

The **JOURNAL**  
of the  
**AMERICAN COLLEGE**  
of **DENTISTS**

The Dental Examiner and  
Our Changing Society

Future Need for Dentists

History of Dentistry

National Boards and  
Academic Achievement

APRIL 1974



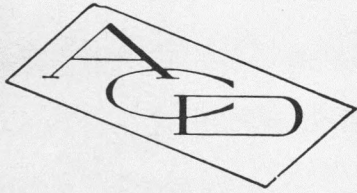
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# NEWS AND COMMENT

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## BOARD ACTIONS AT MARCH MEETING

The Board of Regents, meeting in Bethesda, Maryland on March 29 and 30, took the following actions:

- Adopted a budget for 1974-75.
- Accepted the report of the Executive Director indicating overwhelming approval of the new bylaws by the mail ballot taken of the membership of the College.
- Approved a feasibility study of a Mini-Self Assessment program for the Greater New York meeting.
- Approved a report of the Financial Advisory Committee to streamline the financial operation, investment policy and fiscal responsibility of the College.
- Adopted as Board policy the recommendations of the Publications Advisory Committee guidelines for College publications and editorial staff.
- Requested the Publications Advisory Committee to study the feasibility of a conference on the present status of dental journalism.
- Adopted a report of the Committee on Conduct and approved a motion to publicize the Guidelines on Conduct in College publications and consider a mechanism for enforcement procedures.
- Approved a contribution of \$500 to Section R (Dentistry) of the American Association for the Advancement of Science for program support of that Section only.
- Accepted the report of the Memorial Book Committee and approved a revised procedure for placing books in libraries of dental schools of deceased Fellows.
- Approved a motion to establish a planning committee to restructure the Orientation program of the College.
- Accepted the report of the Self Assessment and Continuing Education program committee, and urged Fellows to continue their efforts to promote the program.
- Rejected a recommendation for a dues increase. (The last increase in A.C.D. dues was in 1965.)

## SECTION NEWS

### Illinois Section

The Illinois Section met on February 10 at a luncheon at the Conrad Hilton Hotel during the annual meeting of the Chicago Dental Society. Section chairman William Vopata presided, and greetings were extended by Louis Holtzman, president-elect of the Chicago Dental Society and Robert Griffith, president of the Illinois Dental Association.

The Illinois Section awards for "outstanding academic achievement, human relations, and the ability to get along with others," were won by students Ronald Cannizaro, Dennis J. Lazzaro and Joel P. Schilling, of the three Chicago dental schools.

The featured speaker was Fellow Carlton H. Williams, president of the American Dental Association, who talked about the interest of government in the dental profession, and discussed the New Zealand dental nurse program and its implications for the United States.

### New York Section

The New York Section held its annual dinner in November, at the New York Hilton Hotel in conjunction with the Greater New York Dental Meeting. One hundred and twenty-eight fellows and their guests attended a reception followed by dinner. Andrew Linz, Chairman, introduced the dais and honored guests. These included Regent and Mrs. Walter Mosmann, Dr. & Mrs. Harold Gelb; Dr. & Mrs. Michael Turoff; Dr. Lester Eisner, past chairman; Dr. Charles Hillyer; Mrs. Andrew Linz; Dr. and Mr. Carlton H. Williams; Dr. & Mrs. Abraham Kobren; Dr. & Mrs. John Faust; Dr. & Mrs. Edward Mimack; Dr. & Mrs. Lyndon Kennedy; Dr. & Mrs. Lawrence Kerr; Dr. W. Brown Ingersoll; Dean Harry Blechman; and Dr. Nicholas DeSalvo. New Fellows of the College, Drs. L. Marino, F. Hopf, M. Schlein, F. Romberg, L. Quitt, and Isabel Whitehill-Grayson, were introduced.

Andrew Linz presented the annual award and certificate to Mr. Robert Goldman, Senior student from Columbia, and to Mr. Roger Galburt, Senior student from Brookdale Dental Center of New York University.

The speaker, Mr. John Malone, Director of the New York Bureau of the FBI, gave an excellent talk about the FBI today.



## SECTION NEWS

### Regent Walter Mosmann Addresses Canadian Fellows

Travelling to Montreal in February, Regent Walter Mosmann met with a group of Canadian Fellows and discussed New Horizons of the American College of Dentists. An interesting discussion followed, in which the development of one or more Canadian Sections was explored. Interest was also expressed in the College's Self Assessment and Continuing Education program. Dr. Mosmann's visit has done much to enhance the good feeling that has traditionally existed between United States and Canadian Fellows.

### Tri-State Section

"Professionalism in Today's World" was the topic of a meeting on March 1 in Memphis, Tennessee sponsored by the Tri-State Section of the American College of Dentists. All students, faculty and alumni of the University of Tennessee College of Dentistry and the members of the Tri-State Section were invited to attend. The participants were Richard A. Batey, B.A., Ph.D., Professor of Bible and Religion at Southwestern at Memphis, and Robert J. Nelsen, D.D.S., Executive Director of the American College of Dentists. In the evening, a gourmet dinner, supervised by Regent Richard Reynolds was attended by 92 Fellows of the Tri-State Section and their wives. The informal evening was just that — no head table, no formal introductions — a unique occasion enjoyed by all including Dr. & Mrs. Winfield Dunn. Dr. Dunn, a Fellow of the College, is Governor of Tennessee.

New Section officers are:

Chairman: Jim F. Blakemore, Jr., Fort Smith, Arkansas  
Chairman-elect: Marshall M. Fortenberry, Jackson, Mississippi  
Secretary-Treasurer: Richard J. Reynolds, Memphis, Tenn.  
Vice-Chairman, Arkansas: Joseph P. Chancey, Jr., Fort Smith, Ark.  
Vice-Chairman, Mississippi: Kirby P. Walker, Jackson, Miss.  
Vice-Chairman, Tennessee: John R. Nelson, Jackson, Tenn.

### New England Section

The annual Mid-Winter Meeting of the New England Section of the College was held at the Statler Hilton hotel in Boston, on January 14, 1974. As has become customary, this was a breakfast meeting.

Three of our newly-elected members were present and welcomed by Chairman H. Martin Deranian.

After routine business, two of our members, Charles E. Zumbrunnen of Concord, New Hampshire and James M. Dunning of Cambridge, Massachusetts, gave reports on their respective trips to New Zealand. Both spoke about the country, and in particular about the School Dental Nurse Program. In addition, Dr. Dunning talked about his observations of Australia, where a similar program is under way. He also showed some very fine slides which he had made during his trip to both countries. Each speaker answered questions following his formal presentation. Both commented also on the reports of the California group which had visited New Zealand and whose summary appeared in a recent A.D.A. Journal. It was a most informative and enjoyable meeting.

### NEWS OF FELLOWS

The immediate past president of the ADA, Fellow Louis A. Saporito, has been appointed by the American Fund for Dental Health to be national chairman of the Fund's first personal solicitation campaign for the dental profession.

Serving with Dr. Saporito in the personal solicitation drive will be vice-chairmen Marvin C. Goldstein of Atlanta and Martin Naimark of Southfield, Mich.

Elected president of the American Fund for Dental Health, was Donald J. Galagan, dean of the University of Iowa College of Dentistry, who succeeds Alvin L. Morris, vice-president for administration at the University of Kentucky.

Arthur W. Kellner of Hollywood, Florida, was honored recently by the Greater Hollywood Chamber of Commerce who presented him with its Community Service Award. Dr. Kellner, a former commissioner and mayor of Hollywood was cited for "his pre-eminence in his profession, his selfless community dedication and his countless contributions to his city".

*(Continued on Page 143)*



# the JOURNAL of the AMERICAN COLLEGE of DENTISTS

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A QUARTERLY PRESENTING IDEAS IN DENTISTRY

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HENRY J. HEIM  
*Treasurer 1973-74*

## The Treasurer of the College

Newly-elected to the post of Treasurer of the American College of Dentists is Henry J. Heim, an orthodontist of Washington, D.C. A native of Hempstead, New York, he spent two years in the U.S. Navy during World War II. Afterward he entered Holy Cross, where he graduated cum laude with a B.S. degree, followed by dental studies at Georgetown University. He graduated in 1954, again cum laude, and went on to Tufts University where he studied orthodontics on a U.S. Public Health Service Postdoctoral Research Fellowship.

Joining the orthodontic teaching staff at Georgetown, as an assistant professor, Doctor Heim taught full-time for three years, reducing this commitment to a part-time basis upon entering private practice. He initiated the first orthodontic technic course at Georgetown, and has been a visiting lecturer at Tufts and Howard Universities. He is a member of the American Association of Orthodontists, the Middle Atlantic Society of Orthodontists, and is a co-founder and presently secretary-treasurer of the Greater Washington Orthodontic Study Club.

He has held many committee appointments and chairmanships in the District of Columbia Dental Society and was general chairman of the Spring Postgraduate Meeting in 1969. Going through the various offices, he served with distinction as president in 1971. Doctor Heim has been active in the Georgetown Alumni Association, serving on its Board of Governors and as national chairman of its Annual Fund Campaign. He presently is a member of the Alumni Senate, The Dean's Advisory Council of the Georgetown Dental School, and was the first dentist named to the Board of Regents of Georgetown University.



His alma mater and its alumni have honored him with a number of awards, including the John P. Burke Memorial Award for Excellence in restorative dentistry, and the prestigious John Carroll Award, the Alumni Achievement Award of the Georgetown Club of Metropolitan Washington, and the Georgetown Dental Alumni Distinguished Service Award. He is also a member of Omicron Kappa Upsilon Honorary Dental Society.

Currently Doctor Heim serves on the membership committee of the Middle Atlantic Society of Orthodontists, trustee of the Balanced Retirement Plan of the District of Columbia Dental Society and president of the District of Columbia Dental Society Research and Educational Foundation. He has been active in drug abuse education at St. Bartholomew and Holy Child schools, and in fund raising for Holy Cross College and Georgetown University. He was a member of the Board of Governors of St. Luke's Guild for Physicians and Dentists, and founder of the dental care program of River Road Day Care Center.

Doctor Heim is married to the former Eileen Rickert, and they are parents of five children, four girls and one boy.

As Treasurer of the College, considerable responsibility for its financial management falls upon his shoulders. The College is confident that the acumen and ability he has displayed in the affairs of other organizations will stand him in good stead as he assumes his new duties. His predecessor, Fritz Pierson, served the College well for more than ten years, and we look forward to another period of useful service from this pleasant, amiable and highly capable colleague. Best wishes, Hank.

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**MAY IS A. F. D. H. MONTH**

**STEP UP AND BE COUNTED**

# Can Quality Dental Education Survive?

Dental schools today face some rather complex problems. The ever-rising cost of dental education, the inflated expense of operating a school, the uncertainties involved in federal funding, the need to increase already high tuition fees, and the difficulties in maintaining a level of quality which meets the accreditation standards of the American Dental Association Council on Dental Education have created immense problems for a number of schools. Most of these difficulties are related to the need for financial support.

