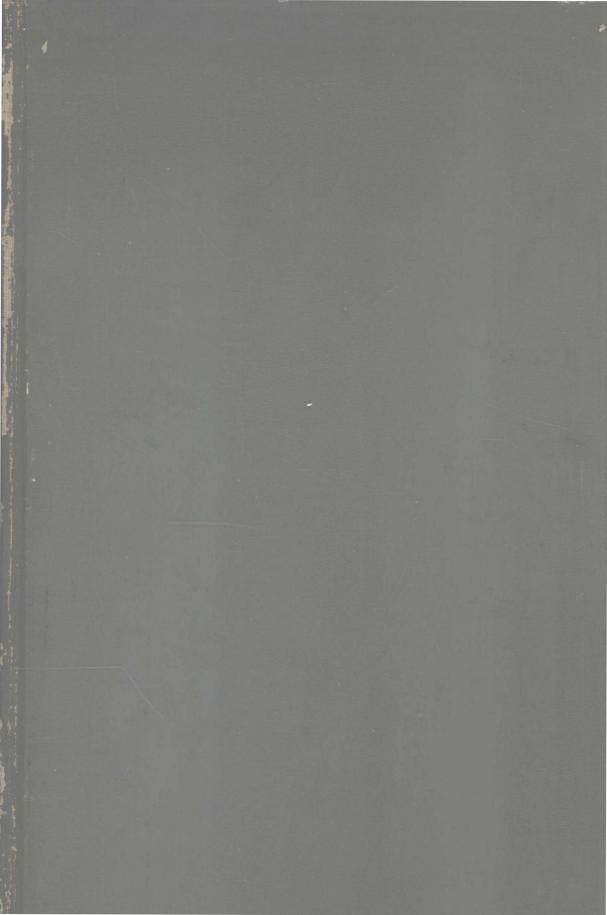
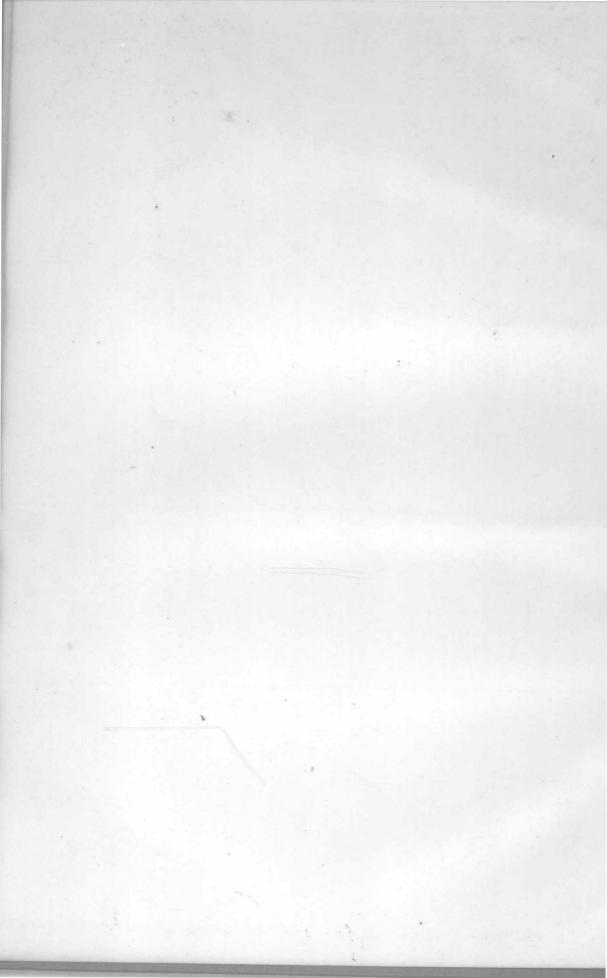
R614

R614





3 .

INESTHESIA FOR INFANTS AND CHILDREN

ROBERT M. SMITH, M.D.

Anesthesiologist, The Children's Medical Center, Boston, Mass.

Assistant Clinical Professor of Anesthesia, Harvard Medical School

Consultant in Anesthesia, U. S. Naval Hospital, Chelsea, Mass.

and Lemuel Shattuck Hospital, Jamaica Plain, Mass.

