## CONTENTS

### Preface ix
### Acknowledgments xi

### Section 1. Anatomy and Diagnostics 1

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Normal Ocular Anatomy</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Normal Pigmentary Variations</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>The Normal Canine Fundus</td>
<td>6</td>
</tr>
<tr>
<td>4</td>
<td>The Normal Feline Fundus</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>The Normal Subalbinotic Fundus</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Normal Myelination Variations</td>
<td>12</td>
</tr>
<tr>
<td>7</td>
<td>The Ocular Examination</td>
<td>14</td>
</tr>
</tbody>
</table>

### Section 2. Diseases of the Eyelids 17

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>Eyelid Agenesis</td>
<td>18</td>
</tr>
<tr>
<td>9</td>
<td>Eyelid Laceration</td>
<td>20</td>
</tr>
<tr>
<td>10</td>
<td>Distichiasis</td>
<td>22</td>
</tr>
<tr>
<td>11</td>
<td>Ectopic Cilia</td>
<td>24</td>
</tr>
<tr>
<td>12</td>
<td>Trichiasis</td>
<td>26</td>
</tr>
<tr>
<td>13</td>
<td>Tear Film Wicking Syndrome</td>
<td>28</td>
</tr>
<tr>
<td>14</td>
<td>Entropion</td>
<td>30</td>
</tr>
<tr>
<td>15</td>
<td>Ectropion</td>
<td>32</td>
</tr>
<tr>
<td>16</td>
<td>Combined Entropion-Ectropion</td>
<td>34</td>
</tr>
<tr>
<td>17</td>
<td>Macropalpebral Fissure</td>
<td>36</td>
</tr>
<tr>
<td>18</td>
<td>Chalazion</td>
<td>38</td>
</tr>
<tr>
<td>19</td>
<td>Juvenile Pyoderma</td>
<td>40</td>
</tr>
<tr>
<td>20</td>
<td>Immune-Mediated Blepharoconjunctivitis</td>
<td>42</td>
</tr>
<tr>
<td>21</td>
<td>Autoimmune Blepharitis</td>
<td>44</td>
</tr>
<tr>
<td>22</td>
<td>Eosinophilic Folliculitis/Furunculosis</td>
<td>46</td>
</tr>
<tr>
<td>23</td>
<td>Adverse Drug Reactions (ADRs)</td>
<td>48</td>
</tr>
<tr>
<td>24</td>
<td>Dermatomyositis</td>
<td>50</td>
</tr>
<tr>
<td>25</td>
<td>Demodex-Associated Blepharitis</td>
<td>52</td>
</tr>
<tr>
<td>26</td>
<td>Dermatophytosis</td>
<td>54</td>
</tr>
<tr>
<td>27</td>
<td>Radiation Induced Blepharoconjunctivitis</td>
<td>56</td>
</tr>
<tr>
<td>28</td>
<td>Apocrine Hidrocystoma</td>
<td>58</td>
</tr>
<tr>
<td>29</td>
<td>Sebaceous Adenoma/Epithelioma</td>
<td>60</td>
</tr>
<tr>
<td>30</td>
<td>Histiocytoma</td>
<td>62</td>
</tr>
<tr>
<td>31</td>
<td>Eyelid Melanocytoma</td>
<td>64</td>
</tr>
<tr>
<td>32</td>
<td>Eyelid Melanoma</td>
<td>66</td>
</tr>
<tr>
<td>33</td>
<td>Cutaneous Epitheliotropic Lymphoma (CEL)</td>
<td>68</td>
</tr>
<tr>
<td>34</td>
<td>Eyelid Squamous Cell Carcinoma</td>
<td>70</td>
</tr>
<tr>
<td>35</td>
<td>Mast Cell Tumor (MCT)</td>
<td>72</td>
</tr>
<tr>
<td>36</td>
<td>Fibrosarcoma</td>
<td>74</td>
</tr>
</tbody>
</table>

