

he will be able to recognize his own special abilities and select the line in which he can best succeed.

For several years we<sup>1</sup> have refused advanced standing to graduates in veterinary medicine, dentistry, pharmacy and literary colleges, although the constitution of the association permits such recognition. Such graduates are, as a rule, not better able to cope with the medical course in a shorter time than those who lack a college training. A high-school graduate usually makes a better student than the average college graduate. The law of New York forbids the recognition of colleges that grant advanced standing for the degrees mentioned and none should be allowed.

Certain medical studies should be allowed to count towards an A.B. degree. An A.B. degree should not be allowed to count towards a medical degree.

No college, a member of this association, should receive a student from another school unless he holds a special letter from the dean of the school from which he comes. During the past year students have come to me from other schools with clean certificates, which on inquiry proved to be falsified. Some system should be adopted which will effectually prohibit such fraudulent attempts.

#### REQUIREMENTS FOR ADMISSION TO MEDICAL SCHOOLS.\*

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It will aid us in discussing this topic to review briefly the quantitative requirements now exacted:

1. In accordance with statutory provision.
2. By individual medical schools.

In the state of New York a preliminary general education equivalent to graduation from a four-year high-school course after a completed eight-year elementary course is prescribed by statute as the minimum standard for license to practice medicine. Quantitatively this standard approximates that demanded in Continental Europe. Qualitatively it leaves much to be desired. The defects are being remedied, as I shall show later.

New Hampshire, Ohio and Vermont have similar requirements, but they are not as rigidly enforced. Wisconsin demands the equivalent of admission to the junior year of an accredited high school. Delaware, Maryland, New Jersey and Pennsylvania prescribe a "common school education," Louisiana "a fair primary education," Illinois and Iowa less than one year of high-school work, Maine and Virginia evidence of a preliminary education, Arkansas a good literary education where a licensing examination is required, Rhode Island a high-school diploma or its equivalent under the same conditions. In remaining political divisions laws and rules are either silent in this respect or so indefinite as to be of little value.

According to the latest available catalogues Johns Hopkins and Harvard exact a college course for admission; Western Reserve, the completion of the junior year in college (really, as appears later, Harvard should also be in this class; admission to baccalaureate courses, however, is higher than elsewhere); the University of Minnesota, the completion of the freshman year; 17, 9, 14 and 90 medical schools require respectively four, three, two and one year of high-school work; 11 demand a

grammar school education; in three the requirements are indefinite.

At present only four medical schools in the United States exact more in quantity than is represented by the New York state medical student certificate. Later, in speaking of qualitative requirements we must also include in this roll of honor Columbia, Cornell, Syracuse, University of Michigan and, after 1904, the University of California.

In answer to recent inquiries 79 of the 80 medical schools of the United States giving definite information on the subject report that the New York state medical student certificate is accepted at its face value for entrance.

There has been substantial progress since 1900, but it is still true that when medical schools conduct their own entrance examinations the tests are often mere matters of form, even though the standards appear satisfactory on paper.

The five subdivisions of this topic call for a discussion of qualitative requirements. Up to this point we have spoken entirely of quantitative requirements. I think, however, that we shall get a clearer conception of the quality of the work that should be required by approaching the subject in this way.

A satisfactory uniform statutory requirement is impracticable at present, owing to varying conditions as to density of population, educational advantages and general development. It should be comparatively easy, however, with united efforts on our part, to bring about much more satisfactory conditions than those at present prevailing.

It is highly desirable that there should be a sufficient degree of uniformity in admission requirements to medical schools so that, as in other countries, students could go without inconvenience from one school to another for special lines of work.

In graduate schools it would seem sufficient to make a minimum requirement, as at Johns Hopkins, in languages, physics, chemistry and biology. It appears that Harvard, though nominally requiring college graduation, has been in the habit of accepting master degrees, which may represent nothing, or bachelor degrees, like the Spanish *Bachillerato* or the French *Bachelier*, which stand for little in advance of high-school graduation. Then, again, the combined course as at the Lawrence Scientific School and the medical school may be completed in seven years.

Graduate schools probably without exception will continue to be parts of great university systems, where work is organized on very broad lines, thus making it possible to vary to a considerable extent the requirements for an M.D. degree.

Next in order come those schools that demand for admission to the four-year medical course one, two or three years of college work. At present there are only two schools in this class, or three including Harvard. Here there is an excellent opportunity for work in Latin, French and German, physics, chemistry, biology and mathematics, to make good deficiencies in high-school courses.

We now reach the most important class, the schools that follow the New York statutory requirements in demanding for admission a four-year high-school course based on an eight-year elementary course. I say the most important class, though it now embraces only 17 schools, because this is the highest standard that will be obtained by a large majority of those who study medicine.

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\* Read before the Association of American Medical Colleges, 1902.

The fact that 79 out of 80 medical schools giving us information on this matter report the acceptance of our medical student certificate at its face value, shows that in this credential we have the best common basis for work toward higher standards. The New York state medical student certificate is awarded either as a result of regents' examinations or of equivalent work in an accredited school. The acceptance of equivalents involves the careful registration of schools in all parts of the world. At present the list of registered schools, which is subject to constant revision, embraces about 9,500 institutions. Our facilities for this work are unsurpassed. In fact, no work of the kind elsewhere can be compared with it even in a remote degree for thoroughness and comprehensiveness.

