

THE IDEAL DENTAL CURRICULUM (PRELIMINARY, SCIENTIFIC, and especially PROFESSIONAL) FOR DENTAL EDUCATION UP TO THE STANDARD REQUIRED FOR THE EFFICIENT PRACTICE OF DENTISTRY

BY

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The ideals of yesterday are superseded by the higher ideals of today. Those which today places beyond our attainment, may become the realities of tomorrow, only to be supplanted in turn by the loftier and better standards which we hope further in the future will be materialized. And thus it is that our own professional ideals are constantly mounting with the times, and each age finds them worthier and more highly developed. The horizon of our professional knowledge is being daily extended by the light that is shed upon places hitherto dark. Facts wrested from the unknown give us the means whereby we are enabled to enlarge our ministrations to humanity. The aspiration to render the maximum of service to our fellow man which is the factor exerting the greatest influence in the moulding of our professional ideals, is only limited by the extent of our knowledge, and our standards keep pace with the revelations of the possibilities of better service which science is pleased to make to us.

The educative process in dentistry, that procreative function by which new generations of dentists are brought into being to maintain the continuity and carry on the

service of the profession, must frequently be revised to accord with our advancing ideals. An ideal dental course of ten or even five years ago no longer satisfies us: to be acceptable today it must represent the best thought and experience of the time. We hope that the years to come will lift it to higher levels of effectiveness, and that it will always advance in accord with the best professional ideals.

The ideal dental curriculum which we would formulate today must answer certain major requirements. In the first place, it must be an evolutionary development from which we have had before, for the only safe method of progress is to utilize so much of the old as experience has proven to be useful, to discard that which has been found valueless or harmful, and to add only that which can be shown to have a direct utility either in its special or general relationship. This is of necessity a gradual process, for the increments to our knowledge which safely pass the exacting scrutiny of time and experience, do not accumulate so rapidly that they are likely to upset with revolutionary disorder our existing system of education.

The curriculum must be based upon the conception that dentistry is a specialized branch of the healing art of which it is intrinsically an integral part, whether now organically united with it so far as its educational activities are concerned or not. The earlier conception in which its requirement of a high order of craftsmanship obscured the importance of the vital relationships of our service, has been succeeded by one in which the tissues of the mouth have been given their true position in the body economy, and their physiological and pathological interdependencies with other parts of the human organism realized and understood. It is evident to all that unless the dentist receives sufficient instruction not only in the biological aspect of his own field, but also enough of general basic medical knowledge to enable him to appreciate the causative and resultant relations sustained between pathological processes of the mouth and those in other parts

of the body, he is insufficiently trained. Even if it were once desirable that the dentist should have the full curriculum in general medicine and surgery, it is not so any longer, for the general medical course as now given not only comprehends a great deal that would not be useful to the dentist, but as now organized it would extend his period of training to an unwarranted degree. This was recognized by Kirk who, in an address to the Sixth International Dental Congress in 1914, expressed the „opinion that because of the practical impossibility of combining the present medical curriculum with the present dental curriculum so as, in view of the present economic conditions, to train the dental practitioner to the best advantage, our obvious course is to so enlarge the scope and improve the character of the special dental curriculum as to adequately meet modern educational demands.” Dental education has largely developed along this line since this address was delivered but we are beginning to note that medical education is having to answer some pertinent questions asked by those who realize that it is not only possible, to teach all that is known about medical science within a reasonable period of years, but also that it is not necessary for the specialist to know a great deal that is included in the general course. Medical knowledge will continue to increase, and medical education must be reorganised on such a basis that a student will not spend years acquiring what will be of no use to him, but will confine himself to obtaining a general basic training which will enable him to properly understand and give proper significance to the instruction peculiar to his own special field. A great many medical teachers realize that this reorientation of the medical curriculum must come but no positive steps have yet been taken to bring it about. If and when the reorganization occurs, dentistry will be ready to take its place among the other specialists as advised by Kirk in that address above quoted. The historical fact that, at the moment when our first organized system of instruction was

proposed, dentistry was not received into the scheme of medical education and hence was forced to develop independently, has no bearing upon its ultimate destiny, for there are no intrinsic reasons for the continuation of their separation. Huxley has said: „it is a peculiarity of the physical sciences that they are independent as they are imperfect; and it is only as they advance that the bonds which really unite them become apparent.”

