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 or the advancement of the dental profession. The Journal disclaims responsibility for opinions expressed by authors.

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Objects

The American College of Dentists was established to promote the ideals of the dental profession; to advance the standards of efficiency of dentistry; to stimulate graduate study and effort by dentists; to confer Fellowship in recognition of meritorious achievement, especially in dental science, art, education and literature; and to improve public understanding and appreciation of oral health service.

Teacher Training Fellowship

Recognizing the need for more dental teachers and their proper training in educational procedures, the Board of Regents in 1951 established a fellowship program for the training of teachers of dentistry. The fellowship grant covers a period of one year in the amount of $2500.

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Because of its interest in research, the Board of Regents in 1951 established the following grant-in-aid funds:

(a) The William J. Gies Travel Fund, through which grants are made to research workers “to enable them to visit the laboratories of other investigators to obtain first hand information on associated problems.”

(b) Research Fund for Emergencies, available for aid in the event of loss of equipment, animal colonies, needed repair and the like.

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Convocation Address*

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About a hundred years ago a discerning and voluble Frenchman, one Alexis de Tocqueville, visited our young republic, observed as best he could our cities, our people, their daily lives, their goals, their achievements, compared what he saw to what he knew of Western European culture, and set down his responses to what he had experienced. One of his summations included the following:

"It would seem as if the rulers of our times sought only to use men to make things great; I wish they would try a little more to make great men; that they set less value on the work and more value on the workman."

In a rapidly growing country, with great new waves of people coming across oceans to share in its growth, with material wealth and personal security generally the goal and symbol of individual success, it is easy to understand why things should be made great, as De Tocqueville puts it, and why the work should be highlighted and why the man who could do the work should be regarded as having little value aside from his status as an ingredient, as a commodity essential to the gaining of material wealth, even his own personal wealth. And this obtained, let it be noted, in all but a few corners of American society, and not just in quarters that might be called denied or underprivileged.

We like to think that we have come a long way from the situation observed by De Tocqueville. You could join me now in listing all sorts of social gains and achievements innumerable secured for and by the individual, all this calculated to be evidence that the average American is less materialistic, that, while responding to the demands of his work, he nevertheless places in 1958 less value on the work and greater value on the workman. Perhaps he does. Let us turn to a more recent observer.

Let us read a literal translation of a message from the Chief of Intelligence of the Chinese Peoples Volunteers, who fought us in North Korea recently, to the Chief of Intelligence of the Chinese

* Presented at the Convocation of the American College of Dentists, November 1958, at Dallas, Texas.
Peoples Republic in Peiping, which was intercepted by our forces. The message purports to be an evaluation of the American officers and soldiers captured by the Chinese in North Korea.

"Based upon our observation of the American soldier and their officers captured in this war for the liberation of Korea from the capitalist-imperialist aggression, some facts are evident. The American soldier has weak loyalties—to his family, his community, his country, his religion, and to his fellow soldier. His concept of right and wrong is hazy. He is basically materialistic and he is an opportunist. By himself he feels insecure and frightened. He underestimates his own work and his strength and his ability to survive. He is ignorant of social values, social conflicts and tensions. There is little or no knowledge or understanding even among American university graduates of U. S. political history and philosophy; the federal, state and community organizations; states and civil rights, freedom, safeguards; and how these allegedly operate within his own decadent system.

"He is exceedingly insular and provincial with little or no idea of the problems and the aims of what he contemptuously describes as foreigners and their countries. He has an unrealistic concept of America’s eternal and inherent, rather than earned or proven superiority and absolute military invincibility. He fails to appreciate the meaning of and the necessity for military organization or any form of discipline. Most often he appears to feel that his military service is a hateful, unavoidable servitude to be tolerated as briefly as possible and then escaped from as rapidly as possible or he is what they themselves call a ‘peace-time soldier’ who sees it only as a soft and a safe job. Both of these types resent hardship and sacrifice of any description as if these things were unreasonable and unfair to them personally.

"Based upon the above facts about the imperialist United States aggressors, the re-education and indoctrination program for American prisoners proceeds as planned.”

We may dismiss or minimize the substance of this message as biased. We may ignore it because it is a judgment of a cross-section of American young men, that it emphasizes the sons of all the people from all sorts of backgrounds, including a great many, perhaps a majority of them, underprivileged. We might assume that young men who were privileged to develop their acknowledged native talents in our colleges and universities would turn out better in a searching scrutiny of their values.

Dr. Phillip E. Jacob, a professor of political science at the University of Pennsylvania, published for the Hazen Foundation late last year Changing Values in College, a book which offers a review and interpretation of several studies of values held by large numbers of college students in a variety of American colleges and universities. “Only a minority,” says Dr. Jacob, speaking of the subject of his study, “seem to value their college education primarily in terms of its
intellectual contribution, or its nurturing of personal character and the capacity for responsible human relationship. Vocational preparation, and skill and experience in social adjustment head the rewards which students crave from their higher education."

All this sounds as though the work and preparation therefor was at least several touchdowns ahead of the workman; that the gaining of things still scores ahead of the making of great men.

Let's look at some extracts from what Dr. Jacob calls "a profile of the values of American College students":

"A dominant characteristic of students in the current generation is that they are gloriously contented both in regard to their present day-to-day activity and their outlook for the future. . . . They are supremely confident that their destinies lie within their own control rather than in the grip of external circumstances.

"The great majority of students appear unabashedly self-centered. They aspire for material gratifications for themselves and their families. They intend to look out for themselves first and expect others to do likewise.

"But this is not the individualistic self-centeredness of the pioneer. . . . They anticipate no die-hard struggle for survival of the fittest as each seeks to gratify his own desires, but rather an abundance for all as each one teams up with his fellow self-seekers in appointed places on the American assembly line.

"Social harmony with an easy tolerance of diversity pervades the student environment. Conformists themselves, the American students see little need to insist that each and every person be and behave just like themselves.

"The traditional moral virtues are valued by almost all students. They respect sincerity, honesty, loyalty, as proper standards of conduct for decent people. . . . They do not feel personally bound to unbending consistency in observing the code, especially when a lapse is socially sanctioned. For instance, standards are generally low in regard to academic honesty, systematic cheating being a common practice rather than an exception at many major institutions.

"Students normally express a need for religion as a part of their lives and make time on most weekends for an hour in church. . . . Their religion does not carry over to guide and govern important decisions in the secular world. . . . God has little to do with the behavior of men in society, if widespread student judgment be accepted. . . .

"American students are likewise dutifully responsive towards governments. They expect to obey its laws, pay its taxes, serve in its armed forces—without complaint but without enthusiasm. . . . Except for the ritual of voting, they are content to abdicate the citizen's role in the political process and to leave to others the effective power of governmental decision. . . .

"This disposition is reflected in strangely contradictory attitudes towards internal affairs. Students predict another major war within a dozen years, yet international problems are the least of the concerns to which they expect to give much personal attention during their immediate future. . . ."

Some confusion of values is present here, to say the least. It reminds me of the man up in New Hampshire's north country who
said, "Twarn't my ignorance that done me in; 'twas the things I knowed that warn't so"; or of the mother who had taught her children constantly the evils of "drink." One day her smallest son drew a picture of a cowboy standing at a bar in a saloon. Anticipating her objection, he said, "Don't worry, Mom, the cowboy isn't in there to drink anything. He just went in to shoot a man."

The Jacob study was undertaken as an exploration of the impact of general education in social sciences on the values of American students. Its author reports, "This study has discovered no specific curriculum of general education, no model syllabus for a basic social science course, no pedigree of instructor, and no wizardry of instructional method which should be patented for its impact on the values of students. Student values do change to some extent in college; with some students, the change is substantial." The formal process of education is, however, not the primary influence.

"Potency to affect student values," says Dr. Jacob, "is found in the distinctive climate of a few institutions, the individual and personal magnetism of a sensitive teacher with strong value-commitments of his own, of value-laden personal experiences of students imaginatively integrated with their intellectual development."

...the individual and personal magnetism of a sensitive teacher with strong value-commitments of his own..." This is the key phrase for me, for enough of such teachers make "the distinctive climate of a few institutions" and could make it of many. Such teachers offer or arrange to have their students stumble upon "value-laden personal experiences...imaginatively integrated with their intellectual development."

Very well. So far, I've been making noises like an educator, and deliberately. Now, if you will be patient for a few more minutes I'll try to give this some application to the concerns of the American College of Dentists and the whole broad and compelling field of dental health; a field, incidentally, with which I have sought to identify myself with increasing ardor and rewarding pride.

The College, according to your estimable Journal, was established to promote, among other things, "the ideals of the dental profession," presumably in behalf of all humanity, and certainly of the American people. I'm grateful to Dr. Philip Blackerby and his article in the June 1958 issue of the Journal for recalling Justice Brandeis' definition of a profession. According to that distinguished jurist, "A pro-
profession is an occupation for which the necessary preliminary training is intellectual in character, involving knowledge, and, to some extent, learning, as distinguished from mere skill; it is an occupation which is pursued largely for others and not merely for one's self; it is an occupation in which the amount of financial return is not the accepted measure of success."

We can assume, I think, that Dr. Jacob's study embraced pre-dental and dental students. Perhaps they are included in the minority that assigned value to character development, growth in intelligence, and "capacity for responsible human relationships" at least equal to vocational preparation. It would be more realistic, I think, to assume that most pre-dental and dental students are like most other students in most colleges and universities. Are they as revealed in the Jacob study? For purposes of discussion, let's say they are.

How, then, do we promote "the ideals of the dental profession" in the years ahead? If vocational preparation is to be his paramount aim, how are we going to get the dental student to understand and accept his responsibility for advancing the ideals of his profession?

The ideals of a profession are based on values. Justice Brandeis' definition emphasized, you will recall, working for others and not merely for one's self, and it said that financial return is not the accepted measure of success. De Tocqueville would applaud this, I'm sure. Men above things; more value on the workman, less on the work.

So far, this discussion has been concerned with the ideals and obligations of the dental practitioner in his daily work in the practice of his profession. What about the professional man's place in the community? As a layman, I covet for my dentist friends as good a hearing in community and national discussions, as respected a place among civic leaders, as honored a reputation for self-sacrifice for the public good as any other professional man. My dentist friend must be worthy of all these, however. I don't want to be disappointed in him. I don't want to discover that he's not equal to these demands. They say that a man wrapped up in himself makes a mighty small package. A professional man wrapped up in himself as a professional man presents no problem to the Container Corporation of America, either.

Taking my cue from Dr. Jacob, let me suggest an answer. Staff the dental colleges (and other colleges and universities) with magnetic and sensitive teachers with strong value-commitments. It's not
a new idea; it’s an old one. It’s generally acknowledged that the school is as good as the teacher, and no better. The book *General Education in a Free Society*, the so-called “Harvard Report” in 1945 said it this way:

“... the best way to infect the student with the zest for intellectual integrity is to put him near a teacher who is selflessly devoted to the truth; so that a spark from the teacher will, so to speak, leap across the desk into the classroom, kindling within the student the flame of intellectual integrity, which will thereafter sustain him.”

“... a teacher who is selflessly devoted to the truth.” I like best as a definition of truth a paraphrase of Aristotle’s definition,

“There is Truth which is based on demonstrable fact—and Truth that is arrived at through reasoning and logical deduction, and Truth which is a matter of spiritual conviction.”

Staff the dental colleges and universities with magnetic and sensitive teachers with strong value-commitments who understand the spiritual dimension of truth as well as its other dimensions. Yes, I know. All the deans in this room, and all the others who aren’t here, would agree and then inquire with wry, perhaps even acidulous smiles, “Where do you get them?” I can respond with the utmost sympathy. I’ve been looking for them, too—and found them, every once in a while, usually when I was working hardest at the search. There are a few available and a host of unfilled vacancies waiting for them. I know. Within a year or two, we hope there will be a few more available, as the Training Grants Program of the National Institute of Dental Research becomes productive. Twenty-two dental schools are offering under this program opportunities for postgraduate study intended to qualify people for teaching and research in dental health. Perhaps the presence in dental colleges of these young men who know that true professional training is “intellectual in character, involving knowledge, and, to some extent, learning, as distinguished from mere skill” may stimulate the dental undergraduates to an interest in teaching. Perhaps the dental faculty members may themselves be stimulated to a full appreciation of their obligation as true professionals. This is what I recognize as the doctrine of propinquity; the notion that the alert observer can be heavily influenced by his mere nearness to men or their activities.

Perhaps the dental colleges can persuade more true professionals
among the practicing dentists in their vicinities to take on teaching part time in order that the undergraduates may be better oriented and motivated. Perhaps the true professionals among dental alumni can be actively concerned about their universities and dental colleges and their educational policies, their programs of study, the quality of their faculties, and other important matters. Perhaps the financial rewards for teaching everywhere can be raised enough to attract and hold those capable of successful research and teaching. Perhaps the dental colleges will demand that their applicants for admission present evidence that they have at least been exposed in college not only to the basic sciences but to the social sciences as well and particularly to the humanities. Please be reminded of the importance of the humanities in the preparation of the true professional. As one educational leader has it: “What we know to be great in our society, our political thought, our humane laws, our sense of human dignity, our powers of self-discovery and self-realization, are all born of the humanist mind.”

Perhaps, if all these things were done, even if only in part, we could look forward with optimism to dental colleges producing more true professionals because they first produced enough magnetic and sensitive teachers with strong value commitments. Then, we could hope to have a dental profession more responsive to its ideals. Then, the dental profession would have a better chance of playing its part in the advancement of Western civilization, a civilization, ladies and gentlemen, which will never be advanced if materialism and collectivism are dominant. And this becomes the case when, as De Tocqueville complained, men are used to make things great, when there is too much emphasis on the work and a neglect of the workman, the individual. The individual is and must remain at the heart of Western civilization. Let me close with a word from the writings of Albert Schweitzer, who is, to me, the most admirable figure of the 20th Century.

“The renewal of civilization has nothing to do with movements which bear the character of experience of the crowd; these are never anything but reactions to external happenings. But civilization can only revive when there shall come into being in a number of individuals a new tone of mind independent of the one prevalent among the crowd and in opposition to it, a tone of mind which will gradually win influence over the collective one, and in the end determine its character. It is only an ethical movement which can rescue us from the slough of barbarism, and the ethical comes into existence only in individuals.

“The final decision as to what the future of a society shall be depends not on
how near its organization is to perfection, but on the degrees of worthiness in its individual members."

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President’s Address

THOMAS J. HILL, D.D.S.
Brecksville, Ohio

WHEN THE ORGANIZERS of the American College of Dentists founded this Institution they showed great insight into the needs of rapidly growing professional ideals which would give character to the dental profession. They were conversant with the history of dentistry and recognized that its origin was in the arts and that if dentistry was to assume its full stature as a member of the healing profession, there would be need for leadership in the promulgation of ideals of service.

The bases upon which this College was founded are broad—to improve the efficiency of dentistry; to encourage continuing educational efforts of the profession; to stimulate and promote research; to further by improved relations with the public a better understanding of oral health service; to promote the more efficient use of measures for the control and prevention of oral disease and to advance all professional relationships that the public may be better served.

It was recognized that to obtain these objectives it would require the united and concerted effort on the part of many of the leaders of the profession. The Fellows of the College were invited to fellowship because in the opinion of their colleagues they could and would contribute to the fulfillment of these objectives.

The life of a profession like that as an individual is filled with preparation, the setting up of ideals, the planning of objectives and the constant struggle to bring them to fruition. In order to have the proper perspective it may be well to observe the changing ideals that have been instrumental in the development of our profession and which have served as guideposts and directed us along the path. So, may I review with you these changing philosophies that have been associated with the profession of dentistry and may I suggest to you the direction in which the guideposts point in the future?

Dentistry is said to have had its origin in antiquity but it must be admitted that except for occasional brief and isolated instances early dentistry was a craft rather than a healing art. As a profession it is young and as a material contributor of the health services, its ad-

* Presented at the Convocation of the American College of Dentists, November 1958, at Dallas, Texas.
vancement has been confined to the past one and one-half centuries. Upon the wall in the library of the School of Dentistry at Western Reserve University is a framed copy of the “Boston Gazette” for August 20, 1770. On the front page is an advertisement of Paul Revere. It says, “Paul Revere takes this method of returning his most sincere thanks to the Gentlemen and Ladies who have employed him in the care of their teeth, he would now inform them and all others who are so unfortunate to lose their teeth by accident or other ways, that he still continues the business of a dentist and flatters himself that from the experience he has had these two years (in which time he has fixed hundreds of teeth), that he can fix them as well as any Surgeon Dentist who ever came from London. He fixes them in such a manner that they are not only an ornament but of real use in speaking or eating. He cleans the teeth and will wait upon any of the Gentlemen or Ladies at their lodgings or may be spoke with at his shop opposite Dr. Clarks at the North End where the gold and silversmith business is carried on in all its branches.”

It is evident that Paul Revere in his effort to serve the public was performing the work of an artisan and chiefly concerned with the esthetics of personal appearance. He makes no mention, nor did he have any conception of the biological aspects of dental service. He had no realization of the implications involved in dental caries as a disease nor of periodontal disease as having any relationship with systemic health. He had one objective only, to improve the appearance of the client.

The same may be said of the much publicized John Greenwood who made the often exhibited false teeth for George Washington. These spring-held carvings of ivory were in truth false teeth and not dentures in the modern sense that they were in any way related to the performance of a service or to the health of the patient.

Dentistry received its first concept as a science with founding of the first dental school in 1840. This was the first attempt to prepare man for the practice of dentistry with a basic background that indicated any realization that teeth were in reality a part of the human body. By comparison to modern day standards, the educational effort was to give technical training rather than a scientific concept of a health service. Although weak in its scientific and humanitarian objectives it was the spark that lighted the fires of professional idealism. These fires burst into flames a few years later when two dentists,
Horace Wells and Thomas Morton gave to the world the use of surgical anesthesia. With the demonstration of the practical use of nitrous oxide and sulphuric ether dentistry gave to humanity one of the greatest of all contributions in the relief of surgical pain.

Dentistry grew rapidly in the concept of its ability to perform a service which was more than that of an artisan. It, however, did not neglect the development of its technical proficiency and soon American dentists became the world leaders in this field. By the turn of the century it was well on its way to the utilization of the basic principles of metallurgy and the incorporation into its refined techniques much of the knowledge of engineering design. As a matter of fact restorative dentistry became so technically proficient that it retained teeth even in the presence of bacterial infection.

Benjamin Rush, one of the signers of the Declaration of Independence, and a noted physician of that time, is often credited with being one of the first to relate diseases of the mouth to systemic disease. In his "Medical Inquiries and Observations" he said: "I have been happy to discover a connection between extractions of decayed and diseased teeth and the cure of general disease." This observation made in the early 1800's remained for nearly 100 years without anyone becoming seriously concerned about it. It was the stirring accusation of Sir William Hunter who charged the dental profession with the responsibility in the prevention of oral infection. Here dentistry had its birth as a health service rather than the work of an artisan. Here dentistry became seriously concerned about the intimate relationship of the infections of the teeth and the surrounding tissues. Here dentistry began to realize the biological relationship of the oral tissues as a living part of the human body. Here was born the concept that infections of the mouth produce systemic disease and systemic disease was frequently and intimately reflected in oral health.

