

place, and the fee charged. A syllabus of the lectures in any given course is also drawn up. We give two specimens of these latter for the purpose of showing the method and scope of the lectures:—

Syllabus of Lectures on Inductive Logic and the Methods of Science.

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| 1. Induction and Deduction. | 7. The Four Methods. |
| 2. The Uniformity of Nature, its meaning and proof. | 8. Verification. |
| 3. Observation and Experiment. | 9. Fallacies of Induction. |
| 4. Means of accurate Observation. | 10. Arguments from Analogy. |
| 5. Classification. | 11. Lord Bacon and the Inductive Method. |
| 6. Hypothesis. | 12. Classification of the Sciences. |

Syllabus of Lectures on Light and Spectrum Analysis.

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| 1. Sources of Light. | 8. Colour. |
| 2. Propagation of Light. | 9. Spectroscope. |
| 3. Reflection of Light. | 10. Radiation Spectrum. |
| 4. Refraction of Light. | 11. Celestial Spectrum. Absorption. |
| 5. Vision and Optical Instruments. | 12. Radiation and Absorption. |
| 6. Theories of Light. | |
| 7. Dispersion of Light. | |

One lecture of an hour's duration is given every week, and at the close of the lecture the lecturer stays for a time, to explain more fully any difficult point, to recommend the books to be read, and the course of reading to be pursued. Besides this, the lecturer meets once a week those who attend the lectures, in a class, in which the instruction given is of a conversational character, questions being put and answered, and a general discussion raised. At the close of the course an examination is held on the subject of instruction, and certificates are granted to those who pass the examination satisfactorily.

Such is the University Extension Scheme. It is not unreasonable to hope that it is the germ of a great educational system which shall permeate the land.

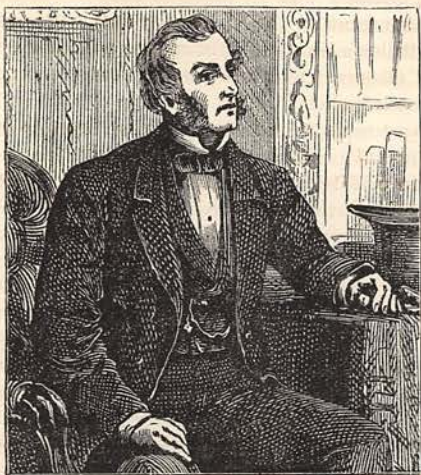
We have now a few seats of learning, a few homes of culture, a few centres of thought; but why should

not every large town be such in a certain measure? The great mass of our population will probably never be able to give three years of life to a Collegiate course at the Universities; but why should they not have Colleges with similar functions to those of the Universities at their own doors? The institution of mere science Colleges like those at Leeds and Newcastle—very valuable so far as they go—are not sufficient. They do not go far enough. An education based simply on physical science is a one-sided education, devoid of culture. The institutions required are those which will teach many things, which will provide an education developing the mind in many ways and by many means. The city of Manchester has such an institution in Owens' College; is it chimerical to hope that the time may come when every large city shall have its Owens' College? Such a College might be maintained by the city itself out of its rates, while Oxford, Cambridge, and London would supply the needful teachers. "Oh!" say some, "people would never stand this; they are burdened already with heavy rates and taxes; they do not wish that any more should be added." We would ask such people how their burdens are caused;—by crime and pauperism. This crime and pauperism is the legitimate offspring of the ignorance and folly of the past; and money spent to dissipate these clouds of ignorance is one of the surest methods of reducing the rates caused by crime and pauperism.

Were this system of local Colleges carried out, our large towns would not be simply immense, ugly tracts of dreary buildings, devoted to the getting and spending of money, but centres of intellectual influence, giving forth on all sides rays of light, and diffusing culture and refinement in the midst of crowded populations.

HOW TO QUALIFY FOR THE MEDICAL PROFESSION.

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SO varied and numerous are the channels through which the medical profession may be entered, that it becomes a matter of some difficulty to afford any precise information as to the

Medical Council, a Council which may be said to preside over the profession, every student must be registered, and before being registered he must produce a certificate of having passed some preliminary examination in arts recognised by the Council. Hence, the whole course of study which it is required that every student shall pass through, before receiving any diploma qualifying him to practise as a medical man, divides itself naturally into two distinct portions—the preliminary and the professional education, as they are generally termed. The preliminary education consists, as we have before intimated, in passing, and obtaining a certificate of having so passed, some examination in arts, recognised by the General Medical Council for the purpose.

