

Conclusions.

"We shall not cease from exploration
And the end of all our exploring
Will be to arrive where we started
And know the place for the first time".

T.S. Eliot, Little Gidding.

14: Retrospect and prospect.

"It is largely by a student's later career that the merits of his education must be judged."

Robb-Smith (1966).

"A cynical friend of mine remarked that the study of medicine is a pleasant way to pass the time until the undergraduate is sufficiently mature to become a doctor."

Rhodes (1976)

"... the time has come for long-term prospective research into the validity of selection of entrants to medical school".

Richardson (1980; p.356)

"In 1869 ... Paget and two of his colleagues drew on personal knowledge of 1000 students ... who had passed through their hands between 1839 and 1859. Of this 1000 they estimated that 23 achieved distinguished success, 66 considerable success, 507 fair success, 124 very limited success, and 56 failed entirely. Also ... 96 left the profession, 37 died within twelve years of starting practice, and 41 died during pupillage. Galton (1889) ... indicated the range of talent found in this group of doctors:

'... towards the foremost ... stood the three Professors of Anatomy at Oxford, Cambridge and Edinburgh ... towards the bottom of the failures lay two men who committed suicide under circumstances of great disgrace, and lowest of all [was] Palmer, the Rugeley murderer, who was hanged.'

Harris (1948)

(For an account of Palmer, see Graves, 1957).

Summary.

The broad findings of the thesis are reviewed, their implications for medical schools are discussed, and the prospects for future research are outlined.

The problems discussed in this thesis are amongst the oldest in medicine. In The Canon, which describes the characteristics desirable in a student of medicine, Hippocrates suggests that,

"For a man to be truly suited to the practice of medicine, he must be possessed of a natural disposition first, [and] the necessary instruction [and] education"

Lloyd (1978; p.68).

Hippocrates leaves unanswered the major question, of the greater importance of a natural disposition or of education. In a previous thesis (McManus, 1979) I argued that its major questions could be construed as what A.N. Whitehead called 'footnotes to Plato'. The present thesis may be similarly construed, as an antagonism between Plato and Aristotle, over the relative importance of education in determining virtue or character. Plato argued that education had little influence; "virtue will be acquired neither by nature nor by teaching, whoever has it gets it by divine dispensation" (Meno, 100.a) (see also Pence, 1983). In contrast, Aristotle takes a more biological and environmentalist line, attributing greater influence to social factors; "Goodness of character ... is the outcome of habit ... no form of goodness of character is produced in us by nature" (Ethics, II.1, 5; Burnet, 1903, p.44). The satisfaction of the demands of Hippocrates for men "truly suited to ... medicine" (and who presumably would subscribe to the strict ethical code which he required) would therefore be resolved differently according to whether one preferred to believe Plato or Aristotle.

After setting the problem in perspective, we may now humbly try to provide some sort of answer to the questions raised by Munro (1981), which are also of course the questions of the ancients, when it is asked whether "selection or training is at fault?".

In a different context from the present one, Elstein et al (1978;p.3) have described how our knowledge of diagnostic skill, "was based on everything but systematic empirical studies ... [t]he literature [comprising] admonitory papers detailing how clinicians ought to do their work, fortified with anecdotes provided by distinguished physicians". Medical education is in a similar position, studies frequently containing a multiplicity of ex cathedra statements with little attempt at basing these on systematic enquiry (e.g. Walker, 1965; Sinclair, 1972; Pickering, 1978; Roddie, 1984). It need hardly be said that the view of this author is that empirical study is essential in evaluating medical education, and in making proposals for change.

The process of student selection is seen in this thesis as being relatively passive. To a large extent the students accepted are a fair selection of those who apply, with the important exception that acceptances have far higher A-level grades than rejects; otherwise they have pretty well the same background, hopes, aspirations, attitudes and interests as rejects. Nevertheless it is clear from chapters 2 to 7 that selection as a total process is far broader than a mere consideration of selection by medical schools would suggest. Medical students are a highly select group in terms of their origins and background, as are medical school applicants in general, and they are select because to a great extent they are self-selected. In choosing even to contemplate applying to medical school, applicants are an exclusive group, with their exclusivity determined partly by intellectual factors, and partly by other factors such as schooling and class, which both encourage an applicant to believe that they have a realistic chance of entering medical school, and provide the educational resources to ensure that they then gain the crucial A-levels to win a place in stiff competition. However it is those same background factors which can be shown to

influence the attitudes of applicants (see chapter 9), and which imply that their attitudes might well be substantially different from a comparison group without that particular social composition. The hypothesis deserves to be the subject of a future study, although the logistics of its testing would be formidable. How medical schools might change their selection to take account of such factors (assuming that they did indeed wish so to take account) is also difficult to know. It would require secondary schools to be encouraged to treat a wider range of their pupils as being potentially suitable for medical school admission. But in so doing it would encourage a greater number of applicants to be disappointed in their career choices. As yet we know almost nothing about the effects on school-leavers of pushing their aspirations towards medicine, and subsequently disappointing those aspirations; so that they perhaps make a repeated application to medical school the next year, with yet further failure and eventual subsequent entry to another science or para-medical university course, perhaps two or even three years behind the peer group to which they once belonged. Whether thwarted ambition leaves them eternally frustrated, or they are sufficiently adaptive and responsive to take such blows in their stride is simply not known. It is a question which it is hoped will be answered in the future by studying the rejects in the St. Mary's study, three or four years after their initial rejection.

