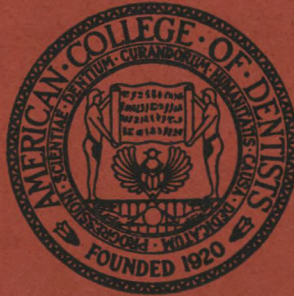


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# *Journal*

AMERICAN COLLEGE OF DENTISTS



December 1950

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# JOURNAL

## American College of Dentists

Presents the proceedings of the American College of Dentists and such additional papers and comment from responsible sources as may be useful for the promotion of oral health-service and the advancement of the dental profession. The Journal disclaims responsibility, however, for opinions expressed by authors.

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*Address of the Editor:*

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JOURNAL  
American College of Dentists

*"There is no future in any job. The future lies in the man who holds the job."*

—DR. GEORGE W. CRANE



## EDITORIAL

### THE LAST HALF OF THE TWENTIETH CENTURY

The American College of Dentists was born in the year 1920 A.D., being the brain child of two or three men, leaders in the dental profession. Since it is a brain child it is one therefore, without a mother and of course in a biological sense, it is fatherless as well. It is however, an institution and as such has now gone through thirty years of growth-pains and whatever else may have happened or have been necessary to bring it thus far on its way to maturity. Thinking in terms of biology and therefore in terms of life, whether human or animal or even plant life, maturity takes place at a much earlier date and in a much shorter period. Institutions on the other hand require long periods of testing and of experimenting, that their usefulness may be adequately proved and that their progeny, of what-so-ever kind may likewise show good reason for existence.

Thirty years with the length thirty summers have passed. The two or three who thought together in the beginning have gone on to that land from which there is no return. Most of those recognized as Founders and Organizers are not here any longer save only as some of us whose memories are still acute are able to continue the direction given by them. Presently there will be only the spirit of all who labored to serve as guide to those now coming and who will come in the more distant future. This spirit will of necessity be an interpretation made by one or more strangers in the body, but kindred in spirit to the extent that their original purposes may be possible of determination because of what has happened.

Looking back over a longer period of time one may ask what kind of man was Fauchard and why did he do what he did, i.e., live and practice as he did, then write a book? Answer to this must be found in his writings or whatever may have been written about him by his contemporaries. Always the written words of a man show up the deepest and best within him. As the poet has said, "The good that men do lives after them, the evil, we inter with their bones". So in the case of Fauchard or any other, the real secret of a man's life is found between the written words and lines, itself unwritten of course.

So it will be too, with those who laid the foundation of the College—future innerpretations of their intermost thoughts will continue to give that direction which was their hope and intent in the beginning.

As we today now see the fruition of these past three decades and as we now prepare our minds to bow ourselves out of the picture in so short a time hence, it might be well to pause and reflect, then put our *layer* upon that which is laid.

The College has been intimately associated with and actively influential in many advances of the profession. We have seen our schools raised to a high level of usefulness; concomitantly, we have seen great advance in all lines of practice, operative dentistry, prosthetics, oral surgery, orthodontics, and all along the line; we have seen advance in hospital dental service, auxiliary services of the profession, technicians, assistants, hygienists, etc; we have seen advance in our social and professional relationships, in our organizations, in literature both books and periodicals; in all of these the College has been active, participating in person and in funds.

There will never be a time when there is nothing to do but in all that is done whether in the past, present, or future, always will there be the individual, the person or the persons who did it. We could not be where we are nor what we are were it not for the past or for the men who labored in the past. Therefore, is it not time to contemplate these men and others, in their lives both private and public, that their spirit may live on and that those who knew them not in person, may at least have this advantage. There are many men in American Dental life who have made worthy contributions to this advance over the years and we should know who they are.

So as we enter the second half of the twentieth century, it will be well to bring out all of these American Dentists of Distinction.

## PRESIDENTIAL INAUGURAL ADDRESS<sup>1</sup>

HENRY O. LINEBERGER, D.D.S., *Raleigh*

The American College of Dentists was founded immediately following the first world war. Our country has survived a second world war. Today, we are waging another conflict and are preparing our defenses in order to prevent a third world war. With this picture confronting us, this College goes forward for another year of activity.

I am deeply grateful for the confidence which you have reposed in me by electing me to this office, and in taking over the Presidency of the American College of Dentists, I do so with great humility and with a keen knowledge of my many short-comings. But I am most encouraged when I contemplate a year's work with a most cooperative Board of Regents, well organized sections, a tried and true secretary and a membership consisting of the finest Fellows to be found in any organization.

The American College of Dentists is an organization composed, in the main, of members of the dental profession. As doctors of dentistry, as well as Fellows of the College, today we pledge anew our cooperation with Fellows, and individuals of skilled professions and associated activities, to the end that we may render our nation and the people of our various communities a better health service.

A study of the history of the American College of Dentists will reveal that from its very inception, the College has striven earnestly to study all problems confronting the profession and to aid in any way possible in developing and perfecting plans for the future.

The Board of Regents at its mid-winter meetings in Chicago and at the annual Convocations, receives reports from the various committees. Many of these indicate active and enthusiastic personnel while some may reflect a different tempo. This seems to be the general pattern of most all organizations. There is, however, another great difference in committees. Some, by virtue of the nature of their work, confine their activities to committee members entirely. The programs of other committees are such that they not only have to plan and work themselves, but they definitely need the active cooperation of each Section of the College and so on down to the individual Fellow. The College is committed to certain long-range programs and activities now being carried out by various-specialized

<sup>1</sup> Convocation, Atlantic City, October 29, 1950.

committees. These we must continue to encourage and lend to them whatever assistance we may.

The College is interested in many activities which require our co-operation with committees, bureaus, and commissions, of the American Dental Association. Permit me to cite certain illustrations; the Sinai and Simons' report on the "Way of Health Insurance", in 1930; the study of the Cost of Dental Care in 1943; and in 1949 Dr. Myers' report on "The British Dental Plan in Operation", a copy of which was mailed to every member of the American Dental Association and the Congress of the United States. These reports furnished needed information for legislation and for our own Health Service program. The cooperative spirit is further illustrated in the fine work being done by the committees of the College in Journalism, Preventive Service, Dental Specialties, History, Hospital Dental Service, Research, and others.

We have not had a Legislative Committee and do not contemplate appointing one this year. This does not mean, however, that the College is not interested in all forms of legislation, both State and National, which will in any way affect the Dental Profession or the Dental Health Services of the people of this country. We most heartily support the legislative program of the American Dental Association. It is hoped that every dentist everywhere will familiarize himself with both his State and National legislative programs and see to it that his representatives in Congress and in his State Legislatures are kept advised as to the position of the dental profession.

Perhaps something should be said about the committee framework of the College. There are a number of standing committees covering many, though not all, of the interests of the College. A few years ago a plan was adopted whereby these committees could become clearing agencies for Section committees working in similar areas. Sections were asked to accept assignments of several subjects, covered by these committees, and appoint committees to study the subjects at the local level reporting their findings to the central committee. It was not the thought that a local committee was to replace the central committee, nor that the central committee was to direct the activities and thinking of the local committee. Rather it was hoped that a broader viewpoint would develop and a wider interest would be aroused in the areas studied.

With a few notable exceptions, the plan has not worked very well and we find ourselves again actively engaged at the top level and not too greatly aroused at the local level.

One notable exception needs special commendation. Reference is made to the Tri-State Section, composed of the states of Tennessee, Mississippi and Arkansas. This Section has not only manifested the earnestness of purpose so evident in the committee at the top level, but has made a major contribution to the studies in the several fields of interest. It is suggested that the Fellows of the College and Section officers, in particular, look over these contributions as recorded in the June, 1950 issue of the Journal of the American College of Dentists.

While it is realized that the daily rounds of practice, and many extra assignments may prevent members and Sections from extensive participation in the work of the College, it is hoped that every member will give at least a portion of his time to College activities. Only in this way will we move ahead.

This year the Officers and Regents are very desirous that we give special emphasis to those programs which, if they are to be successful, must have similar committees in each Section of the College and definite support on the part of each individual Fellow.

One of the most important committee reports of this year was that of the Prosthetic Dental Service Committee, headed for many years by our President, Dr. Walter H. Wright, and latterly by Dr. Charles A. Nelson, Amery, Wis. This committee of the College is still working hand and glove with a similar committee in the American Dental Association. I would urge you as Section groups and as individuals to study this report. If you do not have accreditation of Dental Laboratories in your State, give it serious consideration. Do not make the mistake of not recognizing a very valuable adjunct to the profession, a minority group which works with and for us. The dental laboratory and the dental technician need us and we need them. All can benefit by the right type of consideration and cooperation.

The Committee on Education has presented a concrete plan to aid deserving dentists or dental students who desire to further their training, looking to a career as dental teachers. The Board of Regents has appropriated a sum of money toward the furtherance of this educational program. This amount could be greatly increased by matched funds from Sections, State Dental Societies, individuals, or a group of individuals who would themselves sponsor some deserving student.

The Committee on Dental Student Recruitment has for several years been developing a sound picture entitled "DENTISTRY AS A

CAREER", to be presented to High Schools and Colleges. The first showing of this picture will be made at this Convocation. One of these pictures may be secured by your Section or your State Society at a small cost. The program for the recruitment of dental students could well become a definite project for a Section of the College or a State Dental Society. These Committees, with others, solicit your suggestions and cooperation. They deserve your support.

(At this point, Secretary Brandhorst read the names of Committee chairmen for the ensuing year. The full list of committees will appear in the March Journal.)

It was stated in the beginning of this address that our Country is facing a crisis. Yea—we are at this time in a crisis. Free enterprise, America's way of life, is being challenged. The course which all true Americans should follow has been made crystal clear. We as members of the Dental Profession should be familiar with the position taken by the Health Service Professions, and as leaders in our respective communities we should advise our friends of the soundness of our position. This is no time for hysteria, but rather it is a time for clearly thought-out plans. Don't be a hearer only of the truth but be an enthusiastic doer as well. The urgency of the times makes it imperative that we declare ourselves. It is time to stand up and be counted.

Loyal Fellows of the College have for thirty years met squarely the challenges of other times. The torch has been passed to us. Let us individually and collectively resolve to build on the foundation that has been laid through toil and sacrifice in the past and to make the future a credit to that past.

Ours is a peculiar task and a unique opportunity. In our midst we have the best minds of the profession. No problem is too large or too technical for this group to solve. Nowhere can dentists find a greater opportunity to apply themselves with freedom of action and unhampered by trivial misunderstandings. This makes ours a peculiar task and a unique opportunity.

Since we recognize both these premises, it becomes our duty to respond. I ask, therefore, that each Fellow, and each Section, consecrate himself and itself anew to the work of the College and the profession, that dentistry as a Health Service may spread its benefits to greater numbers and in greater abundance.

## THE UNIVERSITY AS A BENEFACTOR OF DENTISTRY<sup>1</sup>

HAROLD O. VOORHIS,<sup>2</sup> A.M., LL.D., *New York*

It is obvious that the American College of Dentists has been reared in the classical tradition. Tired of being amused, edified, or irritated exclusively by your own kind on these festive occasions, after the old Roman fashion you have resorted to the importation of an alien for sacrificial purposes in your arena. I am deeply sensible of the honor of such an assignment and duly apprehensive of the consequences.

The famous English satirist, Jonathan Swift, once on a visit to Dublin, was buttonholed for a contribution to the building of a new orphans home. He promised five pounds. Much annoyed at the involuntary buildup, he protested. The committee promised a public retraction. Rather than be subjected to that embarrassment, he said, "I'll give you the fifty pounds if you will let me designate the inscription to be placed over the front door of the new orphans home." The committee agreed. His suggested inscription was this: "I was a stranger and ye took me in."

Well, this isn't the first time I've been taken in by professionals. Some years ago I went down to South Carolina to attend the inauguration of a new president of the State University. My train to Columbia was late and when I got to the principal hotel in that city I gave my bag to a boy, told him I would register later, and asked him where the official luncheon for visiting delegates was being held. He directed me to the mezzanine floor. There I encountered an ingratiating man at a table with a commanding badge on his lapel who asked me my name. I told him Voorhis. "Why Professor Forrest," he said, "we've been looking for you." Now the misinterpretation of Forrest for Voorhis, or vice versa, is not an uncommon thing, so I said nothing. But when this young man escorted me through the crowded dining room to a vacant place at the head table where I was greeted warmly by the presiding officer I became uncomfortably suspicious, and realized all too late that I had probably got into the wrong dining room. My uneasiness was sharply accelerated when the toastmaster opened up the post pran-

<sup>1</sup> Address, Convocation, Atlantic City, October 29, 1950.

<sup>2</sup> Vice-Chancellor and Secretary of New York University.

dial discussion. He said, in effect, "In arranging for the annual meeting of the *Southeastern Druggists Association* I wrote some months ago to the leading man of this area in pharmaceutical research asking him to address us at this session. I refer to Professor Forrest of Louisiana State University. Professor Forrest gave me a tentative acceptance but I wasn't completely sure of his coming until he showed up here just a few minutes ago. While it has not been my pleasure until now to meet Professor Forrest personally, we all know him certainly by reputation, and it gives me much pleasure to introduce to you as the speaker for this session, Professor Forrest, who will address you concerning some of the newer drugs." With which he turned to me.

Abandoning with consternation the slab of roast beef that had been thrust belatedly before me, I rose a bit unsteadily with, to put it mildly, conflicting emotions. I did not want to make a fool of myself; neither did I want to make a fool of the presiding officer. It was a dilemma that called for split-second resolution. Having stumbled into the wrong convention, the fault was clearly my own; I could not in clear conscience pass the buck. Therefore I gulped down the rest of my tumbler of water, thanked the presiding officer for his compliments, and told the session that in accordance with the privilege generally accorded visiting speakers I intended to depart from my announced theme and discuss, not the latest drugs, but the broad influence of university discipline upon the pharmaceutical profession. This I proceeded to do, as best I could, for the ensuing ten minutes, at the conclusion of which to my further embarrassment they elected me an honorary member of their Association. How my dissimulation was subsequently revealed is another story. At any rate, I was a stranger and they took me in.

Whether Dean Wright knew of that episode and entertained the illusion that such experience in extremis might enable me to get away with appearance before this august company, I do not know. While I have had interesting, instructive, and sometimes painful experience with your profession, this is the first time the request for an appointment has ever come to me from your end of the line, and I am duly sensible of that distinction. Ordinarily when I have been asked to open my mouth in the presence of any one of your fraternity, I have feared the worst, and too often such fears have been poignantly realized.

When Doctor Wright first booked me for this date, it was without



specification. Then when he had me firmly on the hook, he offered the hint that I should speak briefly. Well, being obliged to engage after-dinner speakers now and then myself, and knowing the propensity of some of these swivel-tongued rogues to go on and on, his suggestion of brevity met a warm and instant accord. But when later came his suggestion that I talk about what the university relationship had done for dentistry, I felt a slight encroachment on my style which is usually to talk about something unrelated to education, and next when he placed in my hands a copy of Harlan Horner's definitive treatise on "Dental Education Today" from which to mine my nuggets for this occasion, I realized all too late that I was completely regimented.

Now, I have nothing against Harlan Horner. On the other hand I have known him and respected him for some thirty years, and have the highest regard for his services to dentistry. But for me to offer in this informed presence a regurgitation of Dr. Horner's gospel would be sheer cartage to Newcastle, a crime of sterile plagiarism which I would rather not commit, particularly on the Sabbath Day. Therefore, I am now on my own and you can quite properly fear the worst.

Yours is a youthful profession, yet an honored one. The precincts of higher education have not always been peopled with your kind. It is within the memory of living men that the preparation for the practice of your profession has come under university protection and authority. Similarly medicine, law, and other professional disciplines have gravitated to the university orbit, some ahead of you, others in your train.

That the universities should possess such magnetic properties in drawing professional training to their fold is not surprising. For nearly a thousand years they have served as sanctuaries of intellectual integrity, and citadels of civilization. They stand as bastions of protection of both academic and professional interests. These interests they are pledged to advance. The university is essentially an area of freedom fraught with heavy responsibility. Whenever any university has been stripped of its freedom, and wherever its purposes have been prostituted, it has thereby ceased to exist as an agency of enlightenment and has suffered sterility and prostration. But on the whole the universities have shown remarkable resistance to corruption throughout the ages. They are perhaps the most stable of our social institutions and outdate every existing political

system. They are the most redoubtable bulwarks ever devised for the preservation and enhancement of the best and finest features of our human heritage.

Many of you have visited some of the older academic institutions as have I, such ancient seats of learning as Bologna in Italy, Oxford in England, and the University of Paris which date from the eleventh, twelfth, and thirteenth centuries respectively. One cannot tread the halls, the cloisters, and the quadrangles of such venerable establishments without a profound sense of reverence at the sublimity of the traditions with which they are suffused. Through all the vicissitudes of the ages, through wars, uprisings, plagues, famines, revolutions, new deals and bad deals, these institutions have somehow continued to shield the flame of truth and to pass on to succeeding generations the cumulative intellectual endowment of the race. From such institutions have come many of the great historical personages of all time, men who have gained there preparation for epochal leadership. Likewise from the study halls and research laboratories of such institutions in progressively increasing volume have come many of the discoveries and inventions that have helped mold the life of mankind.

Even in the New World some of the universities may be reckoned as ancient organizations. The oldest of the lot, the National University of Lima, Peru, will next year celebrate its four-hundredth anniversary. Harvard was established in 1636. William and Mary, Princeton, and Washington and Lee Universities have all been in continuous existence for more than two centuries. But it is only in the most recent history of these and kindred institutions of higher learning in this country that we trace the development of training for the professions.

It is to the lasting credit of dentistry that most of its reforms have come from within rather than outside the profession. The Council on Dental Education, together with cognate and predecessor agencies within the profession, have done a pretty good job of housekeeping. Once awakened to its responsibility dentistry has been quick to put its affairs in order. One by one the proprietary schools of amorphous standards and profit-motivated policies which had their heyday within living memory have been superseded by university-connected schools. To be sure such investigations as that sponsored by the Carnegie Foundation under Dr. William J. Gies a generation ago have been most effective spurs to improvement.

Doctor Horner says it was the Gies study that "spelled the final doom of the proprietary dental school, set dental education on the way to its ultimate complete absorption by the universities, awakened the public to the significance of dental care as a health measure, and emphasized the fundamental objective of society to give dental education and research adequate financial support." Nevertheless the fact remains that if that report had not fallen upon sympathetic ears in the profession itself, enlisting those able and willing to activate its proposals, it would have proved hopelessly unavailing.

As a result of induction into the university scheme dentistry, even as the other professions, has rendered distinctive service to higher education at the same time that it has benefited from the relationship. The affluence and distinction attending the various professions, including dentistry, redound most assuredly to the credit of the universities which offer professional training. Those of us concerned with university administration cheerfully acknowledge that debt. Were we stripped of that vastly influential area of professional activity our institutions would suffer unspeakably in substance, stamina, and public usefulness. The result of the association has been mutually advantageous. The university has gained in stature and substance; the professions have gained in prestige and repute.