Foreword by ROBERT E. GROSS, M.D.

With 182 illustrations

COPYRIGHT © 1959 BY
THE C. V. MOSBY COMPANY

All rights reserved

Printed in the United States of America

Library of Congress Catalog Card Number 59-9031

Distributed in Great Britain by Henry Kimpton, London

FOREWORD

During the past decade surgery has made important strides in providing safer and improved methods for handling various problems in infancy and child-hood, indeed now making it possible to correct some conditions which were previously thought to be entirely hopeless. Many factors have contributed to these dramatic advances in pediatric surgery. Outstanding among them is the work of anesthesiologists who have focused on the field and have provided well-standardized procedures for carrying small and critically ill patients through operations on literally all portions and every system of the body. The surgeon realizes that his chances for success or failure are determined in great measure by the capabilities of the person at the head of the table who is administering the anesthetic.

In some medical circles there seems to be an attitude that the surgical operator is managing the show; in others, the anesthetist has an overly possessive feeling toward the patient. Neither approach is proper. It is best for each to be cognizant of his own problems and also to know of the other's difficulties; both must work together for total care of the patient. Certainly this is the most pleasant way to work, and surely it is the most effective way to conduct a child through a surgical ordeal.

It has been my good fortune to have Dr. Smith as the head of our anesthesiology service. He has managed in an expert and harmonious way a large department, carrying a heavy clinical load. In addition, he has been inquisitive and desirous of developing new ideas and bringing forth new technical advances. He has been an excellent teacher of doctors, nurses, and students. He has written this book to summarize and put on record the anesthetic methods which have been found to be most practical and useful. The volume will doubtless prove to be of great value to all readers who are interested in strengthening their knowledge of anesthesia for infants and children.

ROBERT E. GROSS, M.D.

William E. Ladd Professor of Children's Surgery Harvard Medical School

THOMESON

Exploration of the state of the

Exemple of task objects on its consequence to the selection of the selecti

- And the second of the second

Affiliam E. Locks Protessor 1882 and aller and allerge to the second transfer of the second

PREFACE

During the past few years, the scope of pediatric anesthesia has been greatly extended, and numerous contributions have been made in both technical and theoretical aspects. Brief articles containing valuable bits of information or describing important new types of apparatus have been widely distributed throughout anesthesia journals and texts, as well as pediatric, surgical, and general medical literature. My intention in writing this book is to organize and evaluate this information and to add what I can from first-hand experience and observation.

A few words of explanation concerning the preparation of the text should be offered. It is assumed that those who use this book will be familiar with the essentials of general anesthesia; consequently detailed information concerning anesthetic agents and techniques commonly used for adults is not included. Greater emphasis is placed upon information which anesthetists usually lack when called upon to care for infants and children. In many instances this concerns pathology, pediatrics, or surgery rather than anesthesia. Such matters may appear to be beyond the scope of a text on anesthesia; however, knowledge of this material often is essential for correct anesthetic management of young children, and it seems important to place such information within easy reach of anesthetists whose experience with young patients has been limited.

Since many aspects of the subject seem to overlap, it has been difficult to avoid a certain amount of repetition. In the description of apparatus, the discussion of choice of agent and technique, and suggestions for management of specific types of cases, the same basic factors often apply. In several instances a certain amount of repetition has appeared preferable to breaking up the continuity of the text by referring the reader to other pages.

The references included with each chapter have intentionally been confined to articles which have made definite contributions to the field. Furthermore, an attempt has been made to choose references which are generally available and to avoid those which are relatively inaccessible.

In the preparation of this book I have become indebted to many. The members of the anesthesia department have contributed in a variety of ways. Dr. Tiina Bougas was largely responsible for gathering the material for the study on mortality, while Miss Eleanor Kline assembled the statistics. Miss Betty Lank and my other associates provided much of the material necessary for background.

To Dr. Robert E. Gross, Dr. Donald MacCollum, and others of the surgical staff I am especially grateful for their generous cooperation in allowing me freedom to use patient material, photographs, and statistics. Dr. Charles Davenport Cook's excellent chapter on Respiratory Physiology was an invaluable asset in shaping the text, and his work is keenly appreciated.