Now there are several examining bodies whose certificates are accepted by the Medical Council as satisfying their requirements under the head of preliminary education. The list is a long one, and it would be beyond our present purpose to furnish a complete summary of them all. It will, however, be useful to

course to be adopted by any intending student of medicine. By the rules and regulations of the General

quote some of those best known. 1. Graduation in arts at a British University. Among the Universities recognised we find Oxford, Cambridge, Dublin, London, and Durham, besides many others. 2. Oxford: responsions; the senior and junior local examinations of both Oxford and Cambridge, provided the certificates include Latin and mathematics. 3. Cambridge: "previous examination." 4. Matriculation at London University. 5. The first-class examination of the Royal College of Preceptors. Provided, then, the student possess a certificate of having passed some one of these examinations (but it must be remembered there are several others), he is not subjected to any further preliminary examination in arts, and he may proceed to the professional curriculum at his leisure. But most probably the student will not have obtained any of the above certificates: for what examination, therefore, is he to present himself? what preliminary examination, in fact, is passed by the great majority of students entering the profession? There are two—the preliminary examination of the Royal College of Surgeons and that of the Apothecaries' Society. As these two constitute the bodies whose final qualifications are sought by the great majority of students, it comes that the bulk of students select one or other of these preliminary examinations. The certificate of passing either one of them is accepted by the other body as sufficient evidence of a due knowledge of the subjects of preliminary education, so that the qualification of the College of Surgeons may be obtained by one who has selected the preliminary of the Apothecaries' Society, and *vice versa*. These examinations are divided into two parts—compulsory and optional subjects. The former comprise writing from dictation; English grammar and composition; arithmetic (simple rules); geography and English history; Euclid, Books I. and II.; algebra to simple equations; Cæsar, Book II. of Commentaries "De Bello Gallico." The optional subjects are six in number, one of which must be taken up by each candidate. They are: 1. Xenophon's "Anabasis," Book I.; 2. X. B. Saintine's "Picciola;" 3. Schiller's "Wilhelm Tell" (these three subjects include questions on grammar); 4. Mechanics; 5. Chemistry; 6. Botany and zoology.*

Before taking leave of the subject of preliminary education, we have one suggestion to offer—and that is, we earnestly recommend all students to act upon the information given in the footnote on this page, namely, to qualify for the Fellowship of the College of Surgeons. The advantages of fulfilling the requirements for the Fellowship of the College at the preliminary examination are forcibly impressed upon us from time to time by witnessing the distressing spectacle of a duly qualified Member of the College working up his Greek or algebra in order to obtain the Fellowship. This we think is sad enough; but it is even more deplorable that a Member of the College, who finds that his future success would be considerably

enhanced by the possession of the higher grade of Fellow, should be debarred from obtaining it simply because he omitted including the one or two extra subjects in his former examination.

Before going further it will be well to give a slight sketch of the three examining bodies in England whose diplomas are sought by the great majority of students. By far the most important qualification in this country is that of the Membership of the Royal College of Surgeons of England—the "M.R.C.S.," as it is commonly abbreviated—inasmuch as nearly all students eventually become candidates for this diploma. It constitutes the most important of the so-called student-qualifications. There are two grades in the College of Surgeons—Fellows and Members. The Membership of the College is the only one of these which need occupy our attention, it being the qualification possessed by the great bulk of practitioners; indeed there are numbers of medical men in practice who possess no other qualification besides this. It is, however, far more usual for a medical man to be doubly qualified—that is, for him to obtain a diploma in medicine as well as surgery. As we have said, he obtains his surgical diploma at the College of Surgeons: where does he seek his second or medical diploma?

There are three examining bodies, which share between them, though not in an equal degree, candidates desiring this second qualification. They are the Royal College of Physicians of London, the Royal College of Physicians of Edinburgh, and the Apothecaries' Society. We do not intend to enter into any minute details with regard to the conditions which it is necessary to satisfy, nor the course of study to be pursued, in order to become eligible for these various diplomas, but it would be impossible to form any definite ideas at all on the subject of medical qualification unless we refer to these examining bodies.

In the Royal College of Physicians of London there are three grades—Fellows, Members, and Licentiates. Of these the first is purely honorary, and so in a certain sense is the second. The third is that taken by the student at the close of his hospital career, and constitutes another of what may conveniently be termed student-qualifications. The bye-laws of the College of Physicians impose such restrictions upon its Fellows and Members—such, for instance, as prohibiting them from entering into partnership with another medical man, and from dispensing their own medicines—that these higher qualifications are not sought, and indeed can hardly be held, by the ordinary general practitioner. The College of Surgeons does not place such restrictions upon its Fellows as the College of Physicians, consequently this higher qualification may be held by general practitioners.