It is generally conceded, I believe, that the influence upon professional training by the harboring university and the influence of the university upon professional codes and standards has been salutary. As a component unit of the university organization the dental school shares equally with other schools the benign influence and fundamental respect that customarily attend the university program. These benefactions affect all elements of the school.

Consider the case of the students. The university has welded together as never before the collegiate preparation for dentistry and the professional course of the dental school. Secondary school graduates bent on careers in dentistry may proceed through two years or more of preparation in the liberal arts college and on into the associated professional school with a consistency of groundwork and purpose that saves their time and gives them strength as could never be had under the competing interests of separate, disjointed institutions. Under university auspices the collaborative liberal arts and professional programs of study are integrated with a minimum of friction and lost motion. The initial selection of candidates who

will ultimately enter the profession is safeguarded by tested university standards and principles.

As for the faculty, the dental professor is at the same time a university professor. He is chosen for his job and is able to progress in his job according to university criteria. He is a member of the ancient guild of university scholars. He definitely belongs to the fraternity of *academus*. There is open to him all of the avenues of research and development of the larger institution. The members of the dental faculty are constantly exposed to all of the stimuli by which the university encourages all of its staff in the way of more acute thinking, more active doing, and more constructive achievement. The university, being a teaching and a research institution as well, fosters both activities. In this golden age of scientific investigation, the fact that dental research has prospered under university influence is evidenced by the proliferation of research publications by dental school personnel.

As for the alumni, the dental school graduate is *ipso facto* a university graduate who can take unto himself all of the pride and satisfaction that comes of belonging to the parent institution. His loyalty to the school is sublimated by his loyalty to the fostering university. With the lawyer, the physician, and the business man who may share such fealty to the same university there is a common bond of interest between him and them that is strengthened as the years roll by, to the untold advantage not only of the institution and the community, but of the individual alumnus himself in whatever walk of life.

The university organization through its comprehensive structure affords many services to the constituent schools under its banner that could scarcely be had otherwise. For example, in many institutions university testing facilities aid not only in the selection of dental students but the determination of their advancement and final graduation. Indeed, the program of the dental school all along the line is buttressed by university support which is reflected in strengthened personnel, physical facilities, financial resources, *esprit de corps*, professional stature, and public repute.

But any estimate of university service, however complete, leaves plenty of room for improvement. Much remains to be done in improving the methods of selecting students and giving them vocational and professional guidance to the end that the public shall be more

competently served. Much remains to be done in according our dental schools funds and facilities in keeping with their opportunities. Though much progress has been made, there is still ground to be gained in establishing better understanding and rapport among the professions in the interest of common accomplishment for the public good. In all of these relationships the university occupies a key position of responsibility.

Confronted with this unfinished business, it is encouraging to remember that, democratic in the extreme, higher education knows no caste but that of intellectual worthiness. Its object is to impregnate its whole program with the purpose to excel. That better dentists are being trained today under such circumstances than were trained under the less exacting and less solicitous auspices of the ancient regime is surely incontestable. Yet even more interested than in the training of competent practitioners the university is concerned with the development of men and women for more useful citizenship. In all lines of work both professional and vocational, we have been sorry witness to the fact that technical competence has all too far outrun common sense. In mastering our mechanical problems, we too often fumble our human problems.

Paradoxically, our successful pursuit of comfort and happiness is yielding far too much unhappiness for comfort. For all of our cleverness as a people we are beset with anxiety. I think it has been rightly said that the highest mission of our colleges and universities today has become the restoration of self-respect and confidence to a generation woefully bewildered. Let us take some measure of comfort from the thought that institutions dedicated to such lofty purposes still abide.

A few years ago at an academic convocation in England, the poet, John Masefield, put into imperishable phraseology his tribute to the university which though often quoted is as fresh and inspiring as the morning sun. What he said in part was this, with which I close: "There are few earthly things more splendid than a university. In these days of broken frontiers and collapsing values, when the dams are down and the floods are making misery, when every future looks somewhat grim and every ancient foothold has become something of a quagmire, wherever a university stands, it stands and shines; wherever it exists, the free minds of men, urged on to full and fair enquiry, may still bring wisdom into human affairs."

## CARIES RESEARCH: ITS PRESENT POSITION AND FUTURE TRENDS<sup>1</sup>

HENRY M. LEICESTER, Ph.D.,<sup>2</sup> *San Francisco*

This publication, showing that actinomycetes as well as lactobacilli can produce acid from carbohydrates, serves once again to call to our attention the complexity of the caries process. Many workers in the past have felt that caries was essentially straightforward, with destruction of tooth substance occurring by one mechanism only. The very number of such single mechanisms that have been proposed and supported by more or less convincing evidence gives a clear indication that caries is not so simple as these investigators have thought.

It is significant that most of the triumphs of medicine in the last century have occurred in relation to pathological conditions which result from a relatively simple cause. Such diseases as typhoid fever and diphtheria, for instance, were recognized as due to a specific causative agent. The agent was isolated and its properties studied. From this information it was possible to devise counter measures which today have all but eliminated these diseases as public health problems.

Medical science is also confronted by a more baffling array of pathological states. Such conditions as cancer and essential hypertension have so far resisted the efforts which have been put forth for their conquest. Many single investigators and larger groups of scientists have attacked these conditions from a variety of angles. Much has been learned, but there are so many closely interrelated factors involved, and so many different sciences concerned, that up to today it has not been possible to disentangle the various processes which go on and decide on the relative order or importance of each of them. The complexity of these problems makes it essential to attack them from many angles, but the final synthesis of all the available information has not been made.

The problem of dental caries seems to be analogous to those mentioned. Successful solution has so far evaded us because histologi-

<sup>1</sup> A Discussion of a Recent Publication of Hutton, Hurst, and Nuckolls, *J. Am. Coll. Dentists* 17: 99, 1950. Solicited by the editor.

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cal, biochemical, bacteriological, and perhaps genetic factors are involved. When the problem is attacked from the viewpoint of any one of these sciences, facts emerge which are a part of the picture, but a part only. When enough facts from these, and possibly other sciences, have accumulated, it will become possible for a broad, general synthesis of the various ideas to be made. The various parts of the puzzle will fall into place, and the mechanism and methods for prevention of caries will become clear. As yet, however, as in the case of cancer and high blood pressure, the synthesis has not been made.

Nevertheless, it is possible to indicate some of the preliminary steps in such a synthesis which have been taken. This will indicate the lines of approach which today give promise of eventual success. They are based on the theories of caries etiology which are prominent at present, and which, though sometimes seeming mutually contradictory, yet are each supported by a sufficient amount of experimental evidence to show that they must be given consideration in the final picture. Eventually, the inconsistencies will disappear, and a place will be found for all the facts which have been accumulated.

From bacteriological evidence, it is clear that microorganisms are the immediate cause of caries. Final proof of this comes from recent experiments in which bacteria-free animals raised under completely sterile conditions do not develop caries when treated by procedures which invariably result in caries in normal animals. Therefore, one of the most important points to be considered is the nature of the agents which attack the tooth.

The production of acid by lactobacilli is well established, and acid formation by other organisms, including the actinomycetes already mentioned, and the streptococci studied by Bibby and his co-workers, has been clearly shown. It is evident that acid is a part of the caries process, but the respective importance of the different acid producers has not yet been fully established. It should be remembered that, although lactobacilli accompany caries so regularly that they can safely be used as indicators of caries activity, this does not mean that they alone must produce the acid involved in the lesion.

In addition, proteolytic organisms occur in the mouth, and in the progress of caries, tooth protein is destroyed. As yet only a beginning has been made in identifying the proteolytic organisms, and much

remains to be done to show their relation to the acid formers, and the time relations of their attack on tooth material.

It is also necessary to consider the conditions under which the various bacteria which have been discussed can function. The existence of different types of plaques and the presence of various food materials in the mouth at different times open the possibility that at times one type of organism may flourish, at times, another. The buffering action of saliva and the possible presence of enzyme inhibitors which may sometimes discourage one or another type of organism, are complicating factors which must be studied.

Even if the bacteriology of these organisms and the biochemical reactions which they carry out are understood, there is another factor of major importance which must be considered. This is the structure and composition of the tooth itself. Every tooth has a general similarity to every other tooth in these respects, but every tooth is as much an individual as is every human being. The developmental history of each tooth varies, so that areas of decalcification or heavy calcification, anomalies of structure, or abraded or eroded areas will differ in each case. No single tooth has the same history as any other tooth. The agents which can attack one type of tooth structure are not necessarily those which can attack another. Organisms which can produce large quantities of acid would be relatively ineffective against an intact protein enamel epithelium, while proteolytic organisms would make little headway in destroying a highly calcified surface, or a mass of secondary dentin.

Therefore, the developmental history of the tooth becomes important. Metabolic disturbances which interfere with matrix formation or calcification in a developing tooth may be of great importance, if the proper conditions subsequently arise for an attack on the type of structure formed as a result of such disturbance. The degree of hypoplasia, the location and arrangement of organic and inorganic material in the tooth, are seen to be involved in the initiation and development of the carious lesion. The possibility of formation of compounds in the lesion which are themselves capable of further damage to the tooth should not be overlooked. Recent suggestions that acids formed in protein hydrolysis may reinforce acids produced externally are an illustration of this possibility.

It must be emphasized that most information can be obtained concerning caries by studying the earliest, pre-clinical stages of the



process. Only at this time is it possible to separate the various factors which have been discussed and analyze the effect of each with any degree of assurance. By the time a lesion reaches the point at which it is clinically obvious, so much destruction has already occurred that the conditions which favored development of the lesion no longer exist. All the various processes which are involved in the progress of caries are now operating simultaneously, and the isolation and control needed for a scientific study become very difficult.

It can be seen, then, that the two major factors involved in a carious lesion are the attacking agent and the nature of the substance attacked, the tooth. Each of these factors is modified by a large number of possible individual variations, specific to the particular case. This may appear somewhat discouraging, for every lesion has its own history. Yet the total number of possible variations is not limitless, and so, complex though the situation is, a study of a considerable number of cases should permit correlations which may be of great value. Caries, like cancer and hypertension, has so far resisted major generalizations, but the more facts that are accumulated, the better becomes the chance that an orderly picture will emerge. Every theory based on sound experiment, and every new experimental fact, bring closer the day when such a picture will be ours.

### SCHOLARSHIPS

Scholarships are currently announced in different fields and under different auspices as follows:

1. RESEARCH AND ALLIED FIELDS through The Public Health Service, Federal Security Agency, Washington D.C. (Address Research Fellowship Branch, Division of Research Grants and Fellowships, National Institutes of Health, Bethesda 14, Md.)

2. RESEARCH ASSISTANTSHIPS IN CHEMISTRY, through the American Dental Association and the American College of Dentists. (Address American Dental Association, Bureau of Chemistry, 212 East Superior Street, Chicago 11, Ill.)

## THE PEN-PROBE . . . . .

### ILLITERATE LITERACY

E. S. KHALIFAH,<sup>1</sup> D.D.S., M.S.D.

I have often marveled at the ability of the dental student and his ingenuity at butchering the English language. This happened again one wintry night three years ago when I sat up until late hours struggling with examination papers and chuckling over what the freshmen had to say and the manner in which they said it. In bewitched bewilderment, I muttered to myself, "Oh! No! Not that?" until I thought I was really 'touched' in the brain.

To establish my sanity, I proceeded to illustrate my point and to gather data, the basis of this paper. Those of previous years, though rich, went unrecorded. Had foresight equaled hindsight, this would have been a far more rewarding study.

So, at the next scheduled test and all others that followed, the freshmen were advised that their English would be considered in the grading. They were given ample time to think and write the answers, and to re-read their papers if necessary. To relieve apprehension, common on such occasions, they were further told that the examination will not be proctored and that if one happened to borrow thoughts and words from his neighbors, he was expected to use quotation marks and to indicate the source in footnotes. One class in particular was once asked to judge its own papers individually, each suggesting the grade he thought he earned.

There were no footnotes recorded though misspellings were not lacking, and only a few overestimated their ability. As I recall, one student stood out in contrast. He wrote a masterly piece, a product of clear thinking and expression, with which not even a talented proofreader could find fault. Many wrote admirable papers though not a few fared badly. Here are the gleanings.

One question was to discuss the controversy of the discovery of anesthesia. (The italics in the first part of this paper, unless otherwise stated, indicate the words as originally given.) "The *contriversey* centers around Wells, Morton and Long," wrote one student. "This

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was a great *controversity*," wrote another. One learned that *Horas* Wells discovered *anesthesia*. Another student called it *antesthesia*. *Antesthetic* and *anesthetic* became the adjectives. Wells did not impress his audience because the patient *growned*, though there were *visable* signs of deep sleep. "And let's not forget that Wells was a *dintist*."

"Morton *toke* up where Wells left off." *Martin, Morgan* (Morton) worked with *sulfate gas* (sulfuric ether) and produced *insisibility* and *insensensebility*. "Crawford Long made no *clame* for the discovery; he was just a *practioner* of medicine." Hickman's "suspended animation" was a form of *suffication* and very *brutle*. *Hipnotism* was also practiced, and *evening* (even) a tap on the head was used to produce unconsciousness.

Unfortunately, one student, being human and subject to frailties to which I have often fallen a prey, understood the question to mean "the controversy of the discovery of dentistry," and wrote four pages on a discovery no one uncovered and on which no controversy is known or suspected.

From varied sources one learns that the dentists of the past were skilled *artysans* and capable *artisans*. They knew about *pyarreeah*, *cottery*, *medicification* and *excapation*. They knew about *reming* canals with *barber*<sup>2</sup> broaches and *curved*<sup>3</sup> (Kerr) reamers. They also practiced *luxication* of the tooth to sever the pulp at the *apexical*<sup>4</sup> foramen.

To misspell proper names, especially one like mine, is not a mortal sin. But there are names in dentistry that should not be so desecrated. The immortal G. V. Black became *George Vardiman Black*, *the professor of the profession*, who gave us extension for *prevension*. J. Leon Williams became *Jay Young Williams*, and Gysi Geise and Geesey. Magitot may not have recognized *Migantot*. But the name of Pierre Fauchard suffered the most: *Fouchard*, *Forchard*, *Pearre Fachard*, *Pirre Fauchard* and *Fauchet*.

One student wrote: "Fauchard filling material: Tin (he *like* better). Fauchard *like* tin better because it *unite* better." Another said, "Fauchard began to fill caries." He wrote the *Surergien Dentiste*. He also wrote *Les Chaurgeins Dentistes*. *Bordet* (Bourdet), *Bunyon* (Bunon) and other *promint french* dentists were *contempories* of Fauchard, who did some work on *porclain* and knew something

<sup>2, 3, 4</sup> Related to me by John T. Bird, Jr., personally.

about *absessed* teeth. A great *surgein* of his day was Guy de *Chaul-iriéc*.

It is not unflattering to dentistry that a dental student has at least a speaking acquaintance with the name of the great Jewish philosopher Spinoza, but to call nasal stenosis *nasal spinoza*<sup>5</sup> is something that not even that prince of reason who pleaded for freedom of thought and speech, would have allowed.

The *beganning* of dentistry (six students wrote *begining*) is lost in history. No one country could be called the *craddle* of dentistry. "India has *clamed* the beginning, Dr. *Kliafah clames Seria* [he never did] and I *claime* Indiana."

The history of dentistry goes back to the time before *christ*, i.e., *b.c.* Mention of it is made in the *Bibel*. "Around the birth of Christ there was a medicine called *Trepine* which killed the tooth (nerve and arterial supply)." Evidently, the venous supply was not *suf-ficated*, if I may complete the thought with a borrowed word. *Hippocraces* was a great physician.

*Assseryians, Asserians, Etruschans, Etructians, Truskins, Etrusans, phonicians, Pheonicians, englishmen, Mohammodans, greeks, Eureo-peans, arabians, french, Chinease* and people of other *country*s knew about dental art. Probably they knew about "langwidj," too, but I was not so informed.

Before dentistry became a *proffesion* and a *speacility*, there were *practicioners* who were *quakes, charlots* and *charletons*. The Egyptians knew something about dental art as evidenced by the *Elber's* papyrus. They recorded their knowledge, *useing* and *implying papirus* and *papayri*. The ancients also knew about *calcilus*, but dental treatment was *primitive*.

The phonicians also had some similar knowledge, "for the Ford mandible is perhaps one of the most interesting *fossils*. The mandible shows the *four central incisors* wired to the canines." There was another *fossal*.

*Comparitively* speaking, dental knowledge underwent a great *metamorphisis* in the Middle Ages, as a result of the works of Vesalius, Eustachius and Fallopius. *Vestalius, Versalius, Vestachius, Eustacious, Eustatius* and *Fallipous* were great anatomists. They recognized the *dential follicl* and studied *decidious* teeth. And John Hunter, the English physician of the eighteenth century, who is

<sup>5</sup> Related to me by B. E. Lischer, personally with the comment that "it all goes back to the early training when patterns are made."

well-known for his studies in comparative dental anatomy, was treated in this manner: "England's great contribution was *hunter* who gave his works on dental *Anatomy*." And "during Middle Ages there was a 'blackout' in *dentistry knowledge* and advancement until *Renaissance*." Sometime during this period "*Leewanhock discovered* the microscope."

*Zene Artzney* or *Artzney Buchlein* (the italics denote the book) is the first book solely devoted to dental art. It was first published in 1530. This fact alone—that it is the first purely dental book—gives it an air of historical importance. The name of its author or compiler is not known and it was not an original book.

The treatment of this book by some dental students is revealing. One called it *artenzy*. Another said it was written by *Réné Artzney*. A third stated that *Zeke Artzney* was responsible for it. A fourth advanced the theory that "*Gene Artzney*, a German, wrote the first purely dental book." A fifth student believed "*Artzney Buchlein* wrote the first purely *Dental* book in German." And a sixth called it the *buckline*.

Now we come to dental education, journalism, *legsillation* (thrice in one paper) and *organization*. One student believed that the fathers of dental education were the "ADA and the deans of dental schools;" another added: "C. and J. Harris, Taylor, Winter, Skinner and others," whose efforts were not *ineffective*.

Horace Hayden was called *Hadden*, *Joseph Hayden*, *Oris Hayden*, *Hadin*, *Haden*, *Haven* and *Hagan*. Chapin A. Harris became *Chaffin* (thrice in one paper), *Chaiffin* (twice in another), *Shapen*, *Chapian*, *Chaplen* and *Caphen* Harris, who gave *courses* (twice) in dentistry. He taught at *Transivania*, *Transalvania* university, "and probably had an M.D. and *E.S.* degrees." And John Harris, Chapin's brother, out of the clear blue was christened *Stephen* by someone, but unlike St. Stephen, the first Christian martyr, "Stephen" Harris was not stoned to death though he has become the forgotten man in the history of dental education.

