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Innovation and Traditional at the University of Pennsylvania School of Medicine: An Anecdotal Journey

David Y. Cooper III

Marshall A. Ledger

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Abstract

This book was not commissioned, nor was the author assigned the task of writing a history of the School of Medicine of the University of Pennsylvania. The idea to write this history arose after I read the critique of a grant request to the National Institutes of Health, which gave my proposal an unfindable priority score. The reviewers' criticisms of the proposed experiments were so contrary to concepts that I thought lead to great discoveries that I wondered what factors are involved in making scientific advances. Realizing that a number of important advances in medical science had been made from time to time by my colleagues at the University of Pennsylvania School of Medicine, I decided to examine systematically how these scientists' ideas originated and their advances were made. What I thought would be a relatively easy task soon became a complex one, for I soon found that, in addition to the many scientific contributions made by the faculty, the School of Medicine had a history that was richer and more distinguished than I or anyone I talked with realized. To my surprise, my investigations uncovered the fact that, even before the end of the eighteenth century, the faculty of the Medical "Department" had begun original experimentation and, within a short time, had made discoveries equaling those of their colleagues in Europe. As the new country developed, the Medical Department made every effort within its often meager means to improve its teaching, rebuild its facilities, and meet the medical challenges of a growing nation.

Comments

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Innovation and Tradition

at the University of Pennsylvania School of Medicine

DAVID Y. COOPER III
MARSHALL A. LEDGER

UNIVERSITY OF PENNSYLVANIA PRESS

Philadelphia

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Innovation
AND Tradition

AT THE UNIVERSITY
OF PENNSYLVANIA
SCHOOL OF MEDICINE

An Anecdotal Journey

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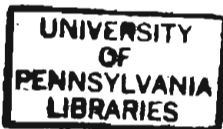
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*This history is dedicated to
Cynthia, Lucy, and Allison
all gifts to me from the School of Medicine
of the University of Pennsylvania*

and

To Martha, Kate, and Gabe Ledger

Be not dispirited at the difficulties which present, or obstacles you are to encounter. Let them serve rather as a spur to your industry. They will not stand in the way of men who are determined to surmount all opposition to their course. Regard them as left by others for you to master. Was there no difficulty remaining, you would have less scope for a genius of investigation; less honor in being barely followers of others. Both science and honor offer one fate to their votaries. They reward the courage of the brave and of the steady, and repel the fainthearted and irresolute. You have an ample field before you to cultivate. Inspired by a love of science, your diligent inquiry into natural causes and effects must produce discoveries and these discoveries prompt you with fresh alacrity to new researches; an employment as delightful and honorable as it is advantageous.

John Morgan, Charge to the Students. A Discourse Upon the Institution of Medical Schools in America

CONTENTS

FOREWORD	<i>Arthur K. Asbury</i>	ix
FOREWORD	<i>Jonathan E. Rhoads</i>	xi
PREFACE	<i>David Y. Cooper III</i>	xiii
PREFACE	<i>Marshall A. Ledger</i>	xv
ACKNOWLEDGMENTS		xvii
Introduction:	History Rounds	1
1	Stirrings of Organized Medical Education	5
2	Early Teachers and Scientists	11
3	Conditions of Learning	29
4	The First Wave of Nineteenth-Century Luminaries	45
5	Creating a Change or Reacting to It	67
6	The Start of Several Modern Departments	87
7	A Chair for Surgery	115
8	Specialized Institutes	123
9	Reform, Gentlemanly and Otherwise	137
10	A New Building and New Research Groups in Surgery and Dermatology	145

11	Mergers and Graduate Education	167
12	Establishing Twentieth-Century Practice of Science	175
13	Science and Practice: The Next Phase	191
14	The Maloney Constellation and a Severe Self-Examination	211
15	Medical Physics	229
16	Discoveries That Turned into Household Names	243
17	Research During World War II and Afterwards	261
18	Advances in Pennsylvania's Pediatric Service at the Children's Hospital of Philadelphia	277
19	Introduction to the Modern Era	289
	APPENDIX I	<i>Leaders of the University of Pennsylvania School of Medicine</i> 305
	APPENDIX II	<i>Buildings of the School of Medicine</i> 329
	APPENDIX III	<i>Buildings of the Hospital of the University of Pennsylvania</i> 331
	INDEX	337