The New York law fixes the statutory requirement at four years of high-school work after a completed eight-year elementary course without restriction as to subjects. It is not probable that the statute will be amended to prescribe specific subjects. Columbia, Cornell and Syracuse have done so already, however, and other New York schools will soon follow their lead. Dr. Vaughan tells us that the University of Michigan now demands specific tests which, in his judgment, can not be met, as a rule, before the completion of the sophomore year in college.

In 1900 the regents of the university, with the assistance of the medical council, suggested a preparatory medical course for adoption by New York secondary schools. In the report of the college department of the university for 1901 we compare this course with those of 12 leading universities of the United States, known to have special requirements for the fall of 1902. Following are the required subjects in the course recommended by the medical council: algebra, first year Latin, plane geometry, physical geography, Greek history, Cæsar's Commentaries, physics, Roman history, botany, first year German, chemistry, zoology and English history. All these subjects are found in the special requirements of Columbia, Cornell and Syracuse. The following subjects of the medical council's course are required or recommended in all the courses of the remaining nine universities: algebra, elementary U. S. history and civics, first year English, first year Latin, plane geometry, Greek history, Cæsar's Commentaries or second year Latin, first year German, first year French, physics, Roman history, second year German, second year French. The only subjects not recommended by the medical council that are required in any of these universities are plane trigonometry by the University of Michigan and solid geometry by Northwestern University.

It is clear to me that we should not be too specific in prescribing entrance requirements. In other words, alternatives within reasonable bounds should be permitted. Our medical student's certificate accepted at its face value generally throughout the United States, now specifies exactly the subjects represented. In this way it has been materially strengthened. There is no longer any excuse for its acceptance at more than face value. Hereafter former matriculates under exemptions can not attempt successfully to represent themselves as high-school graduates. If plane trigonometry, for example, were not included on a credential presented by an applicant for admission to the University of Michigan a special examination might be demanded in that subject. To me it would seem unnecessary to do this, provided the applicant were able to offer other subjects that might fairly be considered as an equivalent. A reading

knowledge of both French and German, for example, is desirable, but I should accept Spanish, or perhaps another language for either French or German. Then, again, we should remember that it will be some years before high schools generally will be prepared to teach biology, physics and chemistry. In the meantime, most of our medical schools must accept alternatives. New York secondary schools have made very rapid progress recently in teaching these subjects. In fact, I do not hesitate to say that if botany and zoology, physics and chemistry are required in the near future for admission to New York medical schools, New York secondary schools will be able to give instruction that will meet the needs of the medical school. I believe, however, that though in other political divisions there are individual schools that do work in these subjects superior to that done by the average New York school, yet the average in New York state is higher than elsewhere, mainly because in New York state only there is a central authority that insists on a satisfactory secondary school equipment and protects the public from the imposition of bad work.

It seems to be the consensus of opinion that two years' work in Latin should be required, that algebra and plane geometry should be required in mathematics, that both physics and chemistry should be demanded and half a year each in botany and zoology. The uniformity already secured in the requirements of these 12 leading universities leads me to believe that with a reasonable use of the alternative plan we could agree on a preparatory medical course that would be acceptable generally throughout the United States by all schools admitting high-school graduates. Even more than this, schools that require one, two, three or four years of high-school work could admit on a part of this same course while working toward higher standards.

A word in closing as to admission to advanced standing. In 1902 the New York medical law was amended so that hereafter the regents may, in their discretion, accept as the equivalent of the first year of the four-year medical course evidence of graduation from a registered college course, provided that such college course shall have included not less than the minimum requirements prescribed by the regents for such admission to advanced standing. Those who favored this amendment to the medical law argued that a three-year medical course based on a satisfactory four-year college course was preferable to a four-year medical course based on high-school work only. This allowance of one year means frequently rather the shortening of the college course than of the professional course, i. e., universities maintaining medical departments are permitting seniors in the baccalaureate courses to elect the regular medical course. In January, 1899, a committee of the faculty of medicine at the University of Pennsylvania reported, after an exhaustive study: "It is evident that the trend of higher medical education and also the sentiment of the medical profession is that four full years shall be spent in a purely medical school." The dean of the faculty of medicine at Yale writes: "We believe that four years is not too much time for even a college graduate to devote to his medical course, and that three years is a sufficient time to put on his general college course."

It is believed that seven years for the combined baccalaureate and medical course represents the highest practicable standard for those students of medicine that are able to take college work, and that this fact will be generally admitted as time goes on. In 19 departments of universities both baccalaureate and medical degrees are obtained on three years in the baccalaureate course

and four years in the medical course. In 21 departments of universities the baccalaureate course is four years in length and the medical course three years in length. Forty-three independent medical schools make an allowance of one year to graduates in arts and science of reputable colleges. In 28 medical schools less than seven years are required for both baccalaureate and professional degrees. Forty-four do not give us satisfactory information on this subject.

