students. Some of the faculties of medicine restrict admissions to native-born applicants. Privately endowed medical schools are more lenient in this matter than tax-supported institutions. In borderline cases the non-residents are usually eliminated.

Medical schools in Canada take into account the ages of applicants, being reluctant, or refusing completely, to accept into the final four years in medicine any individual who is less than 19 or more than 30 years old. Furthermore, screening committees are prone to postpone admission of bright young students who are immature in other respects than scholarship. This policy is followed in the conviction that an additional year or more of college or university will not only contribute substantially to the applicant's general education, but make him a more competent student when he is admitted to the medical course. Candidates over 30 years of age are usually rejected because, even if graduated in due course, they will have proportionately fewer years to devote to the practice of medicine.

Lack of emotional stability or some other personality disorder may be a determining factor in the rejection of a borderline applicant. Unfortunately the assessment of the personality pattern does not seem at present to enter as prominently as it should into the selection of students with outstanding scholastic records. Perhaps this is because of the lack of a dependable technique for making this sort of judgment. Screening committees are alert, however, to obtain clues which turn up in personal recommendations or are obtained from other sources. An effort is usually made to have a psychiatrist serve as a member of the screening committee.

Final choices from among borderline applicants depend a good deal upon interviews with the selection committee. Here a careful appraisal is made of the conditions under which these applicants have completed their premedical courses. Family background is inquired into, as well as financial resources and obligations. This latter is particularly important in our experience, because in recent years it has been quite apparent that the medical course should be a full-time occupation for any but the exceptional applicant.

Other situational and personal factors which it has been found helpful to discuss with borderline applicants include health and physical adequacy for the medical course, reading habits, the applicants' reasons for wishing to become physicians, and their intentions with regard to their medical careers if accepted into the school and graduated.

Personal Reference

I wish to devote my remaining time to a consideration of the possible value which may be obtained from personal references. As was stated by the Vice-President of this Conference, Dr. Victor Johnson, when he addressed the American Association for the Advancement of Science in 1944 on the "Requirements for Entry into Medical Schools," the broad objectives of any educational programme can be stated if we define the product which we seek to turn out. I endorse Dr. Johnson's elaboration of this statement to the effect that we are seeking to select and train future physicians who will be good citizens, equipped with the knowledge and skills required in the practice of modern scientific medicine. We are seeking individuals with intellectual curiosity who will be lifelong students and who, perchance, may make their individual contributions through original investigations. Finally, we wish to select as medical students young men and women who have, or will develop, a strong social consciousness.

In trying to devise some means for judging the potential or proved attributes of applicants to our medical school in British Columbia we have felt we would like to obtain all possible assistance from persons who know the candidate well. However, it has been our experience and that of others that ordinary requests for letters of recommendation do not bring forth the information desired. In order to explain what is wanted to these well-intentioned people and to be

able to deal quantitatively with the information provided the accompanying questionnaire has been developed. Replies made to the first seven questions are graded as shown. An average numerical grade can then be given for the complete personal assessment. If these questionnaires served no other purpose, they would be amply rewarding in our experience because of the critical comments usually forthcoming under Item 8.

In conclusion, I feel it should be stressed that the medical schools of Canada are deeply concerned to select entering medical students of integrity and intelligence who have mastered to a satisfactory degree the basic concepts in chemistry, physics, mathematics, and biology. These must continue to be the foundation stones upon which the study of medicine rests. Our objective, also, is to select students with the broadest liberal or general education it is possible to achieve in the time available. We, along with many others, are seeking for ways in which the principal educational values of the previous four-year premedical course can be condensed into a three-year programme. We are hopeful, although not entirely optimistic, that this may be accomplished through improvement in the quality of instruction and elimination of non-essentials from the curriculum of premedical students.

SELECTION OF STUDENTS IN AUSTRALIA*

BY

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The Melbourne Medical School, which I represent, is the sole Australian school limiting entry, and this practice has been in operation only for about ten years. Dr. Severinghaus has with great care outlined the present status of selection in one school in the United States, with particular reference to the value of the confidential report and personal interview. My object is to present another point of view.

