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THE  
STUDY OF DENTAL SURGERY

*And the Means Thereto.*

BY  
JOHN TOMES, F.R.S.

LONDON.

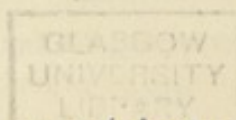
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ISSUED BY THE BRITISH DENTAL ASSOCIATION.

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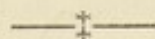
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# THE STUDY OF DENTAL SURGERY AND THE MEANS THERETO.



DENTAL surgery has, during the present century, with the full consent of the medical and general public, developed into a well-defined speciality. The medical practitioner refers all dental cases to a dentist, where one is at hand, and the general public select him as the fittest to help them in all cases of dental trouble. No apology therefore need be offered for the separate practice of dental surgery ; neither need arguments be put forward in support of its continuance as a distinct branch of surgical practice. The necessities of society on the one hand, and the technical requirements of the dentists on the other hand, have determined the condition of separateness. But this great international meeting affords a fitting occasion to inquire how the accepted conditions can for the future be met, so that the public may be best served, for herein rests the sole cause for our presence, either as special or any kind of practitioners whatever.

Utility alone is the excuse for the dentist's existence, and the full recognition of this fact brings us to the question of how and by what available means he can become most useful. How he can best fulfil the trust reposed in him as a specialist, bearing in mind that on account of his supposed superior special knowledge he is consulted, and that he assents to the belief that the dentist is far more capable than the general surgeon in the treatment of dental ailments. Clearly his honour, nay, even his integrity, is pledged to render himself in the highest degree capable of discharging to the fullest the freely accepted duties, and to this end the obligations of the teacher are in no way below those of the student. In admitting the social necessity for the presence of the special practitioner, the need for his special education is acceded, and it is to the wide question regarded in detail, of what should be the education of the dental practitioner for the determination and the due development of which we, as practitioners and teachers, are responsible, that I would call the attention of the meeting.

Before proceeding further, however, let me state that I wish it to be understood that all I have to say upon the subject of dental education applies only to those who have yet to be educated, and to those who possess neither unusual fitness or unfitness for the pursuit of dental studies.

And, furthermore, I desire to state that any opinions I express as to what can and should be done, are intended to apply only to education in this country. It will be for the representatives of other nationalities to tell us what system of professional education is most applicable and suitable in their respective countries.

In the first and second decade of the present century, dental practitioners were few in number, and for the most part, but not in all cases, members of the medical profession who, at the outset of practice, had but slender knowledge of the duties of the dental surgeon, even as they were then understood,



or, at best, had such an amount of special knowledge as the accident of a good or bad private instructor might impart. In all constructive matters he depended, from the first, on the assistance of dental mechanists. Other persons commenced their career as young men, or boys, in the laboratory of a dental practitioner, acquiring therein, in the course of an apprenticeship, extending over five or seven years, great manual skill, but whose claim to sound surgical knowledge, at the expiration of pupilage, could not be sustained; yet from this class of persons some of our most distinguished practitioners, of the last generation, were derived. The one class spent their years, when to learn is easy and authority in the teacher is effective, in the acquisition of manual skill; the other in the acquisition of medical.—I will not say “surgical knowledge” in the strict meaning of the word “surgical.” Hence it came that practice was approached from two wholly distinct sides, and resulted in the production of two distinct classes of practitioners: one competent to advise, the other competent to treat, but neither fully competent both to say what should be done, and to do it effectively.

Towards the end of the second decade, dentists began to increase in number, and each year, up to the middle of the century, brought new candidates for practice, the vast majority of whom came directly from the dental laboratory, and who were, for the most part, below the surgeon in general education, and in whose medical knowledge they had no share.\*

Out of this educational difference arose an inter-professional division, not to say jealousy, in which society took but little interest, each person selecting for himself a practitioner, from whom he hoped to secure all the advantages treatment could effect, and the choice as often fell upon the unqualified as upon the surgically qualified dentist.

Among the more intelligent practitioners, it came to be freely admitted, that dental education, from its one-sided character, was in a very unsatisfactory condition; and after some years of discussion, the opinion was accepted that the general and special portions of dental training should go on simultaneously; so that skill of hand and surgical knowledge should be acquired in the days of our youth, when the power to acquire is at its best, and at the only time, indeed, when a high degree of manipulative skill can be acquired.

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\* In May, 1878, the number of *bonâ fide* United Kingdom dental practitioners was estimated at about 2,000, by persons engaged in supplying them with instruments and materials used in the practice of dental surgery. This estimate did not include either dentists' pupils or assistants of any kind, or persons who performed trifling operations, or who merely extracted teeth in connection with the practice of pharmacy, or of any other business. The initial register, published in 1879, contains the names of 5,291 persons, of whom 2,049 alleged that they practised dentistry with pharmacy, 50 with medicine or surgery, leaving 2,707 persons who practise dentistry as their sole occupation, 483 of whom are licentiates in dental surgery. If a reasonable deduction be made from the remaining 2,224 as representing assistants, real and assumed, and of quasi practitioners who are known to have registered, the entries in the register will support the accuracy of the original estimate of the number of *bonâ fide* practitioners, whose registration was contemplated when the Dental Practitioners Bill was drawn.



