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# *Medicine and the reign of technology*

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*To Katharyn*

# Contents

List of illustrations	<i>page</i> viii
Preface	ix
1 Examination of the patient in the seventeenth and eighteenth centuries	1
2 The stethoscope and the detection of pathology by sound	23
3 Visual technology and the anatomization of the living	45
4 The microscope and the revelation of a cellular universe	69
5 The translation of physiological actions into the languages of machines	91
6 Chemical signposts of disease and the birth of the diagnostic laboratory	122
7 Medical specialism and the centralization of medical care	144
8 The shortcomings of technology in medical decision making	158
9 Selection and evaluation of evidence in medicine	174
10 Telecommunication, automation, and medical practice	196
11 Conclusion	227
Notes	232
Bibliography	279
Index	309

## *Illustrations*

1	A dissection in the late fifteenth century	<i>page</i> 12
2	A dissection in the mid–sixteenth century	14
3	Laennec’s stethoscope (1819)	26
4	Stethoscopes designed in the nineteenth century	42
5	The Helmholtz ophthalmoscope (1851)	48
6	The first X-ray of a human being: Frau Roentgen’s hand (1895)	59
7	A patient being X-rayed in 1896	63
8	A compound microscope constructed by Joseph Campani in the mid–1680s	70
9	Measuring the vital capacity of the lungs (1846)	92
10	Marey’s sphygmograph (1874)	102
11	Patient attached to Einthoven’s string galvanometer	108
12	Thermometers constructed by Santorio Santorio (1625)	111
13	Graphic representation of the temperature, pulse, and respiration	118
14	Inspection of the urine in the early sixteenth century	123
15	Stethoscope as a relic	168

## *Preface*

The process of determining a patient's ailment from his symptoms is crucial in medical care. For the physician and the patient, this process or diagnosis is not only the starting point of their relationship as therapist to subject, as human being to human being, but it also determines the course of any future medical intervention.

This book describes some of the technological advances made in the art and practice of medicine during the past four centuries, and shows how those advances altered the methods of diagnosing illness; and how new methods, in turn, have altered the relation between physician and patient and have influenced the systems of providing medical care and treatment. The book concludes that modern medicine has now evolved to a point where diagnostic judgments based on "subjective" evidence – the patient's sensations and the physician's own observations of the patient – are being supplanted by judgments based on "objective" evidence, provided by laboratory procedures and by mechanical and electronic devices. The book attempts to trace the historical development of how this happened, and, along with the resulting gains, points out the potential losses to the sick patient, to the physician as clinician, and to society.

The development of some of the major technological advances of diagnosis is described – the microscope, the stethoscope, the thermometer, the increasing knowledge of bacteriology and biological chemistry, X-ray devices, electrocardiographs, and the most recent automated devices such as the computer. The reliability of the evidence thus produced is discussed, as well as the hazards involved in its unquestioning acceptance.

The physician discovers illness in people by means of a variety of diagnostic methods, each of which focuses his attention on a different aspect of the disease from which his patient suffers. The kind of diagnostic method chosen is shown to affect the physician's per-

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ception of the nature of an illness, because it necessarily selects some aspects of illness and excludes others.

The growing supremacy of technology in medicine is discussed, and how it has led to the rise of the specialist and to the centering of medical care in hospitals; and thus to the decline of the general practitioner and an increasing alienation between doctor and patient.

A large number and variety of factors influence medical care and the use of technology, some of them being philosophy and religion, economic and political systems, social and cultural values. This book does not seek to discuss the totality of the factors that are a part of the growth of medicine and technology. It focuses, mainly, on the thoughts and actions of doctors and patients as they have responded to the availability of new diagnostic technology, and on the process by which a technical advance is accepted or rejected. Further, I have not attempted to discuss all the diagnostic methods that are a part of medical history. I examine a selected number of techniques, chosen for their importance in the evolution of diagnosis, and for their illumination of the themes of this book. My analysis is confined principally to developments in Great Britain and the United States, and, from the early twentieth century on, chiefly to those events that shaped American medical care.

Modern physicians, more than men and women in other professions dealing with people, must now use technology intimately, continually, and expertly. The physician has become a prototype of technological man. By studying his behavior over the past four centuries, as technology has been incorporated into the most significant of his professional duties, I hope to point out some of the dangers, as well as the benefits, inherent in the general relation between man and machine.

In exploring this aspect of medicine, I have used a large number of primary sources, and hence owe particular thanks to those who have helped me locate the necessary material. At the Francis A. Countway Library, whose magnificent collection of medical works almost invariably yielded the information I sought, I am particularly indebted to Harold Bloomquist, who was the librarian from 1969–75, Richard J. Wolfe, curator of rare books, his assistants, and Elaine Ciarkowski, circulation librarian. The rest of the staff at the Countway, too numerous to name individually, were always obliging and gracious to me. The Archives of the Massachusetts



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