As the practice of dentistry requires not only a knowledge which will enable us to diagnose the diseases of the mouth and define their relationships to the body generally, but also the skill which will enable us to administer the proper therapeutic measures mechanical or otherwise, the importance of the latter must not be obscured, and our ideal dental curriculum must contain provision for adequate training along this line. The increase of our knowledge of the medical sciences cannot compensate for a decadence in the exquisite technical skill for which dentistry has been famous. The enlargement of the scientific horizon not only does not call for less skill, but brings out new problems or throws a new light on old ones, in the solution of which an even higher technical ability is needed. Furthermore, if the sciences of all sorts are to serve us, they should point the way to the development of a better technique in our mechanical procedures.

Certain economic factors must also lend their influence in the formulation of an ideal curriculum for the dentist. The need for the completion of his training and for returning him to society in the briefest possible period is a consideration which the voice of our social organization is insistantly calling to our attention. This is for two reasons: that he may begin his service at an earlier age and that the time and money cost of his training may not be so great as to prevent an adequate number of dentists.

The length of the course should be set at the minimum period which will give a wholly satisfactory training. The

question is now being agitated as to whether the purely mechanical procedures in the mouth such as filling cavities require a full training in the medical sciences for their accomplishment. It is suggested that a two year period beyond the high school would suffice for the schooling of an artisan type of partly trained dentist, who could work under the physician type of highly educated dentist. Perhaps, in the future, the economic conditions may require that we study this question more actively.

Another demand that should be made upon an ideal curriculum is that it be conceived and executed in consonance with sound pedagogical principles. The content of the curriculum should be critically examined to see that its various elements fulfill their designated function and that a just and proper proportion between them is maintained. In the interest of economy of time and energy, not only must the course be pared down to the essentials in each subject, but with reasonable latitude, the subjects themselves should be restricted to those whose direct utility is apparent. A proper sequential relation between the subjects of the course must be established. Thus anatomy must precede physiology, and the latter must be finished before pathology is begun.

The ideal curriculum which is offered for consideration by the Commission, copies of which are herewith submitted, has been worked out as a product of the experience of a number of the best American universities during the past four years. It conforms to the standards which have just been promulgated, and is a practical curriculum which it is believed may be put into operation by a large number of schools, certainly by all with a university affiliation. It does not represent the curriculum of any single school, nor is it a composite of a number of existent courses. It comprehends three divisions, which are fairly comparable to the three divisions of the title of this paper, that is, Preliminary or Preparatory, Scientific or Preclinical and Professional or Clinical. Each of these corresponds roughly to two years of

collegiate training, though there may be some overlapping.

The preparatory curriculum must include satisfactory courses in chemistry, physics and biology for these are basic to a proper comprehension of the fundamental medical sciences. It is not only important to know the sciences which treat of matter and the principles which govern its behavior, that is chemistry and physics, but it is doubly needful that the great underlying facts pertaining to the science of life itself should be acquired by him who would study any branch of the healing art. Huxley in 1881 pointed out with great clearness the connection of the biological sciences with medicine, and their importance in the preparation of medical study is universally recognized. The preparatory course in short should include all that is now required for the prospective student of general medicine.

Medical educators found that these three sciences could not be successfully mastered in one year, so the course was extended to two years, and now includes in addition the study of the native language, at least, one modern foreign language, and some electives of a general educational or cultural value. Aside from the direct utility of its scientific content, this course serves to develop the mental capabilities of the student to undertake the more abstruse subjects of the professional curriculum proper. It should equip him with a proper intellectual method, and if he fails to pass it, he is eliminated and the professional school is saved the effort to train an unfit student. While the cultural elements are not essential to the successful undertaking of a professional course, it will, no doubt, be agreed that they are desirable for the dentist for other reasons.

The scientific or preclinical period must contain the so-called medical sciences basic to all branches of the healing art, which are anatomy, physiology, bio-chemistry, materia medica and pharmacology, bacteriology and pathology. In addition, because of its special dental application, metallurgy is to be included, together with exhaustive highly

specialized courses in the division of these major sciences which especially relate to the field of the dentist such as regional anatomy, dental pathology, etc. Courses in these major sciences given in medical schools for medical students are by no means ideal for the dentist. They are too comprehensive and contain much that will not be directly useful to him. If medical education were reorganized, it is conceivable that a general basic course could be arranged in each of these that would be equally applicable to the needs of all the several specialties. Until this is done the dental student should have general basic courses conceived upon this idea, which would give him an adequately broad foundation for the later addition of his special courses.