A consensus of opinion as to requirements having been gained, effective action soon followed. But we were not the first to recognize the necessity of a systematic dental education. Our American brothers not only felt, but provided for, the want, in the organization of dental colleges; and in following in their footsteps, and profiting by their experience, we accepted an obligation, which should at all times be freely acknowledged. The history of the organization, past and present, of the colleges has been published in "The History of Dental and Oral Science in America," 1876. From this work, from Dr. Eliot's address, delivered before the American Academy of Dental Science, 1878, and from the prospectuses of the colleges, I shall take the facts, a statement of which should be made in acknowledgment of the work of our predecessors, and of those differences of method, or of requirements in education, which differences of social or of national wants or opinions have rendered desirable or necessary.

In order to arrive at a right understanding of the constitution of the American dental colleges, it will be advantageous to refer very briefly to the state of medical education, and of the medical colleges, upon the lines of which the dental schools were, to a certain extent, of necessity framed. For this information I am wholly indebted to a "Special Report upon Medical Education and Medical Institutions in the United States of America," prepared for the United States Bureau of Education, by N. S. Davis, A.M., M.D., 1776—1876; and "The Relations of the Medical Profession to the State," by D. B. St. John Rosa, M.D., 1879.

In early days, Scotch graduates, who settled in America, organized a university drawn after our northern model, but it was soon found that educational demands upon the student, readily met in Scotland, were altogether beyond the powers of the youth in a newly settled country. Hence, to avoid failure, the standard had to be lowered in favour of private pupilage. After the War of Independence—according to Dr. Davis—universities and colleges sprung up in the several States, subject only to the dormant control of the legislature of the State in which they were situated, and from which they derived their corporate powers. Neither the dominant feeling of the country in favour of individual liberty, or the multiplication of graduating bodies, tended to arrest the progressive lowering of the terms upon which the doctorate in medicine could be obtained; and "the fact," says Dr. Rosa, "that the degrees conferred by the colleges became practically recognised throughout the whole country, as a sufficient license to practice medicine in all its branches, gave the student an opportunity of obtaining a degree wherever it was granted, upon the most convenient or easiest terms;" fully justifying the complaint of the president of the Medical Society of New York, in speaking of the medical colleges to the effect that, "The present necessary laxity in admission, and in final examinations, fairly overwhelms the land with physicians. Many of them are only so by title."

This is but describing a state of things that, in a certain degree, existed in our own country at no pre-historic time, and against which great efforts had to be made before it was brought within control, and practically to an end. Its bearing upon our subject is important, in so far only as it no doubt



influenced the institution and constitution of dental colleges in America, created in 1840, and afterwards. The distinguished president of Harvard University, in his admirable address on dental education, divides the subjects which constitute the fitting education for the dental surgeon into those which are common to the general and to the special surgeon, and those which are peculiar to the latter. The general he estimates at three-fifths, and the special subjects at two-fifths, of the whole education ; and there will be few dissentients to this division. Keeping Dr. Eliot's estimate in view, but that the medical degree was often given and taken on such easy terms, it would, from our stand-point, have been difficult to understand how it was that so many dental colleges undertook to educate their students in the principles of medicine and surgery, necessary to the dentist, in the presence of schools devoted to these subjects, furnished with all the multitudinous appliances necessary to successful teaching, and provided with teachers of experience and distinction.

The withdrawal of the dental student from association with the general, in the study of subjects common to general and dental surgery, offers here no educational advantage, in compensation for the injury his limitation to a special school would probably inflict. The separation might tend to produce a distinction of social position, to the obvious disadvantage of the dental practitioner, whose claim to the possession of the necessary amount of medical or surgical knowledge might be challenged by those who studied under more favourable circumstances, and under the guidance of eminent teachers. For, however little professional education may be forced upon the individual, there never has been a time when the diligent and determined student might not readily acquire a thorough knowledge of his profession in the medical schools of America or of our own country.

The position taken by the medical graduating schools, thirty-three in number, at the time (1840) when the first dental college came into existence, would inevitably influence the organization of the latter. It is not reasonable to suppose that the dental could, even if they would, exact a higher degree of culture than the medical colleges.

Still, even a casual study of the subject leads to the conviction that our transatlantic brothers were, and are yet, strongly and rightly impressed with the absolute need of a thorough special training, and although not in a position to enforce its acceptance, yet offer to the student every inducement to acquire a sound knowledge of the special subject and the skill requisite for its practice.