Private schools are the ones which feel the pinch the most. Not many have large endowments, and funds from the private sector are not flowing in abundance. The federal government therefore has come to play a larger part as a source of support. Many schools have felt constrained to accede to the federal demand for increased enrollment as a qualification for added funding, in compliance with the Health Professions Education Systems Act, and are now close to overcrowding. Others have gone to a three-calendar-year curriculum, thereby qualifying for federal capitation grants at more frequent intervals.

Students are burdened not only with increased tuition rates, but those in the three-year schools have lost the opportunity to earn tuition and expense money through summer employment. Scholarship and tuition aid requests increase as the cost of studying dentistry escalates.

Physical facilities in need of renovation or replacement have been neglected. Some schools have been rudely shaken by their loss of full accreditation and their relegation to provisional or conditional status until deficiencies are corrected.

Faculty salaries have not kept up with living costs, and many full and part time teachers are badly underpaid. When one compares their incomes to the rewards of private practice, one can readily understand why it is difficult to attract men into teaching. It takes a person of unusual dedication to want to enter academic life today.

In the face of these problems, can we expect that quality dental education can be given students in the foreseeable future? The answer is — not likely, if present conditions persist.

What must the profession do to correct the most obvious deficiencies? A number of suggestions come to mind. First of all, the individual dentist must assume a greater share of the responsibility for better dental education. He should be willing to contribute generously to his alma mater's Alumni Fund, to the American Fund for Dental Health, and to any other private agency that is trying to upgrade the quality of dental education. Philanthropic Foundation support needs to be solicited to a greater degree than at present. State legislatures must accept greater responsibility for the support of state-affiliated dental schools, and some means must be found to alleviate the pressures that accompany federal funding.

The trend toward larger classes and condensed calendar time for educating students needs re-examination. The manpower shortage, if it exists in dentistry, will not be solved by producing larger numbers of less-well-educated practitioners.

The needs of students require greater consideration. Dental students are no different from any others. They need time to mature, to digest their teaching. Not all students are able to acquire knowledge at the same speed. They need to be permitted to learn at an individual pace, rather than in the lock-step curricula and pressure-cooker atmosphere of some schools. The excuse for the shortened programs has been given that "it worked fine during World War II." True, but there was a national emergency then, and a greater need for dentists in the armed services than there is today.

It is well and good for dental schools to offer students a thorough scientific education, but are we teaching them the insights necessary to make professional value judgements? What good will it do in the long run to turn out hordes of skilled technicians without the necessary moral and ethical equipment to put their learning to proper use?

Faculty salaries need to be increased, in order to attract the best possible people into the academic world and to make teaching the honorable calling that it once was.

If the maintenance of quality in dental education is important to the profession, it will have to face up to these challenges. We do not need more schools, larger classes, condensed curricula and pressurized programs. We need better schools, not bigger; smaller classes, and time for students to absorb not only the technical aspects of dental science but some understanding of the concepts of true professionalism.

R.I.K.



# The Dental Examiner and Our Changing Society\*

KENNETH V. RANDOLPH, D.D.S.\*\*

It is indeed an honor to have been invited to speak to you at the annual meeting of the American Association Dental Examiners. Your organization has made many great contributions to the profession of dentistry and in my judgment the importance of continued involvement has never been greater than now. As a dental school dean, I am fully aware of the reported differences between educators and examiners, but I will admit my personal inability to subscribe to many of these differences. I believe in the concept of a State Board of Dental Examiners, but perhaps there is justification for identifying the group with a more appropriate title. I further believe the purposes, objectives, methodology and evaluation processes of State Boards as well as Dental Schools should be reviewed continuously. Our common objective of better dental health for the public can be accomplished best when educators and examiners lay aside differences and work in unity. We need to listen to each other in the interest of those we serve.

Comments on the traditional role of the dental examiner will help set the stage for a discussion on how this role might be affected by a changing society. Above all, the examiner is responsible for providing reasonable assurance to the laymen in his jurisdiction that quality dental care is available. To accomplish this end, he examines candidates for competency; he promotes rules, regulations and laws that

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\*Presented at the annual meeting of the American Association of Dental Examiners, San Francisco, California, October 26, 1972.

\*\* Dean, Baylor College of Dentistry, Dallas, Texas.

will uphold the highest ideals of service; he counsels, arbitrates and prosecutes in cases of violation; he is truly a servant to his colleagues and to the public at large. For the purpose of considering the effect of a changing society, it will be assumed that the role of the dental examiner will remain the same.

Self-studies to determine how society can best be served is an obligation of all segments of the dental profession. Such studies should be made with open minds, and with high respect for those who are knowledgeable and progressive and who have demonstrated good wisdom and good judgment. Consultants from the laity, intraprofessional groups and other health sciences will provide a good cross-section of opinion with maximum benefits. Your organization and its individual members have always seemed amenable to such studies. The changes requiring study are legion and they are occurring at a rapid pace. They are evident both in the profession and in society at large and are so inter-related that independent consideration is not feasible.

The demand for dental care has attracted much attention over the years. Although the profession strives for maximum individual health, it is unlikely that this goal will ever be reached. Public awareness has been improved and this contributes to an ever increasing demand for service. Modern methods have made dental treatment less time consuming and have virtually eliminated discomfort. The stigma of pain and long, tedious appointments still exist, but much has been accomplished to overcome unpleasantness.

The factor of affluence cannot be overlooked in the present and projected desire for comprehensive dental care. Statistics show a direct correlation between the pursuit of dental care and the income level. There are more who can afford treatment and therefore more who are seeking it. The economy factor also directly affects the continued interest in national dental health programs. Dental care is no longer restricted to the extremes of pain alleviation and luxury treatment, but it is gradually being considered a right for all the people. If the momentum continues, a professional disaster could evolve and nothing would be more embarrassing or damaging to dentistry than to face an elevation in demand that could not be met. Additional professionals and improved methods of delivery continue to be a high priority for action.

For many years dental leaders have been concerned about the population increase in relation to the increase of oral health personnel. The ratio has been unfavorable, statistically, and there is no indication of significant improvement in the near future. To be sure,

changes in our social systems, family planning programs, etc. have affected population growth. Concurrently, however, advancements in scientific knowledge and in treatment methodology have increased longevity. To dentistry, this means not only do we expect a longer period of service from the natural dentition, but we are obligated to see that it occurs. All over this nation there are conflicting opinions about the need for more dentists. Many surveys have been conducted and the weight of evidence supports that need. The dental educator, dental examiner and dental practitioner, all have a great deal at stake and must take appropriate steps to assure that the profession can meet its responsibilities.

Modern society has been blessed with all types of conveniences and advantages. The availability of comfortable and rapid transportation methods are not least among these. Properly motivated patients are willing to travel long distances for dental care, and unfortunately, dentists actually expect them to do so. Practice in a small community has become less and less appealing due to the lack of educational, cultural and social opportunities. Why should the dentist sacrifice these special opportunities and conveniences when patients who really want dental care can travel great distances — perhaps even to Europe as reported in some news media. Perhaps this type of logic can be rationalized, but can it be justified. There are people who do not have the interest or the means to travel great distances for treatment and these people must be served. The geographic distribution of practitioners is probably the greatest problem facing the profession today. We have failed to treat it with much more than lip service.

#### GOVERNMENT INTERVENTION

Much has been said against government intervention, but a cooperative program between the Federal Government and dentists at the state level might well be the best solution. Perhaps two years of compulsory assignment to areas identified with need could replace the old two-year military obligation. If necessary, income could be subsidized to a minimum level for the assigned period. Perhaps after two years, the dentist would be so much involved in the community that he would choose to remain in the same area. No group within the profession should be more concerned and more influential in solving the geographic distribution problem than the examiners.

Various types of health insurance programs have been conceived, planned, refined, analyzed and debated. Some have been delayed,



others defeated and some have been approved. Some form of a national program undoubtedly will become operational within the next few years. Whatever the form may be, a new impact on dental health services is a surety. More people will feel entitled to service, will want it rapidly and according to their terms. They will be concerned not only with the availability, but also about methods of management and possibly about methods of delivery. Although we as professionals in the health field do not like the idea of referring to our patients as consumers, those who receive the service have no objection. With the growing concern of the consumers there is a greater possibility of lay agencies becoming involved. The dental profession must observe such moves with great caution and the examiner must play a leading role.

One must not overlook a general attitude of resistance to authority which has infiltrated society during the last decade. The right to question, to identify problems, search for answers and reach intelligent and logical conclusions has always been characteristic of the American society. These privileges have resulted in a type of progress second to none and for this we can take great pride. But the pendulum seems to have swung far enough that in many instances, logic, wisdom, judgment and reason seem to have been lost. Social concepts have been liberalized beyond the wildest imagination; the integrity of the home and family has been compromised for the adventures of communal living; the comforts and strengths obtained from firm religious beliefs and convictions have suffered from the effects of doubt, the need for proof, uncertainty and uneasiness; all too often pride of working for a living has been lost in the shadow of the right for a livelihood; the courts have repeatedly handed down decisions which have demanded readjustments in our living; the overall social structure has been disturbed and we find ourselves floundering in confusion. The health professions have not escaped the influence of these different views, actions and reactions. Across this nation dental students have pressed faculties and administrators for the opportunity to participate in decision processes affecting the schools. Faculty members, under the guise of academic freedom, have asserted attitudes, opinions and philosophies without fear or restraint. The same groups of students and faculties are proposing a complete adjustment of the examination and licensure processes. They seek freedom to move from one licensing jurisdiction to another. Dental examiners represent an authority and any such authority constitutes a "no no" in today's society. As a protector of the public in the area of dental health care, the examiner must be

alerted to the effect of these generalized social concepts on his responsibility.

In addressing oneself to the assigned subject, many factors directly related to the professional service of the dentist must be considered. Although these factors may not be categorized strictly as "changing society" they represent changing concepts which have a direct bearing on the control of dental care. Those to be considered are the future role of the dentist, the use of auxiliaries, concepts of practice, the impact of preventive measures and the obligation of continued study.

#### THE FUTURE ROLE OF THE DENTIST

During recent years there has been much furore about what the future role of the dentist will be. The issue has been discussed extensively among professional leaders and yet there seems to be great reluctance to identify this role in any specific terms. Some have berated the way the dentist traditionally uses his time and some have demonstrated frustrations about their own professional fulfillment in dentistry. There is an uneasiness to which the profession should give urgent attention.

If I have assessed the trends properly, it is quite likely that the dentist of 1985, perhaps even before, will be some sort of a super diagnostician and treatment planner. He will direct the efforts of a supporting staff and he will become far more involved in business matters, because truly his operation will become a business. I hope I am wrong about this prediction because it represents an "assembly line" concept and this is contrary to my understanding of a true profession. Please don't misunderstand, I am not speaking against improvements in service or the efficiency in delivering service; I just want to be sure it is always conducted in a way that compliments the professional status of dentistry, something our forefathers worked so hard to achieve.