This concept grew rapidly and a few years later Sir William Osler, the great internist, is credited with the statement that there is no one thing in all preventive medicine that is so important as the prevention of oral infection.

Dentistry became a true profession when its concern was centered in the maintenance of health. But it soon realized that its manpower was totally inadequate to cope with the rapidly increasing demands. The realization that restorative and reparative dentistry could not
provide adequate service gave birth to the necessity of finding ways for prevention of oral disease. Then came the period of preventive dentistry in which we now live, a period more or less dominated by research in the cause and control of oral disease, a period in dental education and research which embraces a multi-discipline attack on a comprehensive understanding of cellular metabolism, of the biochemical and nutritional changes which affect the basic unit of all life—the living cell.

I have mentioned only a few of the guideposts that have marked the development of dentistry as a profession. They have led us directly to the present concept of an oral health service and have molded the form and character of present-day dental practice; a dental practice which embodies a modern understanding of disease and the most advanced technics for the reparative and restorative service to those who suffer from the most common of all diseases. To teach men in the basic sciences, to educate them in the cause and control of disease, to train them to be skilled technicians is the direct responsibility of their technical training, but professional training and professional practice must carry the concept that every professional man has a duty and an obligation to perform first—a health service. Professional education and professional practice which fall short of this have missed a golden opportunity.

This concept of an obligation to perform an adequate health service is broad. It is not confined to the individual service rendered by a successful practitioner to an exclusive clientele. It involves a service that goes beyond office walls—the education of the patient and the public in principles of oral health. It includes the Herculean task of public health dentistry. An adequate health service implies that the profession should educate and alert its members to their responsibilities, and arouse in them an intelligent interest in the oral health of the community, the rich and the poor alike, the handicapped child, the need for dental service to the cerebral palsied, cleft palate and severe malocclusion patient. These severe handicapping defects are problems which affect the physical, social and economic life of the whole community. The development of an interest in meeting these problems is part of the concept of a professional rather than a technical service.

The concept of an oral health service reaches further. The service to the public will be only partially fulfilled unless we also consci-
entiously seek to prevent disease. It is readily admitted that our knowledge of dental caries and periodontal disease is incomplete, but it is sufficient to understand some of the contributing factors. One of the most difficult problems we have to face is to train our profession to utilize available knowledge in prevention.

There is always a lag in any profession between the availability of knowledge and the application of that knowledge. First, there is a time lag due to the slowness of the dissemination of knowledge. Dental practice today, particularly in the field of preventive service, lags far behind in the use of available information in the control of oral disease. Second, the frailties of human nature contribute to this lag. The difference between what we do and we ought to do makes the difference between the excellence in the use of our knowledge and the excellence in our practice. There are many factors which contribute to this frailty of human nature. Some may be caused by time pressure, by economic conditions, and many others, but those that are inherent in the individual or in the profession itself should be scrutinized with care.

Practitioners become so engrossed in the arts and techniques of service to those who suffer from oral diseases, that they are slow to utilize all the means for preventive service. In this, the profession has made progress in private practice and an outstanding contribution in public health dentistry. To research in dental disease we owe our knowledge of the value of fluorine in the control of dental caries, and it is to the undying credit of the dental profession that they have been the leaders in education and legislation for the fluoridation of communal water supplies for 33 million people.

Dental education and dental practice are placing increasing emphasis upon the utilization of our basic knowledge in the prevention and control of disease. They are developing increasing concern about their inability to provide dental service for more than 40 per cent of our public. They are highly concerned that in large urban centers there is a totally inadequate dental service for the indigent. William Ludlow has said, “If I obtain the finest formal education, beyond the dreams of past ages, and increase not my understanding of human relations, my mind becomes confused and my contributions to society will be nil. Though I sit at the feet of the greatest of teachers and learn some of their fruits of learning, and may even have the ability to interpret their studies and perhaps even be able to apply some of
their principles but have no vision for humanity, I am totally blind.”

Because of its ideals, the dental profession is accepting increasing responsibilities to social welfare but it should be borne in mind that it also has legal obligations. When the people of a State pass legislation to license only those qualified to practice in this profession they are chiefly concerned with guarding the safety of the public. But at the same time this legislation creates a protected class of professional people. Only those so licensed have the right to perform such services. This then, places upon them the total responsibility for the oral health of the community.

The Fellows of this College, who by their membership are obligated to promote a more adequate health service, might well ask themselves what are their social responsibilities to oral health? Do they consider that they have fulfilled those responsibilities when they have provided an oral health service only to those who are in that financial bracket that can afford private practice? The question I am speaking about has nothing to do with socialized medicine. I am talking about the underprivileged and the indigent. I am speaking about the profession’s obligation to provide oral health for all the people. If Sir William Osler was right about the value of oral health in preventive medicine, why has there not been a more concerted effort to provide this service in out-patient departments of hospitals and health centers? I am aware that these health centers provide some oral surgery and a minor amount of restorative service but in a broad sense the value of oral health is neither taught nor practiced except in private practice.

I am not suggesting that it is the responsibility of the profession to provide free service to these or any other people, but I am suggesting that it is the responsibility of the profession to take sufficient interest in civic health services to see that all professional services that are beneficial to health are available to the underprivileged and the indigent as well as to private practice.

The motivating philosophy of the profession of dentistry should be to do more than meet the barest minimum needs of a necessitous population. It should be to improve the status of the unfortunate, to prevent oral disease, to rehabilitate the mouths of the needy as well as the rich, and to restore function and service to all people. This is in keeping with the American way of life and one of the directions in which the guideposts point for the future development of professional service.
Over the past one and a half centuries dentistry in its development as a profession has had changing objectives and changing philosophies. While there have been many minor changes, for the most part two changes in philosophy have been dominant. First, the constantly increasing emphasis upon the importance of dentistry as a health service and second, a constantly increasing consciousness of the responsibility of the profession to the public.

I have mentioned only a few of the directions in which the profession must develop if it is to fulfill its full value to the oral health of the Nation. May I remind you that each of these suggestions is in keeping with the declared philosophy of the College as outlined in its objectives?

In closing I leave you with this thought: If this is the direction in which oral health service should develop, upon whom lies this responsibility? It lies with the professions which are represented by men who have a firm sense of principle, who are the leaders of thought and who mould the character of the profession in their communities. Such men are Fellows of the American College. It was for these attributes that they were invited to fellowship. And it must be remembered that the right to share in the privileges and benefits of an organization carries with it the right and responsibility to share in the fulfillment of its objectives. And whether he be a Fellow of the College or not, these ideals of service are part of every professional man's responsibility to the public which he serves.
Inaugural Address*

HAROLD J. NOYES, B.S., D.D.S., M.D.
Portland, Oregon

REGENT PRECEDENT has imposed two criteria upon the words which are expected of me as President-Elect. First (and I suspect most important in your minds at the moment), they must be few. Second, they shall be directed to matters which concern the American College of Dentists and its Fellows. I am content to conform to both of these edicts.

Tonight, at least, I shall restrain any and all impulses to behave in the pattern of a dean and will be brief. The second admonition I am pleased to accept, for with the exception of but one subject, my grandson, there is none that lights more fire than that of the American College of Dentists.

Although the College kindles a fire in my heart, if I were to be entirely truthful, and I intend to be, this was no more than a spark at my own convocation. For like some, though not many of you, the College inherited me and I inherited the College. My father was a founder and my grandfather a Fellow. My contributions such as they were had been inspired by dentistry, not by the American College of Dentists. It was not until I worked for dentistry within the College that I came to know the force and the magnitude of influence which the American College of Dentists has exerted upon the practice, the science and the art of dentistry. I can and do say to you with the confidence of documentation that through its activities and its Fellows, the contribution to intellectual and spiritual growth of our profession is unequaled by any other agency.

Notwithstanding my gray hair and an occasional cryptic comment, I do not believe that dentistry or dentists are deteriorating! Though we have more dental schools now than in 1920 when the American College of Dentists was founded, they are better schools and they graduate better dentists. Of their graduates there are more percentage-wise as well as numerically who engage in research, teaching and public service. In 1920 there were 56,152 dentists of whom but

* Presented at the Convocation of the American College of Dentists, November 1958, at Dallas, Texas.
25,000 were members of the American Dental Association. In 1958 there are 87,000 practicing dentists 3,000 of whom are in teaching, research and administration. Of these, 79,846 are fully privileged members of the American Dental Association.

In 1920 the American College of Dentists was founded with 23 members. Today there are, with our present convocation, 2,477. Some have said this is too rapid growth, the College is too large. If you will review the contributions to dentistry as revealed by statement of the Secretary in 1956, the address of President Hill and his testimony this morning, as well as the reports of committees, our membership is not idle. If the American College of Dentists is to keep pace with the growth of dentists and dentistry as well as the responsibilities and precedent it has established, it must increase in manpower commensurate with the increase of dentists on the one hand and dental health needs on the other. Our problem is not a matter of concern with multiplication of numbers, rather one of motivation of our Fellows in productive unselfish service demanded by the increasing need of the public. Added membership inspires in the place of frustration, a challenge to individual effort and leadership.

The American College was not created to conceive character, social or professional responsibility; rather to recognize and develop these and other sterling qualities. The incubation period of such inherent attributes lies in the ten years between graduation from dental school and acceptance of Fellowship in the College. There begins at this significant time an opportunity for further maturation and development of character, social and professional responsibility which kindles within, a warm spiritual satisfaction that is nourished by knowledge that in some small way one has made the lives of others easier and perhaps happier.

I have used the word spiritual and as I think of it, perhaps the essence of the College is of the spirit. It is not basically clinical, important as is this aspect of dentistry. The contributions of the American College of Dentists have been predominantly spiritual and the benefits which come to its members are in greatest measure through unselfish service, which, in contrast to material things, is indeed of the spirit.

It probably is of no great consequence who is President of the College as long as we have Otto Brandhorst serving as secretary, a capable Board of Regents, and the ideals and objectives set forth in
our constitution. Yet I want you to know that I deeply appreciate serving, when inducted, as your president and consider it a privilege to contribute in any way that I may to the dedicated purpose of the American College of Dentists.
MINUTES OF THE MEETINGS OF THE BOARD OF REGENTS
Dallas, Texas, November 7, 8 and 10, 1958

Abbreviated by Secretary O. W. BRANDHORST

FIRST MEETING

The Board of Regents met in the Baker Hotel, Dallas, Texas, on Friday afternoon, November 7, 1958, with President Hill presiding. Thirteen regents were present. A period of silence was observed in memory of Dr. S. E. Davenport, Jr., who passed away on May 26, 1958.

Minutes approved as presented. Report on minutes presented by the Secretary, received.

Reports of Officers

President Hill reported on his activities as President, stating that he had enjoyed serving the College. He reported also that he had accepted, for the College, an invitation to participate in a conference on Health Needs of the Nation, under the auspices of the Department of Health, Education and Welfare. Dr. Hill was appointed to represent the College at this conference. He also recommended that the College take an active part in discussing problems of interest at government hearings, not as lobbyists, but as expert witness on matters of public and professional concern. It was later voted that this be done.

Report of Treasurer

For report of Treasurer, see Convocation minutes.

Report of Secretary

The secretary reported the result of polls taken by mail since the Chicago, 1958 meeting of the Board of Regents. The decisions made were confirmed.

Among these decisions was one that enables the College to accept and act as custodian and disburser of funds made available for research purposes.
The secretary reported 30 deaths since the February 1, 1958 meeting. A complete list of deaths since the 1957 Convocation will be found in the Convocation minutes.

The secretary reported, that, as of November 1, 1958, the total membership of the College consisted of 2,383 active Fellows plus 24 Honorary. Report received.

*Report of Editor*

Editor Seyler reported that more pages were needed to accommodate the accumulating mass of material available for publication and asked that consideration be given to this matter in the budget. Report received.

Historian Gurley was not present but the Reference Committee on the publication of the prepared history material reported that it was now reviewing the material. Report received.

*Reports of Regents*

Reports were received from various regents on American College of Dentists' activities over the country.

*Unfinished Business*

The secretary reported that the reviews of the ILWU-PMA studies were now completed and summaries had been published in the September *Journal*.

He reported that the studies on Motivation were moving along satisfactorily.

He also reported that the report of the Opinion Poll on preventive service was nearing completion and would be available soon.

Adjournment at 5:20 p.m.

**SECOND MEETING**

The second meeting of the Board of Regents convened at 9:00 o'clock on Saturday morning, November 8, with 13 present. The Board regretted the absence of Vice-President Parks, who had become ill on Friday evening and was confined to the hospital.

This meeting of the Board of Regents was devoted to hearing committee reports. The following committee reports were received: Development, Section Activities, Conduct, Dental Prosthetic Service,
Continuing Educational Effort, Auxiliary Dental Services, Socio-Economics, Education, Health Relations and Journalism. These reports will be published.

Adjournment at 12:15 p.m.

THIRD MEETING

The third meeting convened at 1:15 p.m., on Saturday, November 8. Eleven regents were present. Reports of committees continued, the following being heard: Bylaws, Financial Aid, Preventive Service, Public Relations, Human Relations, Recruitment and World Relations. These reports will also be published.

In approving recommendations made by the various committees, it was done with the understanding that any financial involvements would be subject to the availability of funds within the approved budget for the fiscal year.

Dr. Nathan Kohn, Jr., in charge of the studies in Motivation for the Committee on Recruitment, appeared before the Board and discussed some of the problems that were being uncovered. It was voted that application should be made to the U. S. Public Health Service for funds to complete the study.

The secretary reported on general plans for the New York meeting of the College on September 13, 1959.

New Business

Consideration of budget for 1958-1959. A budget with an anticipated net balance of $1,682.01 was approved.

JOURNAL printing contract. The Ovid Bell Press, Inc. was awarded the 1959 contract for the printing of the JOURNAL.

Adjournment at 5:45 p.m.

FOURTH MEETING

The fourth meeting of the Board of Regents was held on Monday, November 10, at 3:00 p.m. This was the first meeting of the new board. President Noyes presided. Fourteen were present.

President Noyes presented the appointments to the various committees, which were approved.

The Committee on Development was asked to consider the possibility of several new committees, as suggested by President Noyes.
The secretary reported the greetings from Dr. Gerald H. Leatherman of London, England.

The following persons were selected for the several positions:

Board of Contributing Editors to the JOURNAL:

John T. Bird, Jr., St. Louis, Mo. (5 years)
Norman C. Colebrook, Cleveland, Ohio (5 years)
Isaac Sissman, Pittsburgh, Pa. (4 years, replacing Dr. W. J. Pelton, now a regent)

Historian—John E. Gurley, San Francisco, Calif.


Adjournment at 5:15 p.m.
MINUTES OF THE CONVOCATION
Dallas, Texas, Sunday, November 9, 1958

MORNING MEETING

The morning meeting of the 1958 Convocation of the American College of Dentists was called to order in the Ballroom of the Baker Hotel, Dallas, Texas, by President Hill, at 9:00 o'clock.

Rabbi Levi A. Olan, D.D., of Temple Emanu-El, Dallas, Texas, offered the invocation.

Executive Session:

The minutes of the 1957 Convocation at Miami Beach, Fla., were approved.

Treasurer Hodgkin reported as follows:

As of November 1, 1958, the funds of the American College of Dentists on deposit with the Fauquier National Bank, Warrenton, Va., are represented by balances and safety-deposit box holdings as follows:

**General Fund**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bank statement balance of Nov. 1, 1958</td>
<td>$8,685.81</td>
</tr>
<tr>
<td>Less checks outstanding</td>
<td>6,202.20</td>
</tr>
<tr>
<td>Actual check book balance</td>
<td>$2,483.61</td>
</tr>
<tr>
<td>U. S. Savings Bonds, Series G and K</td>
<td>38,000.00</td>
</tr>
<tr>
<td>U. S. Treasury Bond, 2 1/2%, due Aug. 15, 1963</td>
<td>10,000.00</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>$50,483.61</td>
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</tbody>
</table>

**American Dental Association Centennial Fund**

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Savings Accounts deposits</td>
<td>8,000.00</td>
</tr>
<tr>
<td>Accrued Interest</td>
<td>274.48</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>8,274.48</td>
</tr>
</tbody>
</table>

The accounts of the College were audited by James C. Thompson and Company, of St. Louis, Missouri, at the close of the fiscal year ending June 30, 1958.

In addition to verification of the then current balances, the audit disclosed the following items touching the material interest of the College:

There were *Dues Receivable* in the amount of $2,845.00, and a reserve of $300 has been established out of surplus to provide for possible uncollectible dues.

The College has floater insurance policy, covering loss by fire and extended coverage, on the ceremonial equipment in the amount of $2,400.00.

There is also $8,700.00 insurance carried on the equipment of the Secretary's office, including supplies and other contents.
Surety bonds on behalf of the Secretary and the Treasurer in the amounts of $10,000.00 and $15,000.00, respectively, are in effect.

Respectfully submitted,

WILLIAM N. HODGKIN, Treasurer

Report received.

In the absence of Vice-President Parks, on account of illness, President-elect Noyes presided while President Hill presented his President's Address. President Hill reviewed some of the activities of the College and pointed out some of the opportunities ahead. His address was well received.

President Hill called for the report of the Necrology Committee, which was presented by Dr. Robert P. Dressel, of Cleveland, Ohio, Chairman of the Committee.