The general subject appears to receive less attention, or, at all events, occupies in the dental colleges' prospectuses, a less prominent position. In some cases, indeed, it would almost seem that a college faculty considered that a sufficient knowledge of the general principles of surgery could be gained in the study of the special subjects. It may be so ; but to the English dentist who, bent upon instituting, and indeed insisting upon, a suitable and, at the same time, the highest attainable education for his successors, the order of things described seemed like putting the cart before the horse, and offered an example which should be followed only after a very careful



consideration of all the attendant circumstances. It was felt in this country that the prevailing medical education was, in the matter of degree, not in excess of what should be required of the dentist ; but that while it fell short to the extent of two-fifths of the whole in strictly dental knowledge, it exceeds by two-fifths in certain branches of medical knowledge, the amount which could reasonably be asked of the well-educated dental practitioner. This conviction was fully expressed in a memorial addressed to the Royal College of Surgeons of England in the following terms :—"The memorialists do not suggest an education and examination inferior to that required of the medical practitioner, but propose a certain difference in kind only, not a difference in degree—an education and examination specially adapted to the requirements of the dental surgeon, as distinguished from that fitted for the general surgeon." The value of the foregoing paragraph has not been fully or rightly estimated, either here or elsewhere. Equality of education, professional or otherwise, does not necessitate identity of knowledge. A parson, a lawyer, a doctor, may be equally well educated. The degree of education may be the same in all ; but some of the subjects embraced in each profession will be different. So it may be with the dentist and the doctor ; the degree of culture may be equal, but the subjects of study will be in part different. It has been strongly urged that dental should come as supplemental to medical knowledge—that the practitioner should be a doctor first and a dentist afterwards. This opinion might perhaps be sustained if the position were reversed—a dentist first and a doctor afterwards, provided all or even the majority of students were sufficiently rich in money and time to extend the educational period from four up to six years here, or from three to four and a-half in America, a condition of things which obtains neither in Great Britain, or, according to Dr. Eliot, in the United States.

We allot four years to the study of medicine, and the medical student has not an hour to spare for any other subject ; hence it becomes needful to determine what subjects in the medical curriculum can be lessened in extent or wholly omitted, so as to give time within the same four years for the effective study of dental surgery as a science and a practice.

This problem has not, perhaps, been wholly solved ; but as the last organizers of a complete scheme of compulsory dental education, it is hoped we may claim to have provided the most perfect curriculum hitherto brought into a nation's use. The details of this were determined by a committee of the Medical Council, consisting of the representatives of the several medical authorities which, under the Dentists Act, grant dental qualifications.

The twenty years' experience of the College of Surgeons of England being placed at their disposal, the Committee reported in favour of, and the Council adopted without material variation, the curriculum originated by the aforesaid College. The subjects therein embraced will be found appended in a tabulated form.

The unconditional entrance upon an attested preliminary education, before a medical or a dental student is allowed to commence his professional studies, constitutes a feature of great importance in the existing regulations, inasmuch as it ensures to him an amount of knowledge, and of mental



training, which renders him able to understand without difficulty the language of science, and to follow with comparative ease the methods of scientific instruction and investigation.

Before this great educational step was taken, pupils not uncommonly entered upon their professional studies so poorly informed, that much time was lost in attendance upon lectures which they very imperfectly understood, and consequently to them the first course served the purpose of general instruction, rather than of imparting available medical knowledge, and thus only of preparing them to take advantage of the second course of lectures upon the same subject.

Latterly, much has been said against the vast number of lectures students have been required to attend, and especially against the mere repetition of courses. The objection is, no doubt, valid, now that preliminary education is enforced, and the students thereby enabled to learn from one as much as they formerly did from two courses of the same lectures.

There may be difference of practice, but there can be no difference of opinion, as to the advantage to the student of an attested preliminary education. Before entering upon the consideration of the instruction common to a medical and dental education, I will quote a few sentences from Dr. J. M. Purser's "Address on the Study of Physiology," and ask you to read therein *Dental Surgery for Medicine*.\*

"I have said your business here is to learn Medicine, and you learn the other subjects only as stepping-stones to this. You do not come here to be made anatomists, or chemists, or physiologists. If you want to be an anatomist, you must give your life to it; and so of the other sciences. But you learn those parts of these sciences which are essential in order that you may take the next step safely; so much anatomy, physics, and chemistry, as are essential to physiology; and so much physiology as is essential for medicine, of which you should know all that is known."