How many active dentists today would be satisfied with the role as projected? How would the recruitment of young men and young women to the profession be affected? Would the satisfaction of *supervising* a preventive measure, surgical procedure or restorative service be the same as performing it? I believe the large majority of dentists enjoy their profession because of the personal service they render to the patient. The personal satisfaction of treating an offending tooth, designing and preparing a cavity, restoring masticatory function, and instituting correctional procedures cannot be dis-

counted. Dentists are artisans and their creativeness cannot be fulfilled through the imagination, eyes and hands of others. As a profession, do we really want to abdicate the types of services traditionally attributed to us and through which our image has been developed and preserved?

#### REEVALUATION

Perhaps it is time to sit back and do some re-evaluating, taking a look at where we've been, where we are and where we are going. I have given much thought to the subject and have reasoned that a slightly different approach might be considered. The suggestion is made because much of the ferment about the role of a dentist is related to the expanded duties of auxiliaries. My proposal is that the profession identify things which *cannot* be delegated to the auxiliaries and therefore *must* be performed by the dentist. There are five areas of service which I feel should be included. These are: 1 — Diagnosis and treatment planning. 2 — Surgical procedures on hard and soft tissues. 3 — Placement of the "so-called" permanent filling materials. 4 — Fitting and adjusting removable and correctional appliances. 5 — Prescribing medication. Although the emphasis is negative when positive is usually preferable, I do *not* believe it has been thoroughly tested. If the idea were adopted there would be a meaningful understanding that would quiet the uneasiness about the future role of a dentist. Any uncertainty is the concern of the examiner if he meets his responsibility to the public.

The impact of expanded duties for auxiliaries deserves some elaboration in this discussion of changes affecting dental examiners. Presently, there is only one auxiliary, the dental hygienist, which comes under the jurisdiction of a licensing authority. There are others which have already been granted expanded duties and still others which are gaining recognition. The dental assistant can qualify for her role through associate degree programs, certification programs or in-service training. Regardless of the type of preparation, some states permit the assistant to participate in expanded duties. In many instances, services which have long been reserved for the dentist with many years of formal education, are now being performed by the assistant who may have had little more than the "monkey see, monkey do" philosophy. If the quality of dentistry is to be maintained, the qualifications of those who render this service must be respected. The delivery of service can be enhanced through expanded duties as long as the auxiliary is adequately and properly educated.



History records the long process by which dentistry achieved professional recognition. In the early stages of development it was regarded as a mechanical service. Those with vision and foresight worked diligently toward elevating the status. Today there are many individuals and organizations seeking to revert much of the traditional dental care to the mechanical level. Auxiliaries, without in-depth education, are being permitted to do those things which previously required a broad educational background. This is a serious matter and one which is the direct concern of the examiner.

The basic patterns of dental practice differ considerably from those of a few years ago. The solo practice where a dentist works without an assistant, or perhaps one auxiliary at the most, is still common but in many instances has been replaced with the use of multiple personnel. Incorporated practices, partnerships, group practices and institutional practice have promoted professional interchange and peer review. The Preponderance of study clubs, professional meetings, seminars, special lectureships, etc. has provided unlimited opportunities for the dentist who is dedicated to personal improvement. The TEAM concept has made a big contribution to the manner of practice. What is done in the office and who is responsible for doing it should be the concern of a licensing authority. A question that appears with increasing frequency is the licensure of an institution to perform health care. The idea is different from anything traditional to dentistry, but with the current pace of changes, it does not seem far removed from a possibility. Each of these items affecting patterns of practice may impose additional hardships for the examiner to execute his responsibilities.

#### EMPHASIS ON PREVENTIVE DENTISTRY

Measures to prevent dental disease have been the ultimate objective of the dental scientist. Although many etiological factors have eluded the researcher, much progress has been made in controlling dental disease. Studies and investigations have resulted in a new emphasis on an old concept, namely, preventive dentistry. Water fluoridation and plaque control programs have become a way of life for an ever increasing segment of our population. These and other preventive methods give great promise toward shifting the emphasis of dental care away from the purely reparative type of service. In spite of the potential of such a shift, one cannot negate the human factor of neglect and therefore it must be assumed that the traditional services will continue to require a major part of the practi-

tioner's time. Since there is a renewed emphasis on preventive dentistry and since such services have proven value, the dental examiner will be vitally interested in the impact upon his responsibilities. Certainly it will be important to have assurance that each dentist becomes involved in the preventive philosophy.

#### CONTINUING EDUCATION

I would be remiss in discussing my subject if some attention were not given to continuing education. Most everyone accepts the importance of continuing education and agrees that it should be an obligation of every dentist. There is a disagreement about how it should be handled and particularly about the mandatory requirement. Some believe that licensure registration and/or society membership should hinge upon evidence of continuing education. Some regard continuing education as a personal challenge for continued competence, while others seem satisfied without it. Many would regard any requirement as an infringement upon their personal rights. Who should be responsible for evidence of a participation; the individual, Boards or organized dentistry? The House of Delegates of the American Dental Association referred the matter to the constituent societies. Some professional groups have stipulated continuing education as a part of membership requirement. The examining boards have, by and large, resisted the pressures of making firm commitments one way or the other. Yet, is there any factor more important in the protection of public interests than that of continued competence? Quite obviously, participation in refresher courses does not give any assurance of a better quality of service but certainly it offers a greater potential than nonparticipation. The public is becoming more concerned about the preparation and skills of those who serve health needs and this same laity is more prone to question the dentist who is not involved in continuous learning on an organized basis. Those who are responsible for maintaining controls in the quality of performance, in the ethics involved and in legal fulfillment, can no longer afford to sweep the subject of continued competence into a corner where it might not be noticed.

In the interest of exploring my subject, it was assumed earlier that the role of the examiner would remain the same. Should this be true, the larger percentage of his time will be spent on evaluating the clinical abilities of candidates for licensure. Another significant segment of effort will be directed toward processing violations of dental practice acts and censuring those who infringe upon the stand-

ards of ethics. He will also concern himself with new laws, rules and regulations that will uphold the quality and effectiveness of dental health care. The fulfillment of these responsibilities and others is imperative to the image and respect the profession enjoys.

There is good reason to ask if the ultimate objective, better dental health for the public, can be met effectively in the changing patterns of the profession and of society at large. Is there merit in a thorough self-study by the examiners and is now the time for it? Has adequate attention been given to the supply of professionals to meet the needs of a rapidly growing population, of a society that is more conscious of the benefits of good dental health, of the effects affluence, third party payment and national dental health programs will have?

Has the profession of dentistry really addressed itself to the problem of geographical distribution of dental health personnel? Has there been any reliable study on how attitudes so prevalent today will affect the future of dentistry? Have the interest of the providers of dental care been properly balanced with the interests of the purchasers? Has adequate attention been given to the role of the dentist of the future, the expanded duties of auxiliaries, the TEAM philosophy, the effects of increased institutional dentistry, the impact of preventive dentistry and the requirement of continuing education and how all of these can be integrated into the dental examiner's charge of protecting the interests of the public and the profession? Or are we just marking time with the hope that these problems may go away?

In this paper I have repeatedly referred to the role of the dental examiner and in one instance I eluded to the possibility of a different title. Changes in society and in the profession indicate a need for many assignments beyond those under the caption "examiner". Perhaps the title, State Board for Dental Licensure or State Board for Dental Practice would be worth considering. To cover the broad range of activities, new objectives should be determined and a sufficient number of Board members appointed (or elected, as the case may be) to complete the job. I sometimes wonder just how State Board members are able to accomplish what they do but the fact remains that there is much more that should be done.

Why am I concerned about the term "examiner"? Obviously it does not represent the many types of services performed now nor the types which need attention. Furthermore, there has been enough progress in dental education to de-emphasize the importance of the "examiner concept." There was a time when dental education was limited to proprietary schools or preceptorships. Checks and balances



hardly existed until the state examining boards were established. Truly a most important charge to the examiner was to evaluate the quality of an educational program through examination of the graduate. One must agree that considerable progress has been made since this purpose of state boards was first established.

Two Councils of the American Dental Association have a direct relationship to the importance of examining new graduates. If the profession has confidence in these two councils the examination aspect of State Boards could certainly be reduced. Of course, I refer to the Council on Dental Education and the Council of the National Board of Dental Examiners, each of which is composed of equal representation from The American Dental Association, The American Association of Dental Examiners and The American Association of Dental Schools. The Council on Dental Education is the official accrediting agency for programs in dental education. It has encouraged schools to develop different programs and has never interfered with opportunities for individuality. The Council has established criteria for evaluation that give assurance of the credibility of each program. It has developed methods, accumulated experience and used many consultants for maximum effectiveness in these evaluations. The expertise should exceed the best of individual State Boards. It is not surprising that many examiners report differences among dental schools, but should not the Council be able to detect differences which might adversely affect the profession? There is a growing concern about the interjection of the Federal Government in school accreditation. Perhaps the lack of confidence, as manifested by the profession, has been partially responsible.

#### THE NATIONAL BOARD OF DENTAL EXAMINERS

The National Board of Dental Examiners was established as an aid to State Boards. Most all of the licensing jurisdictions accept results of the National Board Examinations and many require satisfactory performance for admission to the clinical examinations. Even if there is some flexibility and some individuality among schools, the National Board Examinations give assurance of a level of competency. In 1970 the Council considered the merits of a Part III examination which might replace the clinical phase presently reserved for State Boards. The idea was dropped for two reasons, the increasing popularity of Regional Boards and the challenge to the American Association of Dental Examiners to find ways by which inter-state practice restrictions could be reduced. Perhaps there is still

justification to pursue the Part III National Board concept. The point I wish to make is why should there be an emphasis on examining recent graduates when the work of two Councils documents quality education?

In the past, when a license is granted it is assumed that the quality of performance will continue. If the licensee chooses to practice as a charlatan from day one, professional control is doubtful. Only when there is gross violation of the law, ethics or acceptable moral standards, is his right to practice challenged. The present mechanism is not sufficient for the protection of the public against inadequacy in dental care? Unless standards of control are more inclusive, society will question the right of governance within the profession. Control should rest with the profession but only when the concern for the public remains paramount.

In conclusion, let me reaffirm my belief in a board of control for the practice of dentistry at the state jurisdictional level. I am positively against any national licensure program as a substitute for state authority. Some type of examination can always be a part of the licensing procedure, but surely we do not need to retain a concept adopted before the turn of the century. There are so many changes which call for a "new look" in the examining, licensing and control programs. There is no group which has a greater interest or greater ability than that currently identified as the State Board of Dental Examiners. I respect your dedication and service, but as in all aspects of our profession, there comes a time for re-evaluation. In my opinion the time is right for a new look at the way our profession should demonstrate its concern for the public.

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*"The great object of science is to ameliorate the condition of man, by adding to the advantages which he naturally possesses."*

*Elements of Natural Philosophy, 1808*

# The Need for Dentists in the United States

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## STATEMENT OF THE PROBLEM

The purpose of this paper is to examine the question, "Can the present delivery system for dental health care by its normal growth meet the requirements of an accelerated dental care demand? If not, what alternatives are available?"

This paper examines past trends and estimates the supply and demand for dental services in the U.S. by the year 2000. Alternative situations are discussed relative to supplying services to those citizens of the United States requesting them within the time frame of the present to the year of 2000. Current information indicates that a large majority of the population will be seeking dental services by the year of 2000. It appears that they will be covered by some form of dental insurance, either government or private industry programs, or will be non-insured and covering the expenses privately. This total increase would result in a vast increase in the demand for dental services over the 1969 level (45% to 85%).