In 79 medical schools an allowance of one year is also made to graduates in dentistry, in 70 to graduates in pharmacy, in 59 to graduates in veterinary medicine, in two to graduates in osteopathy. In 68 there is no evidence of allowance in these classes.

It is my present opinion that the regents should be somewhat elastic in registering college courses under the amended law. It should be sufficient for them to require that the college work be of such a character as will fit students for admission to advanced standing in medicine. It will be contended that only those medical schools that are wealthy enough to provide many courses from which candidates have the privilege of election within certain limits can admit to the second year of medicine without disorganizing their work students with baccalaureate degrees representing only a broad training in Latin, French and German, physics, chemistry, biology and mathematics. It may be that many schools now giving generally an allowance of one year to college graduates may be driven, like Yale and the University of Pennsylvania, to abandon this plan and to admit to the second year only such students as have covered satisfactorily the work embraced in the first medical year.

As medical school faculties are strengthened, however, and as faculties increase, they can admit to the second year of medicine more and more freely those with baccalaureate degrees that embrace a general training in Latin, French and German, physics, chemistry, biology and mathematics. In other words, I believe that at present the regents should look at it from the broad standpoint that a three-year professional course based on a four-year college course is preferable to a four-year medical course based on high-school work only, and that the responsibility for the necessary rearrangement of work must rest with the medical schools.

#### OBLIQUE INGUINAL HERNIA.\*

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MINNEAPOLIS.

There never was a time in the history of medicine when the physician was not given an opportunity to treat hernia. A short history of the treatment of hernia may not be out of place here. It was a subject which engaged the thoughts of the first surgeons.

The attention which patients suffering with this affliction received in the early days of surgery is not flattering to the profession. We of to-day can scarcely conceive of such ignorance of surgical principles as the operators of the fifteenth century showed. The instruments used in that period for treating the affection were crude and barbarous to say the least. A study of the technic of some of the operations is certainly interesting. The evolution of the operation for hernia is a noted example of the progress of surgery along all lines.

Up to the time of the invention of the truss various plasters and irritants were used to produce an inflam-

mation at the site of a hernia. If a slough occurred a cicatricial plug resulted, or an adhesive inflammation closed the canal. Some of these secret irritants brought good incomes to the venders. The famous Littlejohn obtained from George the First £3,000 and an annuity of £500 more for the secret.

Celsus first employed a truss. It consisted of a strap and a plate. Gordon, in 1305, suggested the spring truss, but it was not adopted until 1785, when Peter Camper rediscovered its use. Irritants were frequently introduced into the pad, which, because of the continued pressure, produced the desired effect all the sooner. This method of cure was entertained by a number of the French Academy as late as sixty years ago. Trusses are sold at the present time which are supposed to have such an irritating effect as to cause an adhesive inflammation of the sac walls.

The actual cautery and caustics were used, many persons losing their lives because of infection and slough which extended even to the bowels. The parts were frequently burned to the bone. As late as 1853 Stolz used a paste of caustic potash, nitrate of silver and gum arabic on the inner surface of the hernial sac. Quite recently Ratier treated cases by passing a seton on a needle in the sac and out through the skin at a level of the inner ring. This seton was left until suppuration occurred.

Castration for the cure and prevention of hernia was practiced, especially in France, as late as the beginning of the nineteenth century. Bishop St. Papaul stated that in his diocese alone 500 children had been castrated for the purpose of preventing hernia. The golden suture used was equal to castration. Valpeau and others scarified the ring. The testicle has been stitched into the internal ring to close the opening. Bonnet, not more than sixty years ago, practiced a needle operation. It consisted in passing a series of needles through the skin, sac and all. Pirogoff, after opening the sac, introduced a small gold-beater's skin, inflated it and tied it off. Valpeau and Jobert obtained some cures by iodine injections. Pancoast also reports several good results obtained in like manner in 1836.

Joseph H. Warren, instead of injecting an irritant inside the sac, used white oak bark external to the sac, which excited so much inflammation as to cause an adhesive inflammation of the tissue without producing a closure. Many of the quacks to-day are still adhering to this dangerous and unsatisfactory practice. In page advertisements they promise a cure without resorting to the knife.

With so many dangers and failures attending the attempts to cure hernia by sealing up the peritoneal opening from the abdomen to the scrotum, other means were tried. Dzondi was the first to suggest a plastic operation. He transplanted a section of skin into the hernial opening. Gerdy invaginated the scrotum, and with a peculiar clamp held the invaginated tissue within the inguinal canal. Later he used a needle and thread and fastened the invaginated scrotum in the canal.

Burns, Lehman, Zeis, Wattman, Gunther, Schmidt and Wützer worked along the same line, endeavoring to hold the invaginated scrotum within the canal and up to the internal ring by ivory pegs, instruments or stitches carried by peculiarly constructed needles.

Wützer constructed an instrument having a needle at its inner end which was made to pass through the fold of the integument near the internal ring. A set

\* Read at the twelfth annual meeting of the Western Surgical and Gynecological Association, held at St. Joseph, Mo., December 29 and 30, 1902.