FOREWORD

The University of Pennsylvania School of Medicine celebrates in 1990 the 225th anniversary of its 1765 origin. This date coincides, as it always must, with the anniversary of the founding of the parent University of Pennsylvania, in this instance 250 years ago in 1740. As most know, the School of Medicine at Penn is the oldest medical school in the United States.

It is fitting that the publication of this book on the history of the School of Medicine also falls in 1990. That it does so is no accident. Intensive planning for the occasion of the 225th anniversary began over two years ago and includes another book (a pictorial history of medicine in Philadelphia); ceremonial dedication of the new Clinical Research Building erected on the Old Blockley site; a large celebratory event for students, house staff, faculty, and alumni in October 1990 at the Philadelphia Zoo; and many lectures, symposia, and colloquia. Credit must be given to those who have worked so hard to make all these plans happen, particularly Dr. Alfred P. Fishman, William Maul Measey Professor Emeritus of Medicine, and Dr. Fredric C. Burg, professor of pediatrics and vice dean for medical education.

Innovation and Tradition at the University of Pennsylvania School of Medicine: An Anecdotal Journey has its own story. The seeds of the project took root a number of years ago in the mind of David Y. Cooper III, M.D. Dr. Cooper, professor of surgical research, has been interested in the history of the School of Medicine since he was a student here in the 1940s. He browsed endlessly over the historical material available, gathering anecdotes and historical tidbits and verifying each detail painstakingly. Reams of draft manuscript were produced. Marshall A. Ledger, Ph.D., editor of the highly regarded *Penn Medicine* alumni magazine, wove together the many threads of this tale into finished

cloth. The emphasis is on the people who made the school important and had a major effect on the course and direction of American medicine and the sum of biomedical knowledge.

Each chapter highlights some of the heroes of our past, recounting their skills and contributions and their foibles and failings. Altogether the story of the school is told in compelling fashion. Doctors Cooper and Ledger are to be congratulated.

When I first came to the University of Pennsylvania nearly sixteen years ago as chair of the Department of Neurology, I was struck by two highly positive features of the School of Medicine. First, the ease of communication and collaboration across departmental and discipline lines was remarkable and, parenthetically, quite different from the institutions with which I had been previously connected. Second, there were virtually no constraints imposed by the past on day-to-day activities. I had expected to be nearly suffocated by tradition, but astonishingly the processes and procedures of the past were relics only, and the concepts of and methods by which we conducted our professional affairs frequently had to be invented anew. This fact suggests that our institutional memory is short. If so, and there is abundant evidence that institutions have short memories, it is doubly important that we preserve in formal ways the knowledge of our past. This book by Cooper and Ledger does just that.

ARTHUR K. ASBURY, M.D.
Van Meter Professor of Neurology
Acting Dean, School of Medicine
Acting Executive Vice President of the Medical Center
University of Pennsylvania

September 1989

FOREWORD

Since its origin in 1765, the School of Medicine of the University of Pennsylvania has grown from a tiny medical college with two professors teaching only the theory and practice of medicine, anatomy, midwifery, and surgery to a giant, multidisciplinary institution.

Over its long history, the school's faculty have accomplished a great deal. Not only have they excelled in medical teaching but they have also developed new institutions for medical research, for clinical teaching, and for care of patients, while making original contributions to medical science. In the following pages the "transactions and studies" of the medical professors from the school's founding until the first half of the twentieth century are told. The story is stopped here because the pace of scientific research has increased to such an extent that to describe these new discoveries adequately would require another volume equal in length to this one.

Although many important discoveries in medical science have been made at Pennsylvania, all too frequently, good ideas have originated but have not been followed through and implemented. A possible reason is limited financial support and facilities; however, it is also possible that some of the failures resulted from the lack of courage and conviction in the medical faculty.