You may be startled to know, as I was, that "The first dental school, The *Boston College of Dental Surgery*, was established under a *charter* of the *Maryland Assembly*." Previously, dental training was by *aprenticeship*. Later, the dental course was *correlated* after *proprietary* dental schools *afiliated* with universities.

"With the start of a formal and scholarly (?) program of education to higher degree of respectability and skill among the *dentist* was a

definite start toward the professional status. An organization of *dentist* was now order and Harris and Hayden were equal to the task. The Society of Surgeon *Dentist* of the City and State of New York was already in *existence* but the new society was to be national in scope. It lasted until *dissolved* by the amalgam wars in 1857." Thus dental *knowledge* and dentistry came to have "the *respect* and *aspect* of a profession."

"The *Dentist's* were not organized. *Literature* was scanty. The *dentist* organizations which were torn by the amalgam wars were also torn by the Civil War and 1859 saw the establishment of the American Dental Association which was northern. In 1869 the Southern Dental Association was established. In 1897 they merged to form the National Dental Association and 1922 became the AMA."

Were there many dental journalisms in the past? According to a source, "The first dental journalism was controlled by commercial interests. The *Dental Cosmic* was such a journal, before it was absorbed by the Journal of the American Dental Association."

As to dental *legislation*, there was once upon a time a *royal eddict* in France for the *eximiation* of dentists. As to the so-called Amalgam Wars, the following may be of interest. "War started on the use of *Amalgam*. Was *to cheap*. Gold was preferred by most, *with more*." Amalgam then was a *courosity*. There was *dissention* and "a big disagreement among *dintist* as to the use of amalgam." These *bel-ligereants* *avocated* gold in *principal*.

All the above is unfortunate, not funny. Most of the errors could be attributed to carelessness. But is it negligence when a dental student, who boasts of a high school certificate and so many academic units of credit and who has passed the intelligence and aptitude tests and all the hurdles the planners threw at him (often wildly), spells dentist *denist* and *dintist*, and writes *denistry* twenty-two times in one paper?

This laxity bordering on lawlessness in the use of language—a precious heritage—is not new to educators. Butchering any language is a crime. In this instance, it is a form of juvenile delinquency. And lest the reader be misled into thinking that I am being harsh and critical, may he be reminded that it is not destructive criticism what the farmer said on learning that his cow gave birth to a calf: "This calf is a bull and she was due for a heifer."

Alfred Owre, during his heyday and long before his death, used to deplore the English of the dental student and thought that something should be done about it. Years later, he admitted that any efforts in that direction were rather hopeless. The situation is not hopeless.

It is not dentistry's fault that dental students command a good knowledge of poor English, but it is the profession that suffers. And it would be unjust to dentistry to say that this problem confronts it alone. Medical educators have expressed similar concern of the medical student's English.<sup>6</sup> A Princeton professor comments on the "lack of knowledge of English grammar (or any grammar), characteristic of American students."<sup>7</sup> And H. R. Huse, in his *The Illiteracy of the Literate*, writes: "A record of one hundred graduate students registering at Columbia University showed that only five per cent wrote out the registration blank without error. In the same institution, out of a hundred library cards only two per cent were correctly filled in."<sup>8</sup>

Albert Lynd,<sup>9</sup> writing in the *Atlantic Monthly*, attributes such faults to quackery in our public schools and lays the blame at the doorstep of what he calls "professors of 'education,'" in both public and privately-endowed universities and teachers' colleges. He is not as critical of public school teachers as he is of the "super-professionals" and "superpedagogues" of "education" who train the personnel of education. "How educated are the graduates of education?" he asks. And again, "Who are the umpires?"

Instead of the elementary steps of rigid drillings in reading, writing and arithmetic, the youngster is taught to bring forth "skills" that are "socially useful." Lynd adds: "You must excuse the limited literacy of your local teachers when you discover that their overlords, having nearly abolished Latin, are now on the way to abolishing not only living foreign languages but the English language as well.

"In truth the superpedagogues are eager to abolish language as

<sup>6</sup> "Medical Education: A War Casualty," by Evarts A. Graham. Wash. Univ. Medical Alumni Quarterly; 8, 151; 1945, (July).

<sup>7</sup> Philip K. Hitti in *The Arab Heritage*, edited by N. A. Faris; Princeton Univ. Press, 1944, p. 14.

<sup>8</sup> H. R. Huse: *The Illiteracy of the Literate*. D. Appleton-Century Company, New York, 1933, p. 5.

<sup>9</sup> Albert Lynd: "Quackery in the Public Schools," *Atlantic Monthly*, March, 1950.

an esthetic medium and to concentrate upon its use as a toolbox. In traditional education the second was a common-sense derivative of a disciplined study of the first."

And the advancement of these teachers depends less on their ability and performance on the job, and more on graduate and postgraduate work, on semester-hours of credit and on meaningless degrees, all based on the dreams of the superpedagogues who "spawn courses faster than any teacher could take them in a dozen lives of summer-school hopping." He continues:

"The Neanderthal English" in which most of the announcements of such courses are written, "may be one of the limiting influences on the literacy of the average public school teacher today, because it is safe to assume that the courses are taught in the same strange dialect. There is more disturbing evidence that your children are getting less than adequate development in cultural attainments because their teachers are themselves actually uneducated in them. Take the fundamentals of English literature and composition, which were once thought to be valuable additions to the personality of any high school graduate intelligent enough to read more than a racing form. The educational pragmatists tacitly argue that the luxuries of private esthetic development are less important than the new 'social orientations.'" May-be so, may-be so, *but how would they know?* They have no comparative basis for judgment, because the pedagogical course-hopping now required of an English teacher gives him no time or energy for reading in the substance of English literature."

It is not my purpose to write disparagingly of the public schools, in one of which our four children are enrolled. I have quoted Albert Lynd for the reason that, as a member of the school board of his home town and as a former history teacher at Harvard and Stanford universities, he is better qualified to speak of what could be responsible for some of our shortcomings.

Nor is it my pleasure to poke fun at the dental student. I have been associated with him long enough to respect and appreciate his ability. But the fact remains that, generally speaking, his English is unbecoming of a profession that aspires to be learned. And it is not uncommon for editors to reject otherwise scientific papers for reasons of language, while others, in need of material for publication, are compelled to re-write them for passable presentation. And



it may be said without disrespect that some editors still accept or cause to be published "literature" that stems from such "education."

Admittedly, English is not a dental course; it belongs to the high school and the college of liberal arts. But in preparing the student for the profession that awaits him, dental education teaches him also how to polish dentures and restorations. It might as well teach him how to polish the vernacular, as a few schools do in the preparation of the "finished product," that elusive prize for which dental education strives. These schools give the sophomore student a course in technical composition. And he who wrote badly as a freshman did that no more in the immediate years that followed. His papers in the junior and senior years, his teachers say, speak eloquently of his ability to learn and would refute what I remarked of him as a freshman.

## CARE

### APPEALS FOR AID FOR KOREA

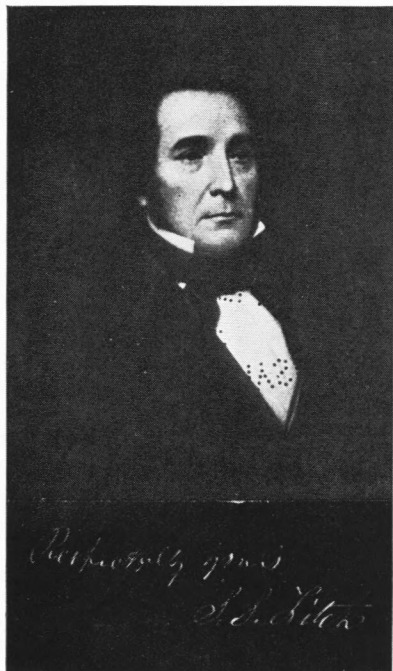
CARE is appealing for funds to send relief packages from Americans to war-devastated Korea, whose people are in desperate need of food and clothing.

Contributions in any amount sent to CARE for Korea, 20 Broad St., New York 5, N. Y., or any local CARE office in this country, will be used by the non-profit agency to deliver gift packages, in the name of the donors, to destitute Korean families chosen on the basis of greatest need.

Six types of CARE packages are available: Food, underwear and socks, or woolen suiting, at \$10 each; knitting wool, \$13; woolen blanket and cotton fabrics, \$7 each. Contributions less than the cost of a complete package will be pooled. All donors will receive a CARE receipt.

## THE BEGINNING OF DENTAL EDUCATION IN PHILADELPHIA

HAROLD L. FAGGART, D.D.S.,<sup>1</sup> Philadelphia



DR. S. S. FITCH

Dental education had its beginning in Philadelphia with a series of lectures given by Dr. Samuel S. Fitch in his office at 171 Walnut Street in the fall of 1833 and 1834 to medical students of the University of Pennsylvania and the Jefferson Medical College. These two medical schools were then located near 10th and Walnut Streets.

Dr. Fitch had received his medical degree from Jefferson Medical College in 1827 with the second graduating class. From his announcement in the *National Gazette and Literary Register*, September 28, 1833, one is impressed with the high order in which his course of lectures in dentistry was to be conducted.

"All graduates, practitioners and students of medicine will be admitted," and "At the close of the course, the gentlemen who choose it will receive an examination, and if found qualified will receive a certificate of their qualification as surgeon dentist." Perhaps the publication of his *System of Dental Surgery* in 1829 may have prompted the medical students to apply to him for instructions in the practice of dentistry. Dr. Fitch's *System of Dental Surgery* was published in three parts: 1) Dental Surgery as a Science; 2) Operative Dental Surgery; 3) Pharmacy connected with Dental Surgery. Quoting Dr. Weinberger in reference to his work, "This was the only work in the English language, up to that time, that attempted

<sup>1</sup> Instructor, Operative Dentistry, Lecturer in Dental History and Curator of the Museum, Temple University, School of Dentistry.

to cover the entire field of dental science and art, and shows that Fitch was well grounded in the literature of his profession and well

sep 23, d3w SAMUEL W. MORRIS.

**LECTURES UPON THE TEETH.**

**T**HE undersigned having for several years past received from graduates and students of medicine repeated applications for instructions in Dental Surgery has concluded to give a course of Lectures upon that subject. The object of these Lectures will be to afford to those gentlemen who come to Philadelphia for medical instruction an opportunity also of acquiring an accurate and complete knowledge of Dental Surgery in all its details both of principle and practice.

The Course will embrace the Anatomy of the Jaws, Teeth, Gums and other soft parts connected with the Teeth. 2d, Natural History of the Teeth. 3d, Diseases of the Teeth, Alveoli Gums, &c. 4th, Diseases produced by Diseased Teeth.

Manner of Extracting, Filing, Plugging and Cleansing the Teeth.

Mode of directing the second dentition and correcting irregularity of the Teeth, so as to render them perfectly regular and beautiful.

Manner of inserting Artificial Teeth, from single to full sets; Dentifrices, &c.

No efforts will be spared to render the gentlemen who attend these lectures accomplished surgeon dentists. All the different operations will be carefully demonstrated before the class. The lectures will commence early in November, and continue between three and four months. They will be delivered at hours not occupied by the regular lectures of the school.

*Conditions of Admission.*

All graduates, practitioners and students of medicine, will be admitted.

Fee for the course, \$26.

At the close of the course, the gentlemen who choose it will receive an examination, and if found qualified, will receive a certificate of their qualifications as surgeon dentists. For this diploma an additional fee of five dollars will be charged.

SAM'L. S. FITCH,  
sep 27-.dlf No. 171 Walnut street.

**LECTURES ON THE TEETH,**  
**AND**  
**INSTRUCTION IN DENTAL SURGERY.**

**T**HE undersigned, flattered by the numerous class of young gentlemen who attended his Lectures the last winter, will again deliver a Course of Lectures upon the Teeth, &c., accompanied with *practical* instruction upon every branch necessary to form the finished, practical, and accomplished Surgeon Dentist.

The student, besides Lectures and practical instruction, will enjoy the use of an excellent Laboratory, where he will have an opportunity of making and mounting all descriptions of Artificial Teeth from the insertion of single teeth to full sets.

At the close of the Lectures, students deserving it, will receive a Diploma.

Lectures will commence early in November, and continue until March.

**TERMS.**

Tickets to the Scientific Lectures, \$ 20  
Lectures, Instruction, Laboratory and Diploma, 165  
For further particulars, apply to the undersigned, at No. 171 Walnut street.

os 9 | SAMUEL S. FITCH.

qualified for the task he undertook." He collected the writings of others, sifted it all, and arranged the valuable material in a clear, logical, order.

## FIRST STEPS TOWARD FORMAL DENTAL EDUCATION

The younger and more progressive men of the dental profession in Philadelphia were not inactive during the formation of the first three dental schools. They had taken an active part in the organization of the American Society of Dental Surgeons and in the promoting of the "American Journal of Dental Science." It was about this time that Dr. J. F. B. Flagg, the younger son of Josiah Flagg, one of the first native-born American dentists, arrived in Philadelphia, having previously practiced in Providence, Rhode Island. He brought with him to Philadelphia a reputation that at once gave him a standing among his professional associates. Aggressive yet tactful, he was thoroughly imbued with the true professional spirit and had but little patience with the exclusiveness which led so many to regard the teaching of experience as a trade secret. His personal magnetism and genial manners made him a welcome addition to a little circle of those who, like himself, were willing to communicate experience and anxious to learn. The first stirrings of the movement favorable to formal dental education in Philadelphia were brought about by this group of progressive minded men who now and again met for social and professional interchange of ideas in each others offices or laboratories.

Listed in this group were: Doctors John D. White, Stephen T. Beale, Robert Author, Elisha Townsend, Lewis Roper, Samuel L. Mintzer and J. Foster Flagg. These men encouraged by the success of the dental schools that had been organized, believed that Philadelphia, the then recognized center of medical education in the United States, should be able to support a dental school. The first step toward this project was to secure the united support of the State by organizing a dental society.

## THE PENNSYLVANIA ASSOCIATION OF DENTAL SURGEONS

In October 1845, a meeting of dentists residing in Philadelphia was called, at which it was determined to invite all reputable dental practitioners in the State of Pennsylvania interested in educational matters to consider the propriety of forming a state dental society. In response to this the Convention met December 15, 1845 in the lecture room of the Philadelphia Museum, then situated at the northeast corner of 9th and Sansom Streets, Philadelphia, and the

following day, December 16, 1845, The Pennsylvania Association of Dental Surgeons came into being.

On the occasion of the Fiftieth Anniversary of this Association, December 16, 1895, Dr. William H. Truman, in an address before the Association, said, "The Association was organized for a special purpose. It was the outcome of an earnest desire of the progressive dentists of Philadelphia to establish in Philadelphia a dental college having a strong dental society at its back."

Shortly after the organization of the Association a committee was appointed to apply to the Legislature of the State for articles of incorporation. However, the acquisition of a charter for a dental college proved a far more difficult task than was anticipated by the Pennsylvania Association of Dental Surgeons. The bill, referred to a committee of the Legislature, was returned, rejected, the reason given by the chairman that it was "Inexpedient, impractical, unnecessary, and without the sanction of the majority of dentists." Adverse political influence blocked their efforts until 1850, when it took an insider, alive to his opportunities, to turn the trick. The Honorable Jesse R. Burden<sup>2</sup>, a retired Philadelphia insurance man who had been elected to the House at Harrisburg, greatly surprised them by letting it be known that he had a charter and that his charter was for sale. The committee of dentists, not familiar with the methods of procedure for obtaining grants from the State Legislature, lost a great deal of time in properly preparing and presenting their bill only to find a trained politician had done it for them.

This was not what the members of the Association desired. Discouraged but not disheartened, after negotiating and finding no other recourse, but not wishing to cause further delay, a committee was appointed by the Pennsylvania Association of Dental Surgeons to confer with Mr. Burden. They then entered into an agreement which allowed the Honorable Jesse R. Burden to name the Board of Corporators, the doctors to have the privilege of naming the faculty. Thus, under these conditions the first dental college in Pennsylvania was organized and became known as The Philadelphia College of Dental Surgery.

A suitable location was found over the dental depot of Jones, White and McCurdy located at 116 Arch Street, now 528 Arch

<sup>2</sup> White, Dr. J. D.: Address, First Commencement, Philadelphia College of Dental Surgery; Dental News Letter, VI, 130; 1853 (April).

Street. During the summer the second floor was renovated and converted into several small lecture rooms, an operative clinic and a mechanical laboratory.

The first session was held in November 1852, with the following members constituting the faculty:

J. D. White, M.D., D.D.S.	Professor of Anatomy and Physiology
Eli Parry, M.D., D.D.S.	Professor of Chemistry, Materia Medica and Special Dental Therapeutics
Robert Arthur, D.D.S.	Professor of Principles of Dental Surgery
Elisha Townsend, M.D., D.D.S.	Professor of Operative Dentistry and Dean
T. L. Buckingham, M.D., D.D.S.	Professor of Mechanical Dentistry
D. P. Whipple, M.D.	Demonstrator of Surgical and Mechanical Dentistry

It is to be noted that these men all possessed M.D. degrees, with the exception of Dr. Arthur, who received the first dental degree conferred by the Baltimore College of Dental Surgery. Doctors Townsend, White and Parry, however, had the D.D.S. degree as well as the M.D. degree. Dr. Townsend was elected Dean.

The first annual announcement of the Philadelphia College of Dental Surgery stated:<sup>3</sup> "For years we have spoken of Philadelphia as a place peculiarly favorable for the location of a dental college—not that the profession resident there were particularly in need of instruction, for we think they will compare favorably with those of any other place on this continent, but because of its peculiar advantages in location; and especially on account of the great number of medical students who congregate there during the lecture season, many of whom, we think would, as they all should, acquaint themselves, to some extent at least, with the various operations in dentistry, because of its intimate connection with the profession of medicine. Philadelphia has justly been styled "The Mecca in Medicine," and we see no reason why it should not have the same reputation with reference to dentistry. From the well-known character and ability of the faculty, and the many facilities offered we can safely promise full and efficient instruction from each chair and a sincere regard on the part of the professors for the advancement of students."

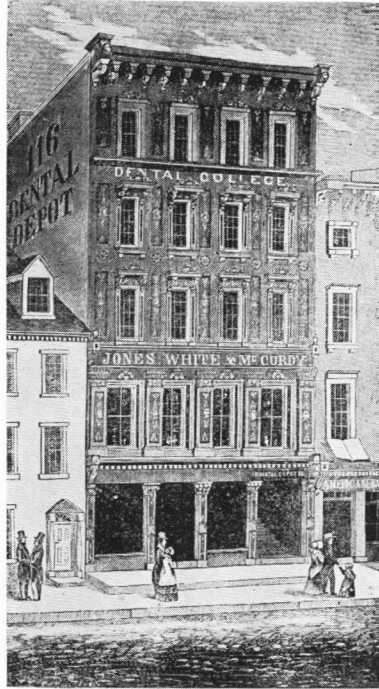
The first to matriculate was Louis Jack of this city, who registered September 2, 1852. C. Newlin Pierce of Philadelphia matriculated

<sup>3</sup>Dental News Letter, July, 1852, page 397.

shortly afterward. Both of these men have earned honored positions in their profession. Thirty-three students in all matriculated for the first session. The opening address was delivered by Dean Elisha Townsend.

