

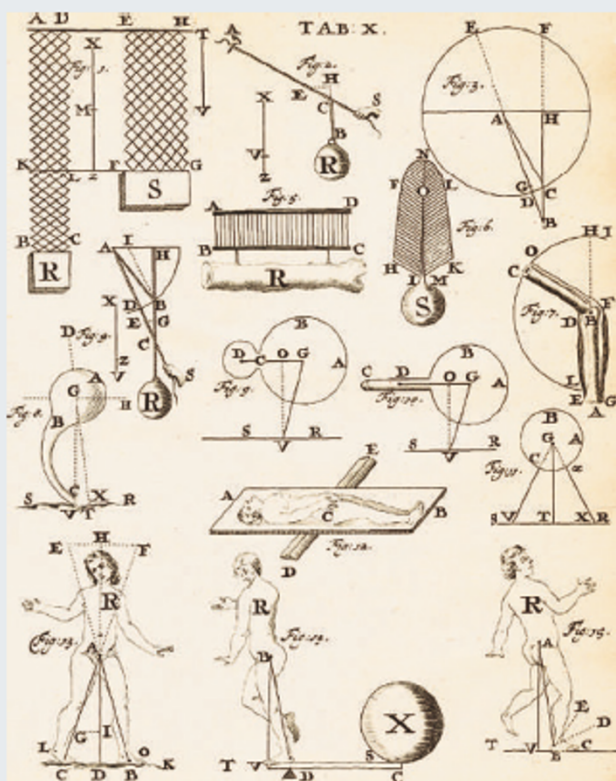
## From mysticism to medicine

*Science and Technology in Medicine* by Andras Gedeon (Springer, €74.95) is an extensively illustrated selection of key works that introduced science and technology into medicine.

It begins at a time when medicine in Europe was mostly folklore and mysticism, with Albrecht Dürer's treatise in 1528 on human proportions, and closes with Michael Phelps' 1975 landmark paper on PET scanning.

A summary of each of 99 publications — the 100th is left to the imagination of the reader — is accompanied by a brief description of its author. The significance of the discovery and its influence on later medical developments are explained.

The illustration shown here is from the works of Giovanni Borelli and was published posthumously in his two-volume *De motu animalium* (*On the Movement*



of Animals) in 1680–81. Borelli adapted Galileo's science of mechanics to physiology, but realized that biomechanics

alone could not account for muscle contraction: chemical reactions within the muscle must be involved. **A.A.**

as cloves or bananas — presented a problem. Who to believe, other than one's own eyes? What 'knowledge' was reliable?

Because these men were trying to document what Douglas Adams called "Life, the Universe and Everything", nothing could be left out. To cope with this, the Renaissance *studiosi* developed a technique that we still use (and perhaps misuse) today: citation. Sources were carefully compared, dependent sources were acknowledged, and all were part of the description itself. This way, everyone knew where the information had come from, and could weigh and assess it themselves. But it was not enough just to trust authority blindly. Independent corroboration — a cornerstone of the modern scientific method — was also the central tenet of Renaissance natural history.

We already know that the methods we use today were invented by our antecedents, so what does this book have to tell today's scientists, working in the molecular and electronic age? Maybe not a lot in terms of the detail, unless you are fascinated by what other people did, as I am. But if you allow your mind to freewheel while reading the book, many resonances will begin to emerge. Issues we are coping with today were also issues in the Renaissance, such as standardization, coping with a superfluity of data and the limits of technology. Standardization allows collaboration: the Renaissance natural historians had a 'Republic of Letters'; we have multidisciplinary, multinational teams. Technology in the Renaissance was in part limited by human memory; today we have machines and computers that can do basically anything.

This book is not only about the development of a discipline in an exciting time, but about how science is done. The trajectory of science is never-ending, but what fascinates me is that so much that our predecessors did has come around again, albeit in a different guise. Yet the solutions to these problems are as varied as the communities in which we work. We are all limited in our own ways. Ogilvie uses the example of the sundew to illustrate how Renaissance botanists were blind to certain things — they never seem to have noticed the plant's ability to trap insects. We can laugh at this oversight now, but what are we missing about the behaviour of subatomic particles or transposable elements?

As a natural historian, I enjoyed Ogilvie's history of my discipline. After reading the book, however, I feel he has done more than just write about the Renaissance science of describing; he has written the story of how science constantly reinvents itself, seen through the lens of the pre-Linnaean. I recommend this book to everyone: not only will you laugh at the descriptions of the walrus and the banana, but it will make you think in a different way about how and why you do what you do. ■

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## A blast from the past

### The Science of Describing: Natural History in Renaissance Europe

by Brian W. Ogilvie

University of Chicago Press: 2006. 385 pp. \$45, £28.95

#### Sandra Knapp

In his beautifully crafted book *The Science of Describing*, Brian Ogilvie shows that history has much to teach us. His detailed examination of how the science of natural history developed in the two centuries before Linnaeus has lessons for all scientists, not just biologists.

Natural history is often thought to be an old-fashioned, out-of-date discipline, but go to any scientific meeting on genomics and you will hear talk after talk about what might be called the natural history of the genome. We are in a new era of discovery extraordinarily similar to that of the Renaissance natural historians. Ogilvie's book throws up parallels by exploring the development of natural history, focusing on botany in the sixteenth and seventeenth centuries, when plants were better studied than animals and information about them was a currency in the scholarly world.

Humanist tendencies to value empirical experience over theory were critical to the development of what Ogilvie calls the "science of describing" — the accurate description and documentation of what Renaissance scholars observed. Ogilvie argues against the idea that there was a seamless line leading from medieval botanical herbalism to today's natural history, as many of us were taught. Instead, he makes the case that the Renaissance *studiosi* (mostly botanists) rejected the teaching of the ancients and the necessity of utility as a primary concern in their work. They were more concerned with documenting what they saw, and, importantly, with assessing the evidence, figuring out whether the descriptions they were given were accurate or not.

As European exploration of the world gathered pace, the number of new plants and animals to be described exploded. This expansion of experience coupled with the weighting of objects over texts meant that these men (and they were all men) were dealing with a fact-rich universe — just as we are today. Travellers' tales — second-hand descriptions of animals such as walrus and reindeer, or plants such