In the past, there has been some concern about the ability of projecting the need for various professional services. Without long term planning our society has created over-supplies of skilled personnel in some areas, while needs exist in other areas. For example, teachers and engineers are currently experiencing a very tragic paradoxical situation; thousands of these professionally trained personnel are having great difficulty in locating employment in their field, and yet thousands of jobs in these same professions go begging because the right skills are not available.

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The dental profession is on the verge of very significant changes relative to the demand for dental services. As a result, the demand ratios for trained professional dental personnel will be significantly altered in the near future. As a result of this increased need for dental services, dental equipment manufacturing organizations will be required to meet the demands of this new market and dental colleges will require added flexibility in their curricula.

At present, very strong factors are at work in our society pushing for complete Dental/Medical coverage. A special report by the Carnegie Commission on Higher Education gives an interesting thought — "Increasingly, health care is coming to be regarded not only as a necessity, but as a right to which all persons are entitled." This view, as reported in "Higher Education and the Nation's Health,"<sup>1</sup> is becoming the accepted pattern of thought of both professional and government authorities.

Many non-unions and union companies alike, offer some type of dental insurance programs for both employees and their families. It is expected that, prior to 1980, most large companies or unions will offer some type of dental insurance program for their employees. In addition, the present government forecast for future programs shows that children (adolescents under eighteen or still in high school), and the retired (62 or 65 and over) will be covered by government programs. Government programs are expected to increase the demand for services by 25% within a ten year period, an industrial programs will add another 12% to the expansion requirements.<sup>2</sup>

It is understood that the validity of projections beyond three to five years is certainly questionable, and that this study, being a macro-projection, will not point out obvious variations in the supply-demand picture as seen in urban and rural health care studies. However, the main purpose of this paper is not to establish exact figures of population or of demand for dental services by the year 2000, but rather to create an awareness of possible situations in the future, and to consider ways of attaining goals which our present society has indicated it will work toward.

#### ASSUMPTIONS

In order to develop this study and project into the year 2000, the following assumptions were made:

Population estimates and projections made by the United States Department of Commerce, Bureau of the Census, are the best available source of data for growth trends within the United States. The

"D" series was used in all population projections (Series P-25 No. 448 August 6, 1970). Recently, the Bureau of Census has revised its population projections; therefore, the "D" series of the August 6, 1970 publication used in this report represents a higher population level than currently projected. If, however, the current level of immigration remains at 400,000 per year, the "D" series of the 1970 projection is relatively close to a stationary population projection.

It was also assumed that the method of sampling as reported in the Journal of the American Dental Association, January of 1972, resulted in the most accurate survey data available with respect to the basic components of dental practice.

The researchers used the least squares technique to develop the base line and assumed a straight line projection to the year 2000.<sup>3</sup>

#### DEFINITION OF SPECIAL TERMS

In the context of this paper, the following special terms have been utilized:

*Dental Services* includes the combined availability of the general practitioner and all the specialities. This is done in an effort to determine more readily the total capability of the dental profession, and because of the great difficulty in trying to categorize the dental activities of an average dentist.

*Demand for Dental Services* includes all personnel presently availing themselves of dental services, plus that part of the population which will, through increased dental health education, a more affluent society, and increased insurance programs in both the public and private sector, demand periodic dental services.

*Auxiliary Personnel* includes supporting personnel employed by the dentist in the following categories: hygienists, receptionists and secretaries, dental assistants and laboratory technicians.

#### FINDINGS

The tables which follow have been developed by plotting existing data summarized basically from surveys taken by the American Dental Association, and using the method of Least Squares for projection of the data to the year 2000.

In developing Table I (Average Patient Loading per Dentist), data was taken from the American Dental Association's surveys of dental practice.

**TABLE I**  
Average Patient Loading Per Dentist

Year	Average Number of Patients per Dentist
1949 (1)	933
1952	1,012
1955	1,056
1958	1,184
1961	1,220
1964	1,257
1967	1,321
1970	1,485
1980 (2)	1,775
2000	2,168

- (1) ADA Surveys — 1949 — thru 1970  
 (2) Estimated by Least Square projection

The mean number of chairside hours and the mean number of office hours per week reported by independent dentists have not significantly changed in the last twenty years. This is not, therefore, a factor in increased patient loading per dentist.

The average number of patient visits per year, as demonstrated in Table II, has been projected to demonstrate a decrease in the average number of patient visits per year. This date, however, has been used only to support the relative stability of the average patient loading per dentist. It is only the current survey which generates this variation and, by itself, does not support a decreasing trend.

Table III represents the growth pattern of the civilian dentist population from 1951 to 1971, and projects their growth through the year 2000. The growth projection is based upon data available from the American Dental Association through 1971, and uses the method of least squares for projecting through the year 2000.

Information available on the number of dentists in private practice, as shown in Table III, does not represent any significant increase beyond the average growth of the total U.S. population. In fact, a



**TABLE II**  
Average Number of Patient Visits Per Year

Year	Average Number of Patient Visits Per Year
1952 (1)	2.8
1955	2.8
1958	2.6
1961	2.7
1964	2.7
1967	2.7
1970	2.4
1980 (2)	2.38
2000	2.07

- (1) ADA Surveys – 1952 thru 1970  
 (2) Estimate by Least Square Projection

**TABLE III**  
Growth Trend of Practicing Dentists  
in Private Practice

Year	Number of Dentists in Private Practice
1952 (1)	73,000
1955	76,600
1958	81,000
1961	84,500
1964	86,000
1967	87,500
1970	90,000
1980 (2)	101,557
2000	121,617

- (1) ADA Surveys – 1952 – thru 1970  
 (2) Estimate by Least Square projection

ratio of the total population growth *vs.* the dentist population growth demonstrates a slight increase in the absolute number of people per dentist. However, this growth trend in number of dentists in private practice — does not represent a realistic projection of the capacity to produce this number of dentists. Unless federal, state, or private funding is made available for additional facilities — such as for expansion of existing dental schools and/or construction of new schools — these dentists just will not exist. The number of dentists in private practice is determined by the annual number of dental graduates — less deaths and retirements of current members of the profession and not by a straight line projection. Therefore, this projection must be considered high. Unless there is rapid expansion of existing programs and the construction of new facilities begin shortly the likelihood of this is at this time very low.

Contributing to the increase in patient loading is the growth trend in full time auxiliary personnel. This increase is demonstrated in Table IV and projects an increase in excess of 100% between 1970 and the year 2000. However, a similar problem exists. There are just not enough programs to produce the numbers of auxiliaries needed.

**TABLE IV**  
**Growth Trends for Full Time Auxiliary Personnel**

Year	Full Time Auxiliary Personnel
1958 (1)	77,500
1961	87,000
1964	116,300
1970	154,500
1980 (2)	222,900
2000	358,540

(1) ADA Surveys — 1958 thru 1970

(2) Estimate by Least Square projection

A report published in 1944 by Henry Klein, D.D.S., "Civilian Dentistry in War Time," gives a striking example of the production increases available through the use of auxiliary personnel in multiple

operatory setups (see Table V).<sup>5</sup> Although the number of patients is high for the period, it should be remembered that this study was completed during World War II and that there was an extremely high demand on the non-military dentist population. Table V is included only as further evidence of increased productivity available through increased use of auxiliary personnel.

**TABLE V**  
Civilian Dentists in War Time

One-Dentist Office	Patients per Week
1 Chair w/assistant	52.6
1 Chair w/o assistant	39.4
2 Chairs w/assistant	64.2
2 Chairs w/o assistant	48.7
3 Chairs w/assistant	68.8

**TABLE VI**  
Correlation Between Full Time Auxiliary and  
Average Annual Number of Patients

Year	Full Time Auxiliaries	Average Annual No. of Patients
1958 (1)	77,500	1184
1961	87,000	1220
1964	116,300	1251
1967	130,400	1321
1970	154,500	1485
1980 (2)	222,900	1775
2000	358,840	2168

r = .990 sig at .01  
 (1) ADA surveys 1958–1970  
 (2) Estimate by least square projection



The correlation between full time auxiliaries and average annual number of patients is .99. This relationship is shown in Table VI. This suggests that one way to take care of the increased demand would be to increase the supply of dental auxiliaries. This route appears also to be most feasible in terms of costs, and could be achieved within a reduced time frame. For example, one way to accomplish this is to give dentists a tax break if they institute an auxiliary training program within their practice. Comparison of number of full time auxiliaries in private practice to average number of dentist patients per annum.

#### DISCUSSION

During 1969, it was estimated that only 45% of the total United States Civilian population received dental services. This percentage has been increasing since 1952 at an average rate of 2.0% per three year period. The demand history has shown a slow, continuously increasing coverage of the total population. Projecting this 2.0% growth pattern, only 65% of the civilian population will have their dental needs met by the year 2000. If we assume that 15% of the population either have no dental needs (children under three), or simply will not take advantage of available services, we have a maximum requirement for service by 85% of the population by the year 2000. However, this 85% is considered a high estimate by the researchers.

Anyone who presently wants dental care, and who can afford it, has no real problem in obtaining services. This should hold true as long as the means of payment remains basically unchanged, or if the means of payment changes very gradually over the next thirty years. In this paper it has been assumed that approximately 85% of the population will be seeking dental services by the year 2000. Normal growth of the dental profession could absorb approximately 50% of this increase for dental services. However, at this point, we are left with a dramatic deficiency in the available supply of dental services — forty million (40,000,000) people will have the economic means to pay for dental services but will not be able to schedule item. This will represent approximately 20% of the total population seeking dental services by the year 2000. Since there is a possibility of an excessive demand picture as the results of the new payment methods, it is important that an analysis be made of the various factors which contribute to, or restrict the total available supply of services.

In analyzing the Supply-Demand picture, it was important to determine which aspects have remained fairly constant over the past few decades. If one of the more relative aspects was found to be constant, a projection of future trends around this constant would be possible. One such constant was found to be the average number of times per year a patient receives dental services. It can be observed (Table II) that, between 1952 and 1968, the average patient visited his dentist 2.7 times per year.

The number of annual patient visits varies with the size of the town or city. In 1967, the number of visits per patient in towns of less than 2500 people was 2.2, as compared with 3.5 in cities whose population is larger than one million. The dentist in the large city is forced to limit the time allocated to each patient sitting because of the large number of patients. Even with these variations between the small and large cities and even with marked changes in the population structure over the past two decades, the important item to remember is that the average number of times a patient visits his dentist per year has remained fairly constant.

Another primary factor to be considered in determining the demand on available dental services is the average number of patients per dentist. This demand has witnessed a steady increase in patient load per dentist. (See Table I). It is quite difficult to break down this increase into its various contributing factors, although it is inferred that the most important contributing element is the increased use of auxiliary personnel. (See Table VI).