Under this general heading I should like to stress the importance of adequate training in general pathology. One of the greatest deficiencies observable in many dental curricula today is the lack of sufficient instruction in the science of disease processes.

Of the third division of the course, the professional period, little need be said except in a general way, because the teaching of the dental subjects is more fully standardized throughout the world. The fundamental idea which should never be lost sight of is that the efficient practise of dentistry not only entails the possession of the requisite knowledge of disease process so that the dentist may see with clear intellectual vision their causation, their probable course, their relationships and consequences, but he must also have the necessary skill to administer the treatment that would be indicated.

The enlargement of our medical scientific horizon must not be allowed to obscure the need for adequate technical training, for it is obvious that it would be of little service to humanity that the dentist should know all about their dental disorders if he were not competent to treat them.

Well organized courses of technic instruction have long since proven their utility in the preclinical years, but a wide

clinical experience must be provided in the last two years. It is absolutely essential that the dental student should have the opportunity to develop by actual practice a high degree of manual and technical skill, and the last year of his course should consist largely of clinical practice.

**IDEAL DENTAL CURRICULUM
CONTENT AND HOURS.**

I. Preliminary or Preparatory.	Two years.	Hours.
<i>Chemistry</i> , General, Inorganic,	Lectures	64
	Laboratory,	64
Analytical,	Lectures	32
	Laboratory	64
Organic,	Lectures,	32
	Laboratory,	80
<i>Physics</i> .	Lectures	96
	Laboratory,	128
<i>Zoology</i> or General Biology,	Lectures,	48
	Laboratory,	96
<i>Native Language</i>		192
<i>Foreign Language</i>		192
Sufficient electives from Mathematics, Foreign Language, Botany, History and Advanced Zoology to make a total of 1856 hours or 928 for each year.		
 II. <i>Scientific</i> .		
<i>Anatomy</i> , Systematic,	Lectures	64
	Dissection, 3 parts	180
Regional,	Lectures	16
	Histology and Embryology,	80
Human & Comparative Odontology,	General Lectures, and Laboratory	80
	Dental, Lectures,	16
	Laboratory,	32
Human & Comparative Odontology,	Lectures	16
	Laboratory,	48
<i>Chemistry and Metallurgy</i> , Bio-chemistry,	Lectures	32
	Laboratory,	96
Metallurgy,	Lectures,	16
	Laboratory	32
<i>Physiology</i> (General & Special)	Lectures	64
	Laboratory	128
<i>Materia Medica and Pharmacology</i> , General,	Lectures	16
	Dental,	48
<i>Bacteriology</i> , (General and Special)	Lectures	32
	Laboratory	100
<i>Pathology</i> , General,	Lectures,	48
	Laboratory	90
Dental,	Lectures	32
	Laboratory	48

III. Professional.	Hours.
<i>Operative or Clinical Dentistry,</i>	
Operative Technics, Lectures	32
Laboratory	192
Operative or Clinical Dentistry, Lectures	64
<i>Prosthetic Dentistry</i> (including Crown-and Bridge Prosthesis)	
Prosthetic Technics, Lectures	96
Laboratory	416
Principles of Prosthesis, Lectures,	96
<i>Orthodontia,</i>	
Lectures,	32
Clinical demonstrations,	32
Orthodontic Technic	16
<i>Therapeutics,</i>	
General, Lectures,	8
Dental, Lectures,	40
<i>Surgery</i>	
General Principles of	16
Major Oral Surgery, Lectures,	32
Minor Oral Surgery, Lectures,	32
including Extraction, Surgical Clinics	32
<i>Anesthesia,</i> Lectures	16
<i>Radiography</i> Lectures	16
<i>Medicine.</i>	
General Practice of, including Physical Diagnosis	32
<i>Hygiene,</i> General & Oral	32
Miscellaneous,	
History and Literature, Ethics, Economics and Jurisprudence,	32
<i>Clinical Practice,</i>	
In Operative, Prosthetic, Orthodontia, Radiographic. Minor Surgical, etc., Clinics	1502
Total 4000 hours for the four years.	