The Philadelphia College of Dental Surgery made considerable progress. Each year as the size of classes increased, the facilities for teaching had to be enlarged. The fourth commencement was held in Music Fund Hall on Friday, February 29, 1856. The degree of Doctor of Dental Surgery was conferred on twenty-three graduates. After the degrees had been conferred and the new graduates had resumed their seats, the President announced that the degree of D.D.S. had been conferred honorarily upon two persons whose names and addresses were not given in any account of the transactions available. This was done against a most earnest protest of the faculty, for the parties were not known as dentists. It was to be expected that professional ethics and commercial greed would prove an impasse between the faculty and the corporators, but the faculty would not permit the granting of degrees to men who were not fully qualified.

So, early in its history, dentistry was proved a profession, and not a trade by the refusal of the faculty to do anything which would lower its standard of ethics. Thus, after the fourth session, the first dental school in Pennsylvania closed its doors. Though its existence was brief and at times stormy, the school served a good purpose in graduating men who exerted a great influence on the future of dentistry. Space will not permit mention of more than a few: Dr. Louis Jack, class 1853, Philadelphia, Dr. J. Foster Flagg, 1855, Philadelphia, and Dr. James E. Garretson, 1856.



THE PHILADELPHIA COLLEGE OF  
DENTAL SURGERY

Ninety-four degrees were conferred by this college, sixty-three regular graduates and thirty-two honorary. It seems pertinent here to make some explanation regarding the college granting honorary degrees. No better explanation could be found than to quote from Dean Townsend's remarks after announcing the names of those to receive the honorary degree at the first commencement: "In conferring these degrees the faculty

was governed by considerations which have ample warrant in the peculiar circumstances of the college and profession.

"Many gentlemen who now adorn the profession entered it when the opportunities for collegiate instruction and collegiate honors were not within their reach. They have earned from the public and from their brethren at least equal rank with those who now by official position have legal power to certify to their worthiness, and it was felt to be just and decorous to accord the claim. The effort which the college is making to establish a formal standard of character in the profession, while it owes this justice to deserving men and could not



without incidiousness withhold it, while also be greatly forwarded by the frank acceptance of this distinction of the schools on the part of the men of acknowledged merit."<sup>4</sup>

#### PENNSYLVANIA COLLEGE OF DENTAL SURGERY

The Pennsylvania College of Dental Surgery was really a continuation of its predecessor, the Philadelphia College of Dental Surgery. There was no interruption in the teaching, for less than two months after the resignation of the faculty of the first dental school in Philadelphia, the new school was organized with the same

<sup>4</sup>Dental News Letter, 6, 186-87; 1853 (April).



faculty with the exception of Dr. John D. White, who took no active part owing to his failing health. The Pennsylvania College of Dental Surgery began under much more favorable working conditions. The last session of the old college ended in 1855, and the first session, under the new name, began in 1856 at the same site, 528 Arch Street. An explanation of this change quoted herewith in part, is found on the last page of the first announcement of the college.

"It seems proper that the faculty of this school, with the exception of one of its members, should make some explanation of the fact that, after having been for several years connected with another institution, which met with unprecedented success, they should suddenly cease to hold connection with it and attach themselves to a new one.

"The history of this matter is a brief one . . . The Trustees of the Philadelphia College of Dental Surgery, the institution referred to above, claimed the right of conferring honorary degrees independently of the faculty, and, in spite of the unanimous protest of the faculty against the act, at the last commencement, confer this degree upon two individuals, who, so far from being distinguished members of the dental profession, were not even generally known as belonging to it."

The retiring faculty of the Philadelphia College of Dental Surgery, with the exception of Dr. White, at once entered upon the task of organizing another dental school. These men had gained considerable experience in the past four years and were better versed in political affairs and now knew how to reach the law-makers of the State Legislature at Harrisburg. The former dean, Elisha Townsend, was delegated by the members to go to Harrisburg and present the matter before the Legislature that was then in session. Although Dr. Townsend's health had been failing he did consent to go, but was unable to stay until action by the Legislature could be taken on the application. He fortunately left the matter in the hands of Mr. Charles Hamilton of Philadelphia, a gentleman of means and a retired businessman. He was not a politician but had considerable influence at the Capitol. He took a great interest in dental education and so well managed the affair left in his hands by Dr. Townsend that the act of incorporation was passed by both Houses and signed by Governor James Pollock, on Thursday April 3, 1856. The new

charter was very explicit in confining the selection of those who shall receive the college degree, this decision and honor being left to the faculty alone. The corporators could not select the candidate, and could exercise their right to confer the degree only upon written

**AN ACT**

**To incorporate the Pennsylvania College of  
Dental Surgery.**

**Section 1.**— Be it enacted by the Senate and House of Representatives of the Commonwealth of Pennsylvania in General Assembly met, and it is hereby enacted by the authority of the same, That Henry C. Carey, William Elder, Washington L. Atlee, Elisha Townsend, George Truman, Benjamin Malone, Alfred Stille, Daniel Neal, Thomas Wood, William W. Fouche, John R. M'Curdy, and T. S. Arthur and their associates shall be a body corporate with perpetual succession under the name of the Pennsylvania College of Dental Surgery, to be located in Philadelphia, and as such may sue and be sued, have a common seal and purchase and convey real and personal estate not exceeding in annual income two thousand dollars beyond the building to be occupied by said college: PROVIDED, that said corporators shall not, at any time, be more than fifteen, nor less than ten, without the vacancies being filled.

**Section 2.**— That the said corporators shall have power to make by-laws for their own government, and that of the faculty, not contrary to the laws of this State or of the United States; to establish a college for lectureships, and to confer the degree of "Doctor of Dental Surgery" upon persons duly qualified to receive the same.

**Section 3.**— That the corporators shall have power to elect five or more professors, skilled in dentistry, to constitute the faculty of said college, who shall deliver the lectures and control the course of instruction therein; and no degree shall be conferred, whether honorary or, upon the qualified students of the college, without the written request of said faculty.

RICHARDSON WRIGHT,  
*Speaker of the House of Representatives.*  
WM. M. PIATT,  
*Speaker of the Senate.*

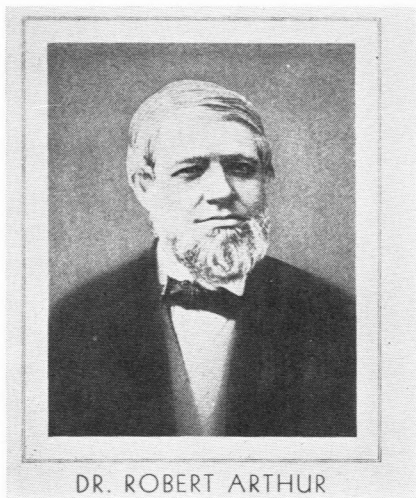
APPROVED, The third day of April Anno Domini  
one thousand eight hundred and fifty six.  
JAMES POLLOCK.

Corporators.  
Amt. of property allowed to hold.  
No. of Trustees.  
Corporators make by-laws for themselves and faculty.  
Confer the degree.  
No. of professors, their qualifications and duties.  
Degrees.

request to the faculty. The fatal controversy of the first school could not arise under this new charter. The members of the Board of Corporators appearing on the charter were men of standing and influence in the community, well known and respected by the profession. Honorable Henry C. Carey was one of Philadelphia's most

distinguished citizens. Thomas Wood was a merchant. John R. McCurdy was one of the firm of Jones, White and McCurdy, predecessors of the present S. S. White Dental Manufacturing Company, and editor of the *Dental News Letter*. Members of the medical profession, by Doctors Daniel Neal, W. W. Fouche, Elisha Townsend and George Truman.

At the first meeting for organization of the board, held April 6, 1856, the Honorable Henry C. Carey was elected President, and Mr. Thomas Wood, Secretary. It is interesting to note that, of the ten members composing the board, four, Mr. Author, Doctors Atlee, Malone and Truman, were members of the Board of the Philadelphia College of Dental Surgery during its entire existence. Evidently they had proved themselves worthy and acceptable to the faculty, for they remained members of the Board, serving faithfully until removed by death.



DR. ROBERT ARTHUR

The Faculty was composed as follows:

Elisha Townsend, M.D., D.D.S.  
Ely Parry, M.D., D.D.S.

Robert Arthur, D.D.S.

J. F. B. Flagg, D.D.S.  
T. L. Buckingham, M.D.

Professor of Operative Dental Surgery  
Professor Chemistry, Materia Medica, and  
Therapeutics  
Professor of Principles of Dental Surgery and  
Dean  
Professor Anatomy and Physiology  
Professor of Mechanical Dentistry

When the first meeting of the faculty was held April 23, 1856, Dr. Robert Arthur was elected dean, and Dr. Louis Jack and Dr. William Calvert were appointed demonstrators of operative dental surgery and mechanical dentistry, the same positions they held in the former college. The organization of the new school was now complete; the rooms furnished at their own expense at 528 Arch Street were engaged, and the first annual announcement of the

Pennsylvania College of Dental Surgery appeared in the July issue of the "Dental News Letter."

The Pennsylvania College of Dental Surgery was for many years the third oldest dental school in existence and during its long career from 1856 to 1909 graduated over three thousand students. It was very fortunate in having as presidents of its Board of Trustees four men of world-wide distinction in their respective fields. The first, Honorable Henry C. Carey, was reputed to be one of the greatest

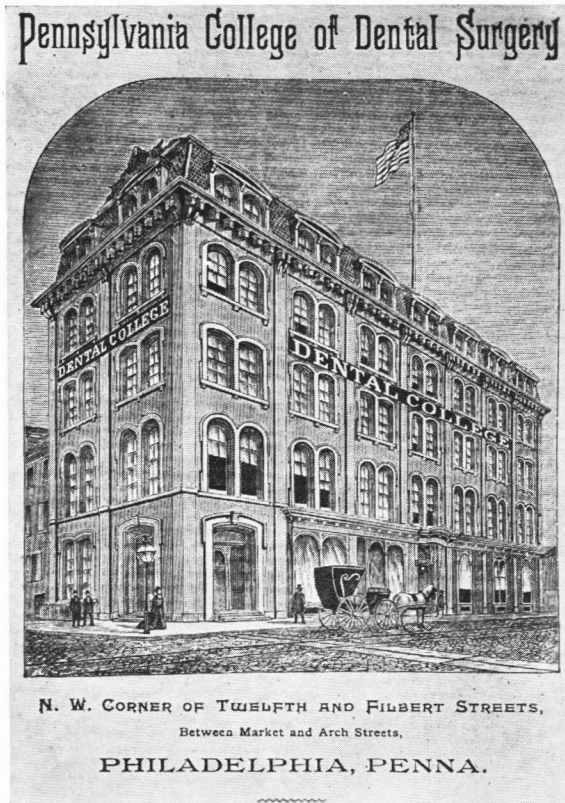


authorities on political economy of his time. He was President of the Board for twenty-four years, and was succeeded by the founder of "American Surgery", Professor Samuel W. Gross, who occupied the position until his death in 1889, when Dr. L. Minis Hays, a no less distinguished man in the scientific world here and abroad, was elected to the office. Only four presidents of the controlling board of the School during its fifty-three years speaks well for the harmony and singleness of mind of that body. Evidently they all had but one aim, to turn out students well qualified to practice the profession of dentistry.

The Pennsylvania College of Dental Surgery occupied four lo-

cations during its existence. In 1864 the College was moved from its original location, 528 Arch Street to the southeast corner of 10th and Arch Streets.

About 1871 it moved to larger and better quarters at the northeast corner of 12th and Filbert Streets; at this time it was said to be one of the finest equipped dental buildings in the world.



To provide still better facilities it again moved in 1892 to a building at the northeast corner of 11th and Clinton Streets. (This building has since been acquired by the Daniel Baugh Institute of Anatomy, a part of the Jefferson Medical College.)

About the time of the opening of the sixth session, or in 1862, Dr. John H. McQuillen resigned from the faculty due to some dissatisfaction over the choice of a faculty appointment. Dr. McQuillen in a short time secured a charter from the State Legislature for a new

school to be known as The Philadelphia Dental College. At this time Dr. McQuillen was Editor of *The Dental Cosmos*. It was feared for a while that this new school was going to hinder the progress of the Pennsylvania College of Dental Surgery. This however, was not the case, and both the schools grew and prospered.

In 1877 the University of Pennsylvania made overtures to the Pennsylvania College of Dental Surgery with the idea of taking it over and forming a dental department. The Pennsylvania College of Dental Surgery being a corporation, a unanimous decision was nec-



essary for this union. Doctors Essig, Barker, Tyson and Darby would agree to unite under such regulations as might be agreed upon, provided it could be shown to them that such a fusion would tend directly to the advancement and good of the dental profession. Doctors Mears and Buckingham objected to the union on the grounds, that, in their opinion, such a coalition did not offer any promise of advantage over the teaching of a well-operated dental school. After several stormy faculty meetings it was determined that those who were in favor of forming the new dental school were to send in their resignations, and join the University of Pennsyl-

vania and organize the dental department. At the close of the session in 1877 Dean Essig, Doctors E. T. Darby and Tyson resigned, and Doctors C. N. Pierce, Wilbur F. Litch and H. C. Chapman were appointed to fill the vacancies.

The list of gifted sons of the Pennsylvania College of Dental Surgery is long and the contributions to the profession by some of these men are so outstanding that their names warrant recall: Dr. Truman W. Brophy of Chicago, the internationally known oral surgeon; Dr. J. N. Farrar, one of, if not the first, to specialize in orthodontia; Dr. Alfred Gysi, professor at the University of Zurich, distinguished for his microscopic research in the structure of the teeth; Dr. W. A. G. Bonwell, the inventor of the electric and mechanical mallets; Dr. Wilbur F. Litch, who edited the monumental work, "American System of Dentistry;" Dr. Edward C. Kirk, Dean of the Dental School of the University of Pennsylvania for many years. Dr. Kirk will be remembered best for his contributions to dental literature and as editor of "The Dental Cosmos." Dr. William H. Truman was noted for his research in the history of dentistry, of which he wrote voluminously, and for his collection of one of the most valuable libraries on dental literature in the country. Dr. I. Norman Broomell was Dean of Temple University School of Dentistry for twenty-two years, previously having been dean of the Dental School of the Medico-Chirurgical College for ten years. His memorable work "Anatomy and Histology of the Mouth and Teeth" published in 1898 has reached the seventh edition and has been used widely as a textbook since the first edition.

About 1900 the Pennsylvania College of Dental Surgery had reached its zenith, and soon afterward the building facilities again became inadequate due to the rapid development of dental science, making necessary an increase in the number of subjects taught and hence the enlargement of the teaching staff. The College, being without endowment, depended on student tuition almost solely for maintenance. This condition finally led the Board of Trustees and the Faculty, in mutual good-will, to close the doors of the Pennsylvania College of Dental Surgery in 1909. The building was later sold, all the debts and obligations settled, its charter and records and balance of funds, after due legal process, were turned over to the trustees of the University of Pennsylvania.

## THE PHILADELPHIA DENTAL COLLEGE

The Philadelphia Dental College was founded actually upon a conviction of error regarding a faculty appointment in another institution and upon an obvious desire to conduct its affairs on a higher academic plane. The birth of this institution was a significant event, not only as a progressive movement, but as a reflection of one man's high ideals concerning dental education. Dr. McQuillen was the principal sponsor for this charter, but was ably assisted by C. A. Kingsbury, M.D., D.D.S., J. Foster Flagg, D.D.S. and Thomas Wardell, D.D.S.

## ORGANIZATION

The idea of a charter for another dental school for the city was not looked on with favor by many members of the profession, especially those who thought the result might be detrimental to the existing dental college. Perhaps one with less courage than Dr. McQuillen would have given up or abandoned the idea, but nothing daunted him. He worked hard in his role of the successful lobbyist of his day, making hurried trips to Harrisburg while the Legislature was in session. He was also handicapped by having no money, but did however, have some influential friends. The successful quest for the charter was in no small measure due to the influence of Colonel John W. Forney, at this time a powerful figure in Pennsylvania politics and founder of "The Press", a political newspaper. A charter was granted by the State Legislature and signed by Governor Curtin, April 1863, for the third dental institution to be organized in the city which became known as The Philadelphia Dental College.

On organization of the Board of Trustees, the Reverend Richard H. Newton, D.D., Pastor of the Church of the Epiphany, then located at 15th and Chestnut Streets, was elected the first President. The Secretary was R. Shelton McKenzie, D.C.L., the well-known literary editor of "The Press" (Colonel Forney's newspaper). Other members were Peter F. Rothermel, William Dulty, George J. Zeigler, M.D., George Williams, Robert McCallen, D.D.S., Oliver Lund, Colson Heiskell, S. Fisher Corlies, James L. Claghorn, Lewis D. Harlow, M.D., Charles S. Bech, M.D., and Henry Crumley.

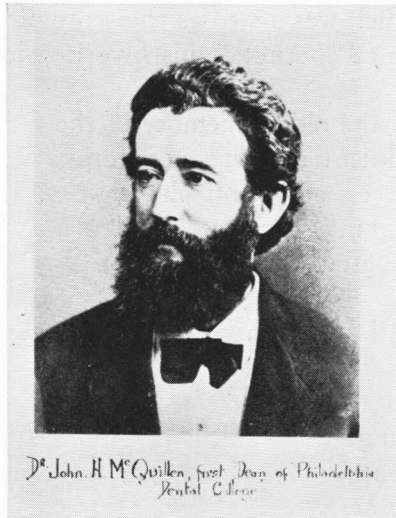
## THE FACULTY

At the first meeting of the faculty for organization, Dr. McQuillen was elected Dean and Professor of Anatomy, Physiology and Hygiene.



He set the pace regarding lectures, giving not only complete lectures on his varied courses, but lecturing upon many other subjects. His talks on comparative anatomy, illustrated with rare specimens loaned by the Academy of Natural Sciences, often covered over two hours. He held weekly clinics at the college, and often in his private office, to select sections of his classes. He was said to be one of the finest gold operators of his day.