Dr. Dressel presented the Memorial Booklet which contained the names of the following Fellows who had passed away since the last convocation:

- Henry J. Altfillisch
- Frederick A. Amundson
- T. Marvin Barlow
- Wilbur L. Beal
- Frank J. Bell
- Russell W. Berthel
- John J. Booth
- Carl A. Bumstead
- Charles Early Butler
- Jacob F. Cart
- Thomas W. Clune
- Frank G. Conklin
- Edwin Francis Cory
- S. Ellsworth Davenport, Jr.
- Raymond A. Derbyshire
- George Crawford Douglass
- Robert J. DiTolla
- William H. Elliott
- J. Martin Fleming
- Fred William Getbro
- Harry R. Hancock
- George Byron Hayes
- Leroy Clifton Hemsworth
- John Greer Hopping
- George B. Jersin
- Eugene J. Kelly
- L. Parkinson Laville
- Jesse A. Linn
- Arno B. Luckhardt (Honorary)
- Patrick A. McCole
- Dubuque, Iowa
- Duluth, Minnesota
- Bellingham, Washington
- Anaconda, Montana
- Billings, Montana
- St. Paul, Minnesota
- Marion, Iowa
- Lincoln, Nebraska
- San Antonio, Texas
- Peoria, Illinois
- Cranston, Rhode Island
- Orlando, Florida
- New Haven, Connecticut
- New York, N. Y.
- Skowhegan, Maine
- Davenport, New York
- New York, N. Y.
- Detroit, Michigan
- Raleigh, North Carolina
- Chicago, Illinois
- Santa Barbara, California
- La Jolla, California
- Waterloo, Iowa
- Birmingham, Alabama
- Baltimore, Maryland
- Trenton, New Jersey
- Plaquemine, Louisiana
- Los Angeles, California
- Chicago, Illinois
- Chevy Chase, Maryland

- December 10, 1957
- January 26, 1958
- November 17, 1957
- January 18, 1958
- November 5, 1957
- April 28, 1958
- May 26, 1958
- April 24, 1958
- March 6, 1958
- April 6, 1958
- May 2, 1958
- September 20, 1958
- February 17, 1958
- May 26, 1958
- April 2, 1958
- January 7, 1958
- October 21, 1958
- October 19, 1958
- December 19, 1957
- December 31, 1957
- April 27, 1958
- December 25, 1957
- August 31, 1958
- May 30, 1958
- September 2, 1958
- August 19, 1957
- April 17, 1958
- July 23, 1958
- November 6, 1957
- May 31, 1958
Forrest W. Meacham           Chattanooga, Tennessee    January 11, 1958
Donald H. Miller             Elmina, New York             June 8, 1958
Samuel Charles Miller        New York, N. Y.              February 8, 1958
Henry Maxwell Morrow         Hamilton, Canada              January 14, 1958
Michael Lawrence Mullaney    Providence, Rhode Island     August 25, 1958
Edward W. Neenan             Chicago, Illinois           December 28, 1957
Clarence A. Nelson           Amery, Wisconsin            February 13, 1958
Leo James O’Hearn            Pittsfield, Massachusetts  November 22, 1957
John H. Phillips             Nashville, Tennessee        November 17, 1957
Joseph E. Psylia             New Orleans, Louisiana       February 6, 1958
Thomas D. Speidel            Minneapolis, Minnesota      December 10, 1957
Lewis Riddell Stowe          New York, N. Y.              November 4, 1957
Earl W. Swinehart            Baltimore, Maryland           July 27, 1958
Charles Ives Taggart         Burlington, Vermont          September 30, 1958
Edward Taylor                Austin, Texas                March 5, 1958
John E. Tyler                Worcester, Massachusetts     November 24, 1957
Jacob M. Wisan               Philadelphia, Pennsylvania  October 4, 1958

Mrs. Carlos H. Schott of Cincinnati, Ohio, then sang the “Lord’s Prayer” which was beautifully done. The audience stood in silence in memory of the deceased Fellows.

Dr. L. R. Main, Chairman, presented the report of the Nominating Committee, which recommended the following persons for the respective offices:

    President-Elect          Donald W. Gullett, Toronto, Can.
    Vice-President            Ralph J. Bowman, New York, N. Y.
    Treasurer                William N. Hodgkin, Warrenton, Va.
    Regents (4-year term)     Walter J. Pelton, Washington, D. C.
                            James H. Springsted, Louisville, Ky.

The vote of the membership supported the recommendations.

Dr. W. N. Hodgkin, Chairman, presented the report of the Bylaws Committee and recommended the following amendments:

(1) That Article VII, Section 2, of the Bylaws, be amended to read: Annual dues. The annual dues shall be twenty dollars ($20.00).

(2) That an Item (c) be added to Article VII, Section 4, of the Bylaws, to read:
    (c) A Fellow in good standing shall be continued without dues on January 1 following his attainment of seventy-five (75) years of age.

By voice vote, these amendments were unanimously approved.

President Hill then called upon Dr. Jay H. Eshleman to give the indoctrination address to the candidates for Fellowship, which was done in a most impressive manner.

**The Program**

President Hill then outlined the plans for the Section meetings to follow, pointing out that these programs had been arranged to
project the activities of the College, so far as the committees were concerned.

The general session was then recessed for the Section meetings, which convened in adjoining rooms as indicated in the printed program. The Section meetings began at 11:00 o'clock and continued to 12:30 p.m.

**Luncheon Meeting**

The luncheon meeting was held in the Terrace Room under the auspices of the Texas Section, with Dr. Harold B. Younger, their Chairman, presiding.

Mr. Louie Throgmorton of Dallas, Texas, was the guest speaker, addressing himself to the subject, "The Tooth, the Whole Tooth and Nothing but the Tooth." He proved to be a very entertaining speaker. Five hundred seventy nine were served at the luncheon.

Adjournment at 2:00 p.m.

**Afternoon Meeting**

The afternoon meeting convened in the Ballroom at 3:00 p.m., after a procession of the candidates, their sponsors and the Board of Regents. Dr. Robert W. McNulty pronounced the Invocation. President Hill called upon Dr. Edward Y. Blewett, President of Westbrook Junior College, Portland, Maine, to deliver the Convocation Address, which he did in an impressive manner, addressing himself to the topic "More Value on the Workman."

Active Fellowship in the College was then conferred upon the following persons:

- John Paul Arthur, Navy
- Andrew M. Ballentine, Pulaski, Tenn.
- L. Rush Bailey, Indianapolis, Ind.
- Brooks Bell, Dallas, Tex.
- James Winston Benfield, New York, N. Y.
- Ralph A. Boelsche, Houston, Tex.
- James P. Bowers, Monrovia, Calif.
- Paul Herbert Bowden, Butte, Mont.
- Lester W. Boyd, Chicago, Ill.
- William J. Brennan, Omaha, Neb.
- Russell Vern Brown, Milwaukee, Wis.
- Richard Jackmon Burch, Air Force
MINUTES OF CONVOCATION

Robert Edward Busby
James B. Bush
D. Lamar Byrd
James P. Byrne
John Andrew Cameron
Frank Monroe Casto (Absentia)
Joseph Barlow Chetwin
Lawrence H. Clayman
William E. Cole
Norman Carl Colebrook
George J. Coleman
Russell D. Coleman
Ralph G. Cooper
Howard Crandall
Charles Leslie Cunningham
Albert L. Davis
Leo G. Dick
H. Patrick Donnelly
R. H. W. Drechsel, Sr.
R. L. Dunton
William A. Elsasser
Jesse J. Englander
Arthur Lawrence Everett
John W. Farley
J. Robert Feeney
Ferber A. Finley, Jr.
Wilson Revis Flint
George Edward Fuller, Jr.
John Archer Gholson, Jr.
Clifford L. Gibbin
Cozier W. Gilman
Alvin LeRoy Goding
Albert Goho
Roy Orval Greep
Irving E. Gruber
Edmund T. Guest
Sol Haberman
Louis Stephen Hansen
George Carrick Hare
Irvin T. Harris
Raymond A. Hart
Paul P. Hicks
Edward C. Hinds
Harold Carpenter Hodge
Harry C. Holmes
Norman O. Holte
Herbert John Hoppe, Sr.
Burr H. Howard
C. Douglas Hoyt
Robert Brooks Hughlett
Trenton D. Huls

Hattiesburg, Miss.
Iowa City, Ia.
Dallas, Tex.
Deming, New Mexico
Dallas, Texas
La Jolla, Calif.
Huntington, W. Va.
New York, N. Y.
Oklahoma City, Okla.
Chagrin Falls, Ohio
Coral Gables, Fla.
San Francisco, Calif.
Portland, Ore.
Oswego, N. Y.
El Paso, Tex.
Terrell, Tex.
Oakland, Iowa
Palo Alto, Calif.
Ft. Worth, Tex.
Minneapolis, Minn.
El Cerrito, Calif.
Bridgeport, Conn.
Huntington Park, Calif.
Albuquerque, New Mexico
Garden Grove, Calif.
St. Petersburg, Fla.
Pittsburgh, Pa.
Army
Clarksville, Tenn.
Rochester, N. Y.
National City, Calif.
Alliance, Neb.
Harrisburg, Pa.
Boston, Mass.
Brooklyn, N. Y.
Toronto, Can.
Dallas, Tex.
Navy
Toronto, Can.
Chicago, Ill.
Saginaw, Mich.
Conroe, Tex.
Houston, Tex.
Rochester, N. Y.
Army
Minneapolis, Minn.
Rocky River, Ohio
Wauwatosa, Wis.
Fair Haven, N. J.
Tampa, Fla.
San Bernardino, Calif.
W. Douglas James
James Munford Jolly
Harrell Jones
William A. Jordan
Raymond W. Kelley
James Jeremy Kennedy
John B. Kiefer
Hunter Carroll Kincaid
William Zachariah Kling
Harry Michael Klenda
Silas John Kloehn
Oscar William Koberg
Richard D. Korns
Dayton Dunbar Krajicek
Harold M. Kramer
Paul C. Kromer
Bruno W. Kwapis
Frank F. Lamons
Theodore E. Lilly
Charles Davis Linfesty
Franklin H. Locke, Jr.
Rudolph M. Lord
Bernard E. Luck
Leland Merle Lynn
Benjamin Leo Lynch
Harvey W. Lyon
William Lionel McCracken
James A. McDowell
Barton Luther McGhee
Herbert Anthony McGuirl
Herbert R. Martin
Frank Meriwether Mathews, IV
Michael J. Maxian
Harry Cameron Metz, Jr.
George A. Morgan
William E. Morris
Joseph Charles Muhler
Walter B. Mullon
Robert B. Murray
John Warrington Neilson
Nguyen Thanh Nguyen
Howard J. Niedhamer
Melvin A. Noonan
Oscar J. Ogren
Forest K. Paul
Gustave Joseph Perdigon
Fritz Arthur Pierson, Jr.
Lloyd O. Pilling
Richard M. Pixley
Paul Vernon Ponitz
Edwin C. Pound

Winona, Minn.
St. Louis, Mo.
McAllen, Tex.
Minneapolis, Minn.
Billings, Mont.
Washington, D. C.
Seattle, Wash.
Huntington, W. Va.
San Antonio, Tex.
Wichita, Kans.
Appleton, Wis.
Ft. Worth, Tex.
Joplin, Mo.
Veteran's Adm.
Portland, Ore.
San Antonio, Tex.
East St. Louis, Ill.
Atlanta, Ga.
Dayton, Ohio
Bakersfield, Calif.
Oakland, Calif.
Little Rock, Ark.
Lansing, Mich.
Lincoln, Neb.
Omaha, Neb.
Navy
Birmingham, Ala.
San Francisco, Calif.
Memphis, Tenn.
Providence, R. I.
Mexia, Tex.
Montgomery, Ala.
Manhasset, N. Y.
Pittsburgh, Pa.
Toronto, Can.
Cleveland, Ohio
Indianapolis, Ind.
Manhasset, N. Y.
Berkeley, Calif.
Winnipeg, Can.
San Francisco, Calif.
Cincinnati, Ohio
Birmingham, Mich.
Army
Indianapolis, Ind.
Tampa, Fla.
Lincoln, Neb.
Milwaukee, Wis.
Batavia, N. Y.
Battle Creek, Mich.
Atlanta, Ga.
President Hill then conferred Honorary Fellowship upon Dr.
Wallace D. Armstrong of Minneapolis, Minn., and Dr. Wilby T. Gooch of Waco, Texas.
The meeting adjourned at 4:20 p.m.

**Evening Meeting**

The evening meeting was held in the Ballroom and convened at 7:30 o'clock with a dinner.
Dr. Hill introduced the guests at the head table and called upon Mr. Duane Moen to present the guests from other countries.
Dr. Hill then installed the new officers and regents with appropriate ceremony. They were:

- Dr. Harold J. Noyes, Portland, Ore., President
- Dr. Donald W. Gullett, Toronto, Can., President-Elect
- Dr. Ralph J. Bowman, New York, N. Y., Vice-President
- Dr. William N. Hodgkin, Warrenton, Va., Treasurer
- Dr. Walter J. Pelton, Washington, D. C., Regent
- Dr. James H. Springsted, Louisville, Ky., Regent

Dr. Noyes called upon Dr. Willard C. Fleming to present Dr. Hill with the Service Key of the College, which was effectively done.
Vice-president Bowman presided while President Noyes presented his Inaugural Address, in which he pointed to some of the problems facing the profession and the opportunities that lie ahead for the College.
President Noyes then called upon Dr. Crawford A. McMurray to present the entertainment features of the evening.
The following program was presented:
- Selections by the Baylor Dental College Glee Club
- Selections by Miss Belin Ortega
- An address by Mr. Louie Freeman on “Life and People Who Make It So,” which offered a bit of relaxation after a full day of activities.
The enthusiastic reception accorded all these features indicated that all were well received.
Adjournment at 10:00 p.m.

O. W. Brandhorst, Secretary
The American Association for the Advancement of Science

Proceedings of Section Nd—Dentistry at the One Hundred Twenty-Fourth Meeting of the Association*

Edited by

GEORGE C. PAFFENBARGER, D.D.S.**

EDITOR'S NOTE: The American College of Dentists, The American Dental Association and the International Association for Dental Research, North American Division, were co-sponsors of the entire program of AAAS Section Nd—Dentistry. There were three excellent sessions in the form of a symposium on the "Physiology and Pharmacology of Fluorides." Maynard K. Hine, Dean, Indiana University, School of Dentistry, was the program chairman and Joseph C. Muhler, Associate Professor in Preclinical and Research, Department of Chemistry, Indiana University, was the local chairman.

The president membership of Section Nd—Dentistry is 1,121, a loss of 16 members during 1957. Section Nd—Dentistry ranks tenth in membership among the 18 sections and its membership is slightly over 2 per cent of the total membership of the AAAS.

The 1957 officers of Section Nd—Dentistry were:

Vice President and Chairman: Isaac Schour, University of Illinois, School of Dentistry, Chicago, Illinois.
Secretary: Russell W. Bunting, School of Dentistry, University of Michigan, Ann Arbor, Michigan.
Society Representatives on Section Committee and Council: H. Trendley Dean (American Dental Association), American Dental Association, Chicago, Illinois. S. Wah Leung (International Association for Dental Research, North American Division), School of Dentistry, University of Pittsburgh, Pittsburgh, Pennsylvania. George C. Paffenbarger (American College of Dentists), American Dental

** Member of the AAAS Council representing the American College of Dentists.

George C. Paffenbarger was elected vice-president of the AAAS and chairman of Section Nd—Dentistry and Thomas J. Hill was re-elected as a committeeman-at-large for the 1958 meeting which is to be held in Washington, D. C., December 26-31.

Abstracts of the reports follow:

I. Physiology and Pharmacology of Fluorides, Part I

MAYNARD K. HINE, presiding

1. Fluoride and Enzyme Inhibition. (abstract)

Walter J. Frajola
Department of Physiological Chemistry
Ohio State University, Columbus, Ohio

The inhibition of enzymes by inorganic fluoride has been studied since 1889. These investigations, involving tissue homogenates, extracts, or otherwise isolated systems, indicated that many enzymes were inhibited by fluoride. Enzymes such as enolase, cholinesterase, lipase, acid phosphatase and succinic dehydrogenase were inhibited in varying degrees by sodium fluoride in concentrations greater than 420 parts per million. Because the present interest in fluoride inhibition of enzymes is confined to the potential toxicity of the fluoride ion to the human body whether administered in the drinking water or by exposure in industrial activities, such studies on isolated enzyme systems are of little value.

It is the effect of fluoride upon the enzyme systems of the living organism that must be determined. This can be accomplished by biochemical biopsy, the examination of the enzymatic activity of the serum. Many serum enzymes have long been used for diagnostic purposes: acid phosphatase in prostatic carcinoma, amylase in pancreatic disorders, and glutamic-oxalacetic transaminase in heart attacks.

By measuring the activities of several serum enzymes, one is able to obtain an enzymatic pattern characteristic of the individual, and if a pathologic condition is present, a pattern that may be characteristic of the particular condition. It is proposed that the effect of fluoride upon the human body be studied by examining the sera and obtaining the enzyme patterns of many individuals of known
low fluoride intake and of those with known high intake of fluoride. If fluoride is toxic, characteristic differences in the patterns should occur. In preliminary experiments, serum enzyme patterns were obtained before ingestion of fluoride and after ingestion of fluoride (about 8 parts per million daily for up to three weeks). The patterns obtained indicate that a slight diminution of the activities of all the enzymes measured occurred.

2. Is Fluorine a Dietary Essential? (abstract)

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For many years the problem of whether fluorine is a dietary essential has been discussed. As long ago as 1913, fluorine was added to diets for animals since "it is quite generally considered as being one of the inorganic elements essential in nutrition." Moreover, many nutritionists feel that since fluorides are found, to varying degrees of course, in almost all foods, and due to their wide distribution in the plant and animal kingdom, their mere presence must indicate some physiological important function to man. Carefully conducted animal studies, the first of which was published in 1933, using highly purified diets, but which unfortunately did contain some fluoride, although the amount was very small, have failed to conclusively demonstrate that fluorine is essential when growth was used as the main criterion for essentiality. Studies at Indiana University in which highly purified diets containing only trace amounts of fluoride (less than one-tenth of a part of fluorine per million parts of diet) were supplemented with fluorine, different fats and proteins, vitamin E, or liver extract, resulted in inconclusive results as to whether or not fluorine improved growth and reproduction. There are, however, repeated suggestions that fluorine may aid the growth and calcification processes. This is strengthened by recent studies in which fluorine-free diets obtained by means of solution culture were used. The results of this study demonstrate the necessity for fluorine in order to maintain growth and to promote resistance to dental decay. The growth rates of the animals receiving the fluorine-free diet gained only 11.2 grams, as compared to controls receiving fluorine which gained 86.9 grams. A total of 10.2 carious teeth were found in the group receiving the
fluorine-free diet as compared to the control group which had 0.5 carious teeth per rat.

Based upon these latter experiments and upon extensive human data showing statistically significant reductions in dental decay in areas where fluorine is present in the water, one must conclude that fluorine is an essential dietary factor. It may be classified as “essential” as a result of its proven effect on resistance to dental caries, in the same manner as many other nutrients are essential for promoting optimal health for only one physiological function of the body. Future studies made possible by more accurate analytical techniques and a fuller understanding of the element’s occurrence and function in the body, may well broaden our concept of the element’s “essentiality” to include other effects not yet understood. Only recently has it been possible to demonstrate, for example, the fact that fluorine is present in various soft tissues of the body, such as the heart, and kidney, although its function in these tissues is not yet known. This is in contrast to the accepted findings of long standing that fluorine is deposited only within the skeleton and teeth.

3. Comparison of Fluorides as They Occur Naturally And as They Are Added in Fluoridation. (abstract)

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Studies conducted by a number of workers in widely separated geographical areas have shown beyond any reasonable doubt that dental decay will be partially inhibited in children using drinking water containing naturally occurring fluoride at levels of at least 1.0 μg per ml. (1 ppm) during the time when the permanent teeth are undergoing calcification. In recent years there has been serious discussion among scientists and laymen about the validity of adding fluorides “artificially” to fluoride deficient waters in order to bring the fluoride level up to that which has been found most effective in natural fluoride water for reducing dental caries. Some concern has been felt in regard to the possible differences in the availability of fluoride for dental decay inhibition because of differing mineral compositions of the waters to which fluoride is added. At the present time there is no direct evidence for any inhibiting effect of minerals
present in the drinking water on the ability of fluoride to reduce
dental decay. Some workers feel, however, that the minerals found
in drinking water, such as calcium, magnesium, and iron, may have
an effect on other aspects of fluoride metabolism, such as, for ex-
ample, retention of fluoride in the skeleton.