I will venture also to bring to your notice the following relevant paragraphs from the address of Dr. Michael Foster, in which he contends that topographical anatomy, which has hitherto been studied as in some part a mental training, should now give way, to a certain extent, in favour of a more complete knowledge of physiology.†

"I think I am not overstating the case when I say that, in the two years (or less than two years) which the medical student devotes to studies other than clinical, 60 or 70 per cent. of his time—in some cases even more—is spent on the study of topographical anatomy. That study may be regarded in two lights—as a discipline, and as practical useful knowledge. The late Dr. Parkes, in a remarkable introductory address which he delivered at University College, London, many years ago, insisted most strongly that its value as a discipline was far higher and more precious than its direct utility; and I imagine that the more one reflects on the matter, the more clearly this will appear. The details of topographical anatomy have this peculiar feature,

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\* *British Medical Journal*, November 13, 1880.

† *Ibid.*, August 21, 1880.



that, though they can only be learnt with infinite pains and labour, unlike other things hard to learn, they vanish and flee away with the greatest ease. I would confidently appeal to my audience of practical men, how much of the huge mass of minute facts, which in their youth they gathered with so much toil, remained fresh in their minds two years after they passed the portals of the College; and how much now remains to them beyond a general view of the parts of the human frame, and a somewhat more special knowledge of particular regions, their acquaintance with which has been maintained with more or less frequent operations. I would confidently ask them what is the ratio, in terms of money or any other value, which the time spent in those early anatomical struggles—say over the details of the forearm—bears to the amount of that knowledge remaining after twenty, or ten, or even five years of active practice, or to the actual use to which that knowledge has been put.

“No, it is as a discipline, and not for its practical utility, that anatomy has been so useful; and this, indeed, may frequently be recognized in the questions set at examinations. When the candidate is expected to describe, within the error of a few millimètres, the structures traversed by a bayonet thrust obliquely through the neck, or is invited to reproduce written photographs, no less exact, of the parts which, from skin to skin, underlie a triangle or quadrangle drawn in ink on the front or back of the thigh, it is clear that the examiner has in view, not the needs of practical life, but an easy means of testing the proficiency of the student in mnemonic gymnastics. Of the value of anatomy as a discipline there can be no doubt. In past years it has served as the chief culture of the medical student—as the chief means by which the rough materials coming up to our great medical schools were trained to habits of accuracy, of exactness, of patient careful observation, and their memories strengthened by exercise for the subsequent strain which would have to be put upon them by more strictly professional learning. In this aspect the very sterility of the subject was a virtue. The mere fact that the separate details seemed to hang loosely, isolated in mental space, held together by no theory, by no ideas, inasmuch as it made the learning a harder task, increased its disciplinary value. Most wisely did the leaders of our profession insist that no trouble or expense should be spared to afford the neophyte this preparatory scientific training; and that, as far as examinations and the like can go, no pains should be spared to compel him to avail himself of the opportunities offered. Indeed, viewed as a branch of education, the machinery of anatomical instruction has for many years past not been equalled by any.”

Dr. Burdon Sanderson, in his introductory lecture, says,\* “The precious years which immediately precede a man’s entry on professional duty, are far too valuable to be wasted in learning anything he does not intend to retain.” If we keep in mind the lately expressed and published opinions of these distinguished teachers, we shall be qualified to form a just estimate of the

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\* *British Medical Journal*, October 9, 1880.



current dental curriculum, regarded as a training in the principles of medicine, and of its relations to the current medical curriculum.

Without substantial differences there are some slight variations in the divisions, and even in the designations, of the lectures recognized by the several surgical colleges. On this account it will be convenient, in making a comparison, to take the respective courses of study of the English College; and the more so, as its dental curriculum has been in successful operation for the best part of twenty years. If, then, we refer to the tabulated statement in the Appendix, it will be seen that the dental student is required to attend one winter course of six months on anatomy, in a recognized medical school, and a second like course, or, in lieu thereof, a course on the head and neck. He is required to have dissected for nine months—in other words, during a winter and a summer session. The medical student, on the other hand, must attend, with no alternative, two winter sessions of anatomy, and dissect during a like time—or twelve months. In fact, the dental student is relieved of part of one course of lectures and of three months' dissections. But if any credit is to be given to the opinions I have quoted, enough surely remains even for the education in anatomy of the medical, and certainly for the dental, student.

We know quite well that the knowledge of a subject got up merely for the purpose of a pass will not be retained; and who will contend that a minute knowledge of the anatomy of the foot will be of sufficient practical worth to the dentist to ensure its retention in his memory? and if not to be retained, then, precious time, Dr. Burdon Sanderson says, should not be wasted in its acquisition. That which is true of the foot is true, also, of the minute topographical anatomy of many other parts of the body, with the treatment of which, in disease, the dental surgeon is not directly or, indeed, indirectly, concerned.

A winter six months' course of lectures on physiology is required alike of each, but the dental student is excused the thirty lectures, or meetings of the class, on practical physiology compulsory on the medical student. But the former will do well to decline this exemption: for a full knowledge of physiology is equally required for the intelligent practice of any and each branch of surgery.

