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directed from one part of the catalogue to another on a quest that may prove fruitless and in the case of multiple references he may be involved in the expenditure of much time and effort in order to separate relevant from irrelevant items. An attempt has been made to overcome this difficulty by the insertion of the author's surname in selected references but this concession has only a limited value. No reason is given for abandoning the more detailed form of reference but clearly the main objection to its use must have been the inevitable increase in the size of the volume. Could this not have been met, in part at least, by economies in other directions? One notices, for example, that spacing throughout the catalogue is on a generous scale—4,818 entries occupy 618 pages (as against 6,959 entries on 369 pages in Vol. I of the Wellcome Catalogue). This seems to allow a considerable margin for reduction without detriment to the general clarity of the layout.

Although this *Catalogue of Sixteenth Century Books* may be open to criticism in regard to details of structure and presentation, its importance as a contribution to medico-historical bibliography can hardly be questioned. The volume is impressive in appearance, clearly printed on excellent paper. The high quality of the descriptive cataloguing, footnotes and indexes and the wealth of bibliographical material which it contains must assure it a place alongside the other great medical catalogues of our time.

H. R. DENHAM

Steno and Brain Research in the Seventeenth Century, ed. by GUSTAV SCHERZ (Analecta Medico-Historica, No. 3), Oxford, Pergamon Press, 1968, pp. 302, illus., £5.

Nicolaus Steno (1638–1686) has been much—and rightly—celebrated. His great works and letters have been made accessible. And yet, looking at the present splendid—though, alas, index-less—volume, one cannot help feeling that he is inexhaustible. No more can be done in the space available than briefly enumerate and indicate the contents of the contributions to the Copenhagen Symposium (18–20 August 1965) incorporated in the book under notice. Happily it was not restricted to the Brain, as the title may suggest, but also, though as a second line, covered other notably biographical and background aspects of Steno.

'Brain Anatomy before Steno' (Edwin S. Clarke) concentrates importantly on the knowledge of individual structures and the differences in nomenclature from modern usage and the remarkable progress in the decade 1655–1666. Mercifully mention is made of the neuro-anatomical merit of J. B. Van Helmont's rejection of the *Folly of Catarrh*—normally and unjustly submerged by the laurels accorded to C. V. Schneider.

'Swammerdam and Steno' (B. P. M. Schulte) illuminates the similarities in their neuro-muscular physiology and the importance of the latter's views for the former therein. 'Willis and Steno' (K. Dewhurst) enlarges circumspectly on Steno's criticism of Willis's ideas on the localization of brain functions.

'Descartes, Stenson and the *Discours sur l'Anatomie du Cerveau*' (K. E. Rothsuh) is a study in contrast lucidly dividing the tenets of the creator of a philosophical system who selects the facts fitting in (Descartes) from the methodical man of scientific research intent on securing his observations and theories (Steno). Perhaps it could

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be suggested that what they may really have in common is a fundamental divorce of religion from science. More general and background papers include: H. Goerke on 'Medical and scientific relations in the Baltic area during the seventeenth century' (influence of the Simon Paulli Family on Steno, the Bartholini family *et alia*); E. Snorrason, 'The studies of Nicolaus Steno (1659) in Copenhagen Libraries' (friendship with Olaus Borrichius, the chemist and defender—against Conring—of the antiquity of alchemy and hermetism, a possible influence of Van Helmont, or even of Khunrath on Steno, the author of the *Chaos*-tract); V. Möller-Christensen, 'Steno's Copenhagen' (the *Domus anatomica*, Worm, Paulli, and Bartholinus).

