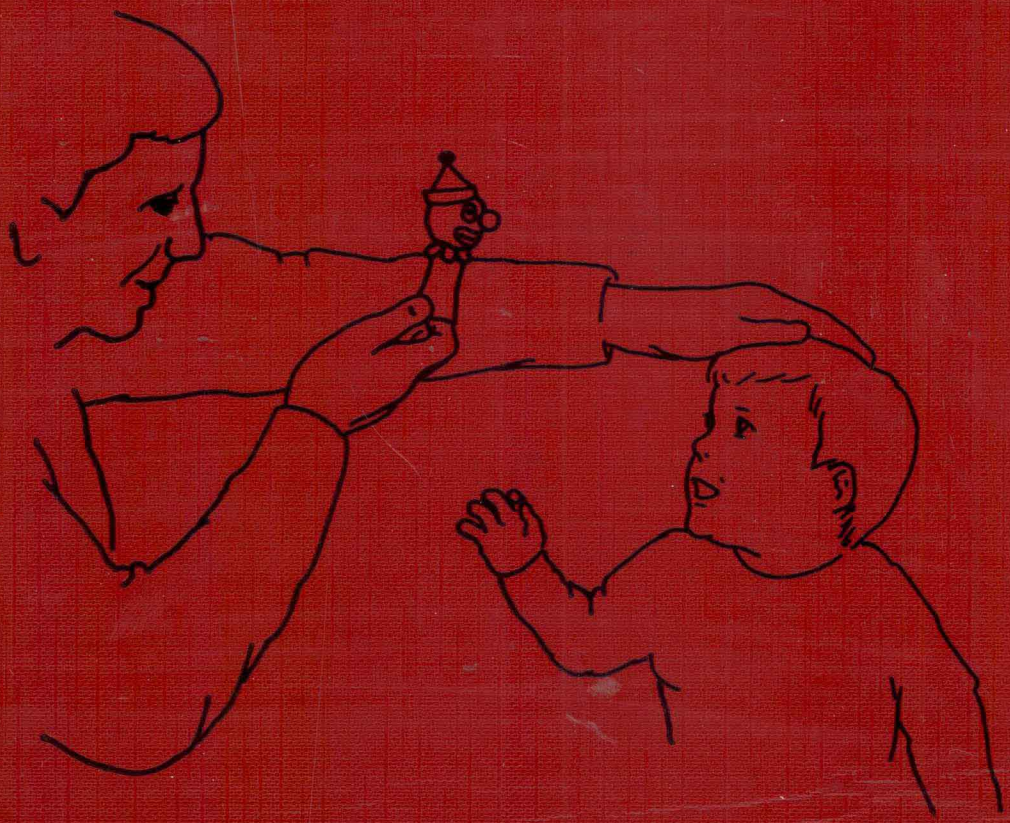
THE EYE IN INFANCY



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The Eye in Infancy

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FOREWORD

The acquisition of a senior status among your colleagues in a specialty is expected to endow you with a perspective not shared by those more junior. For this reason, I presume, came Dr. Isenberg's invitation for me to write a foreword for this most up-to-date and highly valued text in our subspecialty of pediatric ophthalmology.

From my perspective, I could emphasize for the reader the exponential increase of knowledge in pediatric ophthalmology that occurs with the passing of successive years. But what specialty in medicine is not similarly experiencing the same phenomenon? The fact is that the entire spectrum of science annually continues to accelerate the rate of expansion of its knowledge base.

The specific front of the multifarious knowledge base in pediatric ophthalmology that currently is expanding most rapidly involves the developing visual system that occurs from embryogenesis through infancy. The substance of this book addresses this important front.

My perspective of pediatric ophthalmology coincides with the advent of television; both entered my life at the same time slightly more than 40 years ago. I am unable to estimate the total work force involved in the television industry 40 years ago but I can estimate it for the specialty of pediatric ophthalmology. If more than two ophthalmologists were involved it was not my good fortune to have known them. Early in the era of the development of pediatric ophthalmology some general ophthalmologists maintained an interest and made substantial contributions within isolated areas of the newly evolving subspecialty. Yet, the consensus among ophthalmologists 40 years ago was often expressed as, "Who needs pediatric ophthalmology?" As history unfolded, the passing years soundly answered that question with, "The patient." Now, hundreds of researchers and clinicians exclusively work in this subspecialty. Today, the benefit that comes to the visual systems of many little patients is striking by comparison to its absence 40 years ago.

Pediatric ophthalmology by its nature is a rather pervasive subspecialty, covering a wide area as it cuts across many of the anatomically determined or disease-oriented subspecialties. The magnitude of the field of pediatric ophthalmology is associated with a corresponding large knowledge base that lends itself to be sorted into smaller units. Who, 40 years ago, would have predicted that a 29-chapter book would be written by 39 different authors, restricted in content to knowledge about the eye in infancy. The ophthalmologist

wag of 40 years ago would have likely responded, "Which infant's eye, right or left, is the book written for?"

Indeed, it is to the credit of basic and clinical researchers that such a volume of knowledge has built up. But this mass of knowledge can render value to the patient only by authors organizing and relating its pertinent aspects to the person destined to use it. We, who are best able to use it, forever will be grateful to Dr. Isenberg and his many contributors for compiling and presenting this very useful information about the infant's visual system.