It is of all subjects the most interesting, and time cannot be misspent by any manner of student in its study. Neither need we fear that the knowledge of physiology will be lost either to ourselves or to those who may seek our services.

The attendance upon one six months' course of lectures on surgery during one winter session is required in each curriculum, but the attendance upon a six months' course of practical surgery, that is, of bandaging, the application of splints, &c., is not required of the dental student. A course of lectures on chemistry, and a three months' course upon practical chemistry, are required in each curriculum, together with a course upon materia medica and a six months' course on the practice of medicine.

The lectures upon forensic medicine, midwifery, pathology, practical pharmacy, and vaccination are, in the dental curriculum, replaced by other



subjects. So much for the attendance at a medical school. We now come to the practice of a general hospital. The medical student attends the surgical practice three winter and two summer sessions, while the dental student attends two winter sessions. The former is required to attend clinical lectures on surgery during two winter and two summer sessions, but two winter courses only are required of the latter. And here the pupilage of the dental student at a medical school and general hospital ends; for he is not required to attend the six months' dressership, the post-mortem demonstrations, the practice of medicine and clinical medicine of the medical curriculum. But counting all omissions in attendance, can it be said with any show of truth that the dental student has not had ample opportunities—opportunities which within living memory were considered sufficient for the general surgeon—of gaining a sound knowledge of the principles and practice of surgery? and if in the individual case that knowledge has not been acquired, it will be for the surgical section of the Board of Examiners to refuse the qualification of which they, with the dental section, are the constituted guardians in the interest of the public.

The all-important special subjects comprised in the dental curriculum now claim our attention.

In these, the medical student takes no part, while it is in the exercise of them under the direction of his general medical knowledge that the dentist takes and holds his place in society.

The conditions imposed are that he shall, subsequent to his having passed the preliminary examination in general knowledge, have devoted four years to the acquirement of professional knowledge, have been engaged during a term of three years in the acquirement of a practical knowledge of mechanical dentistry under a competent instructor, have attended and taken part in the practice of a dental hospital, or the dental department of a general hospital, during a period of two years; have attended two courses or twenty-four lectures on dental surgery; a like number on dental physiology, human and comparative; one course on mechanical dentistry; and one course on metallurgy.

These, then, are the subjects and conditions which take the place of those remitted from the medical curriculum, and who can justly say they do not impose a tax equal to the one remitted upon the intelligence, the industry, and the time of the student? It may, indeed, be contended that even a greater load is substituted for a lesser. For it is the opinion of those engaged in instruction, and those recently instructed, that nothing can be remitted from the special division of the dental curriculum. The hospital attendance must be exacted almost day by day in order to gain adequate manipulative skill, without which the practitioner would be as the musician who cannot play, the artist who cannot draw, the sculptor who cannot use the modelling tool or the chisel, or the dental critic who should be, but is not, able to equal the work he condemns. It is one thing to know the scientific principles of an art, but it is quite another to carry them into effect. This requires an amount of skill of hand which can be attained only by long and careful practice under competent teachers. The fingers



must become unconsciously obedient to the will; they must follow it automatically as the fingers of the skilled pianofortist execute the mental reading of the work he is playing, or as the hand of the sculptor produces the form the mind has conceived. Short of this unbidden obedience of hand, the performer would be but an amateur, and his professional life one long apology—a life of words in the stead of work.

It will be admitted by all that skill of hand can be attained only by long practice, and few will contend that one time is as good as another for the training. Mr. Fawcett has told us that the blind may, in their youth, be taught a bread-winning trade, but adults who lose their sight cannot gain sufficient skill to secure independence. We know that successful musicians and artists commence their studies while young, and give promise of power before they attain to manhood. If we turn to the artisan class, it will be found that he who fails to acquire skill of hand during his apprenticeship seldom attains excellence afterwards. There is no reasonable ground for doubt that the young hand develops anatomically in the direction of its exercise, and acquires thereby a power in that exercise to which the adult hand seldom attains. These facts have an important bearing upon the question of the time at which the dental student should proceed with his practical education; for the skill needed by the dentist in the beneficial exercise of his calling is inferior to none other.

The results of professional examination fully establish the fact that the medical and dental curricula cannot be fulfilled honestly in the same four years. Yet it has been urged that the entrance upon the special division of the dental curriculum should be delayed until the surgical education has been completed, thus putting off the manual training to a period when the attainment of excellence is difficult, and of the highest degree of excellence perhaps impossible. To devote the days of our youth to the acquisition of knowledge we do not intend to exercise, to the exclusion of knowledge by the exercise of which we propose to gain our bread, is, I contend, a very grave error, and the graver as the remitted portions of the medical curriculum can, without disadvantage, be taken up after the dental education has been completed.