In Melbourne there is general and strong opposition to limitation of entry, though we, like so many others, are compelled to practise it because of inadequate accommodation, staff, and facilities. Our opposition is based on the following points:

1. Limitation imposes too early an emphasis on the competitive aspects of academic life. This is undesirable because (a) it restricts the outlook and early training of the student; (b) good material often reacts unfavourably under this type of pressure; (c) it leads to premature and over-specialization during the early educational period.

2. There are no tests of infallible predictable value on which selection can safely be based. Regardless of the selection technique employed, some good students will be excluded and some very poor ones accepted. Injustices of this kind are inevitable and much good material may be lost as a consequence. There is the additional danger that attempts to justify the selection of any group may lead to a deterioration rather than to a strengthening of standards. Thus a high failure-rate among a "carefully" selected group must reflect on either the selection committee or the teaching or both. This is always a source of embarrassment, which, if not honestly and courageously faced, can be resolved only by adopting the attitude that, since both the selection and the teaching are above reproach, all students must pass; and it has even been suggested that under these conditions examinations are no longer necessary.

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.

3. Mental development is not arrested in the late teens, and it is possible for individuals to rehabilitate themselves when they are transferred to a new environment. All do not mature at the same rate or at the same age. A child has little choice in the school to which he is sent, and often an unfavourable environment restricts his progress. Under the stimulating influence of new teachers in a university atmosphere some students reveal unexpected qualities.

At the turn of the century limitation of entry into medical schools had not appeared to harass students, embarrass selection committees, and complicate the administrative machinery of our universities. But the last half-century has seen great improvements in social conditions and rapid advances in medical knowledge. This, paradoxically, has introduced a need for more, rather than fewer, doctors. Furthermore, the object of enlightened educationists has been to create conditions in which all children who are fit for higher education will be permitted to proceed to a university if they so wish. The provision of scholarships and grants in increasing numbers has accelerated progress in this direction. Thus at the present time we have a situation in which: (1) the evidence shows a need for more well-trained doctors, particularly in young countries with expanding populations; and (2) students are presenting themselves in ever-increasing numbers who are fully qualified to proceed with university courses, wish to become doctors, and have been educated with that object in view.

Factors in Selection

It seems odd that the reaction to such a situation should be to embark, without protest, on a policy of selection for entry into medical schools. Why has it been found necessary to do this? Are we selecting because more of the applicants are of poorer quality than they were 50 years ago? If this is the case, then it reflects on those preparing the students presenting themselves for medical education, and action should be directed towards improvements at secondary school level so that the mediocre are filtered out. On the other hand, if we are selecting not because the standard is inferior but because the number of acceptable applicants greatly exceeds the number of places available, then surely the answer is to make more places available, and our energies should be directed to getting more medical schools instead of fewer students. In short, if our admission standards are satisfied at an intellectual level, then there should be sufficient places to accommodate those expressly desirous of embarking on a medical course.

It is necessary to be quite clear on these points, because some statements on this subject create the impression that the problem is one of deteriorating standards. Since, however, selection dominates our limited horizon and is the subject for this discussion, we should properly confine our remarks to it; but I thought it necessary that someone should raise a voice of protest at what, in terms of university traditions and principles, can be regarded only as a pernicious practice.

In general the basis of selection is examination results, rarely alone and more usually in combination with one or more of the following procedures: survey of confidential reports; interviews; intelligence and aptitude testing.

The determination of the applicant's fitness to study and to practise medicine is a very difficult matter. Very few of the factors involved are amenable to exact measurement. Though it has become fashionable to criticize examinations, they do provide the only objective test at our disposal, and in the past academic merit alone has been responsible for providing a body of medical men of whose achievements any age would be justly proud. The principal criticism against examinations is based on the wide variations in marking and grading systems in schools, and this makes a comparative evaluation of records difficult. Since selection, regardless of the method employed, is highly competitive, it is essential that, where possible, all prospective medical students applying to a particular medical school should be

assessed on the results of a common examination. I appreciate that this is quite impossible in certain countries—for example, the United States—and would be difficult in others where large numbers of students are involved and where they are free to apply over the entire country at will. Despite the difficulties, however, further consideration should be given to the introduction of a method based on a common competitive examination. A possible solution would be to accommodate all matriculated students in a premedical year in medical schools based on a zoning system. The year would then be completed under identical conditions for each school, and at the termination of the course an examination could separate those who are to proceed from those who are to be excluded. But there are several facets to this problem, to which further reference will be made when I relate our own experiences in Melbourne.