### Section 3. Diseases of the Conjunctiva, Nasolacrimal System, and Third Eyelid 77

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>37</td>
<td>Allergic Conjunctivitis</td>
<td>78</td>
</tr>
<tr>
<td>38</td>
<td>Dacryocystitis</td>
<td>80</td>
</tr>
<tr>
<td>39</td>
<td>Symblepharon</td>
<td>82</td>
</tr>
<tr>
<td>40</td>
<td>Herpesviral-Associated Conjunctivitis</td>
<td>84</td>
</tr>
<tr>
<td>41</td>
<td>Third Eyelid Gland Prolapse (Cherry Eye)</td>
<td>86</td>
</tr>
<tr>
<td>42</td>
<td>Keratoconjunctivitis Sicca (Dry Eye)</td>
<td>88</td>
</tr>
<tr>
<td>43</td>
<td>Scrolled Third Eyelid Cartilage</td>
<td>90</td>
</tr>
<tr>
<td>44</td>
<td>Medial Canthal Pocket Syndrome</td>
<td>92</td>
</tr>
<tr>
<td>45</td>
<td>Onchocercias</td>
<td>94</td>
</tr>
<tr>
<td>46</td>
<td>Thelazia</td>
<td>96</td>
</tr>
<tr>
<td>47</td>
<td>Papilloma</td>
<td>98</td>
</tr>
<tr>
<td>48</td>
<td>Conjunctival Melanoma</td>
<td>100</td>
</tr>
<tr>
<td>49</td>
<td>Conjunctival Hemangioma/Hemangiosarcoma</td>
<td>102</td>
</tr>
<tr>
<td>50</td>
<td>Adenoma/Adenocarcinoma</td>
<td>104</td>
</tr>
<tr>
<td>51</td>
<td>Conjunctival Lymphoma</td>
<td>106</td>
</tr>
<tr>
<td>52</td>
<td>Conjunctival squamous Cell Carcinoma</td>
<td>108</td>
</tr>
</tbody>
</table>

### Section 4. Corneoscleral Disease 111

<table>
<thead>
<tr>
<th>Chapter</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>Dermoid</td>
<td>112</td>
</tr>
<tr>
<td>54</td>
<td>Corneal Dystrophy</td>
<td>114</td>
</tr>
<tr>
<td>55</td>
<td>Corneal Degeneration</td>
<td>116</td>
</tr>
<tr>
<td>56</td>
<td>Corneal Endothelial Decompensation</td>
<td>118</td>
</tr>
<tr>
<td>57</td>
<td>Scleritis</td>
<td>120</td>
</tr>
<tr>
<td>58</td>
<td>Nodular Granulomatous Episcleritis</td>
<td>122</td>
</tr>
</tbody>
</table>
Contents

Chapter 59. Chronic Superficial Keratitis (CSK) 124
Chapter 60. Eosinophilic Keratoconjunctivitis 126
Chapter 61. Herpesviral-Associated Keratitis 128
Chapter 62. Canine Multifocal Immune-Mediated Punctate Keratitis (MIPK) 132
Chapter 63. Endotheliitis 134
Chapter 64. Bullous Keratopathy 136
Chapter 65. Feline Corneal Sequestrum 138
Chapter 66. Pigmentary Keratitis 140
Chapter 67. Corneal Abscessation 142
Chapter 68. Corneal Hemorrhage 144
Chapter 69. Corneoscleral Laceration 146
Chapter 70. Spontaneous Chronic Corneal Epithelial Defects (SCCEDs) 148
Chapter 71. Stromal Ulcerative Keratitis 150
Chapter 72. Descemetocoele 152
Chapter 73. Keratomalacia (Melting Ulcers) 154
Chapter 74. Corneal Perforation 156
Chapter 75. Epithelial Inclusion Cysts 158
Chapter 76. Corneal Foreign Body 160
Chapter 77. Limbal Melanocytoma 162
Chapter 78. Fungal Keratitis 164
Chapter 79. Corneoscleral Hemangioma/Hemangiosarcoma 166
Chapter 80. Corneoscleral Lymphoma 168
Chapter 81. Corneal Squamous Cell Carcinoma 170

