quite good. The former contains new information on the use of long acting tranquilizers, drugs that appear to have real promise for helping reduce trauma and stress often seen when wildlife or zoo animals must be closely confined or transported long distances. I suspect these drugs will become important zoo/wildlife veterinary tools in North America. Photos of bomas, loading chutes, specially designed trucks and trailers in these chapters are excellent. Having seen this equipment in the hands of experienced game capture crews, handling literally hundreds of wild animals daily, I can attest that the game management expertise in southern Africa (Botswana, Namibia, South Africa and Zimbabwe) is impressive. I recommend this book to zoo and wildlife veterinarians and serious game ranchers, if only for these two sections. The rest of the book is very interesting reading and could be useful in answering the increasing numbers of inquiries and requests for information on game ranching. I do not recommend this book for the researcher or serious student of wildlife diseases.

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**David A. Jessup**, International Wildlife Veterinary Services, P.O. Box 1413, Orangevale, California 95662, USA.