Dr. C. A. Kingsbury was elected to fill the chair of Operative Dentistry. A precise, formal and exceptionally dignified gentleman, he served the college actively for six years and then continued in



the honorary position of "emeritus" until his death. He was a competent and faithful teacher and his love for the institution and devotion to its interest were manifested in a multitude of ways. Dr. Kingsbury has been ably described by one writer who refers to him thus: "He was a well-rounded gentleman, he could preach, pray and pull power from Paradise; a good teacher and operator in all departments of dental work."<sup>5</sup>

Dr. J. Foster Flagg was chosen for the position of Professor of The Institute of Dentistry, a chair that covered and included all that could be then taught of the science and practice of dentistry. His lectures were full of practical information. His "asides" and sug-

<sup>5</sup> Dr. George Essig—personal communication.

gestions sparkled with wit and humor, but he never failed to give the students the most practical and thorough knowledge of their work. A conception of the personality of Dr. Flagg can be had from the following picturesque description of him:

"His fiery eloquence, scathing denunciation of dogmatic assertions, witty expose of sham, relentless war on charlantry, lightning-like transitions from pathos to wit, from oratory to logic, from dry details of routine work to keen touches of humor, oftentimes reaching a climax in a cyclonic flow of language which aroused the dormant enthusiasm of the listener and convinced the most skeptical into accepting his views; his cutting sarcasm, which was sharp as the scorpion's sting; and his frequent allusions to "hornets", his favorite nickname for dentists."

Thomas Wardell, the oldest member of the faculty, was selected to teach mechanical dentistry and metallurgy. He told the students about zinc, lead, silver, gold, and plaster, the making of porcelain teeth, carved block gum section teeth, mounting on vulcanite, silver, gold and continuous-gum work. He was a conscientious laborer and lecturer.

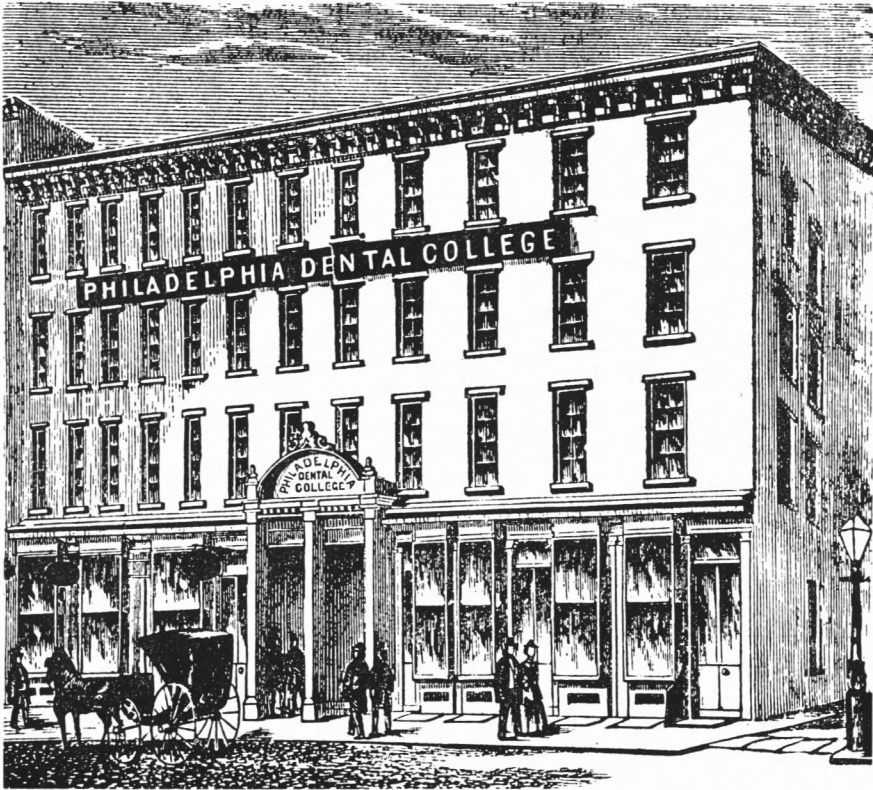
Henry Morton, A.M., chosen Professor of Chemistry, was a man of rare intellectual attainments. In appearance, bearing and courteous manner, he was a "gentleman to the manner born." He had a delightful unassuming style of teaching that compelled attention. His lecture hour was a quiet one; the students interested, attentive and always most respectful. After the second year he resigned and was later appointed President of The Stevens Institute of Technology at Hoboken, New Jersey.

George W. Ellis, D.D.S. was the first demonstrator of Operative Dentistry. William Gorgus, D.D.S., was first demonstrator of Mechanical Dentistry, as it was then called.

#### LAY-OUT OF THE ORIGINAL BUILDING

A suitable building was secured at 108-110 North 10th Street, just off the corner of 10th and Arch Streets, and was soon transferred into lecture rooms, operative rooms, mechanical laboratory and a very modest museum and faculty retiring room. The entire second floor, using the whole length of building from north to south, was made into two lecture rooms with a seating capacity of one hundred

students to each room. In the extreme north end were two small rooms, one for the museum, filled with illustrations, skeletons, papier-mache models, drawings, etc. The other room contained a long table with chairs for the faculty meetings. The south end of this floor was used for the mechanical laboratory. The entire third floor was used for the operative clinic. Here the students performed



their work on clinic patients. Light on this floor came from all sides. The chairs were considered the best at this time, but at that were hardly adequate, according to modern standards. They were arranged in a double row down the full length of the room. A small enclosure in the north wing constituted the extraction room. The stairs ran up the center of the building, giving easy access to the rooms on each floor. There were no toilet provisions for the patients, and only very crude facilities in the basement for the students. It

was not a pretentious college, as compared to colleges of today, however, at the time, it was the ultimate in both accommodations and facilities for learning.

#### ACADEMIC PERIODS OF DENTAL PROGRESS

The following qualifications were necessary for graduation and these requirements remained the same for almost ten years: The graduate must be of good character, and not less than twenty-one years of age. He must have had two years of private tuition, and have attended two full courses of lectures in a reputable dental or medical college, one of which shall have been in this institution; but written evidence of having had five years practice in dentistry, inclusive of pupilage, will be regarded as equivalent to one course of lectures. He must present to the dean a thesis on some subject relating to dental theory or practice; deposit a specimen of mechanical dentistry in the museum of the college; demonstrate practically his ability to perform dental requirements, both operative and mechanical; and submit to an examination by the faculty, upon which, if found competent, he shall receive the degree of Doctor of Dental Surgery.

The first announcement of the opening of the Philadelphia Dental College was in July 1863, at which time the first bulletin had been printed and was ready for distribution to prospective students. It is to be noted at this time that the organizers had secured the friendly influence of the church and press in the persons of the Reverend Richard H. Newton, D.D., President of the Board, and R. Shelton McKenzie, Secretary, Literary Editor of "The Press." Other members of the Board consisted of a number of experienced business men, two well-known physicians and one dentist. These factors together with a faculty of recognized ability, most of them having had teaching experience and the fact that the dean was one of the editors of the "Dental Cosmos," all gave added significance to the announcement in dental journals and city newspapers that a new college was ready to accept, teach, and graduate students who wish to be known as professional dentists.

#### HISTORICAL PERIODS OF DENTAL PROGRESS

It would appear that a more disastrous time for a new undertaking could scarcely have been chosen (July 1863). Let us pause to review

briefly the history of this time. Abraham Lincoln was President of the United States. Most of the Southern States had seceded from the Union, forming a separate government, with Jefferson Davis as President. A destructive war had been going on for nearly three years. The decisive battle of Gettysburg had not been fought. General Lee had not been defeated and driven back across the Potomac River, which event was to mark the beginning of the end of this great struggle. The general conditions in Philadelphia were by no means good, soup kitchens were in evidence everywhere. The population was a little over five hundred thousand. There were one hundred and fourteen men practicing dentistry in the city and only eighteen of them with degrees. The medical school of the University of Pennsylvania was located at Ninth and Market Streets, the present site of the post office, Jefferson Medical College occupied an unpretentious building at Tenth and Walnut Streets and the Pennsylvania College of Dental Surgery, the only dental school in the state, was at 528 Arch Street not having moved as yet to its new location at Tenth and Arch Streets. Concert Hall was at 1221 Chestnut Street and Music Fund Hall at 806 Locust Street. These halls are mentioned because most of the commencements were held in them. The horse-drawn cars were in general use throughout the city. The Reading Railway passenger station was at Broad and Callowhill Streets. In the "Public Ledger" of July 1, 1863, one found an advertisement stating, "The rebels are not yet here, you have, therefore, time to buy the cheapest furniture at Golds & Company."

On Monday, November 2, 1863, the Philadelphia Dental College opened with the first course of lectures. Eleven students had matriculated and paid the fee of five dollars and one hundred dollars tuition fee. It is said that the students of the first class had the manner of men eager to learn. They earnestly cooperated with the professors, and were attentive and respectful. Among them were students who had been in general practice from five to ten years, and during the lectures they did not hesitate to make comments and open discussions.

#### THE FIRST GRADUATES

The first annual commencement was held at Concert Hall, Monday evening February 29, 1864. The valedictory address was delivered by C. A. Kingsbury, Professor of Dental Physiology and

Operative Dentistry. Reverend Richard Newton, D.D., President of the Board of Trustees, conferred the degree of Doctor of Dental Surgery on the following gentlemen who had met the qualifications for graduation with the first class: William A. Breen (by alphabetical order the first to receive the degree), William P. Henry, Pa., Richard J. Hoffner, Pa., Henry E. Knox, Mass., William S. Miller, Mass., Ambler Tees, Pa.

The college was without endowment and relied solely on tuition fees for support, and during the first session the faculty members were compelled to pay seven hundred dollars each for the privilege of instructing a class of eleven students, contributing also appliances and valuable specimens from their own equipment. They fared better the second term, with an assessment of but fifty dollars, and thereafter the college was self-sustaining, though the faculty for some years continued to give much in the way of improvements and apparatus, as well as time from their practice.

The Pennsylvania College of Dental Surgery moved from 528 Arch Street, to the southeast corner of Tenth and Arch Streets, in 1864. This brought the whole group of dental schools of this state and one-half of those in the United States together within the compass of a very small circle. It was easy and convenient for students to circulate, and many visits were made daily back and forth. They knew all about each other, and the "esprit de corps" was most excellent.

The Philadelphia Dental College opened for the second term on Monday, November 7, 1864. Twenty-six students had matriculated, more than double the number for the first session. J. L. Susserott, M.D., D.D.S., and Ex-Governor James Pollock were chosen as members of the Board of Trustees. No change was made in the original faculty.

The surgical clinics at the Pennsylvania Hospital were open to students from the College with the payment of a small fee. The Philadelphia General Hospital (Blockley Hospital) was free to students, and some of them would attend Dr. Gross's clinic on Saturday mornings.

The graduation exercises were held in Concert Hall, March 1, 1865, before a large audience. There were many invited guests present, distinguished dentists from other cities. The President of the Board of Trustees and the Faculty were seated on the stage,

and while the band played, the students and the graduates in cap and gown marched to their seats. The valedictory address was delivered by Dean John H. McQuillen.

It was an earnest, affectionate appeal. He spoke of the work of the professors, and said the uplift of the profession of dentistry, its success and the future success of the College depended on the character of its graduates. Advice, warning and encouragement were the strong features of the address. In closing, he spoke with pride of the success of the College and its outlook.

At the close of the valedictory, Dr. Wm. H. Waite<sup>6</sup>, of England delivered, on the part of the graduates, the following address:

"To the Board of Trustees, Faculty and Demonstrators of the Philadelphia Dental College. Gentlemen: On the occasion of the second annual commencement of this institution, we, the graduates and students, desire thus publicly to acknowledge and testify our heartfelt appreciation of the efforts which have been put forth for our advancement in professional knowledge and skill; and thereby, as we trust, the promotion of those principles which, in common with yourselves, we consider essential to the interests of suffering humanity and to the elevation of the profession of our choice to its legitimate position among the arts and sciences. Recognizing the importance of thorough acquaintance with the subjects treated of, no less than of aptness to teach, as indispensable requisites in a teacher, the professors of the Philadelphia Dental College have been selected purely on account of their accredited and enthusiastic zeal in their respective departments. Thus there have been secured to those who are so fortunate as to come under their care, a thoroughness of investigation, a liberality of discussion, an earnest spirit of inquiry, and indefatigable energy in imparting knowledge which call for the unqualified admiration and sincere gratitude of each and every member of the class.

"Convinced that the principles of action which have hitherto guided the managers of this institution are such as will insure its success, those of us who are now going forth into the world desire to leave behind us our decided testimony on its behalf. As we look forward to our individual success in life, and when realizing the advantages of a careful and liberal education, be assured we shall often and

<sup>6</sup> From the Alumni Records, Philadelphia Dental College, New Temple University, School of Dentistry.

gratefully remember the assiduity and generosity of our teachers, and ever rejoice to hear of the continued appreciation of these benefits on the part of those who may follow us. That portion of our number who have another course to go through, desire to record their deep sense of past favors by their eager anticipation of greater favors to come, determining to second your efforts by all means in their power, that the ultimate results may be gratifying to all concerned.

“While this great nation is convulsed by the protracted struggle arising out of the deadly antagonism which exists between right and wrong, the onward march of civilization is necessarily checked in many respects; yet we rejoice to know that in other departments steady and rapid progress is being made.

“We hail with delight the first appearances of the silver lining which belong to this dark cloud; but we watch with eagerness for the dawning of a peace which, founded on a lasting and honorable basis, may become the forerunner of such prosperity, justice, and liberty as shall elevate this nation to the dignified position of being the pioneer of civilization, education and true greatness to all the world.

“Gentlemen, for your ability as teachers we esteem you; for your liberality and zeal we honor you; for all we thank you.”

Dr. Richard H. Newton, D.D., President of the Board of Trustees, conferred the degree on fifteen new graduates, who had complied with the requirements for graduation. One from Pennsylvania, three from New York State, one from Vermont, four from Massachusetts, one from New Jersey, one from Maine, one from New Hampshire, one from Connecticut, one from Illinois and one from England. The second class parted company the night of the commencement, many of them never to meet again. One went to Paris, France, one to Liverpool, England, and others to the states from which they came. It is doubtful if any graduates from this college in proportion to number can surpass the record of the class. Where they located, societies were soon organized and they were prominent members. Dental laws were enacted and a few of them were appointed members of state dental examining boards.

The activities of a few of the outstanding members of this class deserve mention. Dr. J. H. Borneman located in Norristown, Pa. where he enjoyed a lucrative practice for many years. He was known



for his excellent skill in making artificial teeth, for many years baking his own porcelain teeth as well as making most of the instruments and tools for his laboratory. Two sons, Noah and Sidney, later graduated from the Philadelphia Dental College and for a time were associated with their father. Another son, Henry H. Borneman graduated in law and in 1894 organized the Temple University Law School and was Dean for seven years.

E. J. Roberts located in Augusta, Maine where he filled all the offices in his state dental society from executive committee to treasurer and president, and he was later appointed State Dental Examiner by the Governor. In his private office he trained a number of men for the profession of dentistry. Perhaps the one best known in this country and Europe as a writer, inventor and for his valuable contribution in the scientific advancement of the profession, was Dr. J. Leon Williams, a skilled and artistic dentist, who was located for a time in New York, Philadelphia and London.

In his day, no man was better known in Great Britain in ethical dentistry than Dr. William H. Waite, a cosmopolitan Englishman and pioneer, who came over to America for the purpose of matriculating in the Philadelphia Dental College. On his return to Europe he located in Liverpool, where he took an active part in the British dental societies, being at one time President of the British Dental Association and for many years lecturer in Liverpool Dental School.

From this brief account the far reaching influence the first Philadelphia dental schools had on dental education in early American dentistry can readily be seen.

## THE MUSES AND THE TOOTHACHE POLKA

LOREN B. TABER, B.S., D.D.S.\* AND MARY B. LINS, A.B., *San Francisco*

The influence of music on the story of civilization has been both strange and complex. Loud and piously did the ancient poets pray that their pens be inspired to sing of the "glory that was Greece and the grandeur that was Rome". Nowadays our ears are continually assailed with chants of a different type, as the radio gives us such unmistakable epics of genius as:—

Rinso White, rinso bright  
Happy little wash-day song.

or

Eight o'clock  
Gruen watch-time

sung slightly off key in accordance with the best techniques of the day. However, in the interval of time between the classical approach to music, with Polyhymnia as the Muse of serious sacred song and the "sweethot harmonics" of present day crooners, music played still another role as a medium of advertising.

Probably one of the most interesting side-lights on this aspect of music is the growth and development of street cries in London, Paris, and other European centers. Beginning some hundreds of years before our more modern forms of advertising, hawkers and public officials let the world know of their wares, services, or duties by a combination of words and musical notes which announced to all within hearing their particular trade, offerings or profession. It is problematical at just what early date these street-cries originated, but many examples of old London street-cries are to be found in a 14th century poem entitled "Lackpenny" or "London Lickpenny" (1) ascribed by some to be the work of John Lydgate (1370-1450), a Benedictine of Bury Saint Edmund's Abbey; and the New English Dictionary (2) cites as an example a cry already existing in the year 1393:

Kokes and here knaues crieden hote pyes, hote!

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For centuries much of the world's trading was done in the streets by itinerant hawkers so that it was only natural that as a result of continually crying the same words over and over again there should gradually emerge from the natural cadence and rhythm of the words a little tune. These little tunes were not only melodic and musical but they also served the double purpose of warning prospective buyers of the approach of the perambulating tradesman. Instead of the morning paper declaring the latest thing in ladies' hats or bargain-basement sales, the citizens of the town heard:

Sprats—sprats—sprats

Twopence a peck, twopence a peck, twopence a peck at Milford Stairs (3)

or: "Have you any work for a tinker?", "Wood to cleave" or "Bel-lows to mend". Their day probably commenced with the voice of the Watchman singing:

God give you good morrow, my masters,  
Past three o'clock and a faire morning (4).

and again at night crying upon the still watches:

Twelve o'clock  
Look well to your locke, your fier, and your light,  
And so, Good-night (4).

In addition to all these services found in ones very street two more are of special interest. The first is that of the travelling chiropodist who queried of all and sundry:

Ha'ye any corns on your feet or toes? (3)

The second is that of one other of mankind's benefactors—the dentist who with pelican and other instruments relieves the torment of the damned. In Richard Deering's *Fancy: What d'ye Lacke?* which incorporated (in a musical setting) many of these traditional street-cries, tradesmen's songs and begging songs, the toothdrawer appears under the traditional name of "Kind Heart", and he sings as he wanders from place to place:

Touch and goe! Touch and Goe!  
Ha'ye work for Kind Heart, the tooth-drawer?  
Touch and goe!

The frontispiece to Sir Frederick Bridge's outstanding work "The Old Cryes of London" (5) is a reproduction of a picture purporting

to be that of "Doctor" Kind Heart the tooth-drawer and is accompanied by the following quatrain entitled "The Dentist, or Teeth Drawn with a Touch":

Ye worthies of the British nation,  
Attend to my new operation!  
Let colt's teeth, or decay'd ones come,  
My pinchers quick shall ease your gum.