My strong advocacy of the special must not however be interpreted as indifference to medical qualifications. I would give every encouragement to the attainment by students of the latter, not however as a substitute for, but as a supplement to, the dental degree. Educationally, the relations of the membership to the dental licentiateship may be regarded much in the same light as are regarded the relations of the fellowship to the membership. This view of the position of the two qualifications will, and indeed does, take effect in certain appointments. In many of our hospitals, although the membership of the College of Surgeons is a full qualification for practice, the governing bodies require that the surgical officers shall be fellows of their College. And when the fellowship of his college is required of a candidate—provided the fellowship betokens a higher degree of surgical knowledge than the membership—it may justly be required of the dental candidate for



office that he shall possess the membership in addition to the dental license of his college.

Upon the question of examinations and of examiners I need say but little. The former, being conducted by the same bodies, will follow in their character the lead of medical examinations, and it is provided in the Dentists Act that should the much talked-of conjoint scheme come into operation in medical, it shall do so in dental examinations. Parliament has ordered that the examining boards shall consist of surgeons and dentists in equal numbers. The examiners are the guardians in the public interest against incompetence, and should, as a matter of course, be independent of the pecuniary success of the schools, and collectively irresponsible for the professional instruction of the individuals they are called upon to examine.

In this connection the profession may be congratulated upon the recent determination of the Medical Council to enter in the Dentists' Register surgical qualifications as additional to dental qualifications, on the ground that they indicate a further pursuit of the science of surgery than the licentiateship implies. It may be said that this step should have been taken at the onset; but those who have practical experience in bringing an Act into full operation know quite well that to succeed requires the free exercise of patience, perseverance, and last, but not least, of forbearance.

In reviewing the task imposed on the student, it may be asked whether I have not overstated the amount of special training needed to ensure the acquisition of the necessary manipulative power? I should answer no, with all the emphasis of which I am capable. For I contend that a high degree of skill of hand is absolutely necessary to professional competence—that competence is necessary to self-respect—and that self-respect is necessary to that professional rectitude without which personal comfort in practice would be imperilled, and professional status would be but a shallow fiction. Furthermore, that, with the existing opportunities, a high degree of skill can be gained by perseverance and the due expenditure of time in pupilage, and that it is the bounden duty of the teacher to press for, and the examiner to demand, its possession.

Sufficient reasons for the study and the practice of dental surgery as a speciality are recorded in the first pages of this address, to which a statement of the obligations and the scope of specialism will form an appropriate ending. In no other way can I more perfectly fulfil this latter purpose than by borrowing the very words used in his presidential address by our great master of thought and of speech—Sir James Paget—who therein says :—

“Many of us must, for practical life, have a fair acquaintance with many parts of our science, but none can hold it all; and for complete knowledge or for research, or for safely thinking out beyond what is known, no one can hope for success unless by limiting himself within the few divisions of the science for which, by nature or by education, he is best fitted. Thus our division into sections is only an instance of that division of labour which in every prosperous nation we see in every field of active life, and which is always justified by more work better done.

“Moreover, it cannot be said that in any of our sections there is not



enough for a full strong mind to do. If any one will doubt this let him try his own strength in the discussions of several of them.

"In truth, the fault of specialism is not in narrowness, but in the shallowness and the belief in self-sufficiency with which it is apt to be associated. If the field of any speciality in science be narrow it can be dug deeply. In science, as in mining, a very narrow shaft, if only it be carried deep enough, may reach the richest stores of wealth, and find use for all the appliances of scientific art. Not in medicine alone, but in every department of knowledge, some of the grandest results of research and of learning, broad and deep, are to be found in monographs on subjects that to the common mind seemed small and trivial."

Such, then, are the lines upon which the study of dental surgery have been drawn, so drawn to secure adequate knowledge and skill in the practitioners, and with the view, therefore, to a certain difference in kind, but to equality in degree, between the compulsory education of the medical and of the dental practitioner.

If in this imperfect sketch I have entered at certain points too far into details, or occupied too much time in their description, extenuation for my prolixity may be pleaded on the score of the high degree of satisfaction, not to say pardonable pride, which the surviving members of my generation feel in seeing an educational scheme, in the origination of which they took part, completed and rendered national, and thereby a calling, heretofore of undefined position, elevated by the Legislature to the rank of a learned profession.\*

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\* Dr. Butler (Cleveland, U.S.A.) and Professor Shephard (Harvard University) expressed their unconditional approval of the British Dental Curriculum, and of the opinions advanced in the paper. Dr. Holländer described the state of dental education in Germany; and Dr. Taft (U.S.A.), gave a short account of the early proceedings of the American Dental Colleges. Report of discussion. *The Journal of the British Dental Association*, October 15, 1881.