The only grade in the Apothecaries' Society is that of Licentiate—the "L.S.A."—which forms yet another of what we have termed student-qualifications. This diploma is very much less frequently sought for than was formerly the case, owing to the increasing popularity of the Licentiateship of the College of Physicians, but few men caring to possess themselves

* A candidate, in order to qualify for the Fellowship, is required, in addition to the subjects included in Part I., to pass in Greek, and French or German, and in one at his option of the remaining subjects in Part II.

of more than two diplomas. The L.S.A., however, is more frequently taken than it otherwise would be, owing to the fact that there are parish appointments in various parts of the country which can only be held by one possessing this particular qualification.

In former days the mode of access to the profession was by apprenticeship to some regular practitioner, but in the present day this has been almost completely departed from. The young student entered his master's dispensary or surgery, where he learned to dispense medicines, make a pill, and spread a plaster, and accustomed himself to the routine duties of surgery work. With a good master no course of instruction could be better adapted to the purpose of making thorough good practitioners. But on the other hand, with a careless master the system only tended to perpetuate routine practice, and to produce careless, half-educated practitioners. Nevertheless, the system is one to be strongly advocated, and we would recommend intending students to spend one or two years—not more—with some practitioner, before entering any medical school. The number of years prescribed for the professional curriculum is four, while most hospital courses are so arranged as to be got over in three, leaving a year at the student's disposal, unoccupied by class work. It would be difficult to over-estimate the advantage which the student would derive from spending this year, before entering at any medical school, with some well-educated general practitioner, who would manage to spare an hour during the day, to direct his pupil's studies in elementary anatomy and physiology; we would especially urge the importance of acquiring some acquaintance with the study of human osteology, commonly known as "bones," during this preliminary term of professional education.

In due time, then, the preliminary examination in arts having been passed, and the year, or perhaps two years, spent with the general practitioner—we trust conscientiously and beneficially—having slipped away, the student attaches himself to some school of medicine. We have not sufficient space in such an article as this to enumerate all the hospitals recognised by the College of Surgeons as medical schools. There are eleven metropolitan and some forty provincial schools in England alone; we refer our readers to the *Medical Directory* for 1876 for the list in detail. At any of these hospitals the student may pass the three or four years, according or not as he has carried out our suggestion of becoming the pupil of some general practitioner. Very many students spend one year at some one of the provincial hospitals, afterwards coming to London to finish their course. We see nothing to commend in this; we know that it too frequently results in anything but advantage to the student. Many of our provincial hospitals are much larger than some of those in London. The student finds himself, at least in many cases, completely at sea amongst the abundance of work carried on at these hospitals, and often without any teacher to direct his studies or assist him in forming habits of careful observation. But the great majority of students at the present day come at

once to town, and enter themselves as students at some metropolitan hospital. At which of the eleven schools shall he become a student? This question, in many instances, is settled simply as a matter of convenience, the student being guided in his decision according as his residence, or that of his friends with whom he may have arranged to live, may be situated. Or again, the fact of his father, or other relatives, having formerly studied at some particular hospital may influence the student in his choice. But when no such reasons prevail for belonging to any particular school, it becomes often a matter of some difficulty to come to a decision. The old question of a large school or a small has to be discussed. The largest schools—that is to say, as regards the number of students—are St. Bartholomew's, Guy's, and University College; the first two having at the same time the largest hospitals in London as regards the number of beds. Yet, again, University College possesses one of the smallest hospitals, so that the size and importance of a medical school by no means necessarily correspond to the size of the hospital. The real truth perhaps is that the size of the hospital does not greatly matter. It is urged by the advocates of small medical schools that, by reason of their possessing fewer students, they offer greater opportunities for study, and that there is a greater chance of a student's obtaining some one of the resident appointments, on terminating his career, than at the larger schools. On the other hand, students are attracted to the large schools, as St. Bartholomew's, by the prestige and reputation which they have earned for themselves. That school, after all, will be the best to select where the teachers are active and enthusiastic, and whose success must in a great measure depend upon the success of their school.

