

PHILIP R. REILLY, *The surgical solution: a history of involuntary sterilization in the United States*, Baltimore and London, Johns Hopkins University Press, 1991, pp. xvi, 190, \$19.95, £14.50 (0-8018-4096-1).

Fears of race degeneration underscored eugenicists' calls for compulsory sterilization laws at the turn of the century. While English eugenicists had little impact on policy-making, in the United States the eugenic movement played a crucial role in the establishment of laws aimed at restricting the breeding of the unfit. California had the most active sterilization programme: 80 per cent of all sterilizations carried out in the United States between 1918 and 1920 were performed in six Californian institutions, and the sterilization movement in Germany turned to California for inspiration when the Nazi sterilization campaign got under way in the early 1930s.

The story of the implementation of sterilization laws in the United States is now told by Philip Reilly, a physician and attorney who specializes in legal issues raised by advances in human genetics. Reilly shows how fears about the influx of immigrants into the United States at the turn of the century lay at the heart of American anxieties about the propagation of the socially and physically unfit. The development of vasectomy in 1897 immediately provided a remedy for the problem, and by 1913 twelve states had enacted laws authorizing physicians to sterilize institutionalized criminal and defective persons, mostly without their consent, as a condition of discharge into the community.

Physicians, scientists, and prominent businessmen were active in the campaign for legislation. Where laws were passed, state programmes were shaped by the specifics of the legislation, the attitudes of the physicians in charge of state institutions, and the degree to which programmes were funded. Eugenic sterilization had its heyday in the 1930s, when harsh economic realities prompted arguments in favour of sterilizing and paroling the less retarded as a means of reducing the cost of institutional care; despite the passing of the eugenic thesis, they continued to operate right up to the early 1960s, albeit on a much reduced scale. A discussion of the recent shift towards the "right" of retarded persons to be sterilized concludes this useful book, which goes a long way towards filling a conspicuous gap in the history of American eugenics.

Ornella Moscucci, Wellcome Institute

CORNELIUS O'BOYLE, *Medieval prognosis and astrology: a working edition of the Aggregationes de crisi et ceticis diebus: with introduction and English summary*, Cambridge Wellcome Texts and Documents 2, Cambridge, Wellcome Unit for the History of Medicine, 1991, pp. 92, UK £6.00, Europe £7.00, elsewhere £11.50 (incl. p&p), (0-9516693-1-1).

Critical days are the days on which the "crises" in an illness occur, when the patient either recovers or dies. These times were thought to be controlled chiefly by the movement of the moon and thus critical days is an area in which astrology and medicine meet each other. A good doctor was expected to be able to predict the course of an illness, and the incidence of the critical days. The earliest text on the topic is attributed to Galen, and the doctrine became particularly popular in the medieval Islamic and Christian world. Chapters on critical days can be found in the great medical encyclopedias by Rhazes, Haly Abbas, Avicenna, and (in Latin) Constantine the African and Pietro d'Abano, as well as in general works on astrological judgements such as the *Liber novem iudicum* (printed in Venice in 1509 and in Basel in 1571), and texts specifically on astrological medicine, such as the *Tractatus Davidis Iudei* in Barcelona, Biblioteca de Catalunya, 634, the *Introductio ad iudicia astrologiae quantum pertinet ad medicum*, attributed to Arnald of Villanova (*Opera*, 1504), and Nicolaus de Paganica, *Compendium medicinalis astrologiae* (ed. G. dell'Anna, Galatina, 1990). Thirty-six medieval Latin texts on critical days are listed in Lynn Thorndike and Pearl Kibre's *Catalogue of incipits of mediaeval scientific writings in Latin* (London, 1963). Given such a large body of material, it is surprising that there has been little discussion of the topic in recent times.