Section 5. Diseases of the Uvea 173
Chapter 82. Persistent Pupillary Membranes (PPMs) 174
Chapter 83. Iris Colobomas 176
Chapter 84. Senile Iris Atrophy 178
Chapter 85. Uveal Cysts 180
Chapter 86. Merle Ocular Dysgenesis (MOD) 182
Chapter 87. Feline Anterior Uveitis 184
Chapter 88. Canine Anterior Uveitis 186
Chapter 89. Golden Retriever – Associated Uveitis and Glaucoma 188
Chapter 90. Vaccine-Associated Uveitis 190
Chapter 91. Uveodermatologic Syndrome (UDS)-Associated Uveitis 192
Chapter 92. Hyphema 194
Chapter 93. Aqueous Lipidosis 196
Chapter 94. Iris Bombe’ 198
Chapter 95. Feline Iris Melanosis (FIM) 200
Chapter 96. Uveal Melanoma 202
Chapter 97. Uveal Adenoma/Adenocarcinoma 204
Chapter 98. Uveal Lymphoma 206

Section 6. Diseases of the Lens 209
Chapter 99. Microphakia/Spherophakia 210
Chapter 100. Persistent Hyaloid Vasculature (PHV) 212
Chapter 101. Nuclear Sclerosis 214
Chapter 102. Immature Cataract 216
Chapter 103. Mature Cataract 218
Chapter 104. Hypermature Cataract 220
Chapter 105. Phacolytic Uveitis 222
Chapter 106. Phacoclastic Uveitis 224
Chapter 107. Anterior Lens Luxation 226
Chapter 108. Posterior Lens Luxation 228
Chapter 109. Feline Post-Traumatic Ocular Sarcoma 230

Section 7. Vitreoretinal Disease 233
Chapter 110. The Retinal Dysplasias (RDs) 234
Chapter 111. Oculoskeletal Dysplasia (OSD) 236
Chapter 112. Collie Eye Anomaly (CEA) 238
Chapter 113. The Retinal Atrophies (RAs) 240
Chapter 114. Vitreal Degeneration/Herniation 242
Chapter 115. Retinal Toxicity 244
Chapter 116. SARDS/IMR 246
Chapter 117. Hypertensive Retinopathy 248
Chapter 118. Feline Chorioretinitis 250
Chapter 119. Canine Chorioretinitis 252
Chapter 120. Retinal Pigment Epithelial Dystrophy (RPED) 254
Chapter 121. Uveodermatologic Syndrome (UDS)-Associated Chorioretinitis 256
Chapter 122. Primary (Bullous) Retinal Detachment 258
Chapter 123. Rhegmatogenous Retinal Detachment (RRD) 260
Chapter 124. Chorioretinal Lymphoma 262
Chapter 125. Myeloma 264

Section 8. Diseases of the Globe and Orbit 267
Chapter 126. Microphthalmia 268
Chapter 127. Phthisis Bulbus 270
Chapter 128. Orbital Cellulitis 272
Chapter 129. Extraocular Myositis (EOM) 274
Chapter 130. Zygomatic Sialoadenitis 276
Chapter 131. Orbital Fat Pad Prolapse 278
Chapter 132. Orbital Foreign Bodies 280
Chapter 133. Endophthalmitis/Panophthalmitis 282
Chapter 134. Proptosis of the Globe 284
Chapter 135. Peripheral Nerve Sheath Tumor (PNST) 286
Chapter 136. Retrobulbar Neoplasia 288
Section 9. The Glaucomas 291
Chapter 137. Congenital Glaucoma 292
Chapter 138. Primary Glaucoma 294
Chapter 139. Secondary (Postinflammatory) Glaucoma 296
Chapter 140. Feline Aqueous Humor Misdirection Syndrome (AHMS) 298
Chapter 141. Pigmentary Glaucoma 300
Chapter 142. Golden Retriever-Associated Uveitis and Glaucoma 302
Chapter 143. Buphthalmos 304

Section 10. Neuro-Ophthalmic Disease 307
Chapter 144. Optic Nerve Hypoplasia 308
Chapter 145. Lysosomal Storage Disease (LSD) 310
Chapter 146. Sympathetic Denervation (Horner's Syndrome) 312
Chapter 147. Ophthalmoplegia 314
Chapter 148. Neuroparalytic Keratitis/Hemifacial Paralysis 316
Chapter 149. Neurogenic KCS and Xeromycteria 318
Chapter 150. Optic Neuritis/Meningitis 320