Use of auxiliary personnel has been increasing at the annual rate of approximately 9% since 1952. Increasing importance is associated with the use of auxiliaries and their effect on increased patient load per dentist. There was a 5.1% increase in the average number of patients per dentist between the years of 1964 and 1967. No revolutionary labor saving devices were introduced during this time period, so it seems reasonable to infer that the largest portion of the increases in patient loading is directly associated with the increased use of auxiliary personnel.

During the late 1950's and the early 1960's, three significant labor or time-saving devices became available to the dental profession. High speed dental drills were introduced in the late 1950's; this theoretically allowed a dentist to double his patient load. This period also saw the introduction of an ultrasonic scaling device; this unit decreased the time and fatigue involved in giving a prophylaxis. The early 1960's saw the introduction of what is commonly termed "high volume evacuation," a vacuum process used for evacuation of the

large amount of cooling fluids introduced into the mouth of the patient during the use of high-speed dental drills. This period saw the beginning of a revolutionary period in the dental profession. Dentists were made aware of the possibilities of greatly increasing their patient load, and, at that same time, reducing the fatigue and monotony associate with the performance of their duties. For example, engineering studies of dental practices were made (time & motion) also "sitdown dentistry" became more common. These innovations allowed the profession to greatly reduce the time involved in the performance of some of the more routine operations.

The number of new dentists, although increasing at an accelerating rate, does not significantly add to the total number of practicing dentists. The margin of increase which results from the new dentists each year is held down by the large number of retirements and other professional interests pursued by dentists.

Current growth patterns for the practicing civilian dentists population are increasing at approximately 1.0% per year. This is compared to the total population growth rate, which is currently leveling off at approximately 1.1% per year. This does not take into account, however, the increase in the average number of patients per dentist which is increasing at a rate which more than offsets the loss represented by the increase in the population per dentists.

#### CONCLUSIONS

The conclusions drawn from this study involve two very important considerations, the first being the possibility that the existing growth pattern of both the demand for dental services and the available supply of dental services will basically be left unaltered; i.e., that the growth rates as exhibited in the past twenty years will not substantially be altered.

The natural growth process, increased demand for dental services comes basically from two areas; one is percentage increase in the total population seeking dental services and the second is the general population increase. Looking at these items separately, it can be demonstrated that the percentage increase per year of the average patient load per dentist is approximately equivalent to the percent population increase per year seeking dental services. This is equivalent to saying that *the demand created by the general population in increasing its utilization of dental services could be met by the additional services which would be available strictly through increased patient loading per dentist.*



It should be remembered that, within this projection, a very important element must continue to increase — the patient loading of dentists must continue to rise at an annual rate of approximately 2%. This can only happen through increased use of auxiliaries and continued upgrading of operating equipment and techniques. In other words, increased productivity must continue.

The second factor in increasing demand, the general population increase, *is basically offset by the growth trend of the practicing dentists in private practice. It appears then, that the natural growth process of the dental health care industry should be able to meet the demand for dental services in the United States until the year 1980.*

The second conclusion covers the very real possibility that massive programs will be initiated during the 1970's which will appreciably alter the existing growth rate for demand of dental services. The rebirth of social awareness could result in greatly increased demands on the professional dental personnel. If society is provided with the financial means to obtain adequate dental care; for example, National Health Insurance, and health service groups continue to stress the role played by dental care in maintaining total physical health, than demand is going to increase. In general, the consumer will be made aware of the need for maintaining his dental health and be provided with the means for obtaining this important service. This assumes H.R. 1, currently being reviewed by the legislature, could be amended to include dental health care services, as well as increased demand resulting from labor management contracts.

At present, however, there is no strong evidence that adequate dental service will be available after 1980. In fact, there are many indications leading to the conclusion that *a full 9% of the population seeking dental services will not be able to obtain them by 1980. This trend unless action is taken should continue downward so that by the year of 2000, 20% of the population would not be capable of locating adequate dental service when desired.*

This alarming increase in inadequate coverage could result from the programs and plans currently being formulated and implemented to extend dental services to the 55% of the population not presently receiving services. *The likelihood of a full scale national health & dental program is low. Therefore, this estimate is high and only presented to show the extreme possibility.*

## IMPLICATIONS

Currently, the United States is experiencing an awareness of social well-being and is expressing this in terms of programs designed for the improvement and maintenance of man himself. These programs will create situations in which demands for services will not be matched with the supply. Recognition of the possible implication this can hold for government, industry, the dental profession, and society are of primary importance in the resolution of these problems.

From the government's point of view, providing for social needs is becoming less "socialistic" and the idea of providing for the "needs" of the people is becoming a more acceptable pattern of activity. Although, there are some who may argue that a reversal of this attitude has become more prevalent, it is the researchers opinion that the long time effects will be additional not fewer inputs. As noted earlier, it is anticipated that the demand for dental services will increase by 25% within the next ten years. This is double the growth rate of the previous twenty years, and, to a large extent, will be the result of new government programs.

Our economy is presently "adjusting" in two areas where inadequate long-term planning has resulted in very demoralizing situations for the personnel involved. The teaching and engineering professions were both influenced by external factors to greatly increase the available quantity of professionally trained personnel. However, in the rush to take care of the baby booms and the space age technology, adequate long-term planning was not undertaken.

It takes relatively little time for a union to go from no dental plan to a dental plan; in fact, when it happens, it happens overnight. It takes relatively little time, when the time is right, for the government to enact a dental insurance program. *However, available services can never be dramatically increased in the short run.*

The above situations are mentioned for only one reason — if forces within our society exert extreme pressures on one segment of society, then they should also take the responsibility to avoid any of the possible consequences which might result from that pressure.

Another very important aspect to be dealt with is the long term balance between meeting an excessive demand in the immediate future without becoming overstaffed, and consequently, inefficient in the long run. Long term balancing is not an easily accomplished task; in order to meet a goal of providing dental services to a demand curve which is very steep in the short run, and which then levels off

to an almost zero rate, requires the planning to be such that the supply of services follow this same curve. In relating this to dental personnel, the situation is created in which the absolute number of available personnel must be greatly increased in a narrow time span (10 to 15 years) and then, at some specific period, this high rate of increase must be reduced to a maintenance level. What is needed is a mid-course correction factor, otherwise the target could be missed.

One of the basic alternatives available for increasing the supply-demand ratio is the increase of the percentage of practicing dentists to the total population. Dental education organizations have been concerned, but funds for construction and student loans are grossly inadequate. A number of programs begun within the past decade have already shown their worth through increased enrollment.<sup>6</sup> However, the federal government is presently backing away from the student loan business. Dental education costs are increasing and some immediate action is needed otherwise long term prospects do not look encouraging.

If the commitment being made by the dental schools in new and improved facilities is to result in an improvement in the ratio of dentists to the total population within the current decade, action will have to be taken immediately to help relieve the burden of education costs to the dental student. Average four year educational semester costs per dental student amounted to \$8,989 in 1970; including tuition, instruments, supplies, textbooks and all other fixed fees exclusive of living costs, and costs have risen considerably since then. The lack of concrete action to meet the need will most likely result in the reinstatement of the previous stagnated growth rate in dental school enrollment.

Historically, the total population per dental colleges for increasing enrollments are meeting strong headwinds in the form of reduced government expenditures and skyrocketing inflation. It is not anticipated that either of these basic conditions will be resolved to the degree that the influx of new students will increase to the point where the ratio of dentists per persons will be significantly increased by 1980.

The practicing dentist population growth rate has not been able to surpass the total population growth rate, even with the increased enrollment trends of the middle to late 60's — dental school enrollment has been able to increase itself constantly, but not at a constantly increasing rate. In addition, it has not been demonstrated that even if adequate facilities and tuition monies were made available, either in the form of grants or loans, that the required increase



in dental students would be seen. Previous student levels have never been related to an availability of tuition monies, and it is quite reasonable to assume that the problem of increasing the number of dental students is more complex than just adding money.

An unexplored possibility for increasing the number of dental students is the mounting of a public relations program aimed at the high school student. An adequate knowledge of the rewards, both personal and financial, and of the achievements attained by members of the dental profession are not adequately understood by the members of our population who are searching for a lifetime endeavor. Another avenue to consider is to increase the ratio of dental auxiliaries. This seems like a better road to follow.

The dental equipment industry has had, and continues to exercise a close relationship with the professional dentist. Two of the three most significant labor saving devices introduced to the dental profession within the last forty years have been the direct result of cooperative efforts between dentists and industry. Industry's role in helping to meet this ever increasing demand is one of supplying the tools which aid the dentist in increasing his productive efforts by approximately 3% per year.

However, of the three most significant labor saving devices available today, the high speed dental drill has gained the most universal acceptance.<sup>7</sup> This is significant only in that, as the existing dentist population continues to utilize existing dental technology, and as the percentage of the dentists not trained in the use of these items decreases, the patient load per dentist will continue to increase, even if other factors remain constant. Undoubtedly, however, significant labor saving devices will continue to become available to dentists. Their rate of acceptance and their actual improvement in efficiency are, at best, relatively difficult to project.

The dental industry is constantly working on projects — hopefully as significant to the profession as were the high-speed handpieces and the ultrasonic cleaning unit.

The industry should face the very real possibility of the next fifteen years being relatively good in terms of dollar sales — for those companies presently equipped with adaptive; modern, competitive equipment — followed by an adjustment period in which the large demand of the 70's will be satisfied. In recent years, there have been many important breakthroughs in the use of fluorides and other treatments. The significance of these treatments in determining long term trends has yet to be determined, but they may very well be noteworthy factors in the future demand for services.

The dental profession will find itself in a position of being pressured into increasing its patient loading capacity and, at the same time, requiring itself to continue in upgrading the quality of service rendered. Add to this the fact that one out of every two dentists has requirements for auxiliary personnel which are presently not being filled, and you have a situation which will be very demanding on both the capacity and the quality of the dental profession. In attempting to resolve this situation, dentists are forced to train and upgrade personnel with various levels of experience, so that the available level of adequately trained personnel can begin to meet the local requirements.

Another strong possibility that the dental profession should consider is the fact that in ten to fifteen years, if the bulk of the population can be satisfied in terms of dental service, then the following five years or so would probably require a down shifting, or at least a growth rate not in excess of the current population growth rate. If one assumes that there will continue to be efficiency increases in the delivery of dental services, then there is a strong possibility that the required growth rate of professional dentists will be zero. This may appear to be a rather bleak future for the existing dental population and for the new students entering dental colleges; however, it need not be. With the data which is currently available, it is not a difficult matter to project the leveling point, and then the required growth rate to maintain a balanced state of supply and demand.

Let us recognize that there may not always be as many patients as the dentist has time to serve; with the great efforts being made to catch up, that is exactly what may happen. The likelihood of this happening is still low. Fifty percent of the population, as of this writing, are not obtaining any type of dental treatment, and, for the most part, are not overly concerned about this. Society faces the very real task of becoming aware of its needs; this job can only be completed when the masses accept and understand dental health. A factor, for example, which may have been related to reluctance to use these services by some is gradually being overcome by improved dental health education in the public schools.