This group is followed by: Frans Djourup, 'Steno's ideas on brain research' (methodical approach to dissecting without destroying structural connections, accurate description, moderate criticism of predecessors rather than new original discovery in this field); A. Faller, 'The drawings of brain sections in Steno's *Discours sur l'Anatomie du Cerveau*' (comparative iconography, and Steno's advance in introducing a new method of brain cutting); E. Bastholm, 'Stensen's Myology' (criticism of the Galenic 'spirits' and Descartes's 'nerve-juice', clear and epigrammatic demonstration of absence of volume increase in contraction; muscle-irritability—it can contract on direct irritation without nervous stimulus; failure of interpretation of muscular structure in terms of geometrical analogy); J. Schiller and J. Théodoridès, 'Steno and the Paris scientific circles' (the role of Thévenot, the Cartesianist/Gassendist controversy, Steno and the French anatomists, including new important source material); L. Belloni, 'Stenson memories in Italy' (on G. B. Verle's *Anatomia artificiale delle occhio umano*, Florence, 1679, as based on Steno's demonstrations and on Steno as the transmitter of Swammerdam's drawings of the silkworm to Malpighi); R. Herrlinger on 'Stenson's *Discours* on the brain and the German medical literature' (not really recognized before Haller, Sprengel (1801), Meckel (1815), and Burdach (1822), to be rediscovered and appreciated as the 'lightning that lit up the night' by Max Neuburger (1897)); G. Scherz, 'A new Steno portrait'; L. Belloni, 'The neuro-anatomy of Marcello Malpighi' (Malpighi's personal friendship and methodological parallels with Steno, with comprehensive well-illustrated account of Malpighi's histology); E. Hintzsche, 'Steno, Winslow and Haller' (Winslow recognizing his gratitude to Steno's method of dissecting *in situ* without interfering with structural connections especially in the brain—preface to his *Exposition anatomique* of 1732; Haller came near to following up successfully Steno's recommendation to examine the medullary fibres and their connections by means of a special method—in Haller's case, by brain-freezing); H. M. Koelbing, 'Ocular physiology and its acceptance by the medical profession' (Felix Platter and his recognition of the true role of the retina in vision as against the subordinate role of the lens; the advanced views of Aristotle and Averroes).

Kenneth D. Keele, 'Stensen and the neuro-physiology of pain', lucidly discusses Steno's criticism of Descartes's brain anatomy and its fictional physiological consequences; Spinoza's similar criticism was obviously influenced by his friend Steno. The latter's final despair concerning a scientific solution of the pain-problem (and concerning science at large) was one of the impulses leading him to religion. His admonition to Spinoza to embrace the catholic faith and: 'you cannot explain the

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sense of pleasure or pain . . . how the impact of matter on matter is perceived by a soul that is united to matter' seem to provide in a flash the key to the problem of Steno's whole personality as a paradigmatic phenomenon of seventeenth-century dualism.

A new chapter opens with: E. Lesky, 'The discovery of the function of the mammalian ovary through Nicolaus Steno'. Here we can fascinatingly accompany Steno on his way—through failure by over-dissection (against his own principle) in the ray—to his discovery of the ovum-production by the ovary in vivipara—first in a female dogfish *Scymnus Lychia* (1667). This is followed by a brilliant account of his critical use of functional analogy; recognizing in his notebooks (going back to 1667, though published only in 1675) the close relations of the *infundibulum* with the ovary and the probability of the presence of ova in the mammalian tube, he probably inspired and influenced de Graaf (1672) more than is generally known. His advance on Harvey's generalizing analogies and vitalist interpretations is then lucidly substantiated.

The concluding articles are largely biographical (M. L. Bonelli, 'The Academia del Cimento and Steno'—his friendship with Redi and Viviani and 'that bad man' Borelli's misgivings; also R. Herrlinger on 'The Collegium Naturae Curiosorum and Steno'—Volckamer and Steno in Nürnberg).

F. N. L. Poynter, 'Steno and the Royal Society' brings new highly important source material. It concerns a meeting between Steno and a group of British naturalists, notably John Ray and William Croone, at Montpellier. Then light is thrown on the reception by the Royal Society of Steno's work on the muscles. This includes his experiment on effects of occlusion of the abdominal aorta. The complicated story is here definitively and clearly disentangled; it reflects the thoroughness and persistence of the Society in establishing the truth of the matter as well as the merits of Steno's observations.