But street-cries are not entirely a thing of the past. In the personal experience of one of us in France just before the war (probably the same holds true today), chairmenders, goat-milk vendors, the chestnut-man, the scissors-grinder, proclaiming their wares in distinctive tunes, were all part of city or village scenes. Even the ice-cream man was known and adored by thousands of appreciative youngsters who accorded his tune an enthusiastic welcome. A common sight on street corners was the chairmender surrounded by bottomless chairs and canes, whose cry has been heard for generations. In fact, so many different cries existed in Paris that a remarkable piece of work by George Kastner entitled "Les Cris de Paris" (6), first published in 1857, listed and classified as to place, time and occupation of the crier, some 642 different cries to be heard not only in this capital but also in other European centers.

We here in America are not entirely unfamiliar with street-cries for who has not heard the morning's still or the afternoon's peace broken by "Rags, bottles, sacks, rags, bottles, sacks" (7)? In fact at one time the city of New York was so disturbed by the conflicting melodies of banana-men, old clothes-men, kettle-menders, scissors-grinders, umbrella-fixers and like sundry that the city officials issued an edict by which perambulating merchants were banished from the streets. Today most cities know the ice-cream push-cart or automobile man and his distinctive tune or chimes.

Another example of modern street-music is that new species of torment, the sound truck whose canned melodies and hired barkers announce to all with penetrating and entirely unescapable vigor the merits of Candidate X or the latest thing in "burlesque", perhaps all interspersed with "I love you truly" (which no doubt the politician does) or "I found a million dollar baby in a ten-cent store".

Consider the magnitude of the radio as a medium of advertising! The super soaps, vitamin pills, deodorants, the staffs of life, the

correct times, promises of fitting burial, in fact, all necessities and luxuries of this or any life to come, are presented in stream-lined profusion for the enjoyment of and salutary effect on millions of prospective customers. In a recent election the main political parties were not entirely unaware of the magnetic effect of radio music on voters, for both parties on the night before the election presented choruses which painted glowing word-pictures of the two men whom each hoped to see in the White House.

Stepping out of the twentieth century back to the nineteenth, we find yet another expression of music as a medium of advertising and find at the same time the *Toothache Polka*. The musicians of this period were a friendly lot and selected as their themes subjects popular with the crowd. Waltzes, polkas, quadrilles, and other dances were turned out in honor of various commercial projects.

The New York Times of April 2, 1933 carries a fascinating article entitled "Songs of long ago put on exhibition" (8). The period covered was 1830 to 1876 and the range of subjects casts many an interesting side-light on the fancies and foibles of the day. Firemen and soldiers easily won first place in popularity, and we find such delightful pieces as "Firemen, the Pride of the Nation", written in honor of a volunteer fire company and accompanied by a decorative cover showing the firemen in all their splendor. "My Love is a Soldier", "The New York Fusiliers", "Hewett's Quick Step" in honor of the Jefferson Guards who appear on the cover resplendent in gold lace and bear-skin hats, are but a few of many written in honor of "our boys". It is also to be recalled that at this time (1852), James McNeill Whistler, whose claim to fame and immortality should not rest entirely on "His Mother", illustrated a song for West Point before "resigning" from that institution at the request of the authorities (9).

An example of the commercial aspects of this type of music is to be found in a striking piece called "The Belgium Gallery Polka" composed by Harvey B. Dodworth who also devoted part of his time and musical genius to a composition dedicated to the soldiery. "The Belgium Gallery Polka" was in honor of an importer's shoe store located on Broadway between Spring and Prince Streets in the year 1853!

*The Toothache Polka* was composed by one S. Ehrlich, about whom the most diligent research in the encyclopedias of music and musical

composers, and other works and sources (10) has established only one little point, viz, that he lived in the year 1846 in Philadelphia. Mr. Richard S. Hill, Reference Librarian, Music Division, of the Library of Congress, relates how he attempted to obtain more information about this shadowy individual (11):

"A rather extensive search has been made for reference to S. Ehrlich, but no mention of him has been found in the dictionaries or histories of the period. The fact that so many of his pieces were published in Philadelphia seemed to make it worth while to check the Philadelphia Directories. A search through the volumes from 1830 to 1860, however, revealed only a single entry. In the volume for 1846, the following appears:

'Ehrlich, S., teacher of music, 270 Lombard.'

"Lombard Street ran from Delaware to Schuylkill between Pine and Cedar. The single entry could mean several things. Directories frequently list only householders, and thus the most probable explanation would seem to be that Erlich only had rooms in some large house, and consequently would not be listed. It is also perfectly possible, however, that he lived in some town in the vicinity of Philadelphia, and only moved into the city for a short period in 1845 or 1846."

Several other Ehrlichs (10) were met with during the progress of this investigation, but they were of the wrong initial, or lived at some other time. It was even thought that with the publication of the *Toothache Polka* in New York in 1851, the composer might have removed to that city, but its current directory and other sources failed to yield his name.

Apart from several lists of his compositions in a few of the larger libraries, where he came from, what joys, pleasures, or griefs beset his path, when he died, all is lost in the mysterious past. The earliest of his compositions is 1839, the last 1853, and they include such titles as:—"The Bavarian March", "Clarabella Polka", "Col. West's grand march", "The Daguerreotype Polka", "The Ethiopian Medley Overture", "The Greek Gallopade", "Meet me in the Moonlight Dell", "Nellie, I'll Be True to Thee", "Sweet Lillie", a "Wire bridge gallop composed for the piano forte and respectfully dedicated to Miss Amande Stein", and, amongst others, the "Toothache Polka".

The full title of this composition is "Dr. C. D. and J. Brown's *Toothache Polka* for the Piano". It sounds gruesome, suggesting

*D<sup>rs</sup> C. D. and J. Brown's*

**TOOTHACHE**  
**POLKA,**

*For the*  
**PIANO,**

**S. EHRLICH.**

*25¢ net*

*Published by D<sup>rs</sup> C. D. & J. BROWN DENTISTS, 119 Broadway.*

*To be had at JAKES & BROTHER, 365 Broadway.*

© 1855

something that might be evolved, for example, if a competent composer should produce music suitable for Burns' address *To The Toothache*, with nerve-racking cacophonies, inharmonies, and discords.

TOOTHACHE POLKA. 2

by S. EHRLICH.

*Allegretto.*

POLKA.

But the piece itself does not in the least suggest the pangs of toothache. It is written in a sprightly, catchy folk-tune style with a melody that grows on one with repeated playing. It has the appeal of regular folk type tunes of which it is a specimen. The form is



correct, possessing classic harmonic structure, and the theme is musically on the level with the professional ability of the daughter of the house when asked to perform at the piano. Her talent and that of the composition are on a par, and therefore, it accomplishes its own purpose whether as music or as an advertisement for the dentists Brown. It has occurred to us that perhaps Ehrlich when he composed the piece, had this thought in mind:

"Music exalts each joy, allays each grief,  
Expels diseases, softens every pain,  
Subdues the rage of poison, and the plague;" (12)

Doctors C. D. and J. Brown, who were the beneficiaries of whatever advertising value there was to be derived from *The Toothache Polka*, have been identified as Charles DeCosta and John Brown, respectively. By virtue of their calling, they were listed in the New York City Directories (13-15), and in the Medical Register of New York, New Jersey, and Connecticut (13-15). Charles D. Brown appears as early as 1841 at 280½ Broadway, John Brown is registered in 1844-45 at 310 Broadway. In 1846-47 and until 1857, they share the same address—469 Broadway, which appears upon the frontispiece of the musical composition as an essential part of the advertising.

It is of interest that in the Medical Register referred to, they are listed as *Dentist, M.D.*, but no clue is given as to the validity of the medical degrees.

An attempt was made to uncover any of their professional activities which might have been recorded. In the *Index of Dental Periodic Literatures* (16), there is only one such entry: an article by C. D. Brown, entitled *Recipe and Directions for Enamelling and Japanning Steel Handled Instruments*, appears in the *New York Dental Recorder* for 1847-48 (17). This article, of no great importance, is only of half-page length.

John Brown is not listed in the New York City Directory after 1879-80, and Charles D. C. Brown is not listed after 1883-84. A check of the obituaries in the *New York Tribune Index* (1879-88) and in the *Dental Cosmos* (1880-85) failed to supply any new material (13).

In brief, Doctors Charles DeCosta Brown and John Brown lived and had their being, as the saying goes, in a circumscribed area of

the city of New York, and, so far as we can find out, made no significant contribution to the art and science of dentistry, to belles-letters, to economics, or to politics. If their names had not appeared in the directories, they would have been as nebulous as the composer S. Ehrlich.

*The Toothache Polka* was copyrighted in 1851 (18) by the dentists Brown, whose names and whose profession appear in prominent letters on the frontispiece. Its actual production was in the hands of Jaques and Brother (9), a music house, 385 Broadway, New York, which in 1850 had produced the lovely "*Jenny Lind's Bird Song*", and in 1852, *The Castle Garden Schottische*, amongst other compositions. The price, as noted on the cover, was 25 cents nett. The selection of the music for works of this kind was probably almost a matter of what the music house had as yet unsponsored and, therefore, unpublished, or what some local composer, probably pressed for funds could produce from his unplaced compositions, or whip up from his reserve of old-country melodies. However it was, there is an air of sprightliness about the sheet music of the period, the themes are simple and pleasing, and in color, when used on the frontispiece, are cheerful and gay. One gets the feeling that it was intended that their use be accompanied by gentle festivities and an innocent "good time", and if a restaurant, or a trans-atlantic cable, or a shoe-merchant, or a corp of cadets, or somebody's name and occupation, such as those of a couple of young dentists trying to work up a practice, happened to be mentioned, why, what was the harm in that?

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See:  
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11. RICHARD, S. HILL, Reference Librarian, Music Division, Reference Department, The Library of Congress. Personal communication.
12. ARMSTRONG, JOHN. *Art of Preserving Health*, Book IV, L. 512. Found in Gilfillan, George, Rev. *The Poetical Works of Armstrong, Dyer and Green*. Edinburgh: James Nichol, London: James Nisbet and Co., Dublin: W. Robertson, Liverpool: G. Philip & Son, 1858.
13. The New York Public Library, Reference Department: Paul North Rice, Chief. Personal communication.
14. *Medical Register of New York, New Jersey and Connecticut, 1879-80*. Referred to in note 13.
15. New York Historical Society, Dorothy C. Barck, Librarian. Personal communication.
16. *Index of Dental Periodical Literature*. Vol. I, 1838-1875.
17. *New York Dental Recorder*. Vol. II, 1847-48, p. 213.
18. Frontispiece: Dr. C. D. and J. Brown's *Toothache Polka for the Piano*. Entered according to act of Congress A.D. 1851 in the clerk's office in the dis't court of the South'n dis't of New York.

## COMPOSITIONS BY S. EHRLICH

## A. In the Library of Congress:

- Bavarian march*. Composed and arranged for the piano forte by S. Ehrlich. Philadelphia, A. Fiot, copyright 1839.
- Clarebella polka*. Composed for the piano forte. Philadelphia, E. R. Johnston & Co., c1848.
- Col. West's grand march*. Composed for the piano. Philadelphia, Lee & Walker etc, c1849.
- The daguerreotype polka*. Composed for the piano. Philadelphia, Lee & Walker etc, c1849.
- Echo polka*. Composed for the piano forte. Philadelphia, E. R. Johnston & Co., c1848.
- The Ethiopian medley overture*. Arranged for the piano forte by S. Ehrlich. Philadelphia, A. Fiot [etc], c1844.
- The Greek gallopade*. Composed and arranged for the piano forte. Philadelphia, George Willig, c1839.
- Liberty*, a waltz for the piano forte. Philadelphia, C. F. Hupfeld & Son, c1848.
- Meet me in the moonlight dell*. A favorite song . . . Poetry by Henry H. Paul, Music by S.

- Ehrlich. Philadelphia, A. Fiot, New York, Dubois & Warriner, c1849.  
*Nelly, I'll be true to thee.* Words & Melody by James Simmonds, Arranged by S. Ehrlich. New York, Horace Waters etc, c1853.  
*Sweet Lillie.* The words by H. H. Paul. The music by S. Ehrlich. n.d. 18—. Incomplete. *Toothache polka*, for the piano. New York, Jacques & Brother, c1851.  
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- B. In the Free Library of Philadelphia:  
*LaGaiete Le Salon* no. 3. Phil., Fiot, Meigner & Co. 217 Chestnut St., n.d.  
*Bavarian March.* Phil., A. Fiot, 196 Chestnut St. c1839.  
*Motley Polka.* Phil., 196 Chestnut St. Also N. Y., N. Dubois, 313 Broadway, c1850.
- C. In the New York Public Library:  
 Olympic Waltzes. Philadelphia, Geo. Willig, c1844.

*Fellowships and awards in dental research.* The American College of Dentists, at its annual meeting in 1937 (*J. Am. Col. Den.*, 4: 100 and 256, 1937) inaugurated plans to promote research in dentistry. These plans included grants of funds (The William John Gies Fellowships) to applicants, in support of projected investigations; and also the formal recognition, through annual awards of distinguished achievement in dental research. (See "The Gies Dental Research Fellowships and Awards for Achievement in Research," *J. Am. Col. Den.*, 5: 115, 1938). At the present time the College is supporting a fellowship in the Bureau of Chemistry of the A.D.A. The College has made available a travel fund to aid young investigators who wish to visit other laboratories to develop further special technics related to their investigations. It also has available an emergency fund for the continuation of the activities of laboratories which have suffered sudden disaster. (See—(place here reference to announcement).) Communications should be addressed to Dr. Philip Jay, Chairman of Committee on Research, School of Dentistry, University of Michigan, Ann Arbor, Michigan.

## RESEARCH ON SELECTION OF DENTAL STUDENTS<sup>1</sup>

RALPH F. WAGNER,<sup>2</sup> Ph.D., Pittsburgh

*(This paper represents a study in another field as compared with that promoted by the College, generally. Yet the College is interested in all fields of research. Therefore in presenting this to our readers, not only will they be informed as to present day studies, but teachers may be made to realize what is being done in an effort to keep abreast of activities with other fields. Young men and women must be greatly helped in the selection of their vocations. Ed.)*

Since the end of the recent war, the School of Dentistry at the University of Pittsburgh like other dental schools throughout the country has been faced with the problem of selecting its freshmen from an unprecedented number of applicants. To meet the problem, a program of research aimed at the development of effective selection procedures was undertaken in cooperation with representatives of the Department of Psychology. The latter group was asked to participate in order that full advantage might be taken of recent developments in the field of personnel. In addition, this group brought with it a valuable background of experience gained from the wartime selection and classification program of the Army Air Forces which so conclusively demonstrated the value of scientific personnel procedures.

It was at the beginning of this program that the discovery was made that no systematic investigation of requirements essential for success either in dental school or in dental practice had been carried out. Since such information was regarded as fundamental to the development of improved selection procedures a separate study of critical requirements for dentists was simultaneously undertaken. A report of this study has recently been published.<sup>3</sup>

In the absence of direct information regarding critical require-

<sup>1</sup> Dr. Lawrence E. Van Kirk, Dean and Dr. William F. Swanson, Chairman of the Admissions Committee represented the School of Dentistry throughout the research. Representatives of the Department of Psychology were Professor John C. Flanagan, chief psychologist to the Army Air Forces during the war and Dr. Wagner, aviation psychologist in the wartime psychology program of the Air Force and presently Project Director with the American Institute for Research.

<sup>2</sup> Suddenly deceased October, 1950

<sup>3</sup> R. Wagner. Critical requirements for dentists. *J. of App. Psychol.* Vol. 34, No. 1, June, 1950.

ments for dentists, a comprehensive survey of the literature was made as a source of hypotheses regarding test scores and other variables likely to predict both success in dental school and effectiveness in practice. As a further source of information, correlations were computed between dental school grades and scores on such predictive variables as were available on beginning students in previous classes at the University of Pittsburgh Dental School. These consisted of (1) quality point average, (2) score on a locally-developed carving aptitude test, (3) interview rating and (4) scores on six tests currently being given all dental school freshmen by the American Dental Association as part of a research program under the direction of Dr. Shailer Peterson.

The correlations obtained agreed in general with those reported by others who have investigated the value of various predictors. On the basis of these correlations and intercorrelations among the predictors themselves, the following tests were recommended as an experimental battery for use in the Pittsburgh program:

1. Test C2: Reading Comprehension, Comprehension Section (Cooperative Test Service)
2. Test of General Proficiency in the Field of Natural Sciences (Cooperative Test Service)
3. Space Relations Test (Psychological Corporation)
4. Figure Construction Test (American Institute for Research)
5. Finger Tracing Test (American Institute for Research)
6. Pattern Tracing Test (American Institute for Research)
7. Chalk Carving Test (Pittsburgh Dental School)

It was recommended that an applicant's admission be determined by a weighted combination of his scores on these tests, his predental quality point average and the rating he received in a personal interview.

#### DEVELOPMENT OF AN INTERVIEW

The low predictive value of the interview in the case of previous classes did not present a very strong case for its inclusion. Nevertheless, it was felt that there were certain factors important for success in dental school which could be measured by no other means. The low predictive efficiency was attributed to the inadequacy of the particular interview previously used and not to the interview in general.

A thorough survey of the literature was made regarding the value of the interview for predicting success. A report of this survey has been published.<sup>3</sup> It served to underscore the fundamental importance of determining critical requirements. Although the literature left unanswered the question of just what could and could not be measured in an interview, one definite conclusion resulted—in order to justify the time and effort connected with devising means of measuring a particular characteristic, this characteristic *must* be critical to success in dentistry.

It was obviously too late to conduct a full scale study of the requirements critical to success in dentistry in the short time remaining before the incoming freshman class arrived for testing and interviewing. Yet the problem was of such fundamental importance that it could not be ignored completely.

Although it had serious inadequacies, a brief survey approach was employed to obtain tentative information on requirements. It consisted in drawing up, in cooperation with dental school personnel, a list of factors which *might* be causes of failure in the dental school or dental practice. These factors were then put in the form of a checklist and copies submitted to the Dental School faculty with the request that they check those factors which, in their experience, had been a primary or contributing factor in the failure of a dentist or a dental student. Emphasis was placed on the need for recalling specific cases before items could be checked.

The items on the checklist which were most frequently mentioned were then submitted to members of the psychology staff with a request that they indicate which factors should be measured by tests and which should and *could* be measured in an interview. On the basis of these responses the items to be evaluated in an interview were identified and an Interviewer's Record Form covering these items was prepared.

