

# Contents

<b>1. Why Specular Microscopy?</b>	1	Influence of Optical Curvature on Specular Images	33
What is Specular Microscopy?	1	Summary of the Clinical Consequences	36
Optical Reflections	1	Slit-Lamp Examination of Patients	36
Specular Microscopy: the Examination of a Reflecting Surface	1	Preparation for the Examination	36
The Development of Specular Microscopy	2	Locating the Specular Areas with the Slit-Lamp	37
Alfred Vogt	2	Searching the Lens in the Specular Area of the Slit-Lamp	40
Photomicroscopy of the Corneal Endothelium	3	Examination of Patients with the Specular Microscope	41
Specular Microscopy of Lens Implants	4	Locating the Specular Areas with the Microscope	41
Why Do Inflammations Occur after Lens Implantation?	5	Searching the Lens in the Specular Area with the Microscope	42
Trauma	6	Avoiding Typical Errors	43
Foreign Matter	7	The Specular Area Has Not Been Found	43
Individual Risk Factors	9	Artifacts of the Cornea	43
The Cytology of Inflammatory Reactions on Lens Implants	10	Inadequate Searching of the Lens	46
The Cytological Examination of Explant Lenses	10	Selection of Unsuitable Patients	46
Differentiation of Individual Cells	12		
Membranes on Lens Implants	16	<b>3. Microscopic Anatomy and the Evaluation of Findings</b>	47
Varieties of Cytological Findings	17	Documentation of Findings	47
Comparison of Specular Microscopy to Other Kinds of Microscopic Examination – Why Specular Microscopy?	22	Descriptive Documentation of Findings (Slit-Lamp Examination)	47
Specular Microscopy – Slit-Lamp Microscopy (Focal Illumination)	22	Photographic Documentation	47
Specular Microscopy In Vivo – Microscopy of Explant Material	23	Microscopic Anatomy and the Qualification of the Findings	50
		Histiocytic Giant and Epitheloid Cells	50
<b>2. Techniques of Examination</b>	27	Small and Spindle-shaped Cells	53
Physical Preconditions	27	Lens Epithelium Cells	55
The Specular Areas of a Lens	28	Erythrocytes	55
Definition of Terms	28	Membranes	56
Three Varieties of Specular Microscopy	28	Pigment	57
		Detritus	58
		Deposits of Extraocular Origin	58

Deposits on the Posterior Surface of the Lens . . . . .	58	Syndromes . . . . .	71
Quantification of Findings . . . . .	60	Foreign Body Reactions with Giant Cells . . . . .	71
Determination of the Precise Magnification . . . . .	60	Inflammations Caused by Small and Spindle-shaped Cells . . . . .	75
Maximal Cell Density . . . . .	61	Planning the Examinations . . . . .	78
Distribution of Cell Density . . . . .	63	Clinical Application . . . . .	78
Size of the Cells . . . . .	63	Scientific Application . . . . .	79
Quantification of Other Findings . . . . .	63	Therapeutic Consequences . . . . .	79
		Antibiotics . . . . .	79
<b>4. Clinical Specular Microscopy</b> . . . . .	65	Cortisone . . . . .	80
Normal Findings . . . . .	65	IOL-Materials . . . . .	82
Small and Spindle-shaped Cells . . . . .	65	Surface Modification of Lenses . . . . .	83
Epitheloid and Giant Cells . . . . .	66		
Origin of the Cells . . . . .	68	<b>References</b> . . . . .	86
Mobility of Inflammatory Cells . . . . .	69	<b>Index</b> . . . . .	97