Ophthalmology for the Veterinary Practitioner

Second, revised and expanded edition
Ophthalmology for the Veterinary Practitioner
Frans C. Stades
Milton Wyman · Michael H. Boevé · Willy Neumann · Bernhard Spiess

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## Abbreviations

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<td>a.</td>
<td>artery</td>
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<tr>
<td>ACE</td>
<td>angiotensin converting enzyme</td>
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<td>ant.</td>
<td>anterior</td>
</tr>
<tr>
<td>BAB</td>
<td>blood-aqueous barrier</td>
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<td>BCE</td>
<td>before the Common Era</td>
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<td>brev.</td>
<td>brevis</td>
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<tr>
<td>BSS</td>
<td>balanced salt solution</td>
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<td>Common Era</td>
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<td>CEA</td>
<td>Collie eye anomaly</td>
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<td>CH</td>
<td>chorioidal hypoplasia</td>
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<td>CRD</td>
<td>chorioretinal dysplasia</td>
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<tr>
<td>CSNB</td>
<td>congenital stationary night blindness</td>
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<tr>
<td>CT</td>
<td>computed tomography</td>
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<td>dv</td>
<td>dorsoventral</td>
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<td>ERG</td>
<td>electoretinogram</td>
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<td>ERU</td>
<td>equine recurrent uveitis</td>
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<td>ext.</td>
<td>external</td>
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<td>FCRD</td>
<td>feline central retinal degeneration</td>
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<td>FHV-1</td>
<td>feline herpes virus type 1</td>
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<td>HA</td>
<td>hyaloid artery</td>
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<td>IOL</td>
<td>intra-ocular lens</td>
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<td>IOP</td>
<td>intraocular pressure</td>
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<td>keratoconjunctivitis sicca</td>
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<td>lat.</td>
<td>lateral</td>
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<td>long.</td>
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<td>m.</td>
<td>muscle</td>
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<td>MRI</td>
<td>magnetic resonance imaging</td>
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<td>OD</td>
<td>oculus dexter (right eye)</td>
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<tr>
<td>OS</td>
<td>oculus sinister (left eye)</td>
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<tr>
<td>OU</td>
<td>oculus uterque (both eyes)</td>
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<td>PDT</td>
<td>parotid duct transposition</td>
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<td>PHA</td>
<td>persistent hyaloid artery</td>
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<td>PHTVL/PHPV</td>
<td>persistent hyperplastic tunica vasculosa lentis/ persistent hyperplastic primary vitreous</td>
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<td>PM</td>
<td>pupillary membrane</td>
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<td>PMMA</td>
<td>polymethylmethacrylate</td>
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<td>progressive retinal atrophy</td>
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<td>polyuria/polydipsia</td>
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<td>retinal pigment epithelium</td>
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<td>sudden acquired retinal degeneration</td>
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<td>tunica vasculosa lentis</td>
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<td>v.</td>
<td>vein</td>
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<tr>
<td>VEP</td>
<td>visual evoked potential</td>
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Origin of Plates and Figures

Plates:

7.16, 7.17: G. Kása; Kleintierklinik, Lörrach, Germany.

7.33, 7.34, 8.19, 10.34: W. Klein, Department of Equine Sciences, Faculty of Veterinary Medicine, University of Utrecht, The Netherlands.

3.4, 3.5, 4.10, 6.11, 6.12, 7.8, 7.9, 7.26, 7.27, 10.15, 10.16, 10.17, 10.18, 12.11, 14.6, 14.9, 14.26, 14.27: W. Neumann, Am Drosselschlag 25, Giessen-Heuchelheim, Germany.

10.30, 14.2: B. Spiess, Department for Small Animals, Ophthalmology Unit, Vetsuisse Faculty, University of Zurich, Switzerland.

13.3: Th. M. van Balen, University Medical Center, Amsterdam, The Netherlands.


Remaining plates: F. C. Stades and M. H. Boeve, Department of Clinical Sciences of Companion Animals, Faculty of Veterinary Medicine, University of Utrecht, The Netherlands.

Figures:


2.2, 4.5, 6.1, 6.2, 6.5, 7.2, 7.4, 7.6, 7.16, 7.23, 10.3, 12.3, 13.2, 13.9: B. Jansen, Department of Clinical Sciences of Companion Animals, Faculty of Veterinary Medicine, University of Utrecht, The Netherlands.

Remaining figures: F. C. Stades.
1 Introduction

The previous editions of this book have clearly proved their value. After the Dutch, German and English first editions in 1996, the second and third editions in German, Spanish, Portuguese, Italian and Japanese versions of the book have been published.