A few items on the Interviewer's Record Form could be completed at the conclusion of the interview merely by visual inspection of the applicant during the course of the interview. However, most of the items had to do with attitudes and required certain inferences on the part of the interviewer. For example, one item on the form which the interviewer was required to complete, was; "Do you think the

<sup>3</sup> R. Wagner. The employment interview: a critical summary. *Personnel Psychology*, Vol. 2, No. 1, Spring, 1949.

applicant has done any real thinking about dentistry?" The interviewer checked either "Yes", "No" or "?". To provide the interviewer with the information on which to base these inferences a list of standard questions of the "open end" type was designed. The advantage of questions of this type is that they prevent the applicant from giving a Yes-No or a stock answer. Instead they require him to express himself at length on some point. The opening question used in the present study will serve as an illustration. The question was "*What do you think of the idea of using psychological tests to help select people for admission to dental school?*" It was intended primarily as an "ice-breaker" yet it yielded initial information on the applicant's attitudes. Another question included in the list will further illustrate the nature of the approach. It was intended to reveal information regarding the applicant's interest in dentistry. The interviewer stated the question as follows: "*I'd be interested in hearing what you think some of the future developments and advances in dentistry or dental hygiene are likely to be.*"

By use of questions of this variety it was hoped that the applicant's responses would contain a clue as to his attitudes and the sincerity of his interests. A total of eleven questions were devised and given preliminary tryout. In its final form each question was accompanied by a paragraph explaining its rationale and what it was intended to reveal. Each interviewer was requested to study the questions and the reasoning behind them and to use them in their exact form.

As a means of affording the interviewer an opportunity to complete his response form while the applicant was still at hand in case there was need for further discussion, each applicant was asked near the close of the interview to write on two topics. During the eight minutes allowed for writing, the interviewer was able not only to complete his response form conveniently but also to make any visual inspection of the applicant which he had neglected or been unable to do during the conversational part of the interview.

In the hope of achieving a standard interview and for the purpose of indoctrinating members of the dental school faculty who had been designated to serve in this capacity a "Manual for Interviewers" was prepared for use by each interviewer. The manual presented an introduction to the interview program, discussed the philosophy of



the interview, and gave directions for conducting the interview in a standardized fashion.

#### TESTING OF APPLICANTS

In the first year of the program, one hundred ninety-seven applicants were tested. All had previously been screened on the basis of a required 1.45 quality point average. The freshman class was to be selected by weighting each variable and computing a composite aptitude score for each applicant. The weights which were used were determined by a consideration of the intercorrelations of the variables and the predictive efficiency found for similar variables in other studies. The following weights were used: predental quality point average, (required courses), 5; predental quality point average, (elective courses), 3; science test, 2; reading comprehension, 1; carving aptitude test, 3; space relations test, 1; figure construction test, 1; finger tracing test, 1; pattern tracing test, 1; and interview results, 2.

Before these weights could be applied, however, scores on each variable were converted to single digit normalized scores called stanines.<sup>4</sup> This procedure resulted not only in numbers convenient to work with, but, more important, converted the scores on each variable to a common scale so that standard deviations of all variables were identical. This is important since summing raw scores has the effect of automatically weighting each variable in proportion to its standard deviation.

The intercorrelations of all variables are shown in Table 1. The correlations of each variable with total weighted score is also shown.

#### VALIDATING THE SELECTION BATTERY

The 96 individuals having the highest weighted composite score were selected for admission. The first criterion data against which the predictive value of all variables could be checked consisted of first semester grades. An average grade in theoretical courses and an average grade in technic courses were available for each student. There was no criterion, however, which adequately reflected the factors that the interview had been designed to measure.

<sup>4</sup>Normalized standard scores on a nine point scale with a mean of five and a standard deviation of approximately two. The term was coined from the words "standard nine" and used throughout the aviation psychology program during the recent war.

To obtain this needed criterion, faculty members who had worked closely with the students throughout the semester were asked to evaluate them with respect to three characteristics which the interview had been designed to predict. These were: (1) impression the student would be likely to make on a patient if he showed the same behavior and appearance in practice as he did during the first

TABLE I. *Intercorrelations of Selection Variables*  
(Applicants for 1948 freshmen class N-197)

VARIABLE	INTERCORRELATION										
	1	2	3	4	5	6	7	8	9	10	11
1. Predental QPA* (required courses)		.52	.34	.24	.04	.06	.05	.09	.00	-.03	.73
2. Predental QPA (elective courses)	.52		.34	.19	-.06	-.02	.02	.00	.07	-.04	.60
3. Science test	.34	.34		.47	.08	.33	.28	.16	.15	.11	.65
4. Reading comprehension test	.24	.19	.47		-.12	.18	.13	.09	.10	.02	.39
5. Carving aptitude test	.04	-.06	.08	-.12		.33	.43	.15	.07	.16	.42
6. Space relations test	.06	-.02	.33	.18	.33		.61	.27	.32	.07	.40
7. Figure construction test	.05	.02	.28	.13	.43	.61		.27	.28	-.04	.37
8. Finger tracing test	.09	.00	.16	.09	.15	.27	*		.25	-.08	.25
9. Pattern tracing test	.00	.07	.15	.10	.07	.32	.28	.25		-.03	.28
10. Interview	-.03	-.04	.11	.02	.16	.07	-.04	-.08	-.03		.21
11. Total weighted score	.73	.60	.65	.39	.42	.40	.37	.25	.28	.21	

\* Quality point average.

semester; (2) his application and interest in dentistry as shown by his punctuality and willingness in completing assignments; and (3) attitude toward others as shown by consideration for them and interest in their problems and personalities. Each characteristic was defined and emphasis was placed on the desirability of basing evaluations on recalled incidents which illustrated the presence or absence of the characteristic.

A third criterion of success in the first semester of dental school was thus available and correlations between each predictive variable

and each separate criterion was computed. Since admission had been based on the selection variables, the 96 students in the freshman class represented a considerably more homogeneous group than would an unselected group of applicants with the result that reduced correlations were obtained. And, since selection must in the real situation be made from the total group of applicants, it was considered essential to know how well the tests would have predicted if a random sample of the applicants, instead of the top 96, had been taken. To obtain this important information, the necessary cor-

TABLE 2. *Correlation of Pittsburgh Predictive Variables and Criteria Corrected for Restriction of Range*  
(1948 freshmen N-94)

VARIABLE	CRITERION		
	Theory	Technic	Rating
Predental QPA (required courses).....	.51	.02	.01
Predental QPA (elective courses).....	.28	-.06	-.09
Science test.....	.18	.16	.03
Reading comprehension test.....	-.04	.04	.13
Carving aptitude test.....	.10	.28	.31
Space relations test.....	.01	.12	.05
Figure construction test.....	-.04	.23	.10
Finger tracing test.....	.06	.00	.08
Pattern tracing test.....	.05	-.03	.04
Interview.....	.15	.04	.25
Total weighted composite.....	.72	.09	.03

rection was applied to correlations for the selected group. The correlations, corrected for restriction of range, are shown in Table 2.

In addition to the seven tests included in the Pittsburgh battery, two research tests were administered to all applicants. Scores on these tests were not used as a basis in final selection. As a check on their possible value for selecting later classes, however, correlations with the three criteria were computed. The two tests were: (1) General Information (American Institute for Research) and (2) Incomplete Sentences.<sup>5</sup>

<sup>5</sup> An experimental personality test developed by Dr. John C. Flanagan and Dorothy L. Berger of the American Institute for Research and described in Barham, Dorothy L. *Incomplete sentences as a projective technique*, Unpublished M.S. Thesis, University of Pittsburgh Library, June, 1948.

On the General Information Test two scores are computed from an individual's performance—a total score and a difference score.<sup>6</sup> Total score indicates breadth of information while difference score reflects interests. The Incomplete Sentences Test yields a single numerical score. The correlation obtained in investigation the validity of these tests are shown in Table 3.

The correlations shown in Table 3 suggest, at least in the case of 1948 freshmen, that General Information (total score) and Incomplete Sentences have little to contribute. The criteria, however, cannot be expected to reflect directly, the qualities which these tests are intended to measure. "General Information" score might be related to "ability to converse on many topics." Whether this characteristic is of sufficient importance to effectiveness in dentistry to give it consideration in selection, however, must be determined.

TABLE 3. *Correlation of Research Tests with Three Criteria of Dental School Success*  
(1948 freshmen N-94)

RESEARCH TEST	CRITERION		
	Theory	Technic	Rating
General information (total score).....	.00	.11	.08
General information (interest score)...	.02	.17	.19
Incomplete sentences.....	.06	.04	.05

"Incomplete sentences" is intended to obtain some measure of personal adjustment. Again this would not be directly reflected by the Theory and Technic criteria but might be expected to evidence itself in Rating. But only a negligible correlations was obtained. Although it cannot be accepted as validation, it is of interest to note that the only student in the class to drop out of dental school received a stanine of 3 on Incomplete Sentences which indicates he was in the bottom 23 per cent of the applicants on this test.

In interpreting the correlations computed for the 1948 freshmen, it should be recognized that the reliability of the criteria may be low. The criteria, moreover, may not reflect all factors which are important for effectiveness in dentistry. A low correlation does not

<sup>6</sup> Difference score is determined by subtracting total correct responses on one group of items in the test from total correct responses on another group of items in the test.

necessarily invalidate a test if it is measuring factors known to be important for success but not represented in the criterion.

#### THE NEED FOR FURTHER RESEARCH

In continuing the research on selection at the University of Pittsburgh Dental School, attention is being directed toward the achievement of improved criteria. The criterion has always been a challenging problem but it is one that must be met as completely as possible. Without reliable and valid criteria it is impossible to appreciate the true worth, or shortcomings, of a selection program. Progress must be made in the improvement of criteria before progress can be made in the improvement of selection procedures.

It is essential that criteria of "success" which are developed in dental schools be related to effectiveness in practice. Attention had often been called to the "poor" student who in practice turns out to be a very competent dentist. Unfortunately he has his counterpart in the honor student who fails to make a go of it. How frequently these discrepancies between school standing and effectiveness in practice occur in more subtle instances is not known.

The ultimate criterion—effectiveness in practice—must constantly be the guiding principle in evaluating students and in approving them for practice. The question of what to evaluate students on and what relative importance to place on theory, technic, and personality has not been completely answered. The solution would appear to be in a full-scale study of what constitutes effectiveness in practice. It is believed that the preliminary study of critical requirements for dentists already completed at Pittsburgh and a more intensive study presently being undertaken will provide valuable information regarding this fundamental problem.

#### CONCLUSIONS

Most studies on the prediction of success in dental school have been concerned with performance during the freshmen and sophomore years. Two criteria have been commonly used—grades in theory courses and grades in technic courses. Information in the literature and results obtained at the University of Pittsburgh indicate that these criteria can be predicted with considerable success.

The following variables appear to have given consistently good prediction:

*For grades in theory courses*

- Predental quality point average (required courses)
- Tests in the natural sciences
- Tests of comprehension and retention

*For grades in technic courses*

- Tests of carving or modeling aptitude
- Tests of spatial visualization
- Tests of mechanical comprehension

If first and second year grades in theory and technic courses are accepted as the principal criteria of success, it must be concluded that graduation from dental school can be predicted quite well. Since evaluation may be confined primarily to these criteria, prediction in dentistry appears to be better than that achieved in most other activities. The few multiple correlations of .60 and above which were obtained in predicting success in military specialties during the war were achieved through the concerted efforts of a large staff of research psychologists. Coefficients of .60 were very gratifying in view of the realistically complex criteria with which it was necessary to deal. In predicting "success" in dentistry, however, multiple correlations of .70 and even .80 have been reported.

Insufficient emphasis is being placed on the non-technical aspects of dentistry with respect to selection. The emphasis on technical proficiency is necessitated by the short period available for equipping the student with the skill and knowledge required of the dentist. Selection has been concerned primarily with the identification of students who can master these requirements. The difficulty in predicting the non-technical aspects has, of course, been partially responsible for this emphasis.

A great need exists for a sound definition of effectiveness in dental practice. A preliminary study of critical requirements indicates that such a definition consists of other factors besides technical proficiency. These have been tentatively called "handling patient relationships", "accepting professional responsibility" and "accepting

personal responsibility". If the definition of what constitutes success in dentistry is enlarged to include these factors there will be available the realistically complex criterion which selection batteries should strive to predict.

#### A.C.D. RESEARCH TRAVEL FUND

The American College of Dentists has set up two funds which will be helpful to those engaged in dental research.

The first of these is known as the William J. Gies Research Travel Fund. Grants will be made to investigators who wish to visit the laboratory of a contemporary worker for the purpose of obtaining specific information relating to his own problem. In this way it is often possible to acquire a working knowledge of new techniques or to become familiar with equipment in a short period of time. It is hoped that the execution of experiments will be expedited in this way. Then too, without the advantage of personal contact, misunderstandings sometimes arise which lead to unnecessary confusion, especially in controversial fields.

Assistance will be given to the extent of the cost of first class transportation and a modest per diem, which can be adjusted to conditions in the area to which the visit will be made. It is anticipated that applicants will have sufficient background to be able to accomplish the objective of such a visit within the period of several days.

The second fund was established to cope with emergencies which sometimes arise in research laboratories. It is planned to provide speedy financial assistance where accidents to animal colonies or equipment threaten the termination of studies already in progress.

Applications for grants from either of the funds should be made to Dr. Philip Jay, Chairman of the Committee on Research of the American College of Dentists, School of Dentistry, University of Michigan, Ann Arbor, Michigan.

## GOALS IN UNDERGRADUATE DENTAL EDUCATION<sup>1</sup>

J. L. T. APPLETON,<sup>2</sup> *Philadelphia*

Within a few days after matriculation, I meet the 1st year class and try to take them into my full confidence. All that any dental school can do, I tell them, is to offer the student an opportunity to prepare himself, under guidance, for the intelligent and successful practice of dentistry. Please note that I use the reflexive form of the verb—"to prepare himself"—thus placing the onus of learning where it inescapably belongs, i.e. upon the individual. Learning is an activity as exclusively personal as breathing—in fact more so—for as yet no mental "pulmotor" has been invented (and I'm not overlooking the existence of electronic calculators).

Then I tell them what "dentistry" is (or at least what it might become with their help and in their lifetime)—the health service specifically concerned with the establishment, maintenance, restoration and improvement of the health, function, and appearance of the oral cavity and its associated parts, in their interrelations with other parts and with the individual as a whole. To help them understand this "mouthful", I cite illustrations of what I mean by "establishment, maintenance, restoration, and improvement"—illustrations which should have fallen within their experience. This statement of the field of dentistry, I hope, will become more meaningful in the years ahead.

Next, I feel, I should clear up the meanings of "intelligent" and "successful." A "successful" dentist is one who has the respect of his colleagues, the confidence and gratitude of his patients, and who makes enough money so he and his family can be self-respecting members of their community. An "intelligent" dentist, i.e. one who practices intelligently, can not only answer the question "how" by appropriate action, but can also ask and give rational answers to the questions—"what", "when", and "why." What is wrong with the patient, what are the different things that might be done, and what is the best thing to do in this particular case? "When" refers to the problems of timing and sequence: and there are the constantly recurring "why this?" and "why not that?" One cannot *know* what

<sup>1</sup> An Address at the Naval Dental School, Bethesda, Md., 21 July 1950.

<sup>2</sup> Dean, *School of Dentistry, University of Pennsylvania.*



to do unless one understands what to do; and to do something without understanding is unintelligent and unprofessional, if not unethical.

In preparing himself for intelligent and successful practice, the student should set for himself certain goals or objectives. Some or all of these we, as teachers, have to bring to his attention.

1. It is, I suppose, safe to assume that every student enters dental school with a genuine interest in dentistry or in what dentistry is to him. He wants to be a dentist more than anything else. If he has the necessary qualifications, the experiences in the dental school should raise this interest to a lasting and growing enthusiasm for his profession:—here is something into which a man can put his best, and be proud. "Without zest there can be no successful education."<sup>3</sup> This applies particularly to the student, but certainly the best student is handicapped if his teacher be without zest. As teachers, we too often fall short of making the most of this motivation which has so great potentialities not only in school but also through one's professional life.

2. The student should improve his ability to learn and to think,—to think as an intelligent dentist. As teachers we gladly give lip service to this ideal, but in practice many of the things we do or do not do, discourage the development of effective and original learning and thinking. How little time do our courses and our clinic systems allow for the student to learn from his own experiences or for him to think for himself! I can speak of my own course in Bacteriology. Whatever other criticism might be levelled against it, the most serious and justest criticism (I believe) would be how woefully little time and opportunity and guidance it affords the student to learn how to learn and how to think for himself: and this is true in spite of my awareness of this weakness. I can think up reasons for this, but they'd sound like alibis. We make specific provision for him to develop acceptable skill in cavity preparation for an MOD inlay, but we make little specific provision for him to develop initiative and self-responsibility in expanding his knowledge, in improving his skills, and in acquiring professional maturity. We spend too much time trying to direct his thinking and his activities, when we should be helping him to do this for himself. Most of the

<sup>3</sup>F. Kennedy, *Sat. Rev. Lit.*, 21 Aug. 1943, p. 31.

time we are at best back-seat drivers. How to learn how to learn and how to learn how to think are high goals in all real education.

Closely related to, or as an essential part of, the art of thinking and of learning is an understanding of the scientific method. This is a big subject, and includes statistical methodology. The minimum statistical knowledge that should be brought to the attention of dental undergraduates includes:—sampling, probability, frequency distributions, averages (mean, mode, median), standard deviation, significance of differences of means, chi square, and correlation co-efficient. To this goal I give high priority, but regret time will not allow me to discuss it or to give my reasons.

3. He should acquire an adequate concept of organism—a unit consisting of interacting and interdependent parts, greater than any of its parts and greater than their sum. Specifically he should acquire a working knowledge of the human organism. Among the reasons for this knowledge is that it is basic (a) to an understanding of the interrelations between oral and systemic health and disease and (b) to intelligent co-operation with representatives of other health services, when the welfare of the patient indicates the need for such co-operation. The potential role of dentist as “case-finder” is only now becoming widely recognized and appreciated.

4. Besides this concept of organism, the dentist should have a high degree of familiarity with the structure and function of the region of the body for which he is specifically responsible: the part of the face lying below the nasal fossa and anterior to the anterior pillars of the fauces, the maxillary sinuses, the muscles of expression and of mastication, cheeks, lips, palate, tongue, floor of mouth, the tempormandibular joint, the salivary glands, the triangles of the neck, the blood and lymph supply of these parts and their innervation with associated ganglia and nuclei; and the functions of chewing, intra-oral digestion, swallowing, and speech. It is unfortunate that the whole field of oral physiology has been less intensively and systematically cultivated than the fields of oral anatomy, oral pathology, and oral bacteriology.