#### RECOMMENDATIONS FOR FURTHER STUDIES

The question comes now as to how this paper could be used by the profession, by the education system, by Industry and by Government. It has been written and developed to serve as a tool for those

responsible for decision making in the health care industry. The major implication which can be drawn from this paper, is that better long-term planning should be initiated.

In any additional studies that would be undertaken it is anticipated that the following areas would generate a more precise picture of the supply-demand curve:

- a. Use of exponential smoothing may generate increased accuracy for growth projections over the Least Square means which was used. However, there is a possibility that normal growth curves are not applicable because of external factors which can greatly influence actual growth rates.
- b. More information is needed on the actual acceptance of health care services after they are made available to a particular group. It is quite possible that some current non-user groups will have a relatively long acceptance period. This is to say that even though dental treatment may be free, some groups of people may not accept the services.
- c. New treatment methods continue to be researched and a realistic projection of the effect and the time sequence of these preventive dentistry programs must be taken into consideration for any detailed review or supply-demand projections.
- d. A detailed look at the actual dental health care pattern for various population densities would be necessary; current information indicates a vastly different variation in the treatment pattern in rural and urban areas.
- e. It is anticipated that the government will provide dental care to the elderly or retired, and also to everyone from birth through the completion of one's education; however, this leaves a large area in the middle to be covered by Industry and/or Unions. The rate at which this "working" group is covered will greatly affect any projection and the actual demand; this area needs to be more thoroughly studied.

This study has provided a forecast of selected factors affecting dental services through the year 2000. These forecasts suggest that those seeking dental services should be able to obtain them at least through 1980, assuming that the payment structure remains constant and the growth of demand does not exceed previous periods. However, changes in both these areas are anticipated with the potential of bringing about significant increases in demand for dental services. We still have a little time available to review these expansion needs and take action that is necessary to assure adequate dental services for our citizens.

*(Continued on Page 142)*



# The History of Dentistry in Dental Education

ELOF O. PETTERSON, L.D.S., M.S.S., M.P.H.\*

The history of dentistry has been a subject in the dental curriculum for more than half a century. The importance of the subject has been demonstrated by history being taught as a separate course. Historical references by teachers in other subject areas have not been considered adequate. A specific course in dental history has been the rule at most schools during the last 60 years.

Instruction in the history of dentistry has obviously received a history of its own. This history will be presented in this report together with the 1968-69 status of teaching dental history at 20 schools of dentistry in the United States. Data about dental students' expectations and evaluations of instruction in the subject will be provided also. The information should hopefully be of interest to teachers in dental history and to educational planners responsible for dental education in general.

## DATA COLLECTION

Data on the teaching of dental history were collected in the spring of 1969 from 20 schools of dentistry in the United States. The schools were selected to include only schools with separate administrative units, mainly departments, of preventive and community dentistry.

Information concerning the teaching of dental history at the 20 schools was obtained from (1) documents (official course catalogues, curriculum reports, and course handouts), (2) the chairmen of the

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"departments" of preventive and community dentistry, and (3) dental students. Dental students at 17 schools also described their perceptions of instruction in the subject. (Due to pretesting procedures the students at three schools were not asked the specific questions about instruction in history.) The departmental chairmen provided their information in personal interviews, the students on a take-home questionnaire.

A class-stratified random sample of 40 students was selected from each of the 17 schools. This sample included 18 classes with 10 students in each. Data from 2 classes could not be used, however, because one class had ongoing history instruction at the time data collection began, and the other had received such a diffuse instruction that the students contradicted one another on the question of whether they had been taught history. Accordingly, 660 students remained in the study. Of these, 33 did not answer the questionnaire, and 35 gave answers which were incomplete. Data from 592 students (87 percent of 680 and 90 percent of 660) were used in the analysis.

Students who answered "yes" to the question: "Have you had a course in the *History of Dentistry* yet?" were asked to evaluate that course. Those who answered "no" were asked to indicate their expectations in regard to having such a course. The evaluation was made by checking seven bipolar adjectival scales below the concept which was "Course in History of Dentistry." The scales, each one divided into seven steps, were important-unimportant, appropriate-inappropriate, useful-useless, valuable-worthless, meaningful-meaningless, effective-ineffective, and exciting-boring.<sup>9</sup>

#### HISTORY OF DENTISTRY IN THE DENTAL CURRICULUM

The National Association of Dental Faculties recommended in 1899 that dental history should become part of the undergraduate curriculum.<sup>4</sup> Seventeen years later, in 1916, the Dental Educational Council of American announced that a dental curriculum had to include history of dentistry in order to be approved. The number of hours were not specified, but 32 hours should be devoted collectively to the four subjects of history, ethics, jurisprudence, and economics.<sup>4</sup>

The Curriculum Survey Committee of the American Association of Dental Schools recommended in 1934 that approximately 132 clock hours be devoted to "history, ethics, jurisprudence, practice management, and technical composition."<sup>5</sup> This recommendation was implemented by 1941-42. However, the quality of the teaching

of these subjects, except jurisprudence, was lower than for most other subjects in the dental curriculum.<sup>5</sup>

The following 20 years brought about a drastic decrease in the average number of hours allocated to the same group of subjects. A survey of the 1958-59 curriculum reported a decrease from 128 to 60 hours for the average school.<sup>7</sup> What really happened seems to be unknown. Korf<sup>6</sup> has claimed that courses in dental history were eliminated from the curricula of most dental schools during the forties. This statement appears unlikely, however, because history of dentistry was still required for accreditation by the Council of Dental Education. Nevertheless, in 1958-59, at least one school had allocated 12 hours in all to the combined teaching of history, ethics, jurisprudence, practice administration, and technical composition.<sup>7</sup> The average allocation of 60 curriculum hours to this group of subjects remained about the same throughout the sixties.<sup>11</sup>

#### THE TEACHING OF DENTAL HISTORY IN 1968-69

The official course catalogues from two of the 20 schools, did not include history of dentistry. Two schools which presented dental history in their course catalogues, still did not teach the subject.

One of the latter schools had followed Pelton's<sup>10</sup> recommendation of combining a diffusion of dental history into several courses with appointing one department (oral diagnosis) as coordinator for this instruction. All evidence indicated, however, that the arrangement did not work. Neither teachers nor students were able to identify any instruction in dental history at that particular school.

The official teaching of dental history was most commonly assigned the new "departments" of preventive and community dentistry (at 14 schools). Nevertheless, one such department did not teach the subject, but used the allocated 15 hours, in the junior year, to other topics.

The administrative change of assigning the instruction in dental history to the new departments of preventive and community dentistry did not always imply instructional change: Former courses and former teachers in dental history were often continuing as before. This perpetuation was supported by some departments of preventive and community dentistry, because the established instruction was considered adequate. In other instances, however, these departments found themselves stuck with prestigious professors continuing the teaching of courses, which were described as deficient.



History of dentistry was taught as a separate course at 12 schools. One of the remaining schools integrated the subject with ethics, one with ethics and jurisprudence, one with dental literature, and one with dental sociology.

The largest separate course in dental history covered 18 hours. Conversely, three courses were completed in four hours. The median course covered 10 hours, and it was overwhelmingly taught by lectures. One department of community dentistry had transferred its four "lecture" hours in dental history to a synchronized slide-tape program.

The official hours were quite inflated. For example, one school with eight hours allocated to dental history used four for teaching comparative anatomy. Another school devoted eight of its 10 hours to a variety of community health topics.

The model school (9) taught history of dentistry to freshman students. Five schools scheduled dental history for their sophomores, and two for their seniors. Freshman courses were, on the average, more extensive in terms of clock hours than courses given later. Once taught, the subject never reappeared.

#### STUDENT EXPECTATIONS

Students who had not received instruction in the history of dentistry did not express any enthusiasm for a prospective course in the subject. About 45 percent of the 211 students (from 25 classes representing 11 schools) expressed a mild acceptance of the subject as a part of their dental education, but 30 percent were rather negative to a prospective course in the subject. The remaining 25 percent were neither favorable nor unfavorable. Indifference or ambivalence to anticipated instruction in dental history did best describe the sentiments of the students as a group.

The same impression was received by looking at the 25 class means. These means ranged from 3 ("slightly irrelevant"\*) to 5 ("slightly relevant"), and the majority of class means (18) clustered around the neutral point. No statistically significant difference was observed among the 25 means (one-way analysis of variance).

The data suggested an interaction between school and class level, and between class level and type of school. Possible population differences, both among and within schools made it difficult, however, to speak convincingly about overall school effects or about

\*/"Relevance": Average rating on the five scales of important, appropriate, meaningful, valuable, useful; alpha coefficient .92.

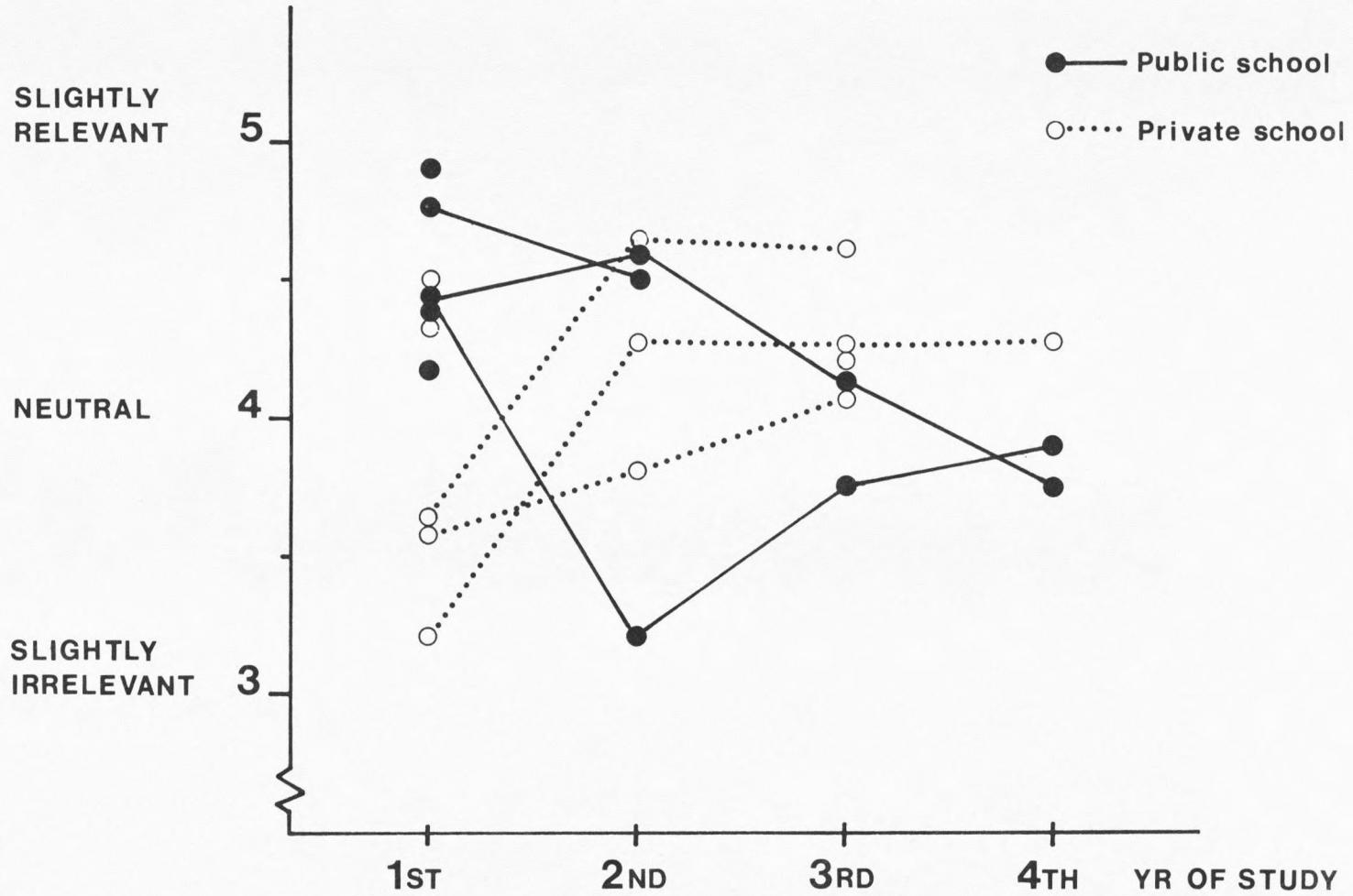


FIGURE 1. Student expectations concerning a course in history of dentistry, spring 1969. (Class means of individual schools are interconnected).