W. Kock on 'Anatomical science and education in seventeenth-century Scandinavia' gives a comprehensive account including the Rudbeck–Bartholinus controversy; it is followed by the brilliant concluding appreciation of 'Steno the humanist' by G. Scherz. He was a humanist in his research—extending observation of detail into the realm of first principles; he was a humanist in his sceptical attitude towards uncritical modernism and he was a humanist in his aiming at a synthesis between science, intellectual maturity and religious faith. Perhaps the reviewer may be allowed to add, it was frustration in this attempted synthesis that led him to abandon science and to embrace religion (see K. D. Keele, above, and below).

The symposium, then, had been designed to celebrate Steno's tract on the Brain, and the moral it conveys to the dissector and to the scientist at large. Our brief survey shows the multitude of aspects which it covered. It is in this that we find its main value. Perhaps even more important is the insight into the spiritual climate of the second half of the seventeenth century which we may derive from it. It was incisively illuminated by Kenneth Keele (p. 231) and Erna Lesky (p. 248). In the first half of the century Harvey had found a place for metaphors and the *argumenta divinae sapientiae et bonitatis* inseparable from his observations and rational teleological account; Steno could no longer admit them in his concrete proofs and demonstrations.

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Steno's inability to explain an affair of the soul such as pain in terms of the impact of matter reveals the dualist split between science and religion which makes itself increasingly perceptible at the time and seems to have troubled him fundamentally. Had earlier scientific men such as Harvey and Van Helmont been perhaps happier in their monist view of the world and of the 'working-matter' in which unification of biological science, teleology and belief had still been possible under the aspect of *philosophia naturalis*?

WALTER PAGEL

Mathias Mayor (1775–1847), by HANS GERSTER, Zürich, Juris Verlag, 1968, pp. 30, S.Fr. 6.

This small thirty-page pamphlet of excellent technical quality is Number 55 in a series of general medico-historical reviews edited by Professor E. H. Ackerknecht. It deals with the life and work of Mathias Mayor, who was surgeon to the Kantonspital, Lausanne, for forty-five years.

He was born in 1775, the eldest of six children. His father was a respected country doctor in Cudrefin in the Kanton Waadt. Mayor followed in his father's footsteps by qualifying in 1795 as M.D. Pavia, where he studied under Scarpa, after initial training in Zürich and Milan. In 1798 he broke a leg. This experience, not surprisingly, stimulated him to become a surgeon and to specialize—in modern parlance—as an orthopaedist.

In 1803 a new hospital was opened in Lausanne to which he was appointed surgeon. He remained there until 1847, when at the age of seventy-two years he died from obstructive jaundice.

His lifelong migraine is reflected in his meticulous and obsessional character. He was a keen and conscientious doctor who treated all his patients—whether private or public—alike, his usual routine being to make two or three visits to the hospital daily.

Surgeons are keen travellers, Mayor being no exception. He visited London in 1828 as guest of Astley Cooper. His family life was happy, although clouded by the death of his first wife and two of their four children. His son, Charles Mayor, succeeded him on his death.

Mayor wrote extensively on many topics and invented numerous surgical techniques and instruments which were refinements in his time and included a fracture-bed and a urinary sound. He was also the first to introduce cotton wool instead of lint as a wound dressing.

A short German translation of his prize-winning work—*Nouveau Système de Délégation Chirurgicale*, written in 1832, is appended. It deals largely with fractures and the correction of spinal deformity, and shows Mayor to be keenly aware of the importance of anatomy and physiology in surgery.

Few doctors anywhere can be accused of insularity nowadays. But this short biography of a little-known Swiss surgeon shows the high standard of medicine that could be achieved, even in the nineteenth century, in a small country at that time the prey of political instability and difficult communications.

I. M. LIBRACH