Index 323
It is some years since I made the conscious decision to further my postgraduate knowledge of the complex and fascinating world of veterinary ophthalmology. With the passing of the intervening years, I have had the immense good fortune to interact with a number of clinician-scientists, all of whom have generously shared their time, experience, and knowledge with me. In particular, I am indebted in this regard to Drs. Peter Bedford, Randy Scaglotti, Kirk Gelatt, Paul Miller, Dick Dubielzig, Bill Dawson, and Mark Sherwood. I am frequently asked to give lectures about various ophthalmic topics to audiences ranging from students to experienced ophthalmologists, and it is most commonly through photographic images that I am able to share my own thoughts and experience. The field of veterinary ophthalmology, detailed ophthalmic texts, and the peer-reviewed ophthalmic literature represent a sometimes challenging and potentially confusing arena and, as a consequence, I have sought here to provide the busy general practitioner with a clear, systematic, repeatable clinical picture of the most frequently encountered ophthalmic conditions in small animal practice. Images are intentionally presented in the same way as cases would be encountered in practice. In order to expand this project beyond that of simply an image atlas, I have also tried to provide clear, concise, updated, and clinically relevant information as it pertains to each of these conditions. This information has been supported with a small number of relevant references for those who wish to read further.

Any potential drug side effects are identified by this shaded colored box.
ACKNOWLEDGMENTS

Many individuals have contributed to the development of this book. The project, from its inception, has been shaped by my editors and publishers at Wiley, with special thanks to Erica Judisch, Nancy Turner, and Catriona Cooper. The images within this volume have mostly been sourced from my own collection; however, I have relied on friends and colleagues to discuss clinical presentations, help source cases (and in some instances provide images) in order to achieve completeness. In this regard, I acknowledge Drs. Dustin Dees, Anne-Michelle Armour, Nicole McClaren, Randy Scagliotti, Al MacMillan, Christin Chapman, David Wilkie, Matthew Fife, Nancy Park, Anastasia Komenou, Jennifer Urbanz, Peter Bedford, David Williams, David Donaldson, Julius Brinkis, Dilip Bhalerao, Emily Moeller, Francesca Venturi, Neal Wasserman, Joanna Norman, Keith Collins, Steve Sissler, Melanie Church. Ashley Stich, Laura Wilson, Rudayna Gubash, Allison Kirby, Nick Millichamp, Mark Haskins, Gwen Lynch, and Kristina Narfstrom. I am additionally grateful to a number of the affiliated specialists with whom I work, for their willingness to source and discuss cases commonly presented to the services of internal medicine, dermatology, and oncology. In this regard, I particularly acknowledge Drs. Wayne Rosenkrantz, Colleen Mendelsohn, Melissa Hall, Julie Bulman-Fleming, and David Bommarito. The time taken to collate and describe these conditions was allocated by Karen Webster and sponsored by Eye Care for Animals as part of its ongoing commitment to advancing the field of veterinary ophthalmology. Finally but most importantly I am endlessly grateful to my wife Sara, herself a gifted and passionate veterinary ophthalmologist. Without her endless assistance, clinical expertise, and patient advice, this book would simply not have been possible.

For Sara and Justin With all my love Doug Esson Tustin, California, 2014
Section 1

Anatomy and Diagnostics
CHAPTER 1
NORMAL OCULAR ANATOMY

Normal canine and feline orbital anatomy comprises the following:

The orbit, made up of bones, connective tissue, lacrimal and salivary glandular tissue, adipose tissue, blood vessels, and nerves.

The eyelids, comprising skin, orbicularis oculi muscles, deep tarsal, and superficial conjunctival tissue. These tissues also contain mucus-producing goblet cells, lipid-producing meibomian glands, and the openings of the nasolacrimal drainage system.

The third eyelid, comprising a T-shaped cartilaginous structure, which surrounds the lacrimal gland of the third eyelid and is covered with conjunctival tissue.

The external shell of the eye, comprising the cornea anteriorly and the episcleral and scleral tissues posteriorly. The cornea is composed of an outer epithelium (with its basement membrane), central stroma, and underlying endothelial layer (with its basement or “Descemet’s” membrane).

The uveal tract, composed of the anterior iris and ciliary body and the posterior choroid, which is the vascular supply to the retina.

The lens, which is suspended from the ciliary body by zonular ligaments and surrounded by the lens capsule.

The neuroretina which comprises;

- Nerve fiber layer and inner limiting membrane
- Ganglion cell layer
- Inner nuclear and inner plexiform layers
- Outer nuclear and outer plexiform layers
- Photoreceptors (rods & cones) and outer limiting membrane
- Retinal pigment epithelium.

