In spite of the definition of drowning as "suffocation by submersion," the process is not that simple. Since detailed observations cannot be made on humans during the process of drowning, knowledge has to come from animal experimentation. From physiologic laboratory experiments came evidence that aspiration of large amounts of fresh water causes rapid development of hypervolemia, while hemodilution causes hemolysis, hypotension, and often death in ventricular fibrillation. Similarly, aspiration of large amounts of sea water (3.5 per cent mixed salts) was followed by diffusion of the salts into the blood, while fluid was drawn into the lungs by the osmotic effect of the sea water, the end-results being hypovolemia, hypotension, and asystole. Postmortem examinations indicated that these changes occurred in some human drowning victims, but it was estimated that fewer than 10 per cent of drowned humans die of asphyxia before aspirating water. As would be expected, the events and time intervals during accidental drowning are extremely variable, so that the nature and magnitude of changes in the victim depend upon the quantity and composition of the aspirated fluid, as well as many other unpredictable factors. In addition, fluid and electrolyte imbalances are rapidly corrected by redistribution, so that retrospective attempts to demonstrate the changes which have occurred in human victims are often frustrating. Among those who have experienced this frustration is Dr. Modell. His first observations of a drowning victim suggested a discrepancy between the changes to be expected from reading the experimental literature and those seen in clinical situations.

Attempting to clarify whether the response of laboratory animals to drowning and near-drowning differs from that of humans was a major research interest for Dr. Modell. Located at the University of Miami, he was in a fortuitous situation to compare observations from both fresh-water and sea-water drowning victims with animal experiments from his laboratory. His conclusion that there is not a discrepancy between animals and humans when they are studied under comparable conditions makes up the principal theme of the book. It is a painstaking attempt to relate animal experiments to observations of human near-drowning victims that contributes to a better understanding of the drowning process. Only occasionally do the specifics of the animal experiments seem to be interpreted as being measurements of the extremely variable realities of human accidental drowning.

Dr. Modell and his associates have made their greatest contribution to improved understanding of drowning and near-drowning by their studies of the changes in pulmonary function following aspiration of fresh water or sea water. Loss of surfactant material, alveolar membrane damage, atelectasis and shunting lead to severe hypoxemia and acidosis in those who survive near-drowning.

This work contains details of respiratory care given successfully to a number of near-drowning victims. Although a number of cases of successful resuscitation of near-drowning victims (those submerged to the point of circulatory arrest, with or without aspiration) are to be found in the literature, management of these victims is given little consideration, suggesting perhaps that the odds against success are too great.

Since drowning is asphyxial death following submersion, with or without aspiration, a truly comprehensive text on the subject must necessarily detail the changes in body systems produced by asphyxia, and identify those modifications due to aspiration. This task is far beyond the scope of this little book, and a comprehensive text probably must await expansion of our current knowledge. However, The Pathophysiology and Treatment of Drowning and Near-drowning serves a useful purpose in detailing the experimental studies which have improved our knowledge of drowning and how these studies relate to resuscitation and subsequent management of human victims.

JOSEPH S. REDDING, M.D., F.A.C.P.
University of Nebraska Medical Center
Omaha, Nebraska 68105


While organized and extensively documented, Cardio-respiratory Resuscitation by Gilston and Resnekov fails to become "the text" on resuscitation. The technique of presentation in which a dogmatic statement is made, then refuted or amended or otherwise altered, while it may be suitable in tutorials and seminars, in this reviewer's opinion, can only lead to confusion, and presents the neophyte with a sea of facts in which it becomes difficult to comprehend what is important and what is not. On the other hand, this volume is an excellent source of reference for anyone who has to deal with or teach cardioresuscitation. The documentation is quite thorough, containing, in addition to the text, appendices, and a bibliography of 1,087 references which is well cross-indexed. The major portion of the book is devoted to dysrhythmia, with minimal attention to the respiratory problems involved in resuscitation, with the exception of the section on aftercare.

One of the most important paragraphs in this volume explaining how to deal with sudden mechanical ventilatory problems is relegated to page 189 in this 221-page text. Since one of the authors is an "anesthetist," it would seem that more emphasis on airway maintenance and good oxygenation and ventilation should have appeared earlier in the text. While many of the 108 figures are good, some appear to have been thrown in just to have another picture.
One may always have differences of opinion about specific items, and no author should be criticized simply because the reviewer doesn’t agree with him. For example, using water-alcohol mixtures for cooling is a procedure long since abandoned by us, since water alone, properly used, is just as effective and far less dangerous. Also, the term “respirator lung” in itself has no real meaning. On the basis of present-day understanding of what goes on in the lungs of patients on respirators, this reviewer also takes issue with the use of heated nebulizers, which he considers both dangerous and unnecessary. The section on nebulization leaves much to be desired.

In summary, this is an excellent text for the expert familiar with the field, and may be useful for persons at the resident level. It would appear to be of limited usefulness for others, such as nurses, physician assistants, or technicians.

KENNETH D. HALL, M.D.
Duke University Medical Center
Durham, North Carolina 27710

Books Reviewed

From time to time we shall publish a list of books received. A number but not all of these volumes will subsequently be reviewed. It is hoped that this listing will serve as a reference source for anesthesia and related literature.—M.H.H.