O'Boyle's aim, in keeping with that of the Cambridge Wellcome Unit's series as a whole, is to bring out a text quickly so that scholars have something to work on. Thus we should not expect the kind of wide-ranging treatment of the subject that might be found in a German Habilitationsschrift on medical texts on critical days (an example which comes to mind is Christoph Weisser's *Studien*

zum mittelalterlichen Krankheitslunar, Pattersen/Han., 1982). O'Boyle's work consists of a convenient history of the place of astrology in late classical and medieval medicine, a summary of the contents of the *Aggregationes*, chapter by chapter, a list of the manuscripts of the text, and some hypotheses concerning the author and the date of composition. (O'Boyle is wisely cautious of making firm identifications: his tentative conclusion is that the work was written by an author whose name began with "B", between 1260 and 1280.) Then follow more detailed descriptions of the manuscripts used in the edition, their affiliation, and the editorial principles. The rest of the monograph is taken up by the text itself, with variant readings but without explicative notes or any indexes.

O'Boyle chose the *Aggregationes* because it was apparently one of the most popular texts on the subject, and (I might add) one of the most detailed. Another reason given by O'Boyle is that it "marks the introduction into Western medical prognosis of a highly sophisticated and mathematically very technical astrology which was derived from Galenic sources new to the thirteenth-century Latin West" (p. 2). The mathematical sophistication is evident particularly in the curious and completely artificial time-periods according to which critical days are calculated (see pp. 72–80). These begin with the "medical month" which is calculated as the mean between the sidereal month and the interval between the first illumination and last illumination. This results in a month of 26 days and 22 hours, which is further divided into a "medical week" of 6 days and 17½ hours; and a "medical day" is one seventh of this value. The author does not do the final calculation, but warns the reader that "medical days" are more indicative than natural days. "Medical weeks" can be rounded up or down. If the seventh day (which, as we have seen, has only 17½ hours) is counted as the first day of the next medical week, the calculation is said to be "by continuation" (*secundum continuationem*). If the next week starts on the following day, the calculation is "by separation" (*secundum discretionem*). (This recalls the theory of tetrachords in ancient and medieval music theory, by which four steps in a scale either overlapped the previous four steps or followed on after them.) Adding the medical months together one gets a "medical year" of 14 months, which, when halved, gives 7 months. Seven is a significant number for doctors. After 7 months a child begins to teethe; and every seven years marks a transition to the next stage in life. O'Boyle explains the mathematics of all this correctly (pp. 11–12) but does not go into its implications. Was all this mathematics and astrology simply meant to confuse the patient and save the doctor from being accused of making the wrong prognosis? Or did doctors really have to have a good grasp of arithmetic and the science of the stars? Or did the doctor, or the patient, have to consult the astrologer directly (as implied in the *Tractatus Davidis Iudei*)? Is this doctrine common to all works on critical days? Do we have any examples of calculations being made? All these questions await further research, but with the text in front of us, at least we know what we are looking for.

O'Boyle is careful in stating the principles on which his edition is based. The text is based on a collation of three manuscripts which are described in detail. It is not clear why he has not included MS Oxford, All Souls College, 69, which he lists as being the earliest approximately datable manuscript (pp. 15 and 20). For the apparatus criticus he adopts an unusual, but clear way of signalling the presence or absence of words by "+" and "-". O'Boyle warns us that he makes no attempt to correct the Latin text but when the manuscripts offer different readings he will adopt the reading which appears to be best (p. 26). Even so, I would wish to question some of the readings; e.g., the repetition of "est" in the first phrase of the last sentence on p. 33 (surely read: "Prima conditio que . . ."); "triens" where one would expect "triens" (several examples on p. 73); "sequens" (i.e. "sequens"="following"), rather than "secans" ("cutting") on p. 73, line 5; "hec est causa *secundum* Galienum" on p. 77 line 22. These do not, however, detract from the general usefulness of the edition. I would have preferred to have a translation rather than a summary: one never knows what has been left out of a summary and a good translation also performs an invaluable service as an *explanation* of the subject-matter. Nevertheless we have what the author promised. It is up to the readers to use this text as a basis for further research in the history of medicine and astrology.

Charles Burnett, Warburg Institute