reputational effects from existing courses. Nevertheless, first year students in private schools had, on the average, a significantly lower rating of prospective instruction in dental history than first year students in public schools (t-test;  $p < .05$ ), and this difference was diametrically different for the following years of study, even if no statistical significance obtained for the differences of the latter three levels. — No significant differences were observed among the schools (controlling for class level), or among the class levels (controlling for type of school). Figure 1.

The expected relevance of a course in history of dentistry was significantly lower ( $p < .01$ ) than that of prospective courses in statistics (smallest difference), epidemiology public health, human behavior, ethics, and jurisprudence (largest difference). These differences, which were statistically analyzed with t-tests on summed difference scores, obtained irrespective of class level.

#### EVALUATION OF RECEIVED INSTRUCTION

The distribution describing overall favorableness\* to received instruction in dental history was bimodal. The instruction appeared to have split the 381 students (from 41 classes representing 13 schools) into two groups, a larger one expressing slightly positive and a smaller one quite negative sentiments toward the instruction in the subject.

The distribution of class means was nicely bell-shaped, however, with 19 of the 41 class means clustering around the neutral point. Of the remaining class means, 10 were found on the negative and 12 on the positive side. One class mean suggested a quite unfavorable rating of received instruction in dental history; another class mean indicated a quite favorable evaluation of received instruction in the subject.

The observed variability in overall favorableness could only be explained by *class belonging* ( $F = 2.55$ ;  $df = 40, 340$ ;  $p < .01$ ). Other independent variables such as *memory* (time between instruction and evaluation), *scheduling* (year of study at which the instruction was received), *hours of instruction*, subject *integration* with other topics, or *type of school* (private vs public) failed to explain any significant amount of variance in the course evaluations. (The effect of memory was tested controlling for integration, and hours of instruction; the effect of scheduling was tested controlling for memory, integration,

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\*/ Overall favorableness: Sum of all seven scales, alpha coefficient .95.



and number of hours; the effect of hours of instruction was tested controlling for class level, integration, and school type; the effect of integration was tested controlling for class level, and hours of instruction; and the effect of school type was tested controlling for hours of instruction.)

The most favorable ratings were given by students in a junior class, which had received an 18 hour lecture course when they were freshmen. The ratings of these students described their course as quite relevant, slightly effective, and slightly exciting. None of the 10 students rated this course below neutral.

The most unfavorable ratings were found for a history course which had been received by a sophomore class and rated one year later (when the students were juniors). This course, an eight hour lecture course, was described as quite irrelevant, very boring, and very ineffective. None of the nine students in the sample rated the course above neutral.

#### RELATION BETWEEN DENTAL HISTORY AND OTHER COURSES

Students, who had received instruction both in dental history and also in jurisprudence, human behavior, epidemiology, public health, ethics, and statistics rated their history courses less favorably than all other courses except statistics. History had been *expected* to be the least relevant course of all, but when it came to actually experienced instruction, history moved one step up leaving the last place to statistics. The differences, which were analyzed with t-tests applied to the summed difference scores, were all significant statistically.

#### RELATION BETWEEN EXPECTATIONS AND EXPERIENCES

Students, who had experienced instruction in the history of dentistry, did not rate that instruction favorably, but judging from the group of students, which rated a prospective course, they appeared to have received what they expected (which was nothing). Freshmen, however, still relying on a "patch-up" comparison with cross-sectional data, appeared to have been favorably impressed by the actual courses in dental history (4.0 vs 4.7;  $t = 3.09$ ;  $df = 85$ ;  $57-2 = 140$ ;  $p < .01$ ).

## DISCUSSION

Korf has said that "Today's students are seriously short changed in their total dental education by not being taught and inspired by the intriguing story of own profession's heritage and tradition."<sup>6</sup> He might be right. Most certainly, few students and few classes, which were contacted in early 1969, were "inspired" by the instruction that they had received in dental history. In this respect, little had changed since the beginning of the decade, because, in 1962, More<sup>8</sup> found that 5.1 percent of 2,587 seniors (representing 52 North American dental schools) considered dental history to be "the dulllest, most boring" subject in their dental education, and 9.5 percent wanted the subject to be eliminated.

"I think," Korf also said, "that students would truly like to know something about dentistry's past, something of its record of accomplishments as well as its failures, . . ."<sup>6</sup> A majority of students did not seem to agree. Indifference appears to be the best description of their attitudes to prospective instruction in the subject. This situation might have changed since early 1969, but drastic changes appear unlikely. A majority of dental students are probably quite disinterested in dental history also today. For instance, Dworkin, Picozzi and Simon reported in 1972 that 320 dental students (sophomores and juniors at the New York University) ranked history of dentistry as number 35 in a group of 48 subjects considered as potential topics for departments of preventive and community dentistry.<sup>3</sup> Only three percent of the students, who were queried in 1969, expressed a very favorable opinion about a prospective course in dental history; 12 percent were quite or very favorable to anticipated instruction in the subject. The corresponding proportion of students rating a prospective course in jurisprudence was 77 percent.

At least two teachers of dental history were receptive to the disinterest among the students. These teachers had taken the opposite decision to that suggested by Korf:<sup>6</sup> They had cut down the curriculum time allocated to the subject, one of them to the extent that the subject disappeared. Some other teachers would probably have liked to do the same. When 59 teachers in preventive and community dentistry were asked in October of 1968 to rank history of dentistry in relation to 37 other subjects, history of dentistry received the low rank of 42, and 34 percent of the teachers considered the subject as barely acceptable in a dental school.<sup>1,2</sup>

History of dentistry was overwhelmingly taught as a lecture course, and a strong majority (47) of the 59 teachers in preventive and community dentistry who were questioned about a suitable method for teaching the subject suggested lecturing.<sup>1,2</sup> This suggestion did not come out as very innovative. On the other hand, the school which experimented with a slide-tape program as a vehicle for the subject was not very successful either. The three most appreciated courses were all lecture courses, covering 10, 15, and 18 hours respectively. These courses were obviously presented by teachers with an ability to make the students listen with some interest.

#### IMPLICATIONS FOR EDUCATIONAL PLANNING

A convenient solution to the observed problems would be to drop the subject from the dental curriculum. Many students and teachers as well, would appreciate such a decision. (Some schools might have taken that decision already.) Another solution would be to back the subject not in proportion to its popularity among students but in proportion to the difficulty with which it is properly taught. No doubt, the task of teaching the subject so that it brings "excitement, vitality, stimulation, and inspiration"<sup>6</sup> appears to be most difficult.

Various strategies for strengthening the subject are conceivable. Before so doing, however, it would be wise to discuss some reasonable objectives and also diagnose the educational needs in relation to them.

The educational objectives which were implied in the course descriptions of 1968-69 were all very low within the cognitive hierarchy: "Introduction to" and "orientation to" were common ways of presenting history instruction to the dental students. Another approach would be the one suggested by Korf,<sup>6</sup> who claimed that history of dentistry should be taught with the objective of releasing existing sensitivity among the students thereby resulting "in future generations of dentists with a firmer sense of their participation and responsibility in their own profession."<sup>6</sup> However, Korf's confidence in the teaching of dental history sounds most unrealistic to the author of this report.

Korf's mission for dental history appears to be more appropriate for all these subjects, taken together, which are described as the "humanities."<sup>1,2</sup> Humanistic studies have been given goals such as the promotion of adaptive capabilities, self-criticism, self-awareness, tolerance, and flexibility.<sup>1</sup> Humanistic studies could be used, according to Banks and Vastyan, to provide experiences and perspectives, conceptual models, methods for analysis, alternatives to



reductionism, a realization that truth is the daughter of time, and that no "facts" are beyond questioning.<sup>1</sup> And some medical schools have already taken the step to include humanities in their organizational structures and their curricula. For example, the college of medicine at Pennsylvania State University has instituted a Department of Humanities which is teaching subjects such as history, literature, and philosophy. The medical school at the State University of New York at Stony Brook has established a Division of Social Sciences and Humanities with chairs in subjects such as sociology, philosophy, and history. The University of Texas Medical Branch has even established a Division of the History of Medicine.<sup>1</sup> Medical history is obviously undergoing a renaissance from a new organizational base together with other subjects collectively referred to as the humanities. This observation does not imply, however, that dental schools should copy the same development. Apparently, there are great difficulties involved in creating such a transformation:

... humanistic studies face potential opposition in medical education from three identifiable directions. Colleagues from the humanistic disciplines can be expected to look askance at such attempts as marginal and without conventional academic rewards. Second, medical colleagues may well resent the implicit criticism and challenge of alien disciplines, whose presence questions the adequacy of traditional models. The humanist and social scientist are third parties whose comments on clinical interactions may transform the student from imitator to questioning learner. Finally, the biological scientist, competing for student time and attention in a constricting curriculum, may see the humanistic disciplines as uninvited intruders or unwelcome guests.<sup>1</sup>

Nevertheless, the present survey, which was conducted in early 1969, left the impression that history of dentistry should be taught intensively if taught at all.\* If taught, various contents could be considered. The content of most courses in 1968-69 was best described as museum catalogues starting, as one course did, with prehistoric animals and ending with the American Dental Association. A few courses were more biographical by presenting "a review of the lives and contributions of men who have been leaders in the evolution of dentistry." Two courses were particularly concerned with extrapolating the historical events into the future, thereby teaching about the unwritten history of the profession; one course took a clear sociological approach to the history of dentistry.

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\*/ Considering the student opinions, making dental history into an elective would probably be equal to eliminating instruction in the subject.

