

Preface

This book consists of 23 essays on interesting people or events in the history of respiratory physiology. It does not attempt to cover the history of this topic in a comprehensive way but consists of events that I have found particularly fascinating. Many of the essays have to do with the history of pulmonary gas exchange, but some are in the related field of high altitude physiology, and one is on space physiology. All of the articles have previously been published in journals of the American or British Physiological Society. However in a few places some changes have been made to lessen duplication or to correct minor errors. The articles can stand alone but they have been arranged in approximate chronological order.

One of the reasons for writing the book is to try to interest medical and graduate students in history. Many are sadly ignorant. Of course the curriculums of both medical school and graduate school are very demanding, and many students cannot find time for anything else. However the hope is that some students will find these essays stimulating.

Several years ago I taught an elective course for medical and graduate students at the University of California San Diego Medical School using some of the topics covered here. The course lasted about 10 weeks (one quarter) and we met once a week for an hour or so. The format was that one of the students gave a presentation on an interesting person or topic, and this was followed by a class discussion.

One of the problems of this course was finding an appropriate text, and my hope is that this book would be suitable. A student could choose any of the topics that particularly interested him or her, present it to the class in 30 to 40 min, and this could be followed by a 20-min class discussion. This would be a painless way of exposing students to some aspect of the humanities in addition to medical science.

Although each essay is centered on some aspect of physiology, other broader topics are covered to some extent. For example, the first chapter on Galen and the beginnings of Western physiology deals, of course, with Galen's teachings and their links with ancient Greece, but goes on to discuss the medieval period and the challenges that scientists had in the Renaissance because of dogma held by the state and church. Another example is Chap. 2 on Ibn al-Nafis and the Islamic Golden Age. This introduces early views on the pulmonary circulation, but at the same time emphasizes the role of the Arab world in preserving and extending the Greco-Roman

science during the dark ages of the medieval period in Western Europe. Another example is Chap. 11 on Joseph Priestley and the discovery of oxygen. Of course this is centered on his research, but it also explores Priestley's response to the Enlightenment which eventually resulted in him being hounded out of England and taking refuge in Pennsylvania. On a more modern note, Chap. 21 deals with the remarkable discoveries made by Fenn, Rahn and Otis at the University of Rochester during World War II, but it makes the point that this trio were very poorly prepared to work in respiratory physiology. However because they were well-trained in science, they responded superbly to the exigencies of war.

There is one feature of these essays that deserves some apology. They were written separately over a time span totaling 30 years. For example Chap. 8 on Stephen Hales dates from 1983 whereas some other essays were written this year. Initially there was no thought of bringing them together and, as a result, the reader will find some overlap. However each essay was written to stand alone, and this is perhaps an advantage if it is to the topic of a seminar as suggested above.

The essays fall into three groups. Numbers 1 through 14 generally follow the development of respiratory physiology up to the end of the eighteenth century. Then numbers 15 through 20 are on aspects of high altitude physiology in approximately chronological order. Finally the last three essays are about more modern topics.

It is worth pointing out that a few of the essays involved much more research than the others. Of course the famous scientists such as Boyle, Hooke, Priestley and Lavoisier have been the subject of many articles, and the essays here mainly assemble some of the most salient facts relative to their role in the history of respiratory physiology. By contrast, several essays such as those on Jourdanet and Finch, and in particular the two on Kellas and Ravenhill, are the result of extensive original research. In fact when the article on Kellas was written, it was the only substantial account in English about this important man, and there still is nothing elsewhere about Ravenhill.

I hope readers of the book will obtain some of the pleasure that I derived from writing the essays. So often a topic that appeared to be of minor interest at the beginning developed into an absolutely fascinating story. It is hoped that some of our medical and graduate students can share this.

So many people have contributed in various ways to these essays that it would be invidious to name any. However I would like to acknowledge the enormous help that I have received from the staff of the Biomedical Geisel Library at UCSD. In addition, my assistant, Keith Lander, helped greatly in preparing the material for publication. Some of the earlier essays were prepared with Amy Clay. I also received much help from the Publications Department at the American Physiological Society and Springer Press.

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