These workers base their feelings on the results of several studies
which demonstrate a reduction in the retention of fluoride in the
skeletons of rats receiving relatively high concentrations of calcium,
magnesium, or aluminum in the animals' fluoridated drinking water.
The animals receiving the mineralized water retained less fluoride
in their skeleton and the decrease in retention was generally in pro-
portion to the amount of mineral present in the water. Other experi-
ments comparing in animals the retention of fluoride from milk or
water containing the same level of fluoride have shown that the
fluoride in milk is less available for metabolism. This effect observed
in milk has been ascribed to its calcium content, which acts in the
same way as minerals in drinking water to reduce the capacity of the
fluoride to be absorbed by the body. It may be discovered from
future studies that only a fraction of the fluoride in water is actually
used by the body, the balance being necessary to overcome the inter-
ference of various minerals.

Consideration of the entire mineral content of a fluoride deficient
water as well as the effect of dietary milk and mineral supplements
may be necessary before it can be expected that the addition of
fluoride will produce the same long-term results in all areas as a
natural fluoride water.

4. Relationship of Fluoride and Lipid Metabolism.
(abstract)

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It has been established by repeated medical studies that when
fluorides are present at the optimal concentration of about 1.0 ppm
in the communal water supply no increased morbidity or mortality
results from the presence of the fluoride ion. Nevertheless, one con-
tinues to hear discussions that fluorides increase the incidence of
cardiovascular diseases. Although no human data are available which
would substantiate this, there are several experimental studies which suggest that lipid metabolism is related to fluoride ingestion. The relationship of serum cholesterol to arteriosclerosis in the human has been of much concern in recent years, and it is necessary to learn if fluorides affect the serum cholesterol level.

Experimental data in the rat concerning the relation of fluoride to lipid metabolism were reported as long ago as 1935 by Phillips and Hart. Substances which are known to be involved in glycolysis were added to diets high in fat content in the hope that a means of circumventing the toxic action of fluorine if added in high amounts would be found. None of these supplements, however, decreased the toxic effects of the fluoride in the rats consuming the high fat diet. The authors expressed the belief that chronic fluorine poisoning involves more than the mechanism required for carbohydrate metabolism. They assumed that the mode of action of fluoride, viewed as a systemic reaction involving enzymatic inhibition, may involve phosphoric acid esters.

In 1955 Miller and Phillips reported an enhancement of the toxicity of fluoride in the rat by feeding high fat diets. If dietary fat in a purified ration was increased from 5 to 20 per cent the growth-retarding effect of the diet which contained 0.1 per cent sodium fluoride was also increased. Feeding higher levels of fat in diets containing fluoride increased the deposition of fluoride in the femora.

In recent investigations Buttner and Muhler have studied the effect of fluoride administration on fluoride deposition in the skeleton and soft tissues of rats receiving different fat diets. Various types of fat were used at levels of 5, 15, and 20 per cent. Fluoride was administered in the drinking water at a concentration of 30 ppm F over a period of four months, or daily by stomach tube at levels of 0.5, 1.0, and 2.0 mg. F over periods of 4 to 10 weeks. No retarded growth was found in rats receiving the high fat diets and fluoride when compared to the control animals receiving a 5 per cent containing fat diet. Numerical, however not significant, increases in fluoride retention were found in the femora and hearts of rats receiving high fat diets and fluoride when compared to the control animals receiving a 5 per cent containing fat diet. A significant increase in fluoride retention was found in animals receiving 2 mg. fluoride daily by stomach tube, over 10 weeks when a 20 per cent lard and a 20 per cent Crisco-containing diet
was fed, when compared to similar animals receiving 2 mg. of fluoride daily and a 5 per cent fat diet.

The serum cholesterol level was determined once each week throughout the experimental periods. Neither fluoride nor any of the diet variables caused significant changes in the serum cholesterol level. These data would suggest that the use of fluoride, even at relatively high levels as used in this study, is not associated with changes in cholesterol metabolism in the rat.

5. Fluoride Ingestion and Vitamin Metabolism. (abstract)

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It is well known that the continued ingestion of elevated amounts of fluorine by man and animals may lead to a chronic fluorotic syndrome. Observed effects indicate that dietary nutrients may greatly influence the course of the disease. The development of the fluorotic syndrome is enhanced by poor diets, high fat intake, limited plane of nutrition and deficiency diseases. On the other hand, certain nutrients promote an increased tolerance toward F⁻ ingestion. Green fresh forage plants, vitamins C, A and D to different degrees retard the development of fluorine toxicosis.

There appears to be a correlation between histologic structures sensitive to certain vitamin deficiencies and those affected in fluorine toxicosis. Avitaminosis A, D and C would be thus involved.

Vitamin C or ascorbic acid seems to be the most important vitamin in its ameliorating effect upon the development of fluorine toxicosis. In this respect, ascorbic acid has been shown to increase survival time and prevent the marked weight loss experienced by experimental animals suffering from fluorine toxicosis. Both fluorine toxicosis and ascorbic acid deficiency affect the adrenal and pituitary glands. In man, an adequate diet containing foods rich in ascorbic acid greatly alleviates fluorine toxicosis caused by long exposure to elevated F⁻ intakes.

From the data thus far available, one cannot escape the conclusion that diet in general is of significance in the development of fluorine toxicosis, and that certain vitamins especially ascorbic acid mitigates the severity of the disease.
6. The Legality of the Fluoridation Procedure. (abstract)

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The courts of ten states have held that the fluoridation of public water supplies does not infringe on the constitutional or legal rights of the individual and under appropriate state enabling authority is a proper exercise of the charter powers of local communities. These decisions were rendered by the courts of last resort in California, Louisiana, Ohio, Oklahoma, Oregon, Washington, and Wisconsin and by trial courts in Maryland, Pennsylvania and North Dakota. These decisions are strengthened by the fact that the Supreme Court of the United States has refused to review four of these decisions for the stated reason that no substantial federal constitutional question was involved.

In marked contrast to the number of favorable holdings is the fact that only one court in this country has ever rendered an opinion adverse to fluoridation. In that one instance, a trial court in Louisiana rendered an adverse opinion which was reversed promptly by the Supreme Court of Louisiana, an action which the United States Supreme Court refused to review.

This unanimity of judicial opinion—an unusual fact in itself—gives the strongest support to the proposition that fluoridation satisfies every legal and constitutional criterion. Opponents of fluoridation have alleged that the procedure violated constitutional rights such as religious freedom and other fundamental liberties. They have argued that fluoridation represented the unlicensed practice of medicine, dentistry and pharmacy; that a community had no legal authority to adopt fluoridation procedures; that fluoridation was "mass medication" and a "poison"; that no reasonable relationship existed between it and the public health; and that the prevention of dental decay was not a proper object of community government efforts. To summarize, every conceivable legal and constitutional objection to fluoridation has been argued unsuccessfully in the ten cases that have been litigated on this subject. In the one case in which a trial court held against the fluoridation procedure, that decision was reversed by the state supreme court.
7. Fluoride Toxicity. (abstract)
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Administered in large enough amounts, both inorganic and organic compounds of fluoride exhibit toxic effects. The inorganic compounds in general exert their physiological effects in proportion to their ability to release fluoride ions under physiological conditions. Cryolite and calcium fluoride are much less soluble, and proportionately less fluoride ion is available than from sodium fluoride or sodium fluosilicate. Potassium fluoborate and potassium hexafluorophosphate are inert in the body, i.e., they do not release fluoride ions. Organic compounds, such as the fluoracetates, the fluorophosphates, and the fluorinated hydrocarbons, produce toxic effects entirely different than those of the fluoride ion. There is no evidence that the fluoride ingested in the human diet or drinking water is other than inorganic.

In the past few years many excellent reports of the effects of fluoride on the growth of various species have appeared. Growth is not affected in most species ingesting a ration or drinking water containing 100 ppm or less of fluoride. For dairy cows undergoing repeated gestation and lactation, a level of 30 ppm is the maximal limit to avoid body weight loss.

The incidence of osteosclerosis, i.e., increased density of bone upon x-ray examination, depends on the daily fluoride intake. Industrial exposures such that urinary excretion remains below 5 mg. F/liter of urine do not produce osteosclerosis even after years of continuing exposure. In a community in which the water supply contained 8 ppm fluoride, approximately 10 per cent of the population showed some osteosclerosis (asymptomatic and without demonstrable effect on health). These conclusions are substantiated by animal experimentation.

A considerable number of reports have appeared over the years describing the effects of fluoride on the thyroid. Although it is tempting to assume that the thyroid gland is "halogen blind" and concentrates fluoride as it does iodide, studies of radiofluoride distribution in the body show that such is not the case. The thyroid fluoride content reflects the changing concentrations of fluoride in
the blood. As blood fluoride concentrations rise and fall, so at slightly lower concentrations does the fluoride in the thyroid gland. From limited chemical analyses, the ability of the gland to concentrate fluoride appears to be only about one-four hundredth of its ability to concentrate iodide. Sufficiently high doses of fluoride can produce changes in the thyroid, such as an increase in colloid content and a decrease in the height of the epithelial cells. In animals, however, changes in structure or function develop only when food or water contains more than 50 ppm of fluoride and in man no substantiated instances are known. Careful studies have shown that 1 or 2 ppm of fluoride in water supplies does not increase the incidence of goiter, nor does it interfere with the prophylactic action of added iodide in low-iodide areas.

Numerous investigations describe the toxic effects of large amounts of fluoride on the kidney. The ration or water apparently must contain at least 125 ppm of fluoride before the kidney is affected (in one instance changes were reported at 50 ppm). The columnar epithelium of the proximal convoluted tubule is most sensitive in experimental animals and depending on the dose, injury or necrosis is produced, followed under certain circumstances by regeneration and repair. No deleterious effects on the kidney, as evidenced by the absence of urinary protein, glucose, hemoglobin, cells or casts, were found in annual examinations of children drinking water containing 1 ppm fluoride for ten years. No deleterious kidney effects have been seen in adults using water containing 8 ppm fluoride for 15 years or more. In some areas of the world, impaired renal function has been described in persons using water containing 2.5-5 ppm fluoride, for example, in South India. A causative role cannot be ascribed to fluoride in the absence of definitive information on the fluoride intake, the nutritional status and the clinical histories of the subjects.

Conflicting reports of the effects of fluoride on the hematopoietic system describe on the one hand, positive effects at concentrations as low as 1 ppm, and on the other, no effects by concentrations as high as several thousand ppm of fluoride. The anemia and lowered hemoglobin values found in animals given several hundred ppm of fluoride in food or water, may be in part non-specific effects due to concurrent and unrecognized nutritional imbalances.

A considerable list of minor complaints has been ascribed to the
ingestion of small amounts of fluoride (for example, 1 ppm in the drinking water). A tenuous and elaborate hypothesis has been offered of central and peripheral nervous system actions engendering such diverse effects as alopecia, skin pigmentation changes, neuralgia, cramps, constipation, cracking of the oral mucosa, brittle nails, and altered calcium metabolism. The list of minor complaints was compiled in the first place from answers to questionnaires by about 20 per cent of a large group of military personnel, men and women, in Britain selected because they had “mottled teeth.” Since mottling of tooth enamel occurs with a similar frequency in populations drinking water with less than 1 ppm F, and since the presence or absence of fluoride in the water supply of those answering the questionnaire was never ascertained, the relation of the mottling to fluoride was not demonstrated. Furthermore, no comparable list of minor complaints was determined in a control population known to be using water with little fluoride (less than 1 ppm) in it. Thus, no cause and effect relation was demonstrated between fluoride and the minor complaints.

Although a few (less than a dozen) established cases of fluoride allergy have been found, allergy has not been convincingly shown to be responsible for the minor complaints.

Arthritic bone contains normal concentrations of fluoride. No relation between arthritis and fluoride has been found. The osteosclerotic changes in persons with high fluoride exposures can be clearly differentiated from arthritic or cancerous changes.

8. Fluoride Excretion. (abstract)

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Experimental inhalation of fluoride resulted in elevated levels of excretion. Low concentrations of HF, 3 ppm in air, when inhaled by humans gave rise to urinary fluoride levels in the range of 7 to 10 mg. per liter. The urinary fluoride levels of these subjects were similar to those observed among residents of Bartlett, Texas, at a time when the concentration of fluoride in drinking water was 8 ppm.

Volunteers residing in certain cities having elevated concentrations
of fluoride in the drinking water, 2 to 8 ppm, were found to eliminate most or all of the fluoride that they ingested. The equality of their intake of fluoride and their output of fluoride was believed to have been the result of their having maintained their intake of fluoride at its current level for periods greater than 5 years. From these data it was apparent that, for each level of intake of fluoride, osseous deposition of fluoride had progressed to a point of saturation or dose-level saturation wherein mobilization and excretion became equal to absorption and osseous deposition. The dose-level saturation of the bone among residents of Bartlett, Texas, probably had an important relationship (A) to the level of fluoride in the drinking water, 8 ppm, and (B) to an induced change in osseous radiopacity observed among some of these residents.

In relation to the use of fluoridated drinking water the accompanying urinary fluoride levels are known to be far below those which have been shown to have accompanied any demonstrable effect on man (except for cosmetic dental effects).

9. Effects of Fluoridation on General Health as Reflected In Mortality Data. (abstract)

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Almost concurrently with the first reports validating the hypothesis that the fluoride supplementation of public water supplies reduces dental caries, there came the allegation that human mortality was higher in fluoride-water areas than in non-fluoride areas. In view of the gravity of the charge concerning the safety of fluoridation, it has been essential to determine whether or not a relationship exists between mortality and the ingestion of water-borne fluorides. Manifestly an examination of mortality experience provides only indirect evidence concerning general health effects resulting from the use of fluoridated water.

This paper takes note of two reported mortality studies, one in Illinois and the other among 32 pairs of cities, each comprising one city whose water supply contained 0.70 ppm fluoride or more naturally, and an adjacent city whose water contained 0.25 ppm or less. Neither of these studies showed discernible difference in mortality
related to the fluoride content of the water supplies either from
deaths from all causes or from certain of the diseases among leading
causes of death.

An analysis of mortality is made in this paper for the 1940 and
1950 census years in five cities before and after controlled water
fluoridation. Grand Rapids, Michigan began water fluoridation in
1945; Sheboygan, Wisconsin in 1946; Evanston, Illinois in 1947;
These are the largest cities beginning fluoridation in each year 1945-
1949 and are chosen in order to provide some indication of the effects
of one, two, three, four, and five years ingestion of water-borne
fluorides on mortality. Two important factors are considered in this
analysis, (1) the general decline in mortality and (2) the constant
change in the characteristics of a community population occasioned
by births, deaths, aging, in-migration, and out-migration.

For each of the cities selected a comparison is made of the "re-
corded" and "expected" deaths for the census years 1940 and 1950.
Recorded deaths comprised the number of deaths recorded by the
community of residence of the deceased. Expected deaths comprised
that number of deaths derived by applying the specific age-race-sex
mortality experience of the United States to the counterpart popula-
tion cohort of each of the cities being studied. This procedure is
employed in order to facilitate the comparison of each city with
itself using a standard base, in this instance the U. S. mortality ex-
perience, for computing an expected mortality value. Thus the
number of recorded deaths may be ratioed against the expected
deaths for each city in a census year before and after fluoridation be-
gan. A significant change in this ratio from one year to another, 1940
to 1950 in this instance, would indicate that some variable other
than age, race, sex, and declining mortality, which have been
equated out, has had some influence.

A comparison of the ratios for 1940 and 1950 for each of the cities
under study reveals no significant difference. As with the previous
studies these data, therefore, do not support the hypothesis or allega-
tion that water fluoridation has caused an increase or decrease in
mortality. On the contrary, the non-existence of a health hazard
as demonstrated indirectly by an examination of mortality data
provides another link in the chain of evidence supporting the safety
of water fluoridation.
III. Physiology and Pharmacology of Fluorides, Part III

ISAAC SCHOUR, presiding

10. Deposition of Fluoride in the Human Skeleton in Relation to Fluoride in Drinking Water. (abstract)

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Previous data on the fluoride content of the human skeleton are meager and are limited to scattered reports on relatively few cases. For the most part the available information pertains to fluoride present in the bones of individuals who had used an essentially fluoride-free drinking water.

No systematic study has been reported on the fluoride content of bones of individuals exposed to increasing concentrations of fluoride in their drinking water.

In the present study, therefore, data were obtained on the fluoride content of some 199 bones and 65 samples of intervertebral cartilage from 70 individuals 26-90 years of age receiving 0.1-8.0 ppm fluoride in the drinking water for approximately 10-87 years. In most cases, a portion of the iliac crest, the 6th rib and the lumbar vertebrae were analyzed for fluoride by standard procedures. The results are expressed on dry bone specimens free of fat.

Bone specimens were obtained at autopsy in New York City (0.1 ppm fluoride in the drinking water), Washington and Baltimore (0.2 ppm fluoride in the drinking water prior to fluoridation to 1 ppm fluoride) and San Antonio, Texas (0.3 ppm fluoride in the drinking water). Specimens were also obtained from Grand Rapids, Michigan (drinking water fluoridated to 1.0 ppm fluoride), Colorado Springs, Colorado (2.6 ppm fluoride), Amarillo, Texas (2.8 ppm fluoride), and Lubbock, Texas (4.0 ppm fluoride) and Bartlett, Texas (8.0 ppm fluoride prior to defluoridation to 1.0 ppm fluoride).

The concentration of fluoride in the bones of the individuals using drinking waters containing <1.0, 1.0, 2.6, 4.0, and 8.0 ppm fluoride averaged 0.050, 0.147, 0.270, 0.407, and 0.568 per cent fluoride, respectively; the intervertebral cartilage, a noncalcified tissue, contained 0.003, 0.004, 0.004, 0.007 and 0.011 per cent fluoride, respectively.
Bones obtained from individuals who had resided in any one particular area were in general similar in fluoride concentration. The fluoride present in the bones was increased significantly by the increased fluoride in the drinking water. Bone calcification, as indicated by the ash content, was not affected by the fluoride deposited in the bones, except at the exposure to 8.0 ppm fluoride in the drinking water. No relation between age and the extent of fluoride deposition in the bones was observed in this study. However, the age range of the individuals was limited to an average of 50.9-75.6 years for the various fluoride areas. The bones of individuals from Grand Rapids, Michigan, incorporated fluoride, although the average age was about 63 years at the start of water fluoridation.

A microscopic examination of these bones from all areas showed no pathological changes which could be correlated with the quantity of fluoride deposited. The data thus indicate that there is a high degree of tolerance of human skeletal tissues to relatively large percentages of accumulated fluoride.

