

Editorial

Fifteen forty three

Exactly four hundred and fifty years ago, in 1543 A.D., appeared two publications of great historical importance (1). One was a book on astronomy by Nicholas Copernicus (*De revolutionibus orbium caelestium*) and the other a book on anatomy by Andreas Vesalius (*De fabrica corporis humani*). Both these books, for the first time after 1400 years, dared place greater reliance on observation than on tradition. Anatomy had at last managed to loosen the grip of Galenic authority. Let us have a closer look at the harbinger of this dawn of freedom in the medical sciences.

Andreas Vesalius (1514-1564) was born in Brussels but had his medical education at Paris. He earned his doctorate in Anatomy from Padua, a great centre of learning in the sixteenth century, at the young age of 23. His performance created such an impact on his teachers that he was immediately appointed Professor of Surgery with responsibility to teach Anatomy (2). He was hardly 24 when he started work on his classic, and got it published before he was 30. But unfortunately the rest of his relatively short life was spent as court physician to Emperor Charles V. Vesalius was a good observer, and vigorous and fearless in the demonstration of observed facts. However, he was less effective in theory, and left Galenic physiology practically intact (1).

The contributions of Vesalius were a landmark in history of science. To understand their historical significance, it is important to go back to the Golden Age of Greece (c. 500 B.C.) characterized by enlightened leadership, religious tolerance, respect for scholarship, and ideals of simple living and high thinking. Then came the Roman Empire, with a more materialistic attitude but proud of its Greek heritage. This period threw up conformist scholars epitomised by Galen. The decline in creativity from the Greek to the Roman period was rather subtle and not very visible. But it set the pace for the Dark Ages of Europe characterized by stoicism and tyrannical orthodoxy. Things began to change somewhat in the 13th century. The human spirit of enquiry was yearning to break free. There was a tremendous revival of learning. However, some scholars continued to be subservient to the authority of antiquity and religion, while others like Roger Bacon paid a price for their courage. It was against this backdrop that scientists like Copernicus and Vesalius came up with their seminal works in 1543, the year that has been chosen by Charles Singer as the year of onset of the European Renaissance (1). What is important to realise, however, is that the events of 1543 did not occur suddenly. They were preceded by a change in the political set up, a change in the attitude of the Church, the advent of scholasticism, the rise of the humanist philosophy, and last but not least, the invention of printing. That is why Henry Sigerist says that it is foolish to hunt for "Fathers" of scientific disciplines, because that ignores the mothers and the obstetricians (3). Individuals are important, and should get the importance they deserve. But the atmosphere of the age, and the unsung heroes who prepare the background for a glorious period are even more important. If Vesalius had not written his anatomy, Giovanni Battista Canano might have done it a little later (3).

As Sir F.M. Burnett has said, "It is hardly too much to say that no major discovery destined to be fully incorporated into established knowledge and techniques is made more than a year or two before it is inevitable." That is why in this issue we have chosen to remember a year rather than an individual.

REFERENCES

1. Singer C. From Magic to Science. Essays on the scientific twilight. New York: Dover, 1958: 62.
2. Green JR. Medical History for Students. Springfield: Charles C Thomas, 1968: 73.
3. Sigerist HE. A History of Medicine. Volume I: Primitive and archaic medicine. New York: Oxford University Press, 1951: 13.

BOOK REVIEW

M.M. GORE : ANATOMY AND PHYSIOLOGY OF YOGIC PRACTICES

Lonavla, Pune : Kanchan Prakashan, 2nd Edition, 1991.

Price : Rs. 45.00

The reviewer, while reviewing the book by M.M. Gore, sat back and reflected what he would expect to find in the book, were it entitled, "Anatomy and Physiology of Diving". There can, of course, be no anatomy to diving except in the sense that the anatomy of a given animal is conducive to the act of diving, that its respiratory and cardiovascular systems pose no special constraints during diving apnoea and so on. By analogy, the title of the book under review leads us to expect a detailed consideration of how normal human anatomy permits the practice of yogic postures and what physiological responses and consequences there might be to them. By both these counts the title of Gore's book is misleading. Part one of this book gives a concise elementary account of human anatomy and physiology. Part Two, in which the author promises to describe "the effects of various yoga practices in terms of anatomico-physiological principles" (p. v), only succeeds in couching descriptions of various yogic practices in anatomico-physiological terminology that is not always convincing. For example, "In the abdominal breathing the diaphragm also moves slowly which has got a soothing effect on the higher brain centers". The idea for which the jargon stands is explained immediately in the next sentence : "One immediately feels calm

and quiet" (p. 96).

At any rate, one can read the second part of the book without much benefit from the first. There are special difficulties with the section on Pranayama. First, the account does no more than describe Pranayama in physiological jargon; there is no attempt at showing how the practice is based on physiological principles. Second, it is not clear how the effects of Pranayama are different from those of deep breathing and how concentration of mind makes a difference. The author details a number of differences (pp. 122-125) but these are procedural rather than consequential. Third, it is claimed that the exchange of gases is efficient during and after Pranayama (p. 116, lines 8-11), but later on we are told that there is carbon dioxide retention which is beneficial. "Increased concentrations of carbon dioxide in the blood during Pranayama stimulate various psycho-neuro-endocrinal mechanisms (p. 125, lines 11-13)". Finally, the benefit of some ambiguous physiological manoeuvres such as "training the stretch receptors to withstand more and more stretching (p. 116, lines 1-2) is unclear. What has been achieved of the aims with which the book was perhaps written seems very little.

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