Be that as it may, it has not been the policy of the School of Medicine throughout its history to buy talent from other institutions, but rather to develop its own. Thus one of the school's most important accomplishments has been developing the scientific and clinical talent that has entered the faculties of every medical school in the United States, to flower elsewhere than at Pennsylvania. An index of the success of this policy is that Pennsylvania-born-and-nurtured department chairmen are found in every medical school in the country.

The most important fact that one gains from this study of the School of Medicine is that accomplishments, all too frequently done in limited facilities, have been possible because the trustees and the medical professors have maintained an environment which is free—in which the faculty can interact with each other, think, and pursue their ideas.

JONATHAN E. RHOADS, M.D.
Professor of Surgery

PREFACE: HISTORICAL SURPRISES

This book was not commissioned, nor was the author assigned the task of writing a history of the School of Medicine of the University of Pennsylvania. The idea to write this history arose after I read the critique of a grant request to the National Institutes of Health, which gave my proposal an unfundable priority score. The reviewers' criticisms of the proposed experiments were so contrary to concepts that I thought lead to great discoveries that I wondered what factors are involved in making scientific advances. Realizing that a number of important advances in medical science had been made from time to time by my colleagues at the University of Pennsylvania School of Medicine, I decided to examine systematically how these scientists' ideas originated and their advances were made.

What I thought would be a relatively easy task soon became a complex one, for I soon found that, in addition to the many scientific contributions made by the faculty, the School of Medicine had a history that was richer and more distinguished than I or anyone I talked with realized. To my surprise, my investigations uncovered the fact that, even before the end of the eighteenth century, the faculty of the Medical "Department" had begun original experimentation and, within a short time, had made discoveries equaling those of their colleagues in Europe. As the new country developed, the Medical Department made every effort within its often meager means to improve its teaching, rebuild its facilities, and meet the medical challenges of a growing nation.

From the start, the University of Pennsylvania and its Medical Department had a faculty interested not only in the practice of clinical medicine and surgery but also in problems of basic medical science.

Many of the contributions made by the faculty have been simultaneously so fundamental and so early (for instance, bromine sensitization of the photographic plate, Muybridge's work on body motion, the birth-control pill) that, when they were incorporated into common or scientific use, the public or the benefiting scientist had long forgotten who made the indispensable discovery for the advance, or where and how it was done; typically credit for the advance was given not to the originator but to those making the most recent adjustment or revision.

Another thing I noticed as the history unfolded was that the important contributions have occurred randomly in the various medical disciplines. There is no set pattern determining who will make the next advance, or when or where. The only common denominator is the ingenuity of the scientist; and genius is an unpredictable phenomenon that silently invades our presence, making discoveries and originating ideas that others can confirm and perhaps even advance but could never conceive. Over the years the University has maintained an environment in which scientists are free to pursue their own ideas. It is an environment that allows for the random events required for discovery, along with stresses that stimulate but do not overwhelm.

Because scientific advances result from the function of minds working in environments influenced by random events, a historian can describe the making of discoveries, but should not force the process of discovery into a general concept. Following that principle, I have resorted to an anecdotal format rather than a conceptual one. What emerges, in addition to the accumulation of accomplishments, is the importance of the interaction of chance and originality in science.

DAVID Y. COOPER III

PREFACE: A WRITER/ EDITOR'S TALE

I came to the University of Pennsylvania Medical Center in 1987 to start a new alumni magazine, which became *Penn Medicine*. As part of my initiation, I read George W. Corner's *Two Centuries of Medicine*, a history of the University of Pennsylvania School of Medicine written in 1965. That book is a fine introduction to those who contributed to the growth of Penn's medical school, but (even in a new and exciting job!) I wished for myself the leisure to investigate in detail the achievements of the school's scientists and clinicians.

Luckily David Cooper walked into my office one day. I had heard that he had been writing a history of the medical school. He gave me a short, unpublished paper on the exact location of the amphitheater in the Thomas Eakins painting known as "The Agnew Clinic."