LICENSING BODIES.	GENERAL MEDICAL SUBJECTS TO BE ATTENDED AT A RECOGNIZED SCHOOL AND HOSPITAL.										CERTIFICATES TO BE PRODUCED.				EXAMINATIONS SINE CURRICULO.
	Anatomy.	Anatomy of head and neck. Not less than 20 lectures, or second course of anatomy.	Dissections.	Physiology. Winter course.	Chemistry.	Surgery.	Medicine.	Materia Medica.	Practical Chemistry.	Attendance at a recognised General Hospital, with Clinical Instruction	Of being 21 years of age.	Of having been engaged 4 Years in Professional Studies.	Of having passed a Preliminary Examination in Arts.		
Royal College of Surgeons of England.	Not less than 1 Winter Session	1 course	9 months	1 course of 6 months	1 course of 6 months	1 course of 6 months	1 course of 6 months	1 course	1 course	Not less than 1 year	21 years	4 years	1	Candidates who were in practice or who commenced their education as Dentists Before Sept. 8, 1859, and who, at the time of the passing of the <i>Dentists Act</i> , were practising in England, are admitted to examination, on the production of certain Certificates. Candidates who were in practice Before August, 1878, and apprentices who commenced their education as Dentists are admitted to examination on the production of certain Certificates.	
Royal College of Surgeons of Edinburgh.	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Candidates who were in practice Before August, 1878, and apprentices who commenced their education as Dentists are admitted to examination on the production of certain Certificates.	
Faculty of Physicians and Surgeons of Glasgow.	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Candidates who were in practice Before August, 1878, and apprentices who commenced their education as Dentists are admitted to examination on the production of certain Certificates.	
Royal College of Surgeons in Ireland.	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto	Candidates who were in practice Before August, 1878, and apprentices who commenced their education as Dentists are admitted to examination on the production of certain Certificates. Candidates are admitted to examination Up to August, 1881, on the production of certain Certificates, provided they have been in practice five years before the date of this application.	

SPECIAL SUBJECTS.

LICENSING BODIES.	Dental Anatomy and Physiology, Human and Comparative.	Dental Surgery.	Metallurgy.	Mechanical Dentistry.	The Practice of a Dental Hospital, or of the Dental Department of a General Hospital.	Certificates of Instruction in Mechanical Dentistry during 3 years from a Registered Practitioner.
	Not less than 24 lectures	Not less than 20 lectures	Not less than 12 lectures, unless specially included in Practical Chemistry	Not less than 12 Lectures or Demonstrations	2 years	3 years
Royal College of Surgeons of England	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
Royal College of Surgeons of Edinburgh	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
Faculty of Physicians and Surgeons of Glasgow	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto
Royal College of Surgeons in Ireland	Ditto	Ditto	Ditto	Ditto	Ditto	Ditto

† N.B.—Every successful Candidate, previous to receiving the License, shall declare that he will not advertise, or pursue any other unbecoming mode of attracting business, so long as he holds the License in Dentistry of the College.