II. Fluorides and Periodontal Health. (abstract)
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Most arguments that use of a fluoride domestic water is inimical to periodontal health are without substance. An exception is a recent hypothesis that (a) use of such water increases “gingivitis activity,” (b) that the resulting inflammatory exudate inhibits caries, and that (c) the inhibition of caries by a fluoride water is wholly due to this process. Each of these propositions is examined in turn.

Evidence from animal studies is scanty and equivocal. But a series of studies in human populations fails to demonstrate any increase in gingivitis or periodontal diseases associated with use of a fluoride water. Studies with specific tooth types indicate that teeth with an open carious lesion tend toward slightly greater involvement with gingival disease than teeth which are caries-free, in both fluoride and non-fluoride population. Neither is the incidence of new carious teeth associated, in teen-age children using a fluoridated water, with gingival condition during the period of study.

It is concluded that the findings are quite incompatible with any
hypothesis that the periodontal tissues of children or of adults are harmed by use of a fluoride-bearing domestic water.

12. Fluoride in Foods and Medicine. (abstract)

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Fluorine of foods is indicated, by its effects on teeth and bone, to be inorganic fluoride though the possibility remains that some organic forms may be present in plants and animals. At least monofluoracetic acid is present in the South African plant, the Gifblaar, but it is intensely toxic.

The fluorides of foods supplement water fluoride in effects on the developing teeth. Bones, as they may be added to other foods, or consumed, as in small fish, contribute significantly to the supply of fluoride. Fluoride may appear as a constituent of plants grown in areas with atmospheric contamination by fluoric gases and dusts but the fluoride of tea is drawn from the soil. Tea may contribute materially to food fluoride though tea drinking is usually begun too late in life to be of dental benefit.

Milk is generally deficient in fluoride.

Diisopropyl fluorophosphate is a superior agent for reducing intraocular tension in glaucoma. Sodium fluoride and sodium silico-fluoride, as 1 per cent of feed for swine are effective, in a single day application, as anthelmintics especially against ascarids, stomach worms and whipworms. Many fluorine derivatives are finding uses in medicine, but their effectiveness is related to properties other than those of dental significance.

13. Fluoridation as Compared to Fluoride Preparations For Individual Use. (abstract)

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The shortest paper in dental literature could be written by simply answering "yes" to the question in the title. But let's go a little deeper and ask some other questions first. The most basic one: Should we be actively attempting to channel larger numbers of students into dentistry?

There are a number of reasons why I think we must. "A good man is hard to find" and the market for brains grows more competitive each year. Increasingly, nuclear physics, interplanetary missile production, engineering, industrial management, and a host of high-paying glamour jobs lure away the very students with the aptitudes and intelligence needed in dentistry. But perhaps the best reason is that we desperately need more dentists both now and in the future.

Is there really a shortage of dentists?

We all know of dentists who are not completely booked up—and probably there always will be a few who have—and, indeed, want to have—open appointments. Yet today, only one in three dentists can see a new patient in anything less than a week, and the average work-week of the dentist is longer than that of most industrial workers. Tomorrow, there simply aren't going to be enough dentists to meet the demand. The South, for example, will need about 36,000 dentists by 1975. It can expect less than 22,000 from present schools, leaving a shortage of 14,000. The eleven Western states will need in the neighborhood of 35,000 dentists by 1975. They will probably get only 16,000. Right now, the Great Lakes states are from 2,500 to 4,850 dentists short of their estimated needs. Nationally, the current shortage is estimated at from 6,000 to 13,500—depending on what criteria are used (Fig. 1).

There can be no doubt that we have a very real—and a very serious—shortage of practicing dentists.

THE CURRENT SHORTAGE OF DENTISTS

As Measured By Levels Of Effective Demand Prevailing In
Average State And Average Among 24 Top-ranking States

Figure 1

Source: Smith, Quentin M. The Growing Shortage of Dentists in the United States. Presented November 12, 1957, Dental Health Section, American Public Health Association, Cleveland, Ohio.

WHAT SHOULD WE DO ABOUT THE GROWING SHORTAGE?

The answer seems clear: We must train more dentists. But this will not be easy. The Bureau of Economic Research and Statistics of the American Dental Association says that to retain the present ratio of dentists to population in 1975, we must either create more than two new schools a year, or provide their equivalent by expanding existing schools! The Public Health Service estimates that if we are also to keep up with the growth in purchasing power which will accompany this expansion, we will need at a minimum 1,850
additional classroom spaces by 1975. Obviously, the cost of providing so many additional facilities, and filling them with qualified students will be very great. Physical facilities alone will cost perhaps 3 or 4 times the book value of our entire existing school plants. And once we have the facilities, finding funds to operate the schools may prove an even tougher problem.

**What About the Financing of Dental Education?**

We know that the per-student cost to the schools is rising steadily. In 1950, it cost dental schools less than $2,000 to provide a year’s instruction to a student.⁶ Now, the cost has crept up above $2,200, and is still climbing.⁷ Meanwhile, the share of the cost borne by the dental student is steadily declining. Only 35 per cent in 1950, the share met by the student has now fallen to about 25 per cent.⁷, ⁸ In fact, college students in general receive a discount on their education “by an amount which is more than double the grand total of alumni gifts, corporate gifts, and endowment income of all colleges and universities combined. This is tantamount to the largest scholarship program in world history.”⁹

Who provides this discount? Underpaid teachers—including those in dental schools! All of them are paid substandard salaries—and at a time when we face an exceedingly great need for high quality instruction.

We cannot ask teachers to continue to subsidize higher education. Yet all colleges, and particularly dental colleges, are having serious financial troubles of their own, troubles they hesitate to solve by requiring students to bear a greater share of the cost of education.

Now, a look at the dental student and the ways in which he finances his education may make the dilemma of the schools understandable.

First, only one out of six dental students enters dental school with as little as two years’ college training.¹⁰ In effect, then, 84 per cent buy three of four years of “discount” education before entering professional school at the discount rate. But even at a discount, the cost of a college education is so high that it acts as a selective factor in enrollments. A youth who is academically in the lower half of his graduating class, and whose family income is $9,000 or more, is more likely to go to college than a youth in the upper fourth of his class but whose family income is less than $5,000.¹¹
We also know that among dental students, one in nine has a dentist father and only one in nine comes from a family which has under $3,000 income. Actually, this one boy in dental school from the lowest family income group represents the "take" from 50 per cent of the families in the United States! (See Fig. 2.) We have learned also that in 1953-54, veterans accounted for less than 40 per cent of dental students but 6 out of 10 students from families with incomes under $3,000 were veterans.

Obviously, programs providing substantial financial aid open the doors of dental schools to hundreds of students who might otherwise have been barred from seeking a professional education.

It costs the average dental student nearly $3,000 a year to go to school. Of this amount, about two-fifths is school expense, the remainder living expense. School expenses reach a peak during the sophomore year, but living expenses increase progressively throughout the four years.

Three out of ten freshmen are married, but by the senior year

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**Figure 2**

more than six out of ten are married. Half of the married students attending dental schools in the 1953-54 school year had children. These figures were influenced by veterans but among the non-veterans, two out of ten freshmen were married, as were five out of ten seniors. Marital status affects not only the expense of attending school, but the manner in which that expense is met.

Where Does A Dental Student Get the Money to Go to School?

A dental student finances his education from within-family sources. Seven out of ten students were helped by parental contributions, which averaged more than 50 per cent of the amount they spent for all expenses during the 1953-54 school year. Wife's earnings supplied from 25 to 50 per cent of the average student's resources, depending on whether or not there were children (Table 1).

A student with children and a single boy at home were more likely to depend on their own earnings than were the childless married student and the single boy away from home. Personal savings covered about 20 per cent of student expenditures. "Outside" loans accounted for 2 to 5 per cent of the average student's money source. Last—and in this instance least—school loans and scholarships together accounted for even less than these "outside" loans. In short, scholarships and school loans played almost no role in dental student financing.

While veterans' benefits comprised only 6 per cent of the total funds spent by all students, they made a substantial contribution to the funds of students who received them. This Federal money covered one-sixth of the total costs to married veterans with children and one-seventh of the cost to a single veteran living with his parents.

Do Dental Students Finish School With Their Financial Sheets Balanced?

Almost six out of ten do not. The average debt per student rises from $2,193 to $4,230 between his freshman and senior year. The fact that no more than 43 per cent of the students finish dentistry with no reported debt suggests that family resources are sufficient for only a part of the 65 per cent of the dental students who come from the 20 per cent of the families with incomes exceeding $5,000 a year.
<table>
<thead>
<tr>
<th>Student Category</th>
<th>Number of Students</th>
<th>Total</th>
<th>Parents</th>
<th>Savings</th>
<th>Own Earnings</th>
<th>Wife’s Earnings</th>
<th>Veteran Benefits</th>
<th>Scholarships</th>
<th>School Loans</th>
<th>Other Loans</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Married:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>With children</td>
<td>2,021</td>
<td>$14,631</td>
<td>$3,027</td>
<td>$2,551</td>
<td>$2,252</td>
<td>$3,645</td>
<td>$1,796</td>
<td>$120</td>
<td>$110</td>
<td>$705</td>
<td>$425</td>
</tr>
<tr>
<td>Without children</td>
<td>2,144</td>
<td>14,281</td>
<td>2,118</td>
<td>1,843</td>
<td>1,274</td>
<td>7,546</td>
<td>825</td>
<td>108</td>
<td>54</td>
<td>269</td>
<td>244</td>
</tr>
</tbody>
</table>

| Single:          |                    |       |         |         |              |                |                  |               |             |            |        |
| Away from home   | 3,825              | 10,341 | 6,094   | 1,941   | 1,073        |                | 295             | 145          | 64          | 465        | 264    |
| At home          | 1,531              | 8,295  | 4,304   | 1,933   | 1,183        |                | 201             | 178          | 25          | 223        | 248    |

| Per Cent         |                    |       |         |         |              |                |                  |               |             |            |        |
| Married:         |                    |       |         |         |              |                |                  |               |             |            |        |
| With children    | 2,021              | 100   | 20.7    | 17.4    | 15.4         | 24.9           | 12.3             | 0.8          | 0.8         | 4.8        | 2.9    |
| Without children | 2,144              | 100   | 14.8    | 12.9    | 8.9          | 52.8           | 5.8              | 0.8          | 0.8         | 1.9        | 1.7    |

| Single:          |                    |       |         |         |              |                |                  |               |             |            |        |
| Away from home   | 3,825              | 100   | 58.9    | 18.8    | 10.4         |                | 2.8             | 1.4          | 0.6         | 4.5        | 2.6    |
| At home          | 1,531              | 100   | 51.9    | 23.3    | 14.3         |                | 2.4             | 2.1          | 0.3         | 2.7        | 3.0    |

It seems evident that in spite of the below-cost tuition rates in effect in higher education today, only the boy who has the mental ability—and the cash in hand—even gets past the two, three, or four years of undergraduate work required for admission to dental school.

**Even Though a Dental Education Is Expensive Aren't There Enough Applicants?**

At the moment there are 2.1 applicants for every available dental school space, and within 10 years there could be as many as 4 or 5. Thanks to the steady increase in the proportion of young people going to college, college enrollments are now at an all-time high, even though our present college-age population is the smallest in 25 years. Once the youngsters born during the war and postwar periods reach college age—and that time is almost here—college enrollments will literally soar. In other words, there is a possibility of having too many applicants rather than the likelihood of having too few.

**Why Worry About the Supply of Applicants, If College Enrollments Will Boom?**

In terms of numbers, the projected ratio of 4 or 5 to 1 can rapidly disappear. Based as it is on our current experience, this ratio assumes that there will be no expansion of dental training facilities. If we are at all successful in building the new schools we need and more spaces become available, this ratio eventually may not prevail. Moreover, the projected ratio of 4 or 5 to 1 assumes that dentistry will maintain its current drawing power in a market rapidly growing more competitive. This is wishful thinking. The health professions are yielding first place to the outer-space men when it comes to glamour and, when it comes to economic incentives, engineering offers a much quicker route to financial reward. In short, we could end with a ratio of applicants to spaces which is not much more favorable than the one we have today. It is reasonable to expect, however, that in the near future we will have relatively more students seeking admission than we now have and the issue then becomes—who will they be?

Unfortunately for us, the demand for talented youngsters is growing very rapidly—and the inroads made by competing occupations will be reflected not only in the total number of applicants but
more significantly in the number of highly qualified applicants. This is the real—and growing—problem: how to attract the necessary number of highly qualified applicants.

**Should We Be More Concerned With Student Ability Than With Student Financing?**

To this I would answer a definite “no.” For what better way is there to expand the pool from which to draw than by removing some of the economic barriers which stand between the potential student and the occupation of his choice? As already pointed out, many of our ablest young people now fail to go to college. Still others get to college but never consider the possibility of going on to professional school. And even now—many of those who would go on are stopped at entrance because their resources are too limited. It is likely, moreover, that even our current 2 to 1 ratio of applicants to spaces permits a certain amount of screening by faculty committees which consciously or unconsciously tends to favor the student who will not bother the school with financial problems. This kind of bias is understandable, even necessary perhaps. But certainly it is regrettable, for financial position is not a very accurate gauge of mental ability. It is, in addition, a bias that we can no longer afford. Any failure to encourage students with special ability means that we are in danger of losing many of the very students we most need to have. For dentistry, this loss could be ruinous.

**What About Tax Sources and Other Forms of Financial Help?**

Recently, Florida joined the company of Alabama, North Carolina, Virginia and New York in making legislative provision for modest scholarship and loan programs. Any only within recent years, states without dental schools have assumed through three regional compacts the obligation of paying part of the total cost of educating their dental students in out-of-state schools.

The effectiveness and desirability of state and federal-sponsored programs of financial aid can no longer be questioned. The G.I. students who went through dental schools after the Korean War and World War II provide an impressive example of what government support of dental education can do in making educational opportunities available to qualified students.
CONCLUSION

The financing of dental education is in a hazardous condition. Not only must more school spaces be provided, either by the expansion of existing schools or the building of new ones, or both, but ways must be found to ease the financial load, both of the schools and of the students.

At the same time, faculty salaries must be brought up to amounts which will make it possible for dental schools to compete successfully for the services of highly qualified manpower.

The inescapable conclusion is that we must not only immediately find the financial support to build these additional dental school facilities but we must insure adequate operating funds. Concurrently, we must develop systems of scholarships and loans which will put financial teeth into our yet-to-be-developed student recruitment programs. In addition, support of pending state legislation—indeed, support of all public or private efforts to assist and enlarge dental school facilities—is of paramount importance.

Time is running out. For unless the dental profession in general and dental educators in particular assume the responsibility and provide the leadership which will assure a continued supply of highly qualified manpower, we may find these prerogatives exercised by unwanted authorities who propose "public-denturists" and other equally untenable solutions.

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Continuing Education for Teachers of Dentistry

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Dentistry, in company with other professional and specialized areas of higher education, recruits its teachers to a great extent from its own ranks. Properly selected, these teachers have an excellent knowledge of the subject matter that they are to present but, with some exceptions, they are quite ignorant of even the basic information and advice regarding teaching that is made available to all elementary and secondary teachers by the schools of education throughout the country. This statement can also be made in reference to many basic science teachers who are not dentists but who instruct dental students.

Particularly since the close of World War II, leaders of higher education have strongly advocated the improvement of college teaching by familiarizing both beginning and experienced teachers with information from the general field of education. To a commendable degree dental schools and dental teachers have recognized the merits of this movement, and a number of meetings, workshops, courses, and seminars have been conducted during recent years. These and other forms of continuing education for the dental teacher are included within the scope of in-service education as it is generally interpreted.

During the past twenty years there has been a constantly growing acceptance of both the need and the moral obligation of the practicing dentist to continue his education throughout his professional life, so that he may offer services of the highest quality to his patients. Dental teachers are now awakening to the realization that they have a similar need and obligation to their students and to dentistry, and that they must strive continually to improve their teaching. Virtually everyone connected with dental education agrees and accepts that the teaching of dentistry should be improved, that an excellent practitioner is not necessarily an excellent teacher, and that in-service training programs in teaching are beneficial to all faculty members. At this moment, however, the methods of providing in-service train-

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ing vary greatly and, for the large part, the programs are rather sporadic. Continuing education for dental teachers is undoubtedly in the state of flux that it was for practicing dentists approximately fifteen years ago, and there is every indication that the years to come will witness the establishment of well-constructed, effective programs of in-service education for teachers of all of the dental schools.

Educators agree that in-service programs in teaching can not be imposed upon faculties by administrators with any great probability of enthusiastic receptions. The motivation for such programs should stem from the teachers themselves if the maximum degree of effectiveness is to be experienced. The administrative officers of a school should become familiar with the potential benefits and with approved methods of improving teaching and should discuss them with the faculty members, individually and collectively. A favorable, encouraging climate for this activity should be fostered, and a suitable time arranged for it. The counsel of a person who is experienced and informed in the field of education should be secured, and necessary books and journals should be obtained. Then, a representative faculty committee should plan the organization of the program, choosing the subject matter and the source people.

Unfortunately, when any program is first discussed and planned, there is a great amount of inertia that must be overcome. Most teachers, dental and other, honestly believe that they are excellent teachers, whether they are or not. Too, human nature is such that an individual does not freely acknowledge the flaws in his armor, even when he recognizes them. Because of this, group planning of an in-service program is desirable, since everyone will become aware that no individual or group is being singled out as being in special need of the instruction and that the intention is to improve the educational experience of the students of the school by better teaching. When this philosophy is understood, there is a great likelihood that the interactions of the faculty and its committee, with the suggested counsel of someone from the field of education and the administrative officers, will result in a properly motivated, well-organized program of in-service education.

Obviously, much time and effort must be expended in initiating and developing an effective in-service program, and this brief discussion of the problem should not be interpreted to the contrary. If everyone wholeheartedly accepts the potential benefits of such an
activity, however, and if the faculty has the opportunity of establishing the goals, the road to success will be much smoother than if a program is merely handed down by the dean. If the subject is presented in a way that leads the average teacher to regard it as simply another burden to add to his already heavy load of teaching, research, and perhaps practice, he will usually only go through the motions and will not receive a full measure of the values.

No single paper can possibly discuss all of the areas that are suitable and desirable for inclusion in an in-service program for dental teachers. There are so many problems that are regularly encountered by teachers that the planners of a program will always find it difficult to select for discussion and study those topics of the greatest need to everyone. Some of these will require additional attention in succeeding years until satisfactory solutions have been found. Some problems that are more departmental in nature should be considered by meetings of the departments involved—virtually in-service programs within the larger one.

Undoubtedly, every dental faculty would benefit by a study of the construction of examinations and of methods of grading. A great amount of information is available in this area, and it is appalling to realize how ill-informed many of our teachers are in these subjects. When afforded the opportunity, these teachers are genuinely interested in the correct methods and philosophy of evaluating students, and they enjoy knowing that examinations can also serve as teaching mechanisms and as a means of studying the effectiveness of their own teaching. They appreciate information about the advantages of the different types of examinations, the construction of questions, and the correct methods of relating the subject matter of a course to the examination. They are helped by understanding the various methods of assigning grades to examination scores and by knowing that there is a difference between standards of instruction and standards of grading. Every teacher should know that standards of instruction and student achievement are not maintained by, nor are they a by-product of, severe grading.