Retinal ganglion cells coalesce to form the optic nerve which exits the globe posteriorly, through the porous lamina cribrosa.
Figure 1.1 Normal ocular anatomy.
Both canine and feline irides may demonstrate a range of pigmentary variations. True ocular albinism (the complete lack of pigment) is rare. The term subalbinism describes pigment dilution resulting in variably grey to bluish colored iridal tissue, a finding common in animals with light hair coat colors. The term heterochromia iridis describes variable combinations of pigment within either one or both irides.
Figure 2.1 Normal variation in pigmentation between left and right eyes.

Figure 2.2 Normal heterochromic variation in pigmentation within a light colored iris.

Figure 2.3 Normal heterochromic variation in pigmentation within a dark colored iris.

Figure 2.4 Normal blue iris (the “red reflex” of the subalbinotic fundus being visible through the pupil).
The canine fundus exhibits a wide variation in normal appearance, comprising a tapetal as well as a non-tapetal region, the optic nerve head, associated vasculature, and multilayered neuroretina, all of which overlie the choroidal vascular bed. The juvenile canine fundus typically appears bluish in color until maturation within the first 3–4 months of life.

The specialized cells of the tapetal region contain reflective material comprising zinc/cysteine as well as a poorly to non-pigmented retinal pigment epithelial (RPE) layer, which facilitates low-light vision. This region is typically bright yellow to green in coloration.

The non-tapetal fundus is usually dark in color because of the presence of pigment within the RPE.

The optic nerve (“optic disc,” “optic papilla”) appears as a variably shaped and variably myelinated white to pink structure within the fundus, representing the accumulation of ganglion cells and displaying an incomplete vascular circle surrounding a central physiologic pit.

Radiating from the ONH are 3–4 large veins and 15–20 smaller arterioles.
**Figure 3.1** Normal pigmented canine fundus. The bluish color indicates immaturity.

**Figure 3.2** Normal pigmented canine fundus (predominantly green).

**Figure 3.3** Normal pigmented canine fundus (predominantly yellow).

**Figure 3.4** Normal pigmented canine fundus (speckled).
The feline fundus exhibits a wide variation in normal appearance, comprising a relatively large tapetal as well as non-tapetal region, the optic nerve head, associated vasculature, and multilayered neuroretina, all of which overly the choroidal vascular bed.

The specialized cells of the tapetal region contain reflective material comprising zinc/riboflavin as well as a poorly to non-pigmented retinal pigment epithelial (RPE) layer, which facilitates low-light vision. This region is typically bright yellow to green in coloration.

The non-tapetal fundus is usually dark in color due to the presence of pigment within the RPE.

The optic nerve ("optic disc," "optic papilla") appears as a small, circular, unmyelinated white to grey structure within the fundus, representing the accumulation of ganglion cells.

Three major pairs of arterioles as well as larger venules radiate from the ONH.
Figure 4.1 Normal pigmented feline fundus (predominantly green), note the poorly myelinated optic nerve head.

Figure 4.2 Normal pigmented feline fundus (predominantly green), note the poorly myelinated optic nerve head.

Figure 4.3 Normal pigmented feline fundus (predominantly yellow), note the poorly myelinated optic nerve head.

Figure 4.4 Normal pigmented feline fundus (predominantly yellow), note the poorly myelinated optic nerve head.
CHAPTER 5
THE NORMAL SUBALBINOTIC FUNDUS

Dogs or cats displaying blue irides, heterochromic irides, and/or merled coat coloration, typically display “subalbinotic” fundi. In these animals, the tapetal region may be variably reduced to absent in association with a variable to complete lack of pigment within the non-tapetal fundus. As a result, underlying choroidal vasculature is visible against the white scleral background. The subalbinotic fundus represents a normal variation in coloration.
Figure 5.1 Normal (canine) subalbinotic fundus. Choroidal vessels are clearly visible against the white scleral background.

Figure 5.2 Normal (canine) subalbinotic fundus. Choroidal vessels are clearly visible against the white scleral background.

Figure 5.3 Normal (canine) subalbinotic fundus. Choroidal vessels are clearly visible against the white scleral background.