Over the past 10 years, continued progress has been made in the knowledge and medications associated with veterinary medicine, and in veterinary ophthalmology, in particular. Of direct interest to the practitioner are not only those drugs that are not available anymore, but also and more importantly, the new drugs and medications that have become available in the recent years. All together, these are good reasons for a thoroughly revised, new edition of this book.

We are very happy about the willingness of Prof. Dr. B. Spiess, Dip. ACVO/ECVO to join the team as coauthor. All the coauthors have each screened a part of the chapters and the editor has screened all and has tried to bring any differences in opinion, if necessary and possible, to a consensus.

The morphologic and physiologic features of the eye and the characteristics of ocular diseases are similar among domestic animals. Nevertheless, there are species differences in structure, in reactions of the eye, and in diagnostic procedures. There are also specific diseases and treatments in the different species.

Ophthalmologic diseases comprise a large proportion of the patients seen by the small animal practitioner. Eye problems are especially frequent in dog breeds with redundant nasal and forehead skin folds, misdirected hairs, or poorly opposed lids, and they cause discomfort to the animal. The large animal practitioner will see eye problems in horses similar to those in small animals, but usually less frequently, and some conditions are specific to the horse. In cattle, sheep, goats, swine, small mammals, and birds, eye diseases are also generally less frequent than in pet animals, but they may cause considerable problems when larger groups of animals are affected. Breed predisposition and hereditary ophthalmic disorders are frequent in all species, but are mainly recognized in the dog. A knowledge of breeds predisposed to eye anomalies and hereditary eye diseases is of major importance. In addition, the authors have tried to pay special attention to the recognition of eye abnormalities such as trichiasis, glaucoma, lens luxation, and progressive retinal atrophy, all of which are difficult to diagnose without specialized ophthalmic equipment.

Much has been published on the subject of veterinary ophthalmology and there are many excellent and detailed books on ophthalmology as well as beautiful atlases. The majority of ophthalmic disorders can be diagnosed using relatively simple equipment and without the need for additional or specialized procedures. However, there is little practical information available for the veterinary student or the non-specialist practitioner.

This book is written primarily to provide the veterinary student and the general practitioner with the necessary information for the recognition and basic treatment of ophthalmic disorders. Over 180 photographs illustrate the abnormalities and more than 200 schematic drawings are included to clarify the text and the different approaches to treatment.

A fully problem-oriented approach appears to be less suitable in the work up of eye diseases. The chapter sequence in this book follows, as closely as possible, the recommended order of the ophthalmic examination, with the exception of the chapters on ocular diagnostics and therapy, surgical procedures, and breed predisposition and hereditary eye diseases. There is a separate chapter on primary ocular emergencies as this should be readily available in hectic practical situations.

Each chapter begins with a very brief introduction to the morphology and physiology of the specific structure; this helps in understanding the etiology, clinical behavior, and therapy of the associated diseases. The eye abnormalities are then presented in the same sequence in each chapter according to pathogenesis, with congenital anomalies being dealt with first. These are followed by diseases caused by environmental influences such as trauma, intoxications, and deficiencies. Inflammatory processes, including infections, are presented next. The final parts of each chapter deal with degenerative, autoimmune, and neoplastic diseases.

The most commonly encountered ocular problems receive the most detailed attention. Priority is given to the way the authors recognize and work up ophthalmologic emergencies and how they are treated. For other ophthalmic problems, the authors have tried to provide adequate information to aid in their recognition and to give general rules for treatment, with special emphasis on preventing mistakes. Details about the specific species are preceded by the species icons.

All of this has been done with an understanding of the limitations in equipment and training of the non-specialist practitioner. Therefore, the authors have also indicated which patients should be referred and when, and how the eye should be protected during transport. The authors have tried to inform practitioners about what the referred owner might expect, which different treatments are possible, and the necessary after-care referring veterinarians must provide when the animal returns to them. At the end of the description of each disease, brief information is given about the prognosis, the genetic aspects, and the consequences for breeding.

The authors are very grateful to the students, interns, and residents who have played a part in making this book possible. Their critiques of the diagnostic and therapeutic keys were...
Fig. 1: Partly opened section of the eye and the nomenclature.
We are also most grateful for the helpful criticism of Prof. Dr. J. Fink-Gremmels and Dr. C. Görg. The many hours spent by Dr. Bruce Belshaw in editing the original manuscript were vital for the book. His devotion to this task is gratefully acknowledged. We are also greatly indebted to Dr. Peter Beyon for his thorough, final correction of the manuscript.

The authors are especially grateful for the encouragement, understanding, and active help of their families during the preparation of this book.