I enjoyed Cooper's sleuthing. He had compared photographs of surgical amphitheaters both in Medical Hall (sometimes identified as the site) and at the Hospital of the University of Pennsylvania. Agnew appears in the HUP photograph. Moreover, the newer HUP facility seemed more likely to be the setting, given Agnew's interest in the new aseptic approach to surgery. The biography of Agnew written by the surgeon's son-in-law also placed the surgical clinic at HUP.

But Cooper could not find evidence that HUP had an amphitheater of the dimensions that Eakins depicted, and no older members of the medical and nursing staff could recall any. He happened to see the 1981 annual report of The Philadelphia Contributionship for the Insurance of Houses from Loss by Fire, America's oldest insurance company, founded by Benjamin Franklin. That report mentioned that the company had insured HUP a century earlier. Cooper wondered whether it had

insured the hospital in 1874 (when the original part was completed) and, if so, whether the Contributionship retained plans of the original building. The answer was yes to both questions, and architectural documents proved that HUP was the site of the Agnew Clinic.

I was happy to publish Cooper's article, which appeared during the one-hundredth anniversary of the painting. One lesson was clear: There is a poignant and unavoidable tug-of-war between the tragedy of destroying architectural treasures when they fall behind technologically and the continual requirement to build anew in order to meet the advancing needs of medical science.

I shortly discovered that Cooper was compiling a manuscript on the accomplishments in the University of Pennsylvania's medical history, the work that I longed to undertake. I was invited to help give shape to his draft. I jumped at the opportunity to contribute to the story that needed telling.

MARSHALL A. LEDGER

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What has been the greatest pleasure in assembling the information for this book has been meeting the curators, archivists, and librarians of the various institutions who possessed the required books, papers, and documents. I cannot adequately thank Hamilton Y. Elliott, Jr., Maryellen C. Kaminsky, and Mark F. Lloyd of the Archives of the University of Pennsylvania and Thomas Horrocks and June Carr of the Historical Collections of the College of Physicians of Philadelphia for their help. Thanks must also go to Christine A. Ruggere of the Rare Book Collection of the Van Pelt Library of the University of Pennsylvania, Beth Horrocks and Robert Goodman of the American Philosophical Society, Chris Wjtowicz (Smith) of the Philadelphia Contributionship and Mutual Assurance Company, who led me to important sources concerning the building of the University, as well as Gail Farr, and Jack Eckert for their help in leading me to important sources of information. Alice Kennedy, Elizabeth Berwick, Eleanor Goodchild, and Valerie A. Pena of the Biomedical Library of the School of Medicine of the University of Pennsylvania must also be thanked for their help in finding books and papers in the medical library. Nadine Landis has been very helpful in supplying old photographs of the Hospital of the University of Pennsylvania. Thanks must also be given to Linda Mills for her encouragement and editing of the early versions of this manuscript. Especial thanks must be given to Francis C. Wood, Jonathan E. Rhoads, Eliot Stellar, and George Koelle, who have read early versions of the manuscript and who have not only encouraged the completion of this work but also offered many helpful suggestions for its improvement. Thanks must also go to Terry Woodward of the College of Physicians of Philadelphia, Patricia Smith, Alison Anderson, and Carl Gross of the University of Pennsylvania Press for putting up with an amateur historian.

For the fact that this history is a part of the celebration of the 225th anniversary of the founding of the School of Medicine of the University of Pennsylvania the authors thank Frederic C. Burg, Arthur K. Asbury, and Alfred P. Fishman.

The authors are especially grateful to the Penn Medical Class of 1939, which generously applied its fiftieth anniversary gift to the publication of this book.

INTRODUCTION: HISTORY ROUNDS

No one walks alone through the halls of the University of Pennsylvania Medical Center. All those who travel through the School of Medicine and the Hospital of the University of Pennsylvania are accompanied by the many portraits on the walls, the busts on pedestals, and the memorabilia in display cases that tell in passing a history of an institution that extends 225 years—further than any other American medical school can claim. Portrait painting is a welcome tradition at the school. It has visually preserved the faces of former faculty (and some others) and continues to do so. But, in themselves, the art and artifacts are mute. They require words, the medium of stories, to flesh out what otherwise is only hinted at.