There is one other element to be taken into account on this head. Of late years, scholarships—the so-called entrance scholarships—have been instituted at most of the schools, with a view, it is assumed, of attracting students. These scholarships are offered for competition to students just entering the profession. The subjects of examination for them are for the most part the same as those of the preliminary examination in arts; others, however, are given for natural science. Of these latter the best is an open scholarship in science, given at St. Bartholomew's Hospital, of the value of £100; it is obvious how beneficially the gaining of such an honour must affect the future course of the student's work. At Guy's the subjects of examination for the entrance scholarships consist partly of natural science, and partly of classics, mathematics, and modern languages; the scholarships are two in number, and worth respectively £60 and £30. At several of the other schools the scholarships are two or three in number, and vary in value from £10 to £40. We would here remind our readers that, while speaking of the preliminary examination in arts, we recommended all students to offer themselves for the higher examination, and so to qualify for the Fellowship, should they select the preliminary examination of the College of Surgeons. It

will now appear that there is a further advantage in adopting this course—namely, that the extra subjects which are required for the higher preliminary examination in arts will serve the student in good stead when he comes to compete for any of the entrance scholarships. In preparing his Greek, looking up his algebra and French, and in acquiring some knowledge of chemistry, mechanics, or botany, for the preliminary at the College of Surgeons, there is no reason why he should not look a little into the future; and not many weeks after having successfully passed his preliminary Fellowship, he may find himself the fortunate possessor of some £40, obtained by honourable competition at some one of the numerous entrance scholarships examinations. It is true that success in life, as Lord Derby said at Edinburgh a short time ago, in the worldly sense of the term, implies that you defeat your neighbour, and that consequently, by the very nature of the case, we cannot all be successful. But this, it must be remembered, is only true as regards the worldly view of success; in the higher and more extended sense of the term, there is no reason why the unsuccessful competitor may not be as truly successful, in the consciousness of having performed his duty to the best of his ability, as he who gains the prize.

After entering the hospital, the student will rapidly find himself in an atmosphere of medicine; and here we must take leave of him. He will soon discover the routine of his first year's studies: wherever he goes he will be met by notice-boards giving full instructions as to the hours of lectures, classes for demonstrations, and so forth; and he will shortly surprise himself and his friends by the familiarity with which he discusses the peculiarities of this bone, the numerous attachments of this muscle, and the intricate distribution of that nerve.

A few words, however, with regard to the subjects of study during the student's first year or two may not be out of place. The subjects which will engage his attention until the end of his second winter session—that is to say, supposing the student to have entered at some medical school in October, until twelve months date from the following April—are anatomy, physiology, and chemistry. He ought, then, to present himself for the primary examination in anatomy and physiology—or First College, as it is commonly termed. It is not a little anomalous that the subject of chemistry should be excluded from forming part of this examination. We would advise

the student not to lose any time in commencing his anatomical studies with vigour and determination. It may be some few weeks before he is enabled to make his *début* in the dissecting-room, owing to the large numbers of men who are studying anatomy; but the time may be advantageously spent in acquiring an accurate knowledge of some portion of the study of "bones." Far too commonly does it happen that students, fancying the two winter sessions to be more than enough for the acquirement of sufficient knowledge "to pass First College," as they say, do very little or no work during their first year, and consequently have recourse to spurts and cramming in order to pass their primary examination. The real truth being that, for the acquirement of anything beyond a superficial knowledge of the subjects, the prescribed two winter sessions are all too short. During the first summer session, the subjects of study are botany, *materia medica*—that is, the nature of drugs and their application—and practical chemistry. After having passed the First College, the student passes on into the wards of the hospital. He takes some appointment, either as a "dresser" in the surgical, or a clinical clerk in the medical wards. We need hardly urge on him the importance of early acquiring habits of industry and observation in his daily duties in the wards, nor of cultivating a kind and gentle manner at the bedside. The subjects of examination for the second, or pass examination, for the diploma of the College of Surgeons, are the principles and practice of surgery and medicine.

The fees which it is necessary to pay for attendance on the practice and lectures at the different hospitals vary considerably. At most of the large ones these amount to £100, or £105 if paid in one sum; at the London and Middlesex hospitals they amount to £94 10s. and £90 respectively, while at the Charing Cross and Westminster £80 will cover them. All of these fees are payable by instalments, and this is the more usual method of payment. The fee for the diploma of Membership of the Royal College of Surgeons is £22, of which £5 5s. has to be paid prior to the primary examination; for the Licentiatehip of the Royal College of Physicians it is £15 15s.; and for that of the Apothecaries' Society, £6 6s., of which £3 3s. is paid at the first part of the examination. The fee of £2 is demanded prior to the preliminary examination in arts at the College of Surgeons.

MY IDEAL.



LITTLE face I ne'er can see,
Bright loving eyes full dear to me;
A little dimpled, blushing face
I seek afar in every place.

A little voice full sweet with song,
Its wild-bird notes around me throng;

I seek the voice, and seek in vain,
And all its song seems fraught with pain.

A little heart, all hearts above;
A tender heart that throbs with love;
Face, voice, and heart—ah, mystery!
Unseen, yet loved, they dwell for me.

G. W.