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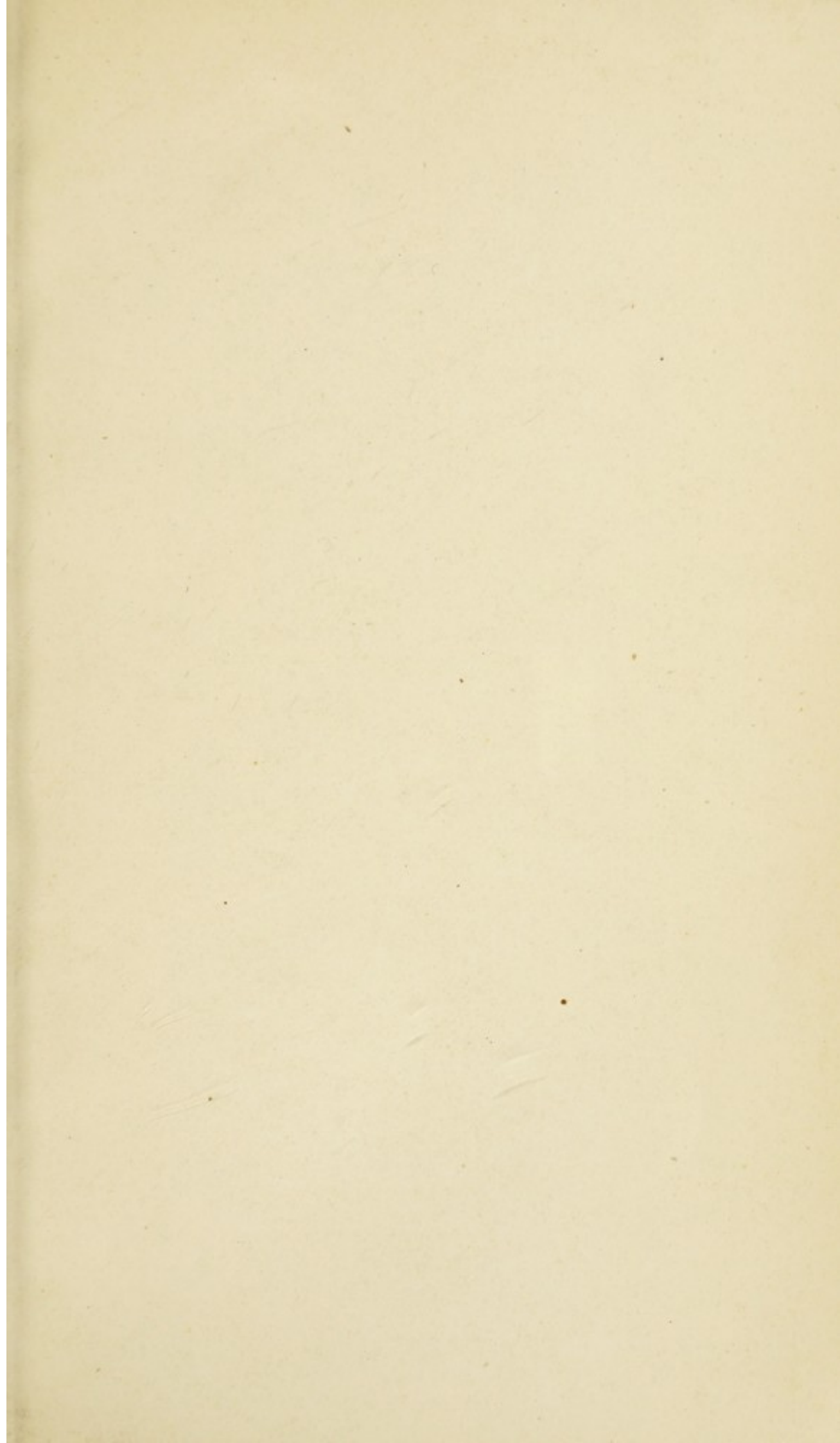
The following table drawn up by Mr. S. J. Hutchinson, shows the extent to which the Dental follows in the line of the Medical course of study.

A COMPARATIVE STATEMENT of the respective Courses of Study required by the Royal College of Surgeons of England of Candidates for the Membership and for the Licentiatehip in Dental Surgery.

<i>Curriculum for the Membership.</i>	<i>Curriculum for the Licentiatehip in Dental Surgery.</i>
1. An examination in Arts.	1. The same.
2. Being 21 years of age.	2. The same.
3. Having been engaged in acquiring professional knowledge during four years.	3. The same.
4. Anatomy Lectures: 2 winter sessions.	4. The same or second special course on the head and neck.
5. Dissections: 2 winter sessions: 12 months.	5. 9 months.
6. Physiology: 1 winter session.	6. The same.
7. Practical Physiology.	7. (Say) Metallurgy, 1 course.
8. Surgical Lectures: 1 winter session.	8. The same.
9. Practical Surgery: 6 months.	9. See 18.
10. 1 course of Chemistry (optional).	10. The same (imperative).
11. 1 course of Materia Medica.	11. The same.
12. 1 course of Medicine.	12. The same.
13. 1 course of Forensic Medicine.	13. } 2 courses Dental Anatomy and Physiology.
14. 1 course of Midwifery.	14. }
15. 1 course of Pathology.	15. } 2 courses Dental Surgery and Pathology.
16. Practical Pharmacy and Vaccination: 6 cases.	16. }
17. Practical Chemistry.	17. The same.
18. Practice of Surgery: 3 winters and 2 summers.	18. 2 winters. And 2 years' practice at a Dental Hospital.
19. Examination of Patients: 3 months.	19. (At a Dental Hospital).
20. Clinical Lectures on Surgery: 2 winter and 2 summer courses.	20. 2 winter courses.
21. Dressership: 6 months.	21. } 2 courses of Lectures on Dental Mechanics.
22. Post-mortem Demonstrations.	22. }
23. Practice of Medicine: 1 winter and 1 summer. Clinical Medicine.	23. } 3 years' Practical Mechanical Dentistry.

The subjects common to the two courses of study must in each case be attended at a recognized General Hospital and Medical School, and the subjects special to Dental Surgery at a recognized Dental Hospital and School, or the recognised Dental departments of a General Hospital and School.

Four years is the time allotted to study for the Membership, and for the Dental Licentiatehip, and six years will not be more than sufficient for the acquirement of the two qualifications.





THE HISTORY OF THE

REIGN OF

CHARLES THE FIRST

BY

JOHN BURNET

OF THE UNIVERSITY OF OXFORD

IN TWO VOLUMES

LONDON

Printed by J. Streater, at the Sign of the Gun, in St. Dunstons Church-yard, near St. Dunstons

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THE SECOND PART

OF THE HISTORY