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FOREWORD

During the past 25 years there has been a remarkable burgeoning of scientific knowledge focusing on the beginning of life. This has included a series of landmark discoveries concerning the human eye.

This volume brings together invaluable information about normal and abnormal development of the eye in fetal life, during the newborn period, and in infancy. Additionally, it provides authoritative information regarding diagnosing and treating the various conditions affecting the eye during these periods. Also included are important aids in accomplishing the difficult task of examining the eye during infancy. *The Eye in Infancy* should prove to be an invaluable resource in our nurseries and offices.

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PREFACE

Childbearing ideally would include the meticulous selection of the date and method of conception, care and nurturing during the pregnancy, and a well-planned delivery. In many ways, the development of this book has proceeded along similar lines.

Prior to conception, parents must achieve adulthood themselves. For giving me the tools to practice and teach pediatric ophthalmology in an adult fashion, I must express gratitude to four great teachers of ophthalmology. Dr. Leonard Apt, the first full-time academic pediatric ophthalmologist, has been a role model as a researcher and practitioner of pediatric ophthalmology. Our association has been especially close and personal, and remains so to this day. Dr. Morton Goldberg demonstrated how to apply a combination of clinical sense, keen knowledge of medical literature, and proper research techniques to ophthalmology. Dr. Martin Urist taught me the power of simple observation and how to simultaneously love life and strabismus. Finally, Dr. Marshall M. Parks personifies one who can dedicate the practical aspects of ophthalmic science to the children he loves so much. To each of these great men I owe a debt I can never repay.

For conception to occur, both desire and interest need to be stimulated. (1) The desire was provided by ophthalmologists, pediatricians, and neonatologists. A number of these medical specialists, realizing my interest in research of the infantile eye, asked where a comprehensive book dealing only with the eyes of newborns and infants could be obtained. After reviewing the texts currently available, it became obvious to me that such a book did not exist. It is for those practitioners, as well as researchers of the eyes of babies, that this book is primarily intended. (2) The interest was obtained from the excitement of studying, examining, and treating infants. This interest was fueled by interactions with my dear colleague, Dr. John Heckenlively, and with a splendid team of researchers in neonatology at the Harbor-UCLA Medical Center in Torrance, Calif. Under the leadership of Dr. Rosemary Leake, the nurses of the Perinatal Research Center, including Susan Everett-Chamberlain, Roberta Rich, John Pescetti, Sarah Alvarez, Eileen Goldblatt, Chris Mori, and Artemiza McCullough have been both the stimulus and tool to investigate many new aspects of the infant eye. Dr. S. Eric Wilson, Chairman of the Department of Surgery at Harbor, has provided a working environment that encourages these efforts. At the Jules Stein Eye Institute, the interest would never have been realized without the ongoing encouragement and support of the director and chairman, Dr. Bradley Straatsma, who appre-

ciates the importance of the eyes of babies.

What is conception but an exchange of genetic material? This genetic material reflects all past knowledge regarding the eyes of infants derived from previous investigations. I must thank the numerous researchers who have enlightened us with their inquiries. Among these people are all of the scientists who have contributed to this volume as well as such luminaries as Drs. Gunter K. von Noorden, Davida Teller, John Flynn, Velma Dobson, and many others.

Following conception, one enters the expectant period of pregnancy. During this juncture, I contacted all of the gifted physicians who contributed to this project and encountered universal enthusiasm. I am most grateful to each of these experts who have shared their knowledge and experience in specific areas of infantile ophthalmic interest with us.

During pregnancy, many new tasks are undertaken and life can become very confusing. For her organizational talents, secretarial skills, and unquestioning fidelity to this project, I thank Ms. Jean Shimizu. Without her, this endeavor would not have been as timely or as pleasant. I also thank Ms. Natalie Stone for her unflagging and compassionate devotion to our pediatric patients.

Finally, after a pregnancy delayed by many unforeseen obstacles, the delivery occurs. For this act, I am grateful to Mr. David K. Marshall and his colleagues at Year Book Medical Publishers for their faith in this book and their many excellent suggestions.

Now that the baby has arrived, one should examine it. This book is organized into four sections. The first section presents aspects of the infantile eye that are of common interest to pediatricians and ophthalmologists. These aspects include embryology, physical and visual development, examination techniques, pharmacology, amblyopia, teratology, and the fascinating topic of transient phenomena found in the newborn eye. The second section is a thorough and systematic tome dealing with the diagnosis and treatment of congenital abnormalities of the eyes, eyelids, and orbit that are evident in the first year of life. It is arranged anatomically and is intended to assist those interested in congenital ocular disorders of either a specific or general nature. The third section discusses ocular disorders of infants that are acquired, such as trauma (due to birth or child abuse), infections, and retinopathy of prematurity. The fourth section presents the role of the eye in systemic diseases of infants and the unpleasant but important topic of the blind infant. Not only is the diagnosis discussed, but the importance of how the physician should relate to the patient and his family is emphasized.

As in many new ventures in life, there is often something won and something lost. Although we have witnessed the birth of a new book, something has vanished that can never be regained. That, of course, is time. To my terrific children, Jason, Ethan, Seth, and Kim, I apologize for all the lost evenings and weekends we did not spend together since I began work on this project. To my wife Rina, who outwardly constantly encouraged me while deep inside surely regretted lost family time and companionship, I appreciate her constant support and return her loving devotion.

SHERWIN J. ISENBERG, M.D.

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PART I

General Considerations of the Newborn Eye