Any faculty will also profit from a consideration of the objectives of dental education in general and of the particular objectives of their own school. The definition and discussion of these goals of teaching are of paramount importance if the role of each department in the educational program is to be understood clearly. After
the objectives of each department are known to its members, the aims of the individual courses will become apparent, for each course will have its particular contribution to make toward the knowledge and skills that are desired for the students.

After the faculty member knows the objectives and the desired outcomes of a course that he is to conduct, he is in a position to decide how to teach it. He must then call upon his knowledge of course organization, educational psychology, and methods of teaching, in order that the course may be presented in as capable and effective a manner as possible. Thus these topics are excellent ones for study in an in-service program.

An understanding of educational psychology is one of the most important items in the armamentarium of a teacher. It is here that the faculty member will study the educational environment and its relationship to learning, motivation, emotions, individual differences in students, achievement, evaluation, development of attitudes, the learning process, learning experiences, and other similar topics. Of great value to a dental teacher is the consideration of the psychological aspects of the learning of motor skills, since this subject is of utmost importance in dental education. Any teacher who develops even a cursory knowledge of educational psychology will realize that he can find many ways to promote learning by his students and that he can, however unconsciously, do many things to inhibit learning. While he will not become a psychologist, he will make improvements in his techniques of teaching that will make his subject matter much more appealing and acceptable to those he teaches, and he will not believe that subject matter will be learned and retained merely because he has presented it.

The teacher with a competent knowledge of the methods of teaching will be able to select those techniques that are best suited for the presentation of his subject matter in the particular situation in which his teaching must take place. He will be better able to utilize effectively such methods as the lecture, the discussion, the seminar, the demonstration, the written report, the laboratory exercise, and a number of others. He can relate his understanding of the advantages and disadvantages of the various methods to the physical facilities in which his teaching will take place, the time available to him, and the number of students in his class, and he will be able to plan his courses so that the teaching will be as effective
and as efficient as possible within the limitations placed upon him.

In organizing each of his courses, such a teacher will list the areas of subject matter that he expects to present and will plan each meeting of the class to accomplish a definite part of the total program. He will not approach a lecture course in a haphazard manner, trusting that he will tell his story in the allotted number of hours and that he will remember to include all essential material. Rather, he will be organized so that everything of importance will be presented in a definite sequence, time for examinations will be allocated, the necessary teaching materials and visual aids will be ready when needed, outside reading will be assigned accurately and at the right time, and all other details will be planned ahead. He will never be in doubt about being ahead or behind schedule in his course, and he will always know in advance what he will be doing in each class period. A practicing dentist will recognize that this type of organization bears a marked resemblance to that advocated for the dental office by lecturers on practice administration.

At the risk of being out of context, it should be pointed out that the crowded dental curriculum forces many teachers to rely more heavily upon the lecture method than they may desire. That being true, every teacher who gives lectures should do everything within his power to learn to lecture well. He should understand the advantages and the disadvantages of this method, so that he may utilize the good features and attempt to minimize the weaknesses of the lecture. He must know how to create the most favorable atmosphere in a lecture situation, must be completely organized and prepared, must have an acceptable delivery and vocabulary, and should know how to evaluate his effectiveness. Unfortunately, developing the art of lecturing it not easily accomplished. It is hard work for many teachers, but it evolves from an understanding of the method and from proper organization, followed by the development of self-confidence. However, the necessary effort will be amply rewarded by the benefits that will come to the students.

A discussion of the potential improvements in teaching that may be brought about by a program of in-service education could go on endlessly. Perhaps a more meaningful purpose may be served by the presentation, only as an example, not as dogma, of the objectives of a course in dental education that was conducted at the University of Michigan for experienced teachers during the summer of 1956. The
course was designed to give the group an opportunity to take part in learning experiences that would increase their ability in their present professional positions to:

(1) View the college teacher in the context of the educational philosophy of the school and in the pattern of the objectives of the teaching profession.
(2) Appreciate the dynamics of group activities.
(3) Understand the manner in which learning takes place and to select and appraise the techniques through which the teacher develops situations that stimulate the learning process.
(4) Examine critically and to evaluate their personal philosophies of dental education.
(5) Interpret the changes occurring in the practice of dentistry and to relate them to dental education.
(6) Appraise dental courses and curriculums.
(7) Increase the breadth of their own general education.
(8) Develop an objective approach to the art of teaching and administration and to initiate research studies aimed at the improvement of dental education.

These objectives are stated in rather generalized language, and the educational material of the course was organized with the following outline of content:

(2) Organization of a college course—philosophy of education of the school; relating the course to the curriculum; establishing course objectives and outcomes; selecting and arranging course content; determining physical facilities for the course; providing courses for auxiliary personnel; correlating the basic science courses with clinical instruction; correlating predental courses with the curriculum; providing graduate and postgraduate curriculums.
(3) Techniques of college classroom teaching—psychology of learning; characteristics of a good teacher and of good teaching; specific teaching techniques and methods (manuals, textbooks, lectures, discussions, demonstrations, clinics, laboratories, reports, readings, projects, field trips, models, charts, displays, audiovisual aids, individualizing instruction, teaching manipulative skills); measuring the results of teaching and learning (intelligence and aptitude tests, pretesting, relating course outcomes to achievement testing, test construction and scoring, validity of testing achievement, performance tests); cycle of teaching—testing—reteaching.
(4) The teacher outside the classroom—faculty organization, administration, and activities; intellectual aspects of the teacher’s role; guidance and counseling of students; research and publications; the relationship of research and teaching; the teacher in the community; public relations aspects of teaching; codes of ethics of teachers; general education of the teacher; continuing education and in-service training programs; evaluating the effectiveness of the teacher.

In-service programs, organized with similar objectives and content, will prove to be stimulating to teachers and will encourage
the improvement of dental teaching. They will serve to emphasize that professional education must provide educational experiences within the main stream of higher learning rather than in an isolated situation separate from the other intellectual disciplines, must provide for early direct contact of the student with the services he is being trained to render, must provide for the complete integration of theory and practice, and must keep the student in communication with the people who are being educated in the other professions. In addition to these general elements, it is quite apparent that in-service programs must also offer information regarding more specific teaching practices.

While organized programs of in-service education within each of the schools appear to offer perhaps the greatest promise of assistance to dental faculties, the inference should be drawn that there can be no other satisfactory method of providing these desired experiences. Courses can be organized on a geographical basis to serve several schools located near each other; courses can be planned on a national basis for teachers of a particular field or subject of the dental curriculum; teachers can enroll in courses in nearby schools or colleges of education; teachers can attend various lectures and meetings pertaining to teaching; and teachers can keep abreast of the literature related to teaching and to educational practices. Undoubtedly, the greatest benefits will be gained by those teachers who participate in several of these types of continuing education.

If the premise is accepted that a teacher must strive constantly to better his teaching, the realization then grows that a really good teacher must be an unusual person. He is faced with the dual tasks of continuing his education both in the subject matter he teaches and also in the art of teaching. And he must meet these tasks faithfully in spite of the varied demands of an academic life and in spite of the attractions and distractions to be encountered in the environment of teaching and research. As he progresses, he may occasionally find it necessary, courageously and tactfully, to break away from the traditions often held so dearly in our schools; he may even have to discard from among the hand-me-downs of teaching that are sometimes inherited by a faculty member—subject matter, teaching methods, and teaching materials. He will always be a busy person, the good teacher, but it will be in meeting this tremendous challenge successfully that he will find his greatest happiness and satisfaction.
The Publication of Papers—
A Criterion of Good Dental Teachers

MAYNARD K. HINE, D.D.S.*

One of the standard methods of evaluating the ability of a dental teacher is to study the quality and quantity of his publications. Most administrators consider carefully the bibliography of an applicant for an important teaching or research appointment, and it is usually true that if a teacher is considered for a promotion, a Promotions Committee will be much more interested in scanning the list of the candidate's publications than in attempting the difficult task of evaluating the effectiveness of his teaching program. It is easier to judge one's publications than his ability to teach, but how valid a criterion of a teacher's ability are his publications?

A teacher should never be judged solely by the number of pages he has published. It is generally known that the Individual who was undoubtedly the most effective teacher of the Western World never wrote a line; the Bible reports that Jesus drew something in the sand, but what he drew or wrote was not recorded. Socrates, who earned for himself a pretty fair reputation as a teacher, relied upon his pupils to write up his dialogues. It should be emphasized, therefore, that a man can be an effective teacher without ever publishing anything. It should be recognized, too, that excellent teachers are often slow to publish papers because of a healthy skepticism of the value of their contributions. Certainly all lectures are not worthy of publication; it is worse to publish too many papers than it is to publish too few. An article should be published only if it represents a definite contribution to the already overcrowded literature, in the form of new knowledge, new points of view, or evaluation of previously known ideas or methods. Also it can be proved easily that too much emphasis on publications is undesirable. Preparation of material for publication is time consuming and can reduce or crowd out one's contact with students in lectures, seminars or conferences.

It is difficult and perhaps unprofitable to list the qualifications of a good teacher. No matter how carefully one prepares a set of specifications for a good teacher, it will be simple to locate an individual

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who does not meet the specifications and yet is effective in the classroom or dental clinic. I well remember being quite irked as an undergraduate student with what I considered to be occasional terrible “teaching techniques” demonstrated by some of my teachers, and yet I can remember even today some of the facts that these particular teachers were attempting to impress upon me. Good teachers simply don’t fit into one pattern. Nevertheless, speaking briefly and in general, the following attributes contribute to effective teaching:

1. The good teacher must have a sincere desire to teach. Many aspects of a teaching program are repetitious and can prove to be monotonous and deadening if the individual does not receive true enjoyment from teaching.

2. The second requirement is that the good teacher must know his subject well. Obviously, to be effective a teacher must know more about that which he is attempting to teach than he expects his students to learn. He must be continually studying so that he can keep informed of developments in his and allied fields.

3. The teacher must like the subject he is teaching. It is occasionally necessary to assign a course to a teacher who does not wish to accept the responsibility of the course. Unless a sincere appreciation of the value of the course is developed by the teacher he will not be a stimulating instructor.

4. The good teacher must like to work with pupils. He must be willing to spend time to become acquainted with them, understand their problems, their objectives, their deficiencies and their abilities. Then he must have a sincere desire to help them.

5. The good teacher must be kind and tolerant of the inept. Of course, kindness must not be confused with pity or “softness”; the teachers who always give passing grades are not necessarily “good” . . . or “bad.”

6. An effective teacher should be alert, curious and possess good health, unlimited energy and contagious enthusiasm for his work.

7. A pleasant personality contributes to making a teacher effective. A well developed sense of humor is desirable if not actually essential to keep his students interested (and himself sane!).

8. The good teacher should have wide interests and be able to converse in an interesting manner on more subjects than the one he is teaching.

9. Truly outstanding teachers are usually dedicated teachers whose chief aim in life is to motivate students to learn. As Paul Schlipp wrote recently, “Good teaching is always inspired teaching; this is teaching which is able to inspire the learned in such fashion that he really wants to learn. It arouses the student’s curiosity—that most divine of human capacities next to man’s rational intelligence. But inspired teaching can be done only by the teacher who is himself inspired. The teacher for whom both his subject-matter as well as his students are humdrum routine will never stimulate any student. Nor is it conceivable that any teacher could long remain inspired, if, instead of being free to pursue truth wherever it might lead, he knows himself to be merely the tool of forces with axes to grind.

“There are only three factors which can keep a teacher inspired: namely,
(a) his endless pursuit of truth (endless precisely because the finite mind of man can never possess absolute truth); (b) his real and personal interest in the growing minds who come under his instruction; and (c) his service to human society in terms of which he evaluates both (a) and (b). Nor can such service be inspirational service unless it be freely given, under no compulsion except only that inner compulsion of the teacher’s own personal conviction and commitment.”*

If an individual possesses the above attributes he will doubtless be a successful teacher and will automatically become a more effective teacher as time goes by. He will become so imbued with the subject he is teaching that he will want to continue to learn more about it. He will wish to carry on some research to develop new information in his field. If he is doing this it is only natural that he organize his thoughts to insure clarity of his lectures and research projects. From carefully prepared notes it is but a short step to an article, and from a series of articles it is another but longer step to an article, and from a series of articles it is another but longer step to a textbook. A good teacher is desirous of taking these steps, because he wishes to reach as extensive an audience as possible. Lecturing to a class will not have the same degree of influence as a publication which is distributed widely.

The teacher also enjoys the mental stimulation from creating something tangible. This is one of the rewards of teaching. Another emolument of publishing is that the teacher can broaden his influence and his reputation. Authorship opens doors for him and makes it possible for him to become acquainted with others in his field. It identifies him as a “leader” in the field of his choice. And, of course, the good teacher realizes that publications aid him in obtaining promotions, and, incidentally, salary increases.

It is true, therefore, that the desire to publish scientific papers is a qualification that most outstanding teachers possess and should be encouraged to develop. One must conclude that excellence of an individual’s publications are a helpful, but not infallible criterion of his teaching ability.

The use of senior dental students as teaching assistants has been suggested and implemented in many schools with a varied degree of success. A universal analysis of this procedure is difficult to make because of the variety of interests concerned. The utilization of senior student teaching assistants can have advantages and disadvantages affecting the student body, the faculty, the teaching institution and the individual selected for the assistantship. The impact upon each of these must be weighed in relation to the whole in order to arrive at a judgment in respect to the validity of proposing this procedure for general use. The whole concept must also be modified by physical and teaching peculiarities of each institution. Like so many ideas which are advanced in the direction of improving our clinical teaching and its product, suggestions of this nature must be evaluated in sober judgment by the faculty of the school intending to use it and by the administrative officers in charge of clinical teaching who will implement it. A paramount premise which should be adhered to in an analysis of this idea is that any student teaching assistant should be used only in teaching under-classmen. To suddenly validate a senior classmate to teach his fellows handicaps the whole idea sufficiently to make its consideration untenable. In the following discussion, therefore, we will accept the principle that senior teaching assistants are used for instruction to junior and sophomore students only.

Since I am in favor of this proposal I will assume the prerogative of listing the advantages first.

The use of senior teaching assistants in the clinic increases the effective teaching by decreasing the student-teacher ratio and enhancing the junior student's concept of techniques, thereby stimulating the more efficient prosecution of patient therapy. This is a \textit{plus} advantage for the student and the institution since it allows the student more personal instruction and improves the teaching objective for the institution. It is also a \textit{plus} value for the faculty.

* Professor of Periodontology, University of California, School of Dentistry.
since the more experienced instructors' time can be spent on more involved procedures and with students needing more instruction. A second advantage is that special interests of qualified senior students selected for this program are stimulated and further education in the activity of their choice is possible through teaching. It is axiomatic that students selected to prosecute this program would be assigned to departments of their special interest and consequently this becomes a plus value to the qualified senior. The third advantage again reflects upon the student recipient of the teaching appointment in that it is usually regarded as a reward for merit and an earned distinction. Qualified students selected for this duty are elevated in stature, both in their own minds and that of their fellow students, which amounts to a stimulation to the rest of the student body to emulate this accomplishment. At the same time it affords opportunity for the further perfection of certain skills and advanced study. This is, therefore, a plus value for the student assistant.

A fourth advantage of this plan is that it affords a proving ground for the evaluation of potential material for future faculty appointments. This advantage reverts to the benefit of the institution concerned, primarily, and is, therefore, a plus value for it. The present difficulty of faculty recruitment in our dental schools could be somewhat ameliorated by the intelligent use of this plan, whereby student teaching assistants are carefully evaluated in the direction of faculty appointments and encouraged to continue in this capacity after graduation. Those of us of long tenure in dental education value the privilege of teaching—the young graduate, on the other hand, is not apt to so regard it and this indoctrination becomes, therefore, a plus value to be allocated to the institution. The fifth advantage accruing as the result of student assistance in a clinical teaching activity is that of stimulation to the older and more mature instructors. It has been our policy, in the use of this plan, to have older and experienced instructors teaching at the same time that the student assistant is assigned to any particular activity. There are, of course, many reasons for this principle not the least of which is the effect of a student teaching shoulder to shoulder with the mature instructor. The faculty instructor is stimulated not only to increase his effectiveness with the undergraduate students but to also project his educational interests to the student assistant as well. The older instructor often assumes the role of mother hen with a favored chick
by enthusiastic teaching of the assistant in the direction of creating one in his own image. As a result this advantage should be evaluated as a plus value for the assistant and for the institution and probably indirectly to the undergraduate student.

A sixth advantage is that the student assistant is in closer alliance with the undergraduate student than is the faculty instructor. As a result of this assistant-student alliance, the student may find it easier to confide discrepancies in technical knowledge or academic background to the assistant and, therefore, misconceptions or inadequacies of correlation can be corrected effectively for some students. Difficulties emanating from clinical procedures, patient personalities and departmental inefficiencies are relayed from the student through the student assistant to the administrative officer more readily than through regular faculty channels. This should result in correction of some of these hurdles with which the student is constantly confronted. It is axiomatic that careful selection as to qualification and personality of the appointed assistant must be made. The advantage of this close alliance results in a plus value for the student as well as a plus value for the institution.

The seventh and last advantage that we could determine in the use of this plan is the effect it has upon the selected student assistants in the cultivation of a professional manner. The assignment of responsibility toward his fellow students and toward the faculty, as he nears the day of graduation, preempts the impact of professional citizenship upon him before he enters practice. The properly selected and well-qualified senior student assistant is placed in a position of dignity and responsibility and this often is mirrored in his acquisition of professional attitudes and manner. It is natural that his closer relationship with the faculty, in their prosecution of teaching responsibilities, rubs off on the student assistant to hasten his maturity toward professional attitudes. This unquestionably is a plus value for the recipient of the student teaching appointment and only indirectly to the faculty and the institution which he serves.

There are obviously other fringe advantages which cannot be definitely pinpointed and vary in importance according to the type and characteristics of the senior students selected, and the students and faculty with whom they work. Stimulation in the direction of a research project, a greater comprehension of patient relationship, a better understanding of faculty problems in dental
education are all present to a greater or lesser degree but difficult to evaluate.

In enumerating the disadvantages of this teaching experiment one has to again consider the variety of factors bearing upon them in the differences of student body, faculty and institution interested in this plan. These disadvantages must be considered in their general implications with a realization that any one of them could be circumvented by proper attention to the experiment and the enthusiasm with which it is approached.

The first disadvantage which comes to mind, is the tendency for student favoritism on the part of the appointed assistant. This is only a very natural result of previous close association and takes an individual of character to surmount it. Student assistants are very apt to be more cooperative with students whom they know well and like than they are with those in which the opposite reactions are present. We have tried to overcome this by our indoctrination and briefing and by the close alliance with the faculty instructor with whom he works. However, it has to be regarded as a minus value for the over-all student body as well as the institution.