While Mr. Ferdinand Harding and his assistant, Miss June Woodworth, deserve credit for most of the photography, several clinical photographs were contributed by Dr. Morton Woolley, Dr. Thomas Holder, and Dr. Robert Allen. The drawings are the work of Miss Mary Ellen Delaney.

Dr. Mary Ellen Mathews was responsible for reviewing many of the references, and stenographic work was shared by Dr. Mathews, Miss Eunsook Kang, Miss Phyllis Cooper, and Miss Evelyn Del Gizzi. The index was compiled by Tuckerman Day of Concord, Massachusetts. To all I am deeply grateful.

Most of all, of course, I am indebted to my wife, who assumed all of my responsibilities at home and gave invaluable material assistance in the final proofreading of the text.

series purificiones, collistation, de congress rather than since and Section of the may

auding read to some product of the south of ROBERT M. SMITH, M.D.

CONTENTS

Chapter	ri santa de la compansión de la compansi		
	BASIC REQUIREMENTS IN PEDIATRIC ANESTHESIA	1 ratual	
Chapter	r 2		
	BIOLOGY AND BEHAVIOR, OR FACTORS DETERMINING THE CHILD'S RESPONSE TO ANESTHESIA	E • • • • • • • • • • • • • • • • • • •	21
Chapte	r 3		
277.	RESPIRATORY PHYSIOLOGY IN INFANTS AND CHILDREN (Charles D. Cook, M.D.)		
Chapte	r 4		
	PREPARING CHILDREN FOR OPERATION		
Chapte	r 5		
	PREOPERATIVE MEDICATION	***************************************	72
Chapte	er 6		
	EQUIPMENT		81
Chapte	er 7		
000.	CHOICE OF AGENT AND TECHNIQUE	344	101

13	
12	CONTENTS
1 64	COMITTIME

Chapter 8	
TECHNIQUES FOR THE INDUCTION OF GENERAL ANESTHESIA	114
Chapter 9 ENDOTRACHEAL INTUBATION	132
Chapter 10	
THE MAINTENANCE OF ANESTHESIA	145
Chapter 11	
NORMAL RECOVERY	157
Chapter 12	
LOCAL AND REGIONAL ANESTHESIA	165
Chapter 13	
INTRAVENOUS BARBITURATES	172
Chapter 14	
72 MARTIN TO THE TOTAL THE TOTAL TO THE TOTAL TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO THE TOTAL TO TH	178
THE COL OF REMAINING	110
Chapter 15	
HYPOTENSIVE TECHNIQUES	185
Chapter 16	
HYPOTHERMIA	192
Chapter 17	

ANESTHESIA FOR INFANTS UNDER ONE YEAR OF AGE

Chapte	r 18	
	ANESTHESIA FOR THORACIC SURGERY	221
Chapte	r 19	
	ANESTHESIA FOR GENERAL AND PLASTIC SURGERY	250
Chapte	r 20	
	ANESTHESIA FOR ORTHOPEDIC SURGERY	265
Chapte	r 21	
	ANESTHESIA FOR PEDIATRIC NEUROSURGERY	278
Chapte	r 22	
	ANESTHESIA FOR EYE, EAR, NOSE, AND THROAT OPERATIONS	292
Chapte	er 23	
	ANESTHESIA FOR DENTISTRY IN CHILDREN	306
Chapte	24 24	
	ANESTHESIA FOR MINOR AND EMERGENCY SURGERY	312
Chapte	25	
	SPECIAL PROBLEMS IN PEDIATRIC ANESTHESIA	322
Chapte	er 26	
	FLUID THERAPY AND BLOOD REPLACEMENT	332
Chapte	er 27	
	ANESTHETIC COMPLICATIONS	357

1 4	division in	-	-
14	COI	TEN	ITS

Chapter 28	E- Tomb	
RESPIRATORY RESUSCITATION	37	76
Chapter 29	A radpal	
OXYGEN THERAPY	38	83
Chapter 30		
MORTALITY IN PEDIATRIC SURGERY AND ANESTHESIA	3	91
Chapter 31		
LEGAL ASPECTS OF PEDIATRIC ANESTHESIA	4	05

ANESTHESIA
FOR INFANTS
AND CHILDREN