Many selection committees attach great value to confidential reports on the school record of the applicant, but these may be misleading. We have already noted that any system of selection must be competitive. What, then, is the basis of comparison when the records of applicants from different schools are under review? Variation in the standards of reports is even greater than it is in the case of examinations. Some headmasters have that wonderful capacity for being good pickers of embryonic doctors, but it would be unfair to exclude by this method the capable and worthy student who is not fortunate enough to be the protégé of such a prophet but who attends a good school where salesmanship is not one of the headmaster's outstanding qualities.

The interview has its strong advocates also, but it is open to several objections:

1. The requirements necessary for conducting interviews are exacting. As Dr. Severinghaus has stated, the committee at his school "regard their job as the most important assignment in the medical school." The interview requires the services of a single committee composed predominantly of medical graduates, because these are presumed to be in a better position to judge those qualities which are most essential for medical work. They also call for a degree of experience, wisdom, and human understanding on the part of the interviewer which few possess. It is astonishing to see interviewers claiming powers with which they are not endowed. The interview must be conducted in an unhurried fashion, and, to be just and searching, must be a time-consuming undertaking. Each interview could hardly be conducted in less than twenty minutes. On a conservative estimate, 18 students at the most could be interviewed in a day and 90 in a week. With large numbers to interview—Dr. Severinghaus mentions 500 in his school—the selection committee would be fully employed for several months. How reliable are the conclusions of any committee working under such conditions, and is the effort worth while? As a general principle, many of us believe that the medical personnel of medical schools should be called upon to do less and not more committee work. University staffs are already grossly overworked, and this new responsibility can only add to their burden and reduce still further the time available for reflection and research.

2. The stage has now been reached where students are being coached for interviews. This is a waste of the student's time and surely defeats the purpose of the interview.

3. Interviews are not used at any subsequent stage of the student's career, and it is therefore unfair to emphasize them when he is applying for entry to the course.

Many have still to be convinced of the value of intelligence and aptitude testing. These methods must still be regarded as in the experimental stage, and if undertaken should be employed solely with the object of collecting data and not with the actual process of selection itself. It is difficult to understand just how the prognostic value of these tests is to be determined. It would be a formidable task to undertake a large-scale assessment of the subsequent careers of thousands of doctors from graduation to death; and what is to be the yardstick by which we are to measure the quality of the end-product—academic record, contributions to original knowledge, social advancement, financial reward, or public recognition?

An Accepted Method

All of these factors have been carefully considered by the Melbourne School, which has decided to base selection solely on examination results at the end of a common pre-medical year. Though the university is the examining body for matriculation, it was decided not to select at this stage, because of variations in the standard of teaching in the different schools and because not all students take the same subjects.

All intending medical students who have matriculated are accepted into a premedical year, where they attend courses in physics, chemistry, biology, and scientific method. The bias in these courses is to medicine. This results in some overcrowding, but it is considered preferable to give all prospective medical students a chance to compete under essentially the same conditions. Written and practical examinations are conducted at the end of the year, and those passing at the first attempt are arranged in order of merit. The number of available places in the quota fixes a line on the list—those above continue with the medical course, while those below may repeat the year and attempt for a place on the list which will carry them into the quota.

Special consideration has been given to those who fail in the examination. Normally such students may repeat the premedical year once, but priority on the merit list is given to those passing at their first attempt. The quota is such that students who are successful only at their second attempt go to the bottom of the list, and for this reason their chances of being selected are remote. They are therefore ill-advised to gamble on another year. However, there are two categories in the failed group who are given special consideration: (1) The student who misses at the first attempt because of extenuating circumstances—for example, severe and prolonged illness. All the failed students are interviewed in order to isolate this group. If exceptional circumstances can be advanced to account for their failure, they are allowed to repeat the premedical year with all the privileges of one making his first attempt. (2) Students who at the second attempt gain marks equivalent to first- or second-class honours are considered to have rehabilitated themselves and are graded as having sat for the first time. In this way, we feel that justice is done to all and that competition for the available places is scrupulously fair.