Figure 5.4 Normal (feline) subalbinotic fundus. Choroidal vessels are clearly visible against the white scleral background.
The optic nerve head (ONH) comprises coalescing ganglion cells as they converge before exiting the globe caudally through the porous lamina cribrosa. This region is variably myelinated; poorly in the cat and variably in the dog. Variations in the amount of myelin present may result in range of normal appearances when this region is visualized.
Figure 6.1 Normal moderately to heavily myelinated canine optic nerve head.

Figure 6.2 Normal moderately to heavily myelinated canine optic nerve head.

Figure 6.3 Normal moderately to heavily myelinated canine optic nerve head.

Figure 6.4 Normal moderately to heavily myelinated canine optic nerve head.
CHAPTER 7
THE OCULAR EXAMINATION

The ophthalmic examination should comprise the following components.

HISTORY
Signalment, pre-existing medical/surgical history (including travel history), and/or current medications.

PRESENTING COMPLAINT
Identification of the presenting ophthalmic complaint.

DISTANT “HANDS-OFF” EXAMINATION
Patient is allowed to move around freely—demonstrating mentation, neurological status, and visual ability.

BRIEF GENERAL PHYSICAL EXAMINATION
Includes assessment of mucous membranes, oral cavity, external ear canals, thoracic auscultation, palpation of lymph nodes and abdomen and body temperature.

CLOSE UP “HANDS-ON” EXAMINATION
Includes careful palpation of the skull and orbits, noting any deformity, asymmetry, crepitus, or discomfort.

NEURO-OPHTHALMIC EXAMINATION
- Palpebral reflex (closure of eyelids upon tactile stimulus)
- Menace response (eyelid closure and/or head withdrawal in response to menacing hand gesture)
- Dazzle reflex (closure of eyelids in response to bright focal light source being shined into eye)
- Pupillary light reflex (PLR) (direct and consensual reflex pupillary miosis in response to a focal light source).

SEGMENTAL ANTERIOR EXAMINATION
A focal light source is used to examine the eyelids, conjunctival surfaces, third eyelid, sclera, cornea, anterior chamber (AC), iris, lens, and anterior vitreous face.

FUNDIC EXAMINATION
The posterior segment is examined using either a focal light source and handheld lens or an ophthalmoscope.

ANCILLARY DIAGNOSTICS
- Schirmer tear test I (STT1). Schirmer strip placed into ventral fornix for one minute, normal value = 15–20 mm/wetting/min
- Intraocular pressure (IOP) estimation. Using either an applanation or rebound tonometer, the probe tip is applied to the axial cornea several times in order to generate an average estimation of IOP (normal value = 15–25 mmHg)
- Vital corneal staining. Sodium fluorescein dye is applied to the cornea then excess carefully irrigated away to detect retention associated with epithelial defects. Fluorescein dye may also be used to assess nasolacrimal duct patency (“Jones” test) and/or aqueous leakage from the anterior chamber (“Seidel” test).

Where indicated, additional diagnostic aids may include obtaining blood samples for complete blood count (CBC), chemistry, metabolic, endocrine and/or infectious titer testing, the harvesting of microbial samples for culture and sensitivity testing as well as cytological and/or histological examination and/or advanced imaging (including radiography, B-mode ultrasonography, computed tomography, and/or magnetic resonance imaging).
Figure 7.1  Estimation of intraocular pressure (IOP) using a rebound tonometer (“Tonovet”). The probe-tip is gently allowed to contact the axial corneal surface (without the use of local anesthetic) by pressing the measurement button. Several readings are taken, so that aberrant readings may be disregarded.

Figure 7.2  Measurement of lacrimal function using gradated (“Schirmer”) tear strips. The tip of each strip is folded and placed into the lower medial fornix for one minute and the resultant STT1 value recorded. This test should be performed before the installation of any topical agents.

Figure 7.3  Vital staining of the corneal surface using fluorescein-impregnated strips. Strips are moistened using a physiologic solution and gently touched to the scleral limbus. Excess stain is then carefully irrigated away using eyewash to prevent “pooling” of residual stain.

Figure 7.4  Visualization of the fundus using a simple handheld indirect lens, positioned just in front of the eye and parallel to the posterior segment. Where an indirect ophthalmoscope is unavailable, a small flashlight or transilluminator, held adjacent to the examiner’s head, will suffice as a distant focal light source.