As early as possible, the student should see how many of the problems, peculiar to dentistry, center about the problems of occlusion. He should seek to master the natural history of the human dentition: coming to realize that—

- a. the dentition, though composed of various teeth, has meaning only as a whole,
- b. it should be thought of in terms of function, i.e. dynamically not statically; and
- c. it should be looked upon as something which changes with time, i.e. the developmental approach is important in understanding the clinical problems of dentistry. The deciduous, mixed, and permanent dentitions cannot all be treated by the same formula—but each calls for an approach, peculiar to itself. Besides this, preventive measures are resulting in increasing the number of people and the number of teeth surviving well past what used to be considered middle age. If these trends continue, then the dental needs of the older groups in our population are likely to increase, both relatively and absolutely, and the attendant dental problems at these ages are unlikely to remain as predominantly prosthetic as they have been. Dental geriatrics is already attracting some attention.

5. After acquiring (or while acquiring) the necessary knowledge, the student should seek opportunity to exercise judgment in diagnosis, in prognosis, and treatment planning. In the exercise of this judgment, I hope, he will come to realize the wisdom of *primum nolle nocere*. These experiences afford an unexcelled opportunity for learning how to learn and how to think in one of the most significant areas of practice.

As soon as possible, the clinical experiences of the student should center 'round the needs of the individual patient. The patient is a biologic unity who needs complete and continuing attention. When I was an undergraduate, we did only odd jobs; and so did most practitioners. That is still, I'm afraid, the prevailing pattern in many offices. More and more in the future the value of complete dental service will be realized; incomplete service (except for relief of pain and temporary eradication of infection) is largely a waste of money. During his undergraduate years the student should come to understand the nature and advantages of complete and continuing dental service for the individual patient, based upon a comprehensive diagnosis, prognosis, and plan of treatment.

6. By the time of graduation the student should have developed a certain facility with accepted and fundamental technics: diagnostic

(including roentgenologic), restorative (operative and prosthetic), periodontic, orthodontic, and surgical. The development of this facility should be based upon an understanding of the principles involved. Specific technics will usually be outmoded in a few years.

The usual dental degree in this country is Doctor of Dental Surgery. The common denominator in all branches of surgery is the demand it makes for a high degree of hand skill. In fact, this idea is in the word "surgery" itself, which comes from the Greek word which means "hand." In the time of Hippocrates the Greek word equivalent to "surgeon" could also be applied to a sculptor or to a stone mason.

Failure as a dentist would be almost certain for anyone who did not have the capacity to develop a relatively high degree of skill in doing nice work with his hands or who did not enjoy the doing and the products of such work. I say this so that no one will believe I am underestimating or belittling the importance of technical skill and its consequent satisfactions. Nevertheless, these technics are a means to an end and not the end itself. This should never be forgotten. On a moment's thought, this seems a truism but in fact too many students, either at beginning or as they go through school, identify dentistry with its restorative technics and too many dental school teachers and alumni seem to encourage and to strengthen this serious misconception.

One of the important responsibilities of the school, I insist, is to seek constantly to improve the technical skill of its graduates. The average of technical skill of the undergraduate of today is, I believe, much greater than it was a generation ago. This doesn't mean that the present status justifies complacency. Nevertheless the mere mastery of a technic without the knowledge of when or where to use it is putting a dangerous tool into hands without experience or judgment.

7. The opportunity and guidance offered by the school should have led the student to the conviction that prevention is an important and realizable ideal. This ideal is particularly rewarding when we start with the child, but it should permeate all phases of clinical instruction. The idea of, and the desire for, prevention of disease cannot be more solidly grounded than on the concept of organism and on the concept of function.

Important as is the concept of prevention, it is essentially nega-

tive—whether applied to an individual or to a society. The avoidance of evils, though welcome, lacks the challenge of a more positive goal. Our limited knowledge of human heredity does not yet encourage eugenic experimentation except on a most tentative and elective scale. An emerging and realistic goal, however, is the establishment and maintenance of conditions requisite for the optimum development, working, and living of the human individual in society. Perhaps, it is in this field that lie the greatest potential contributions of dentistry.

8. His experiences should result in the development of an attitude of healthy criticism toward the claims of drugs, materials, and procedures, recommended for prevention and treatment. His therapy, chemical and physical, should be rational, i.e. based on sound, chemical, physical, and physiologic principles.

9. Again, our guidance should bring the student to look upon the formal professional curriculum as essentially and even primarily a preparation which will enable him to grow throughout his professional life; to keep step with his colleagues and, in some instances, to lead them. Only the incredibly naive will believe that on receiving the DDS degree preparation for practice is complete. Self-preparation should continue throughout one's professional life. Pasteur hit the nail on the head when he said—"Chance favors only the mind that is prepared": and how true is Crumbine's statement:—" . . . it is not the best student at college—it is the one who keeps up his studies later on who goes farthest and does most . . ."!<sup>4</sup>

10. Before leaving school, the student should learn some "facts of life" about the conduct of practice. We have already referred to the value of complete service and the recall system. The organization of practice around the recognition of the patient as a biologic—a psychosomatic—unity, requiring integrated and continuing attention within a physical and socio-economic environment, is a corollary from the concept of organism. He should acquire some skill in patient education and should be able to employ auxiliary personnel wisely.

11. Another important acquisition should be the development of the professional attitude: the sense of personal responsibility to colleagues and to patients. The old injunction—"Do as you would be done by" still holds good: this is the foundation of ethics.

12. During the school years, the student should become socially

<sup>4</sup>Frontier Doctor. Dorrance & Co., Phila., 1948, p. 21.

oriented. The graduate should have an adequate understanding of the role of dentistry in its relation to the other health services, to the socio-economic framework within which he will work and live, and to human well-being in general.

13. Finally, in listing the objectives of undergraduate dental education, I hope that in the environment of the school potential teachers and investigators would find themselves and would receive effective encouragement.

\* \* \* \* \*

A list of goals in education, such as the above, is not supposed to be complete or final. Another would state them differently and would distribute the emphasis differently. I may, more or less inadvertently, have made some glaring omission. Knowing the diversity of human values and experiences, I would be surprised if critics did not reject 1 or more of my goals: and I might feel compelled to disagree with 1 or more of their goals. Certainly, the content and methods by which the goals are achieved will be different in different schools, and will change with time. The solution is not to freeze a corpus of goals and the paths by which they are reached, into a pattern of orthodoxy. There is, in truth, no virtue in seeking a solution because the situation is not one that calls for a solution but a situation which calls for tolerance and recognition of the desirability of diversity and experimentation.

AMERICAN COLLEGE OF DENTISTS  
THE FIRST THIRTY YEARS

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D

THE NEXT FIFTY

(Concluded from the September Journal.)

*Contributing Editor* Rider, B.S.; D.D.S., Missoula



T. T. RIDER

Progress in preventive dentistry has been slow through the years, yet it has been developing along definite lines. From the beginning of the twentieth century until the present time, this development has led the profession along the road of prevention rather than cure. Ever onward is the cry.

The mechanical side of dentistry received the greater stress in the dental schools at the beginning of this century. We were taught the principles of cavity preparation as advocated by Dr. G. V. Black, in extension for prevention. The operator widened the cavities into self-cleansing areas, where the movement of the tongue, cheeks, and

toothbrush could remove the food debris.

We filled the large cavities, failing to see or find the small ones. It was considered good practice to devitalize the pulp or nerve, sterilize the root canals, and then place a large metallic filling or give the tooth our final blessing with a gold shell crown. Dentists practiced their profession under the delusion that when a tooth felt comfortable, it was healthy.

Missing teeth were replaced by construction of bridges, partial dentures, or full dentures as the case required. Not too much effort

was exerted to save individual teeth. Their value was not recognized.

After a patient had had his teeth filled and other necessary work completed, his dentist cleaned his teeth. This was frequently a gratuitous service, "thrown in" so to speak, like a pair of suspenders with a new suit of clothes. This may be the reason that even today, many dentists neglect to render this valuable preventive service to their patients.

During the years, many a prophet of prevention has arisen among us. While a student at the University of Iowa, the State Dental Convention was held in Cedar Rapids, Iowa. There we had the privilege of hearing Dr. D. D. Smith<sup>1</sup> of Philadelphia. He said, "I am firmly convinced that when we learn the cause of dental caries, we will come to the conclusion that the environment of a tooth rather than its' structural composition will be the main cause". Furthermore, Dr. Smith claimed that prophylaxis at frequent intervals not only reduced caries and pyorrhea, but the patient approached the next appointment without the usual fear and misgivings.

In 1904, Dr. Smith<sup>2</sup> read a paper before the New Jersey Dental Society on "Six Years' Work in Oral Prophylaxis", in which he stated that prophylaxis did not arrest caries already in progress but that it prevented recurrence on tooth surfaces where the prophylactic treatment had been regularly instituted. This treatment had really been in use for ten years for he had been using it on relatives and friends before attempting the prophylaxis on patients.

One Dr. Taylor in discussing the above paper of Dr. Smith, emphasized the fact that every case of inflamed gums should be recognized and treated in its incipiency so many people would not be losing their teeth from pyorrhea in adult life. In fact he felt that children in their 'teens were already suffering from the initial symptoms of this disease.

In most cases a period of fifteen years intervenes before a proven procedure or invention comes into general use. This fact holds true in the dental profession. If a new method is introduced in the mechanical field, its early adoption is more certain, than if in the preventive field. This may be partly due to the fact that dentists sense a greater financial return in the former practice than in the latter, where the procedure calls for the reduction of the incidence



of caries or the prevention of periodontitis. It may also be due to the fact that many of us entered a dental college with only a high school education, and as a consequence, lacked the background to evaluate properly the new scientific discoveries.

Dr. Edward J. Ryan<sup>3</sup>, in a paper read before a section on dental economics at a Mid-Winter Clinic of the Chicago Dental Society, stated this fact: "The economic improvement of dentists shall follow whenever they escape from the tether of the vicious triumvirate: materials, merchandise, and mechanics, and begin to place emphasis on health, biologic processes, and prevention."

If we have compulsory health insurance, we will be compelled to pay for a service which we do not want. It will be impossible to keep politics out of the picture. The American people do not wish to be socialized and known by number. Everywhere the above scheme has been tried, it has meant that the available personnel is not sufficient to take care of the dental defects that are accumulating six times faster than they are being remedied. To prevent this nefarious program being fastened upon our people, we must concentrate on research and prevention. These twins hold the only hope of giving our dental patients the best of service. Prevention is far better than cure.

The next advance step in this direction was the mouth hygiene movement fathered by Dr. W. B. Eversole<sup>4</sup> of Cleveland, Ohio. This movement attempted to bring about legislation whereby Boards of Health and Boards of Education would cooperate in the establishment and maintenance of medical and dental examinations, and in the operation of clinics for the indigent poor. This movement<sup>5</sup> had many laudable motives: it emphasized the importance of dental service for children, of teaching preventive dentistry, and of providing the highest type of professional service, generally.

Another worthwhile project was originated by Dr. Alfred C. Fones of Bridgeport<sup>6</sup>, Conn. He held that auxiliary personnel, with limited training, should take over certain duties under the supervision of a dentist. He organized the first Dental Hygienist School in November 1913, with an outstanding group of Dentists, Physicians, and other prominent educators as the faculty.

Ever since dentistry has become a profession, we have been treating teeth as if they were foreign bodies in the mouth, having no

connection with the other organs of the body. The fact is diseased conditions in the mouth are the cause of rheumatic fever<sup>7</sup>, bad heart, colds, tuberculosis, neuritis, and gastro-intestinal troubles. The mouth is a part of the body and must be considered as such.

The public is becoming increasingly aware of the fact that a great deal of pain and suffering can be saved if they will only consult their dentist more frequently, so that he may use preventive measures in bringing about oral health.

Writing in the January, 1935, issue of the Dental Cosmos, Dr. B. B. Badanes<sup>8</sup> mentions the fact that the dental profession has an unlimited field in providing preventive dentistry for children. During the time the child has his deciduous teeth, he is growing and developing at a greater rate than at any time during life's span, and hence the retention of the deciduous teeth in function is a necessity.

When deciduous teeth become infected, in addition to the effect on the investing structures, one often sees marked systemic reactions, as evidenced by headache, nausea, vomiting, and fever. The child has not yet had an opportunity to build up immunity as has an adult. We must not forget that in young children general health is of paramount importance.

The Illinois Dental Health Conference of 1948<sup>9</sup> brought many worthwhile preventive measures to our attention. If caries result from acid formation by the conversion of carbo-hydrates through bacterial activity, then it should be possible to reduce the amount of decay by several methods: one would be the restriction of carbo-hydrate intake; second, the elimination of carbo-hydrates from the tooth surfaces immediately after eating and before they are converted into harmful substances; third, introduction into the mouth of what are known as enzyme inhibitors; fourth, development of a tooth tissue that is more resistant to attack by the carious process, one that is less soluble by the acid that may develop; fifth, the development of auto-bacterial agents, something that could be taken into the mouth that would be effective over long periods of time and not be toxic to the individual. It would eliminate bacteria that produce caries. A sixth method would be to neutralize the acids that are formed before they have an opportunity to destroy enamel tissue.

For the first time in dental history it seems probable that the profession may make real progress in the preventive field. The many leads so far developed indicate that possibly in the near future, caries can be reduced by as much as eighty percent. If this is true, then we can carry on to win the fight against periodontal disease, as well, the destroyer of teeth and supporting structures. Perhaps it may be found that the same agents that cause the former may be the causative factor in the latter. Who knows?

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AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF  
SCIENCE

DENTAL SECTION

(N2—Subsection Nd.—Dentistry)

Annual Meeting—1950

THOMAS J. HILL, D.D.S.,<sup>1</sup> *Chairman of the Section and of the Local Arrangements  
Committee*

AND

RUSSELL W. BUNTING, D.D.S.,<sup>2</sup> *Secretary*

*(It has been the custom of the Journal and of the College to give full emphasis to the work of this Section in the American Association for the Advancement of Science, but during the past years that connection has been lost. Herewith may it be resumed as this is part and parcel of the College program. Ed.)*

PROGRAM

*Friday Evening, December 29*

7:30 P.M. Municipal Auditorium

THOMAS J. HILL, D.D.S., *presiding*

1. Dental Research at the National Institute of Health, H. Trendlay Dean, D.D.S., National Institute of Health, Bethesda.
2. The Role of Dentistry in Atomic Warfare Civil Defense, Speaker to be announced.

*Saturday Morning, December 30*

9:00 A.M. Municipal Auditorium

ISAAC SCHOUR, D.D.S., *presiding*

1. Past and Present Dental Researches in the Navy, Carl A. Schlack, D.D.S., Office of Naval Research, Washington, D. C.
2. Self Curing Resins for Dental Restorations, George Dickson, D.D.S., National Bureau of Standards, Washington, D. C.
3. I/131 Studies of Enamel and Dentine Permeability in vivo, Herbert J. Bartlestone, D.D.S., Veteran's Administration, Washington, D. C.

*Saturday Afternoon, December 30*

2:00 P.M. Municipal Auditorium

PAUL C. KITCHIN, D.D.S., *presiding*

1. Bernier, Joseph L., D.D.S., Armed Forces Institute of Pathology, Washington, D. C. Further Studies on the Incidence of Epithelial Malignancies of the Oral Regions.
2. Burnett, George W., D.D.S., Army Medical Research Center, Dental Branch, Washington, D. C. An Investigation of the Role of Filamentous Organisms in Dental Caries.
3. Palmer, Hubert B., D.D.S., Department of Air Force, Washington, D. C. A Study of the Resistance of Human Molar Teeth to Decalcification Caused by Growth Products of Lactobacillus Acidophilus.

<sup>1</sup> Professor, Pathology, Western Reserve University. College of Dentistry.

<sup>2</sup> University of Michigan, School of Dentistry.

## BOOK ANNOUNCEMENT

*Introduction into Dental Medicine* by PROFESSOR G. AXHAUSEN,  
Munchen, Germany

This is a book of two hundred forty-three (243) pages, with two hundred twenty-seven (227) illustrations. It is well-printed and on good stock. The author is said to have had a very broad experience and his book would indicate a mastery of his subject. The fore-part of the book is devoted to a discussion of problems in treatment and prognosis while the latter part is more technical in nature.

*Histology, Textbook of:*

This is the fourth edition of this book by E. V. Cowdry, Professor of Anatomy, School of Medicine, Washington University. It consists of six hundred forty pages, with an index. It is thoroughly revised, printed on good paper and is well illustrated—some in color; published by Lea & Febiger, Philadelphia 6; Price—\$8.50.

*Principles of Orthodontics:*

This is the second edition of this book by J. A. Salzman, a well-known editor and writer in the dental profession. It is a book of eight hundred eighty-seven pages with five hundred thirty-three illustrations (some in color) and an index. It is printed on good stock with a splendid division into chapters; published by J. B. Lippincott Co.; Price—\$15.00.

*Human Physiology, Elements of:*

This is the second edition of this book by Miriam Scott Lucas, B.S., Ph.D., Assistant Professor of Biological Science at Michigan State College. This consists of three hundred fifty-seven pages including index and with one hundred fifty-eight illustrations (two in color); published by Lea & Febiger, Philadelphia; Price—\$4.75.

*Periodontia, Text Book of (Oral Medicine):*

This is the third edition of this book by Dr. Miller, as the editor and principal author. It includes 34 contributors. Dr. Samuel Charles Miller is Professor of Periodontia, New York University College of Dentistry.

It is a book of 900 pages including an index, with 586 illustrations, some in color. It is printed on good stock, and is easy to read. Published by The Blakiston Company, Philadelphia, 5, Pa., Toronto, 2, Canada. Price—\$11.50.

*Endodontia:*

This book by Edgar D. Coolidge, B.S., M.S., D.D.S., L.I.D. (Hon. Loyola), is another contribution by him and based on his previous book, "Clinical Pathology and Treatment of the Dental Pulp and Periodontal Tissues", but is not a revised edition. It is an entirely new book.

It consists of 300 pages, including an index, 355 illustrations and one colored plate. It is printed on good paper, easily read and shows a minuteness of detail in arrangement of material. The author is now Emeritus Professor, Therapeutics, Preventive Dentistry and Oral Hygiene, College of Dentistry, Loyola University, Chicago.

The book is published by Lea and Febiger, Washington Square, Philadelphia 6. Price—\$6.00.

*Operative Dentistry:*

This is a new edition of a standard text, completely revised and rewritten. The original text has been known for many years under the authorship of William H. O. McGehee, D.D.S., M.D., Formerly Professor of Operative Dentistry, College of Dentistry, New York University. The present volume, revised, is by Harry A. True, D.D.S., Professor of Operative Dentistry, and E. Frank Inskipp, B.S., D.D.S., Assistant Clinical Professor of Operative Dentistry, both of the College of Physicians and Surgeons, A School of Dentistry, San Francisco.

It consists of 699 pages, including an index and 479 illustrations. It is well bound, printed on good stock and presents an altogether attractive appearance. The quality of the book is attested by the previously well known edition and the abilities of the present authors.

Published by Blakiston Company, Philadelphia 5, Penna. Price \$10.00.

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