Admittedly the position in Melbourne is less complicated than in most other places where the quota system prevails. But, though the problem may be simpler, it is nevertheless one of great concern to the administration. The general feeling is that the sooner limitation can be abandoned the better, but this is a question which must ultimately be decided by governments. We also believe that the examination system, carefully applied, should still provide the fundamental basis for selection.

We fully recognize the value and importance of character, integrity, sincerity, and so on; but these qualities are difficult to assess, and how many have matured in this direction at the age of 17 or 18? Furthermore, success in examinations does test something besides academic competence; it reveals qualities such as application, industry, interest, and perseverance. In the final analysis we have decided in favour of examinations. All other techniques are considered to be too unreliable to be tolerated in our democratic community.

The social structure, traditions, customs, and practices of different countries present such great differences that no single formula can be acceptable to all. Discussions of this nature and an exchange of views at an international level are, however, of the greatest value. It is only by learning of the problems of others and the methods that have been adopted to resolve them that we can more easily discover a possible solution of our own difficulties. We are also prevented from becoming complacent about the greatest problem in medical education to-day—how to obtain the very best material to continue and extend the great traditions of our profession.

SELECTION OF STUDENTS IN INDIA*

BY

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There has been a rapid increase in the number of medical colleges in India in the last six years. At present there are 29 undergraduate medical colleges in post-partition India, as compared with 16 in the undivided India of 1947, and it is planned to add four or five more in the near future. This great increase has become necessary because the number of qualified medical men has been, and is, so small for the total population of the country, which reaches nearly 340 millions. For comparison, one may note that in the United States there are 76 medical colleges for a population of 160 millions, and over 20 medical colleges in Great Britain for a population of 50 millions.

Minimum Qualifications

As the result of a nation-wide inquiry into the selection of medical students in India I find that methods vary throughout the country. The minimum qualifications are intermediate examination (taken two years after matriculation or school-leaving examination), with physics, chemistry, zoology, and botany as compulsory subjects. About 10% of entrants have the B.Sc. degree. The minimum age for admission is 17 years.

At a number of centres—for example, Lucknow—all students must appear at a premedical examination (written), when they have to answer four question papers—one each in chemistry, physics, zoology, and botany. At Lucknow usually 1,100 to 1,200 students of both sexes sit for the examination each year. Of these the top 100 boys and 25 girls are asked to return for interview. The interviewing board consists of a chairman and two members together with the hospital radiologist. The latter examines the applicants under the screen and sends a report to the chairman, who, along with the other members, examines them physically and asks a number of questions of general interest, to get a rough idea of the mental make-up of the candidates. No attempt is made otherwise to assess the aptitude of the student for the profession of medicine.

In the majority of institutions no premedical test is held. Students possessing the necessary qualifications are asked to apply for admission. In their applications they are required to state the marks obtained by them in the various examinations, and selection is made on scholastic merit. After selection the candidate is usually interviewed by a board, when a few general questions are asked, but this interview is regarded as of secondary importance.

A small number of places, usually 5 to 10%, are reserved for the so-called backward classes and for candidates from outside the country—for example, those from Nepal and Indians living in such countries as Africa or Fiji.

The survey also showed that about 2,000 students are admitted every year for a five-year undergraduate course. (To these may also be added another 500 to 600 students who are admitted for a "condensed course" for the M.B., B.S. degree. This is intended for "licentiates" who had previously attended a four-year course and were practising as registered medical practitioners.) Not more than 30 to 40% of these students qualify in the minimum five-year period; another 30 to 40% take five and a half years to graduate; and the remaining 20%, six years or longer.

There are about 50,000 qualified doctors in India, giving a ratio of 1 to 7,000 of the population. Even with the increased number of medical colleges and the consequent increase in admissions, we do not expect to have more than 2,000 newly qualified medical men a year—a totally inadequate

*A paper read in Section A at the First World Conference on Medical Education, London, 1953.