A second disadvantage revolves around the problem of clinical grading. This is a very difficult projection for even the mature instructor and many papers have been written on the problem of clinical grading. This being the case the student assistant is in a very poor position to adequately evaluate and arrive at a grade for the clinical efforts of his charges. The student assistant is tempted to over-grade rather than under-grade and, remembering his very immediate experience, under the stress of the importance of grades this tendency is difficult to correct. We have partially circumvented this problem by utilizing the device of comments in the direction of the student's efforts and results, rather than reducing the operation to a grade. The analysis of the composite comments are finally translated to a grade by the administrative officers of the division concerned. Nevertheless, this disadvantage has to be evaluated on the basis of a minus value in respect to the student, faculty and institution.

The third disadvantage is the lack on the part of the student assistant of complete and good clinical judgment. Obviously clinical judgment is based primarily upon clinical experience. The senior clinical student has had little time to develop this facet of instruction
and is, therefore, handicapped because of it. We have relied upon
the close association of the faculty instructor with the student as-
istant in solving matters which are dependent upon clinical judg-
ment. The student assistant is constantly admonished to refer prob-
lems of judgment beyond his ken to the faculty instructor. It is
evident, however, that not all instances of poor judgment are recog-
nized as such and the student may be lulled into a position of inse-
curity because of this lack on the part of the senior assistant. It must
therefore be considered a minus value for the student as well as the
institution.

The fourth disadvantage is similar to the third but is distinct in
itself. This is inherent in the principle that basic science correla-
tions toward clinical entities are poorly made by the senior teaching
assistant. I am not implying that their knowledge of basic science
is less than that of the mature clinical instructor, in fact the opposite
is quite often the case. However, the mature clinical instructor has
often been specifically trained to make very definite basic science
correlations with his clinical teaching and by constant stimulation
on the part of his superiors for further study, has usually developed
an interest in making basic science correlations of validity. The
senior teaching assistant on the other hand may have a more up-
to-date knowledge of biochemistry, pathology, etc., but his ability
to correlate this material clinically is only in direct proportion to
the kind of correlation which has been made in his year and a half
of clinical experience. Therefore, all facets of these correlations
have not been covered for him and he is at a disadvantage in making
them to other students. On this basis this disadvantage must be rel-
egated to a minus value for the undergraduate student and the
institution.

The fifth disadvantage emanating from the use of this plan is a
combination of personality features which enter into the sudden
change in relationship from student colleague to student instructor.
A tendency to develop egotism on the part of the teaching assistant
is present and a lack of finesse in dealing with contemporary students
as a result of a sudden change of status is observed in some instances.
This is often exemplified in change of attitude, bordering on the
overbearing, and a sudden unmerited development of ego on the
part of the student assistant. I wonder how many dental school
faculties realize that a constant student-instructor evaluation is con-
ducted as well as the inevitable faculty evaluation of students! Students are quick to sense these untoward personality developments in either a student teaching assistant or a faculty instructor and by-pass him in seeking instruction which would obviously negate any of the advantages enumerated above. In evaluating this disadvantage, even though the enumerated faults are possible of correction with proper guidance, it must be considered a minus value for the student body as well as the institution.

Like the advantages above stipulated there are also fringe disadvantages which are often peculiar to the institution in which the experiment is tried and used, and most of which can be ameliorated by diligent supervision by the individuals in charge. Such examples as the relaying of faculty confidences to the general, or what is worse, smaller groups of student body are untoward. Actual prosecution of clinical cases by the teaching assistant over and beyond what might be good teaching becomes assistance toward meeting requirements rather than instruction and is deplored by other students. The temporal aspect of the student assistant's appointment destroys somewhat his position as an instructor in the clinic and at the same time the closer association with faculty instructors can and does undermine the fine thread of difference that should exist between faculty and students in their relations.

In summary this analysis would indicate that the advantages of this teaching device outweigh the disadvantages. On this basis, therefore, this plan is worthy of use where its projection results in gains to the student body as well as the institution. The success of implementing such a scheme depends almost entirely on the enthusiasm of the directors of specific clinical teaching activities in which it is tried. The enumerated disadvantages will become strikingly evident if the experiment is forced upon senior teachers without their cooperation. On the other hand given an insight into the advantages and the necessity of meeting the need for more extensive coverage of clinical teaching the experiment has a potentiality for success.

The faculty members in charge of such an experiment can also benefit by cooperating with the student assistant. In teaching the senior student to teach they become more aware of discrepancies in their own teaching and are stimulated to be better teachers themselves.

We have a great need for educational experiments within the
dental curriculum and this is one which is easily motivated and placed into practice with results directly proportionate to the effort put into it.
Report of Committee on Human Relations*

The Committee on Human Relations met in the Central Office in St. Louis on Saturday and Sunday, March 2 and 3, 1957, with all members present.

The committee reviewed its stated objectives and agreed that for the present no additions or changes should be made. They read as follows:

1. To review our responsibilities to the public (the patient) and determine how we can best serve it.
2. To consider present day trends and seek ways and means to control them.

These objectives were further detailed in chartings as follows:

a. To recognize the need for a sympathetic understanding as well as skill in service.
b. To urge recognition of this dual responsibility upon student and practitioner.
c. To study and project ways and means to bring this about.
d. To point out possible results of poor human relationship.

The committee then directed its attention to the development of plans leading to the attainment of these objectives. Considerable time was spent debating the questions:

Are our objectives really attainable?
How shall we proceed to tackle the problems involved?

It was agreed that, while the task was a huge one, every effort should be made to attain our objectives and without delay.

It was also agreed that the best approach was through the education of the persons involved by stressing their obligation to the public.

The dental student was recognized as probably the most fertile area for this purpose, but stress was also placed on the need for carrying this effort to the practitioner.

It was also pointed out that the more restricted this effort (in number) the less effective it would be. Hence the broadest possible approach should be made plus the limited person to person contact.

It was stressed that only through a definite plan of procedure and planned follow-up would such a campaign be effective.

The committee was fully cognizant of the need for the proper

* Presented November 3, 1957 at Miami Beach, Florida.

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selection of the students who enter the dental school. The factors that motivate the person to become interested in a career in dentistry play an important and frequently decisive part in the approach that he makes to his patients and his practice.

The committee received with interest and approval the outline presented by the Secretary of the general plans that were being developed by the College at various levels of activity in an effort to support the objectives of the College and the dental profession by stressing the obligations of the members as well as suggesting approaches to the student problem.

The outline follows:

**A WORK CHART OUTLINING APPROACHES PLANNED IN SUPPORT OF THE HIGHER IDEALS IN DENTISTRY**

<table>
<thead>
<tr>
<th>The Level or Period of Approach</th>
<th>The Approach</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>High School</td>
<td>Assemblies for career planning. Opportunities in dentistry should be presented.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(pamphlet)</td>
<td>Committee on Recruitment</td>
</tr>
<tr>
<td></td>
<td>Studies on motivation. What is the high school student thinking about in planning his future?</td>
<td></td>
</tr>
<tr>
<td>College</td>
<td>Preparation for a career. Dentistry as a career. Material for all.</td>
<td>Committee on Recruitment</td>
</tr>
<tr>
<td></td>
<td>Pre-dental student organizations. Meetings addressed by dental faculty members; dentists.</td>
<td></td>
</tr>
<tr>
<td>Pre-Dental School Period</td>
<td>Aptitude testing; selection of students.</td>
<td>Council on Dental Edu. and Dental Faculty</td>
</tr>
<tr>
<td>Dental School</td>
<td>Dentistry as a health service. Traditions, obligations and expectancies. The ACD lectureship.</td>
<td>The Board of Regents</td>
</tr>
<tr>
<td></td>
<td>Instruction:</td>
<td>Dental Faculty</td>
</tr>
<tr>
<td></td>
<td>Preparation for Practice,</td>
<td>Committee on Journalism</td>
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<tr>
<td></td>
<td>Practice Management, Ethics,</td>
<td>Committee on Education</td>
</tr>
<tr>
<td></td>
<td>Public Health, Prevention, etc.</td>
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</tr>
<tr>
<td></td>
<td>Extra curricular activities: Dental writing and editing; Writing Award Comp.</td>
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<td></td>
<td>Teachers’ Training Fellowship</td>
<td></td>
</tr>
<tr>
<td>Entering Practice</td>
<td>Meeting State Board Requirements. Special attention to the ideals of dentistry stressed</td>
<td>State Dental Bds. and the Nat.</td>
</tr>
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</table>
at this level would have a favorable effect on the profession generally.

In Practice
Development of the Big Brother Idea. Letter to new graduates from Secretary extending congratulations and outlining "ideals" of the profession. Contact with graduate by Fellows of the College in or near his community. (Continuing contact.)

ACD Candidate
Indoctrination lecture at the time of induction outlining responsibilities

Selected Speaker

Committee on Conduct

The Committee on Human Relations is pleased to participate in this broad effort.

With the thought of contributing to these efforts effectively, the Committee asks the approval of the Board of Regents to the following plan:

1. The development of a brochure on human relations for distribution to graduates, Fellows of the College and making some available for broader distribution through American Dental Association.
2. The development of leaflets, or tracts, for broad distribution. These should be brief statements intended to incite interest and curiosity with an effective objective in mind.
3. The preparation and publishing in the ACD Journal some "broad" articles on human relations to provide reference articles for students.
4. Continuing the urging of more attention to human relations in practice by the teachers of this or related subjects.
5. Develop a plan of sending a congratulatory letter with brochure on human relations to graduates.
6. Develop the Big Brother Idea through the Sections of the College.
7. Suggest to the Sections that they plan one meeting during the next year for a discussion of human relations in practice.

The following resolution was passed:

A resolution to the Board of Regents supporting the broad plans for an orientation lecture to the new members on responsibilities in the American College of Dentists and the ACD Lecture Plan for dental students was adopted, the committee feeling that much good could come from these ventures, and that it offered an opportunity to carry forward a message on human relations to the dental students.

Harry S. Thomson, Chairman
Harold H. Hayes, Vice-Chairman
Percy G. Anderson
Forrest O. Meacham
Byron W. Bailey

Action by Board of Regents: Approval of recommendations, subject to budgetary considerations.
Report of the Committee on Preventive Service*

The Committee on Preventive Service has devoted its efforts this year primarily to the assemblage of data from research polls, coordination of material from projects already in operation, suggestion of certain methods in promoting prevention and control, establishment of objectives in an orderly sequence of priorities and finally, on the basis of these, planning for active participation in various affairs in the near future.

The Committee met in the Central Office in St. Louis on June 22 and 23. Despite the fact that two members were unavoidably prevented from attending, due to conflicts of commitments and to illness, an extremely valuable and informative session resulted. The Committee is highly appreciative of the splendid assistance of the Secretary in many ways, but especially in the form of guidance, knowledge of College affairs, and liaison with the activities of other committees.

Since the interests of the Committee on Preventive Service are many and varied, and its province overlaps every field of dentistry, the different areas of consideration will be dealt with as separate topics. While these may occasionally seem unrelated, it is believed that the Committee's statement of projects and recommendations will evince an integration of purpose.

Fluoridation

Since fluoridation is an example of the purest form of prevention, it is naturally a prime object of interest on the part of the Committee. The latest developments in this field may be summarized as follows:

1. The number of communities which have adopted fluoridation of their water supplies is still increasing. Many small towns also are displaying interest in such projects, but thus far have been deterred by expense. Public pressure, or the invention of more economical methods of effecting fluoridation would probably persuade quite a few of these areas to follow the lead of the larger cities.

2. There are, on the other hand, some communities which are discontinuing fluoridation.

* Presented November 3, 1957 at Miami Beach, Florida.
3. Numerous communities complain of difficulty in obtaining fluoridation supplies. This fact perhaps provides at least a partial explanation of these discontinuances.

4. Despite overwhelming scientific evidence of the great merits of fluoridation, plans for its installation are still being vigorously opposed in some sections. Since much of this reactionary thinking is based on misinformation, it seems evident that those resisting the benefits of fluoridation will ultimately be forced to concede that they are fighting a losing battle.

While endorsing and promoting recognition of the value of the fluoridation program, the Committee feels the responsibility to emphasize once more that fluoridation alone is not enough for a preventive program. The profession should also be alert to the necessity of stressing and applying many other measures of prevention and control which are available in the various areas of dentistry. This need for an all-inclusive preventive program could and should be advanced by publicity directed to the profession and within the profession.

**Pamphlet on Preventive Efforts in Dentistry**

The Committee is of the opinion that the time is ripe for the creation of a pamphlet or book outlining the various methods of control and prevention which are utilized in the different fields of dentistry. Many of these procedures have actually been integral parts of the daily routine of dental practice for so many years that they are taken for granted. Since the greater portion of the public is unaware of this, a collection of information of this type might prove to be important as the profession comes under public scrutiny during the Survey now in progress.

*The Committee recommends that this be done.*

**Responsibilities in Control and Preventive Programs**

The Committee, in considering the problems confronting the effective functioning of control and preventive programs, has attempted to outline and delegate responsibilities. Thus, they fall into the following categories:

1. Organizational Responsibilities
   a. Initiation of effort
   b. Promotion of effort
   c. Guidance of effort
   d. Evaluation of effort
2. The Dentist’s Responsibilities
COMMITTEE ON PREVENTIVE SERVICE

a. Chairside education relating to effort
b. The actual application of the measures in service rendered
c. Participation in the organizational effort

3. Responsibilities of Auxiliary Dental Personnel
   To augment the services of the dentist in functioning under his supervision.

4. The Patient’s Responsibility
   To cooperate with the dentist by following instructions.

5. The Parent’s Responsibilities
   Where parental supervision is in order, the parent has the responsibility of carrying out the instructions of the dentist and supervising the dental care program as outlined.

In order that control and preventive programs may function efficiently, each group must meet its own responsibility, but they are obviously so interrelated that cooperation with one another is essential.

WORKSHOP ON CONTROL AND PREVENTIVE MEASURES

The Committee feels that the establishment of a workshop on control and preventive measures would be most valuable, its purpose being to direct the attention of dental practitioners to the daily applications of these measures. In this way, modern dentistry would be displayed in its true light. The Committee suggests that such an endeavor, to be successful, should be made only in a few selected areas where dental schools and College Sections could cooperate in sponsorship and development of the program. General invitation should be extended to the profession in the areas involved.

TEACHING PREVENTION

It is the Committee’s belief that prevention could and should be more effectively and more widely taught. Consequently, it feels that dissemination of information as to the existence of an aid which may prove of value in this field is the distinct responsibility of this Committee. It recommends that reprints of Dr. Ruth Martin’s excellent article on “Teaching Prevention” be made available to the dental schools in the form of reprints, following initial publication in the Journal of Dental Education or the Journal of the American College of Dentists or both (Appendix I).

PUBLIC OPINION POLL

The National Opinion Research Center of the University of Chicago reports that it is proceeding with inquiries among dentists
and dental hygienists concerning practice in preventive methods in dentistry. The results of this study should be available late next year and it is believed that they will prove to be quite revealing.

**QUESTIONNAIRE ON PREVENTIVE SERVICE**

Summaries of the answers in response to the questionnaire on Preventive Service, which was mailed out in 1956, have lately been compiled and distributed to members of the Committee. The general topics covered are research in dental schools, geographic distribution of fluoridated communities throughout the country, and curricula of dental schools relative to instruction in prevention and public health dentistry. This material came too late for proper study and analysis by the Committee, but it will receive consideration and application next year.

**SUGGESTED EDITORIALS**

With the objective of focusing the attention of the profession on control and preventive efforts in dentistry, the Committee has compiled a list of suggestions for titles of editorials. The list is to be sent to the editors of non-proprietary publications, which comprise the American Association of Dental Editors, with the proposal that they be used as the basis of editorials. The list of suggestions is attached to this report as Appendix II.

**RESEARCH**

The Committee desires to declare its continued interest in research in the preventive aspects of dental practice. Although not set up to enter into research itself, the Committee is constantly seeking to acquaint itself with new developments and to encourage the investigation of various subjects, such as new methods of prevention and control, the life-time benefits of fluoridation and so on. A study is contemplated to ascertain a list of the research projects now under way in these areas.

**PRIORITIES**

While it is recognized that continuous planning is essential to the process of carrying various projects to fruition, the Committee has established the following priority list as a guide for its activities:

1. Publication and distribution of reprints of Dr. Martin’s article on “Teaching Prevention.”
2. Development of plans to popularize a program on control and prevention in dentistry. (Part of Workshop Plan)
3. Consideration of responsibilities in control and preventive programs. (Part of Workshop Plan)
5. Fluoridation—a continuing program.
6. Preparation of a pamphlet or book on preventive and control measures in dentistry.
8. Review of present research in control and prevention.
9. Review of research into the general effects of fluoridation.
10. Promotion of research into the life-time benefits of fluoridation.

RECOMMENDATIONS

The Committee wishes to make the following recommendations:

1. That a pamphlet or book on Control and Preventive Measures in Dentistry be published during the coming year.
2. That approval be given to the development of a workshop program in several selected areas.
3. That reprints of Dr. Martin's article on Teaching Prevention be authorized.
4. That Prevention in Dentistry be considered as the theme for the 1958 meeting of the American College of Dentists and that the program be built around it.

The continued interest of the members of the Committee on Preventive Service is manifest in its efforts. The Committee wishes to express its appreciation for the support accorded it by the Board of Regents in the pursuit and attainment of its objectives.

D. ROBERT SWINEHARDT, Chairman
DOROTHEA F. RADUSCH, Vice-Chairman
RUPERT H. GILLESPIE
ALVA S. APPLEBY
CARL J. STARK

Action by Board of Regents: General approval was given to the recommendations, subject to further detail and budgetary considerations.
Report of the Committee on Research*

The Committee on Research submits this progress report of the year 1956-57.

The Committee convened formally twice this year, once at St. Louis in January and again at Atlantic City in March. A broad review of the activities outlined for future projects was published in the ACD Reporter, Volume 1, Number 3.

Many of the objectives considered by the Committee over the past years came to a realization this year because some funds for research became available, but more funds will be needed.

Recruitment of adequate research personnel from recent graduates poses a problem: that of obligations for military service. Since demands for dentists in the armed services are not now so critical it is felt that some effort be directed towards the deferment of young men of promise in order to retain them in the field of research. It is suggested that we support the following resolution to Selective Service by the American Association of Dental Schools at their March meeting:

"The American Association of Dental Schools, in formal Session at Atlantic City, New Jersey, March 24-27, 1957, expressed deep concern about those situations which have an adverse effect on the recruitment and training of teachers for the dental schools. Currently, qualified dental teachers are in extremely short supply. They are needed not only to staff the existing dental schools and permit their proper expansion, but also to staff the several new dental schools which have recently admitted or are about to admit their freshman classes, thus enabling the dental schools to fulfill future civilian and military requirements.