Words have not often told the full story. Dean Joseph Carson wrote a short history, apparently culled mostly from official school minutes, in 1869. George Corner, a physician with no official link to the University of Pennsylvania, wrote a substantial history for the school's 200th anniversary in 1965. Corner assiduously traced the founding and the growth of the school, then the hospital, chiefly through the augmentation of faculty and programs.

The book you are holding looks at the medical advances that faculty and associates (and sometimes students) made while at Penn. It covers the aspect of history that helps induce physicians to teach here and convinces students to attend school here. But such history is not easy to write. Done to the *n*th detail, it would be encyclopedic. Consequently this history is eclectic by design. It covers early Penn history, not to supplant Corner (its approach is too different from his) but to show that, early on, Penn was both first in date and preeminent in medical contributions. Then it moves on to show that medical advances never ceased coming from the school's laboratories and examining rooms.

This history is intended to arrest that individual who has walked the

halls of the school and hospital but has been too pressed for time to examine the stories behind the portraits or statuary or artifacts. Today's students are certainly as harried as anyone and have little time to pause. Yet they probably have more reason to pause than anyone else. They are the ones in danger of graduating smart in medicine but ignorant of their own professional history. And how many have already graduated with less awareness of their surroundings than they ought to have had?

History Rounds, begun in the fall of 1988 for first-year medical students, was meant to prevent the worst. After hearing about the various buildings in Penn's medical history (accompanied by a poster-type display of drawings and photographs), the students took a tour of a few hallways and had the portraits explained. They heard about the first cordial then strained relationship between the school's major founders, John Morgan and William Shippen, Jr. They heard about the relationship between Robert Hare's oxygen-hydrogen blowpipe (the nineteenth-century device that first produced temperatures sufficient to melt metals with high melting points) and recent space ventures, which rely on such antecedents as Hare's work.

They heard about a host of Penn firsts: the first professors of chemistry, physiology (originally called "institutes of medicine"), pharmacology (originally "materia medica"), and surgery; the first endowed professorship; the first hospital built to teach students; a number of first institutes—one devoted solely to the study of anatomy, another to tuberculosis, another to public health, still another to the application of physics to biology and medicine; the first chemical laboratory to service a hospital.

The firsts continued: the first person to use daguerreotype to make portraits; the first head of the American Medical Association (twenty-three other Penn-affiliated presidents have served since). The students heard about firsts missed because, years back, the discoverer did not publish his results or died too soon or, too often, did not recognize the discovery for what it was (incredibly, the X ray and chemotherapy are two of these). And the students heard about the characters of the place. The physician who courted the wife of the hospital director, who, in turn, shot the philanderer in the back—commemorated by the bullet hole in the inkstand, which is on display. The renowned basic scientist who was so eager to avoid arguing with his colleagues that they dubbed him "the first invertebrate." The physician who (in unrelated activities) introduced urology to Penn, brought the Army-Navy football game to Philadelphia, and fought the last pistol duel.

The students also heard about the confused history of the staff-and-snake, both the staff and single snake of Aesculapius and the staff and twin snakes of Mercury. The material kept on coming, a lot for an hour—appropriate, certainly, for a book. And that is the rationale for this book: Penn medical history rounds for all.

In the seventeenth century Hermann Boerhaave summed up the arduous years of medical school and residency when he said:

The person who can perform the several actions proper to the human body with pleasure and certain constancy is said to be well and that condition of the body is termed health. But if he either cannot perform those actions or if he performs them but with difficulty, pain, and sudden weariness, he is then said to be ill. And the state of the body is called disease.

Of course, physicians must know much more than that, just as they need much more than a stroll past the portraits to understand Penn's history. Medical study will resolve the former. This book is intended to resolve the latter.