Once a student has arrived at medical school then the analysis of chapters 8 to 13 suggests a number of substantial changes, which are reflected, albeit often indirectly, in the measures of attitudes, culture and religion which have been described. Some of these changes, such as in specific attitudes can be shown, as in chapter 9, to be specific consequences of the medical training that the student receives. Many other changes, such as in other attitudes, culture or religion are

actually occurring despite the medical training that the student receives, and are either a consequence of a direct maturational process, as immature adolescents pass into young adulthood, or perhaps are idiosyncratic responses on the part of the student to life events unique to themselves. And of course these changes are inter-related one with another in a causal fashion. Chapter 13 suggested that at least two of these causal influences could be teased apart; it is change in the religious values of students which makes them more libertarian, rather than vice-versa, and it is change in tough-minded attitudes which causes change in cultural interests, rather than vice-versa. However the majority of changes that are occurring in student attitudes still remain unexplained. Once more we must accept that although medical schools do have measurable effects upon the attitudes and the behaviours of their students, they are in many respects, relatively passive institutions, through which students can pass without being unduly influenced. It is probably as erroneous to over-estimate the effects of training upon attitudes as it is to under-estimate it. The Birmingham study, upon which most of the above conclusions are based, was not extensive enough to ask a range of more subtle questions about the effects of medical schooling. The St. Mary's selection study found that factors such as schooling and social class were related to attitudes in applicants. An important question concerns whether students from different social backgrounds respond in different ways to the effects of medical training. A planned follow-up of the St. Mary's sample when they are in their final year, in 1986, will allow answers to such questions, due to its greater size. The follow-up should also be able to tell us whether different medical schools have detectably different effects upon the attitudes of their students, after taking into account differences in attitudes on entry to those schools. Certainly medical schools conventionally believe

that their graduates have a perceptibly different 'flavour' to the graduates of other medical schools. A final unanswered question about the influence of medical schools concerns its specific role as a social institution. The analyses of chapters 8 to 13 make the implicit, quasi-physicalist assumption that the effects of a school upon a student may be detected independently of the effects of that school upon other students in the school. However the school in some strict sense is the other students. A more sophisticated social interpretation of a medical school would note that students as a group are not homogenous, but rapidly clump together into smaller social groups, which often live, work and play together. In so doing they may influence one another in very important ways, such that the changes occurring in a student might well be different had he been educated at the same school at the same time with the same fellow students but with different particular friends. Whilst such effects are very likely, and are attractive theoretically, their detection in social systems by observational means alone is difficult, if verging on the impossible. One possible methodological approach might be to examine the St. Mary's sample at follow-up and ask them to list their closest associates in the medical school, so that a sociogram of the nexus of social inter-relations may be constructed, and the relative influences of such groupings upon behaviour then determined.

A further deeper set of questions to be probed by a subsequent study concerns the reasons for changes in attitudes. Merely to say that change in religion causes some changes in attitudes, is only to push the questions one stage further back. The important work of Kohlberg (e.g. 1964), following in the tradition of Piaget (1931), has emphasised that the cognitive processing of moral rules occurs in different stages, or levels of processing. Thus change in ethical behaviour might occur because of a change in the premises within a particular level, or be due

to a cognitive re-working of the same premises at a higher level. Such models should now be distinguishable by the easily administered moral reasoning tests of Rest (1979), and these will be included in further follow-ups, and in the initial stages of subsequent cohorts. Small studies by Goldman and Arbuthnot (1979) and Givner and Hynes (1983) have suggested that such an approach will be useful. The follow-up study will also ask questions about more specifically medical issues than can be asked in a questionnaire designed for medical school entrants, and will also be extended to cover a deeper analysis of religious issues, since these were found to be of greater importance than initially anticipated in the present study, and better techniques will be used to analyse the nature of religious beliefs along a number of dimensions (Piazza and Glock, 1979; Roof, 1979).

The one question the present studies have been unable to answer at all is the one raised in the Introduction: Do the attitudes of medical students bear any relationship to their subsequent clinical practice, either in the general sense of determining the specialty they enter, or in the highly specific sense of affecting the details of their interactions with patients or in their therapeutic or other practice decisions? That question is simply unanswerable at present, there being no adequate empirical data. The St. Mary's study does however form the basis for such a prospective study, since it is simply necessary to wait an adequate amount of time and then re-assess the students, by then long-qualified, and see whether attitudes on entry to medical school relate to clinical practice. 'Simply' is of course a gross understatement. One will in fact have to wait until the students have reached, say, their mid-forties, by which time they will have well-established careers and practice habits; such a study will have to wait until nearly the end of the first decade of the next millenium

(although of course preliminary studies could be carried out before that time). There is also the difficult of measuring practice itself - is it practical to study actual doctor-patient interactions, or diagnostic decisions, or therapeutic judgements? And how does one determine who are the 'good' doctors (or to use Munro's term, the 'right' doctors and the 'wrong' doctors), particularly as Bain(1984) has pointed out that quantity of care is far easier to measure than quality of care? But such questions are not unanswerable, and such measurements are not impossible, given thought and analysis, as Paget showed over a century ago (Paget, 1869). This is particularly so if the questions are reversed, and we ask "who are the 'bad' doctors?"; those GPs, for instance, without even steriliser, speculum or scales in their surgeries (Heath, 1984) would surely fit into that category on any scaling. The St. Mary's study lays the foundations for a large-scale prospective study of medical student selection so that one may hope to answer the question Abernethy posed "as if with painful doubt" to his introductory anatomy class at St. Bartholomew's Hospital in the early nineteenth century; "God help you all! What will become of you?" (Paget, 1869). It is an exciting prospect.