"At the present time, dental school graduates have the possibility of being deferred from military service for training in certain of the dental specialties. The American Association of Dental Schools urges that similar provisions be established for dental teacher trainees. Since the present indications are that the military services will not require all of the yearly dental school graduates, the Association believes that the attainment of this deferment objective for dental teacher trainees is not only possible but logical."

Certain basic questions referable to problems in a research program were discussed chiefly:

1. Where to find research personnel.

* Presented November 3, 1957 at Miami Beach, Florida.
President Ellis of the American Association of Dental Schools was approached concerning the possibility of a section or workshop on research at the next annual meeting in Detroit.

There was some discussion over popularizing the value of and some results of dental research for the use of the general public. A list of such topics is attached to this report. (Appendix A)

In addition it was discussed that there are now many unexplored fields of necessary research and a suggested list of projects is appended. This may serve to stimulate the attention of individuals who are capable of conducting this type of work. (Appendix B) It is felt that this should be published.

Also discussed was the preparation of special articles concerning research problems, particularly in the nature of “Perspectives in Dental Research” by Dr. Lucien A. Bevatta, *JACD* 1957, pp. 124-127, a reprint of which is attached to this report. (Appendix C)

Only one application was received for aid from the William J. Gies Travel Fund. This was for $600 for travel abroad. Since there is no definite directive concerning travel abroad, this request was denied with the suggestion that an appeal of this decision could be made directly to the Board of Regents. All the correspondence relating thereto is in the hands of the Secretary, Dr. Brandhorst. It was felt that there should be established some restrictions both as to amount and distance. It is recommended that the Fund be continued.

RECOMMENDATIONS OF THE COMMITTEE ON RESEARCH

1. It is recommended that the American College of Dentists through the Board of Regents, support the resolution of the American Association of Dental Schools to Selective Service. This resolution reads as follows:

“The American Association of Dental Schools in formal Session at Atlantic City, New Jersey, March 24-27, 1957, expressed deep concern about those situations which have an adverse effect on the recruitment and training of teachers for the dental schools. Currently, qualified dental teachers are in extremely short supply. They are needed not only to staff the existing dental schools and permit their proper expansion, but also to staff the several new dental schools which have recently admitted or are about to admit their freshman classes, thus
enabling the dental schools to fulfill future civilian and military requirements. "At the present time, dental school graduates have the possibility of being deferred from military service for training in certain of the dental specialties. The American Association of Dental Schools urges that similar provisions be established for dental teacher trainees. Since the present indications are that the military services will not require all of the yearly dental school graduates, the Association believes that the attainment of this deferment objective for dental teacher trainees is not only possible but logical."

2. It is recommended that special articles on dental subjects be prepared and published to popularize the advances in dentistry to stimulate greater interest with the public and the profession.

3. It is recommended that the list of possible research projects be published and thus made available in dental literature.

4. Since the amount of money available in the Wm. J. Gies Travel Fund, for Research workers is rather limited, it is recommended that a ceiling be placed on the amount available to a single recipient annually. It is recommended that the 1958 budget provide the amount of $1,000 in the Travel Fund.

5. It is recommended that $1,000 be provided in the 1958 budget for the Emergency Research Fund.

6. It is recommended that the holding of a yearly committee meeting be continued.

APPENDIX A

The following topics were suggested for short stories for public consumption, that would point out the changes over the years brought about through investigations in these fields. Such stories properly prepared might popularize dental research in the estimation of the public and the profession.

*Topics Suggested*

- The Fluorine Story After Ten Years
- National Bureau of Standards and What They Are Doing in the Way of New Materials
- A Story on the Evolution of Teeth and What the Human Dentition Is
- A Story on Orthodontics
- Dentistry for Children
- Modern Methods, Modern Technics, Space Maintainers, Temporary Partial Dentures
- A Study of Full Denture Prosthesis Beginning with George Washington's Teeth and a Gradual Evolution to the Modern Plastics
- Porcelain Jacket Crowns, Veneer Crowns, Full Plastic Crowns
- The Cleft Palate Study
Appendix B

Suggestions of areas for research in dental problems. Statement prepared by the Committee on Research of the American College of Dentists.

Dental diseases in their broad aspect are among the most prevalent maladies affecting mankind at the present time. In spite of this fact the pathogenesis of neither dental caries nor periodontal disease is fully understood. True prevention of either type of dental disease is still not practical and the significance of dental disease to general health cannot be accurately assessed for want of an efficient yardstick.

These simple facts present tremendous problems to our profession. The solutions to them can only come from continued research.

The experienced research worker is aware of these problems and needs no help in selecting projects for investigation. In the pursuit of one problem other related questions will invariably arise. His skill as a researcher will help him select the projects for which his own ability as well as the available research facilities are best suited.

The inexperienced researcher on the other hand may have difficulty in selecting his first projects. Frequently he is handicapped by a lack of appreciation of the many problems confronting our profession, as well as inexperience at making the most efficient use of the facilities that are available to him.

The Research Committee of the American College of Dentists wishes to be of assistance to those individuals who are trying to select suitable research projects and also to the University personnel charged with the responsibilities of guiding the young men in their research activities.

Accordingly the committee has prepared the following reference list of topics and projects which are considered to be worthy of investigation. The Committee hopes that the wide range of topics will stimulate individuals to undertake projects that had not previously been brought to their attention—and that those individuals who are seeking suitable projects will find suggestions that appeal to them and which can be readily adapted to their individual establishments.

It is, of course, impossible to make such a list all inclusive. The headings in most instances are non-specific. The main purpose is to suggest fields of investigation that are of value of dental progress.
and which may be starting points of interest and expansion in dental research activities all across the country.

_Suggested Research Projects:_

1. Rate of set and resultant properties of amalgam under clinical conditions.
2. Study of the effect and cause of the tarnish of amalgam under clinical conditions.
3. Study the resultant properties of amalgam and gold when in contact in clinical use.
4. Development of new alloys for restorations—such as gallium.
   a. Physical properties  
   b. Chemical properties
5. Determine equilibrium diagrams of metals and alloys used in dentistry.
   a. Ag-Sn  
   b. Cu-Sn  
   c. Pt-Cu, etc.
6. A comprehensive study of the physical properties of amalgam and their effect upon the biological requirements.
7. A clinical study of the effect of early strength of amalgam upon its effective oral life.
8. A thorough investigation of cavity preparations considering the physical properties of the filling materials.
   a. Biological requirements  
   b. Physical properties
9. A constant evaluation of new filling materials offered to the profession based on clinical studies as to:
   a. Biological effect  
   b. Physical properties  
   c. Chemical properties
10. Effective clinical life of restorative and auxiliary materials under a variety of storage conditions.
    a. Arctic  
    b. Tropical  
    c. Hot-dry  
    d. Temperate
    a. Amalgam alloy  
    b. Mercury  
    c. Base metal alloys  
    d. Precious metal alloys  
    e. Metallic compound cements, etc.
12. Effect of atomic radiation on the health of the oral area.
13. The early detection in the oral cavity of atomic radiation as a guide to dosimetry of sublethal exposure.
    a. Gingivae  
    b. Salivary glands  
    c. Tongue  
    d. Mucous membrane  
    e. Tooth pulp, etc.
    a. Discoloration vs. effectiveness and side reactions
15. A study and possible development of cavity liners impervious to methyl-methacrylate monomer and/or acids of cements.
    a. Rate of diffusion of liner vs. time of set
16. A thorough investigation of current and new plastics adapted to dental requirements.
   a. Ion exchange
   b. Polyesters
   c. Polyurethanes
   d. Copolymerization
   e. Fillers
   f. Cross-linking

17. Further development of promising plastics in relation to adhesion to enamel and dentin.

18. Compatibility of “tailor-made” plastics to calcification (Mucopolysaccharides).

19. A reduction of physical and chemical properties of plastics not compatible with oral requirements.
   a. Polymerization shrinkage
   b. Coefficient of thermal expansion
   c. Exothermic heat of polymerization
   d. Discoloration due to exudation of amines in ultra violet light
      1. Invisible spectrum
      2. Ultra short wave violet
      3. Ultra long wave violet
   e. Effect of other rays of spectrum on discoloration

20. A thorough evaluation of the effect of various materials on the pulp.

21. An investigation of “pulp healers” for use under inert or irritating materials.

22. Under what clinical conditions are pulps injured?
   a. Irreversible injury
   b. Reversible injury
   c. Heat of preparation
   d. Chemical irritation
   e. Infection

23. A comprehensive histological and chemical study of tooth material vs. ingested fluoride containing water.

24. Same study in relation to physical properties, such as:
   a. Hardness
   b. Strength
   c. Permeability, etc.

25. Similar comparative studies on teeth treated topically with fluorides.

26. Similar studies with various compounds of fluorides.

27. Continued fundamental work on the mechanism of calcification.

28. Adaptation of tracers to study calcification.

29. Tracer studies on interchange of elements in enamel and dentin.

30. Tracer studies on trace elements in enamel and dentin.

31. Tracer studies on bacterial requirements relative to plaques, etc.

32. Use of tracers to study bacterial physiology:
   a. Growth and development
   b. Dietary requirements
   c. Respiration, etc.

33. Tracer studies in relation to elements in dental material alloys:
   a. Setting mechanism
   b. Grain structure
   c. Crystallization
   d. Interfacial planes, etc.

34. Restorative materials vs. tissue tolerance.

35. Histological and pathological study of bone resorption under prosthetic appliances.
   a. Hard resins  b. New soft resins
37. Effect of occlusal patterns of artificial teeth relative to bone tolerance and/or resorption.
   a. Flat plane  c. Inverted, etc.
   b. 20° plane
38. Effect of injection vs. compression molding of complete denture on accuracy of fit.
39. Wear tests to evaluate differences in artificial teeth which can be correlated with clinical service.
   a. Plastic teeth  c. Vacuum fired porcelain
   b. Porcelain teeth  d. Natural teeth
40. Based on results of wear tests, development of plastic fillers to improve wearability of artificial teeth.
   a. Cross-linked resin  c. Mixed polymers
   b. Copolymerization  d. Fillers
41. Improve autopolymerizing resins for use as denture base material.
   a. Residual monomer  c. Transverse strength
   b. Working time
42. Clinical effect of imbibition or water sorption on dimensional change of autopolymerizing resins, heat cured resins for both denture base and restorative materials.
43. Development of wax for pattern or substitute materials (resins) with low coefficient of thermal expansion, low warpage, high adaptation.
44. Clinical evaluation of hygroscopic expansion technics vs. thermal expansion technics for casting all types of gold alloys.
45. Clinical and laboratory evaluation of the rubber containing impression materials.
46. Development of reversible and/or irreversible impression materials made from inert synthetic substances. To eliminate occurring materials in present impression materials such as agar, kelp, etc. Thus providing quality control for the manufacturer.
47. Laboratory study on the accuracy of reproduction of impression materials:
   a. Compounds  c. Agars
   b. Alginates  d. Rubber base materials
48. Comprehensive study of temporo-mandibular joint physiology:
   a. Normal
   b. Abnormal
   c. In relation to occlusion
   d. In relation to malocclusion
   e. In relation to artificial dentures; their centric relation; eccentric functional relation; and free way space
49. Development of adequate tinfoil substitutes for resin polymerization.
50. Development of mold material for polymerization of resins that do not contain molecules of water of crystallization.
51. Evaluation of cutting methods on teeth:
   a. Rotating instruments
      1. High speeds  8. Subsequent recurrent caries
      2. Ultra high speeds  9. Pulpal vitality
      4. Burs, carbide  11. Air turbines
      5. Diamonds  12. Mechanical maintenance
       15. New bur design—"a must"
   b. Magnetostrictive devices:
      1. Current 29,000 frequencies per second
      2. Biological effect on enamel, dentin, peridental membrane, pulp, cortical bone
      3. Variable frequencies under and above 29,000 frequencies per second
      4. Same as 2 for each frequency
      5. Cutting efficiency in cavity preparation

52. Chemical, histochemical studies of calcareous deposits.
   a. Supragingival  
   b. Subgingival

53. Salivary studies in reference to No. 52.

54. Salivary studies in relation to chemistry, bacteriology and pathology of decalcification and the carious process.

55. Dental plaques—comprehensive.

56. An electronic device based on theory of electroencephalograph for determination of the condition of the dental pulp.

57. An electronic device for the early detection of decalcification before it becomes clinically evident, can be based on dielectric potentials of tooth areas.

58. Clinical study of the gingival and peridental fibers in orthodontic tooth movement.

59. Same as No. 58 in subgingival scaling.

60. Study, clinically, systemic causes of bone resorption in the edentulous and dentulous mouths.

61. Electrophysiological studies correlated histologically of fifth nerve conduction.

MYRON S. AISENBERG, Chairman
WILLIAM G. MCINTOSH, Vice-Chairman
MAYNARD K. HINE
THEODORE E. FISHER
HOLMES T. KNIGHTON

Action of Board of Regents: Recommendations 1, 2, 3, 5 and 6 were approved; with regard to recommendation 4, it was agreed that each application should be considered on its merits without the suggested restrictions.
Book Reviews


Those who know Dr. Shaw recognize this book as a beautifully filtered and refined presentation of many years of thought, training, and experience in both dentistry and psychology. It is not a large book, since what it has to say is accomplished with brevity. But it is a brevity which belongs to the scholar who has mastered the technic of teaching his subject in the most practical manner. Ethical hypnosis is such a valuable dental ally, that it is a little surprising to find resistance to its use. Perhaps all that is required is an increased understanding of hypnosis and how it is brought about. This book uniquely extends this information with suitable dignity.

The qualifications of a dentist to study the use of hypnosis do not include or demand special skills other than an understanding of human dynamics and the expression of kindness and intelligence.

The successful technics to induce hypnosis for dental purposes are presented with such order and clarity that the reader may recognize and utilize various stages of hypnosis from simple suggestion to deep trance as workable capabilities of the mind . . . completely divested of the theatrical taint.

Dr. Shaw covers the dangers of hypnosis as well as the benefits. He also works within the framework for understanding the individual as a total person with many needs and influences guiding his actions.

A most valuable use of this book will be as a supplement to the teacher of hypnodontics. It is also fine preparation for such intended courses and an excellent auxiliary to enhance the patient-dentist relationship through suggestion.

MARVIN DAVIS


This book represents part of a total work sponsored by the Pediatric Clinics of North America. Though a comparatively small book, it is a qualitative giant in information that is critically presented on current attitudes in prevention and care of children with handicaps. It could easily be adapted into an organizational handbook for any group that would wish to devote its efforts toward the handicapped child. The more significant purpose permits those who care for children to relate and combine their efforts since the total care of any child with a handicap has outgrown the ability of any individual to meet them successfully.

The broadest possible definition of a handicapped child is used: “A child is considered to be handicapped if he cannot within limits play, learn, work, or do the things other children of his age can do; if he is hindered in achieving his full physical, mental, and social potentialities.”

The symposium is presented in four sections. The first deals with the prevention; the second with care; the third with education and therapy; and the fourth with the community and the handicapped child.

To comprehend the enormity of the problems, a study* is utilized to dramatically indicate prevalence:

“—the numbers of children per 1000 under 21 having each of the following type of defect may be estimated as follows: cosmetic, 43; mental retardation, 40;
personality disturbance, 29; speech, 29; eye and vision, 24; hearing, 19; ortho-
pedia, 17; orthodontic, 16; cardiac, 10; cerebral palsy, 5; epilepsy, 4; cleft palate
and lip, 1. Because of the multiplicity of defects in at least two thirds of this
group, this results in a total of 237 defects per 1000 children, a truly astounding
figure."

The edited clinics presented in this book are most respectfully reviewed as
works of merit and value to medicine and ancillary fields.

MARVIN DAVIS

Travis, L. E., ed. Handbook of Speech Pathology. New York, Appleton-Century-
Crofts, c 1957. viii + 1088 p.

This is a major text on speech and although it is a basic work intended to
be used in conjunction with formal education and the facilities of seminar and
clinic, it is a very welcome reference book for those who are in allied fields.
The book comes to dentistry's direct attention by reason of chapter 19, patho-
morphology of cleft palate and cleft lip; chapter 20, speech problems of the per-
son with cleft palate and cleft lip; and chapter 21, speech defects associated
with dental abnormalities and malocclusions. But those who have studied speech
problems will know that the understanding of speech pathology involves the
total individual and his environment. How magnificent then to find this book
which calls upon the learnedness of many recognized clinicians, scholars, and
teachers of speech pathology, each contributing a chapter of their own specialty.
The complete amount of information is thereby prodigious.

The work is an excellent introduction to many facets of speech; definitions,
mechanics, etiologies, diagnoses, measurements, evaluation, care, and philosophy.

The major portion of the book is devoted to basis consideration in speech
pathology and speech and voice disorders associated with organic abnormalities.
The last third of the book is devoted to speech and voice disorders unrelated
to organic abnormalities, and psychotherapy and speech therapy. Although
there may be little immediate dental relationship, these latter areas of discus-
sion are simply fascinating in their remarkable insight and contribute immensely
to the reader's knowledge of human dynamics. Dentistry has evolved closer to
the need for understanding the individual beyond the implication of the oral
problems alone and since the incidence of speech defects appears to lie some-
where between 4 to 5 per cent of our population, some knowledge of speech
problems increases the value of the dentist to his community.

This book is so vitally interesting that it cannot help but engender further
study. Dental libraries will considerably add to their reference fund with this
addition.

MARVIN DAVIS

Schwarz, Prof. Dr. A. Martin. Lehrgang der Gebissregelung, Part 2—The Treat-
ment, second edition, 1956. Urban & Schwarzenberg, Vienna-Innsbruck, 663
figures, 887 pages (printed in German).

This comprehensive textbook fills a need because of its excellent discussion of
orthodontic treatment with removable appliances. Yet Schwarz spans the full

* Wishik, S. M. Handicapped children in Georgia: a study of prevalence, disability,
range of therapeutic methods by devoting a 100 page section of the book to fixed appliances with special emphasis on the lingual and high labial arches as well as the twin wire arch. The discussion of the edgewise arch mechanism is brief probably because it is hardly used in Europe.

The reader will find a chapter on tissue changes during treatment and following extraction, as well as changes in the temporomandibular joint associated with orthodontics. The last chapters are devoted to treatment planning, extraction therapy, relapse, opening of the median palatine suture, and cephalometric radiography.

As mentioned, the construction and use of removable plates, notably the author's own modifications, are described in great detail. The discussion of the activator or monobloc is second to none in this reviewer's opinion. It may be recalled that the activator is essentially a bite block, made of acrylic, not attached to the teeth. The wearing of the activator at night results eventually in a more favorable relationship between the dental arches and an improvement in the alignment of the teeth.

This book is produced in bound form and also in a loose leaf binder to permit inexpensive revisions or additions to the text.

Together with part 1 dealing with diagnosis (1951—first ed.), the present volume expounds the concepts of one of Europe's foremost orthodontists.

Coenraad F. A. Moorrees

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**CALENDAR OF MEETINGS**

**CONVOCATIONS**

September 13, 1959, New York, N. Y.

October 16, 1960, Los Angeles, Calif.
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