None of these contents stood out as being particularly favored by the students. It would seem appropriate, however, to emphasize the biographical approach and the sociological approach extending the historical development into a professional future. The biographical approach could present models for identification, and professional "heroes," not only past but also contemporary, could serve as role models for scientific, professional, and public health action. The biographical way of teaching dental history could also widen the image of being a dentist, create an understanding for frustrations involved in trying to influence change, and teach that there are good reasons, but no easy victories, in creating professional progress. The teaching of history would thereby become not a goal in itself but a means for reaching a greater goal within the realm of humanities.

The sociological approach, on the other hand, would offer potentials in extrapolating from the past into the future. It might also offer the students a sense of historical belonging and belonging to a path of progress. It could teach about the built-in dualism of the profession and the historical tensions between the desire to serve and the temptation to exploit. The sociological approach would perhaps suit not only the historical aspects of professionalization, health services, and public demands, but also biological and technological developments. The chronological approach to teaching dental history could thereby be abandoned with its presentation of the subject as a cabinet for bric-a-brac. A sociological trend analysis making history relevant to the future would also offer some excellent opportunities to break the dominance of lecturing. An involvement and participation of students in the teaching process would come rather naturally if programmed self-instruction or lectures about the past were followed by small group discussions with contemporary "heroes" and discussions about the professional future of the students.

Material for self-instruction whether programmed or not, could probably be developed as a way of improving the basic instruction in the subject. Video-taped lectures by the few teachers who are truly inspiring might offer another solution.

#### SUMMARY AND SUGGESTIONS

The subject of dental history was expected to have little relevance to the average dental student of 1968-69, and the instruction which was provided did not seem to alter the students' way of looking at the subject.

Two major solutions to the rather deplorable situation stood out. One suggested the elimination of the subject, a decision which had

been taken either officially or de facto by four of 20 schools. The other would be to strengthen the subject in content and method within an overall context of humanistic studies. History of dentistry would then be one of a group of subjects all trying to contribute to the development of pride, humility, critical thinking, and a personal satisfaction in experiencing a sense of professional belonging. A development toward an expanded place for humanities within the dental curriculum would not be an easy task, however. Banks and Vastyan have observed that:

The introduction of nonmedical perspectives into a medical context is not a self-validating enterprise. Rather, it is akin to what Robert Penn Warren called "that slow, painful grinding process by which alone an idea takes shape in history." Effectiveness exacts a toll of energy, money, time, and the support of knowledgeable and committed medical colleagues. Without such resources the medical school can become the burying ground for the brightest of visions and ventures.<sup>1</sup>

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# The National Board Examination and Academic Achievement

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Considerable effort has been expended in analyzing the validity and reliability of the Dental Aptitude Test (DAT) as predictor of performance in dental school. Research in the above area include the work of Gruber and Gruber<sup>1</sup>, Manhold, Vinton and Manhold<sup>2</sup>, Reilly, Yufit, and Mattson<sup>3</sup>, and Peterson<sup>4</sup>. As for local variations Fredericks and Mundy<sup>5</sup> found in one dental school that there was no relationship between the subjects' DAT scores and their academic achievement in the second semester of the freshman year, though some existed between the first semester of the first year. Much less effort has been concentrated on the analysis of the National Board (NB) examination scores in relation to other variables such as academic achievement in the four years of dental school.

The present study, therefore, investigates the relationship between dental students' performance on the NB examinations and their performance on the DAT and their academic achievement (AA) over the 4 years of a dental school. In particular, it attempts to examine the following *two* empirical questions:

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1. Does the dental student's performance on the National Board examinations reflect his previous performance on the Dental Aptitude Test (DAT), the average grade in college (AGC), and his average grade in science (AGC)?
2. Does the student's performance on the National Board examinations reflect his academic achievement (AA) in the four years of dental school performance?

It is hypothesized that dental students with higher NB scores have significantly higher DAT scores and higher academic records than students with lower NB scores. Stated in the null form the above hypothesis reads: Scores on the National Board Examinations do not relate significantly to an individual's academic achievement in the four years of dental school. A  $p$  of .05 was accepted as indicating statistical significance.

#### METHOD

The study sample, which has been described in previous papers, consisted of 1 class of 81 male dental students who attended a midwestern school of dentistry during the academic years 1965-1969<sup>6,7</sup>. Originally, there were 86 students, but 4 discontinued studies at the end of the freshman year. Most of the students in the sample came from rather small, fairly well-educated families living in urban communities at a reasonably high socioeconomic level. Twenty-three per cent of the respondents had German ancestry and 18 per cent were of Italian descent; in both instances the progenitors were mainly from the lower-middle and upper-lower classes.

As noted previously, there have been several articles on the reliability, validity, and predictive qualities of the DAT. In the current study, each sub-test of the DAT was analyzed, but specific focus was given to the analysis and investigation of the 2 composite or average scores, namely, Academic Average (AC) and the Manual Average (MA).

In accordance with the policy of the school under study, the NB examinations (Part I) were given near the end of the second year of the preclinical period; Part II was administered near the end of the fourth year of dental school.

For a detailed examination of the independent variables, the composite scores AC and MA of the DAT; the AGC, the AGS, and the annual breakdown of the academic achievement were used. The variables were as follows:

1. AA(DAT) = Academic Average of the DAT
2. MD(DAT) = Manual Average of the DAT
3. AGC = Average Grade in College
4. AGS = Average Science Grade in College
5. AA(1) = First Year Academic Achievement
6. AA(2) = Second Year Academic Achievement
7. AA(3) = Third Year Academic Achievement
8. AA(4) = Fourth Year Academic Achievement

The dependent variables were as follows:

1. NB(AV-1) = Average Score on Part I
2. NB(AV-2) = Average Score on Part II
3. NB(A) = Anatomy
4. NB(B) = Microbiology
5. NB(C) = Physiology
6. NB(D) = General Pathology
7. NB(E) = Histology and Embryology
8. NB(F) = Biochemistry
9. NB(G) = Dental Anatomy
10. NB(H) = Operative Dentistry
11. NB(I) = Pharmacology
12. NB(J) = Prosthodontics
13. NB(K) = Oral Surgery and Anesthesia
14. NB(L) = Orthodontics and Pedodontics
15. NB(M) = Oral Pathology and Roentgenology
16. NB(N) = Endodontics and Periodontics

In the same sample there was no relation between average grade in college and the MA of the DAT<sup>8</sup>; average grade in science and the AC and MA of the DAT<sup>9</sup>. In view of these findings, it was worthwhile to examine whether the NB scores would prove to be more sensitive toward measuring dental school achievement.

#### FINDINGS

##### *National Board Examination Scores and AGC, AGS, AC and MA of the DAT*

Very little effort has been concentrated on the evaluation of the National Board (NB) examination scores in relation to variables such as average grade in college, average grade in science, academic and manual averages of the dental aptitude test. In this study, the hypothesis that the National Board Examination Scores is related to AGC, AGS, the AC and MA of the DAT is not supported by the data presented in Tables 1 and 2. It would seem, therefore, that many



TABLE I

Relationship Between the Average National Board Examination Scores (Part I),  
Average Academic Grade in College, Academic Science Grade in College,  
and Academic and Manual Averages of Dental Aptitude Test

Achievement Variables	Average National Board Examination Scores (Part I) #					
	Upper Third and Middle Third		Upper Third and Lower Third		Middle Third and Lower Third	
	t	Sig.*	t	Sig.*	t	Sig.*
Average Academic Grade in College (AGC)	0.28	NS	-1.85	NS	1.38	NS
Academic Science Grade in College (AGS)	-0.67	NS	-1.96	NS	-1.54	NS
Academic Average of Aptitude Test (AC of DAT)	-0.27	NS	-1.42	NS	-1.20	NS
Manual Average of Aptitude Test (MA of DAT)	-0.81	NS	-0.35	NS	0.35	NS

\* Sig – Significance; S = Significant at .05 level; NS = No Significance

# NB scores were divided into thirds: 1 = upper third; 2 = middle third; and 3 = lower third

**TABLE 2**  
**Relationship Between the Average National Board Examination Scores (Part II)**  
**and Average Academic Grade in College, Academic Science Grade in College,**  
**and Academic and Manual Averages of Dental Aptitude Test**

Achievement Variables	<i>Average National Board Examination Scores (Part II)</i> <sup>#</sup>					
	Upper Third and Middle Third		Upper Third and Lower Third		Middle Third and Lower Third	
	t	Sig.*	t	Sig.*	t	Sig.*
Average Academic Grade in College (AGC)	-1.07	NS	-1.93	NS	-1.26	NS
Academic Science Grade in College (AGS)	0.61	NS	-0.78	NS	-1.44	NS
Academic Average of Aptitude Test (AC of DAT)	-1.69	NS	-3.08	NS	-1.27	NS
Manual Average of Aptitude Test (MA of DAT)	-1.22	NS	-0.82	NS	0.56	NS

\* Sig = Significance; S = Significant at .05 level; NS = No Significance

# NB scores were divided into thirds: 1 = upper third; 2 = middle third; and 3 = lower third

students with high dental aptitude, as measured by the MA and AC of the DAT, were relatively low in scores on the National Board Examination. Conversely, many students with lower scores on the MA and AC of the DAT exhibited relatively high scores on the NB examinations. Somewhat similar results can be extrapolated from the data presented in Tables 1 and 2 for AGC and AGS — since these two variables were not related to the National Board Examination scores obtained by the respondents.

*National Board (NB) Examination Scores and Academic Achievement (AA) NB Part I and AA*

An analysis of the data reveals that there is no relation between the subjects' NB (Part I) scores and their academic achievement in the second and third years of dental school (Table 3). However, in the first year of study there is a significant difference ( $p < .05$ ) between the upper third of the class in academic standing and with the middle and lower third when comparing the NB (Part I) scores of these groups. Further, there are significant differences between the students' fourth year academic achievement and their national board examination scores (Table 3).

*NB Part II and AA*

The data in Table 4 reveals that there are no relations between the students' NB (Part II) scores and their academic achievement in the second and third years of their dental education. However, in the first and fourth years of study there are significant differences ( $p < .05$ ) between the upper third of the class in academic standing and with the middle and lower third when comparing the NB (Part II) scores of these groups. It would seem, therefore, that many students with high NB scores were relatively low in academic achievement in the 4 years of dental training. Conversely, many students with lower NB scores exhibited relatively high academic achievement.

While the data in Tables 3 and 4 do not provide complete evidence of a positive relationship between NB scores and dental achievement, neither do the data alone confirm the null hypothesis that NB scores do not significantly relate to an individual's academic achievement in the four years of dental training. The similarity in academic achievement among the students (grouped according to their NB scores) does confirm the fact that the subjects have high intellectual ability, this having been established by their acceptance for dental education.

To test the hypothesis further by determining whether NB scores is related to either of the 3 other achievement variables — DAT



**TABLE 3**  
**Relationship Between the Average National Board Examination Scores (Part I)**  
**and Academic Achievement in Dental School**

Academic Achievement in Dental School	Average National Board Examination Scores (Part I) <sup>#</sup>					
	Upper Third and Middle Third		Upper Third and Lower Third		Middle Third and Lower Third	
	t	Sig.*	t	Sig.*	t	Sig.*
First Year Academic Achievement – Cumulative Average	0.89	NS	3.52	S	2.42	S
Second Year Academic Achievement – Cumulative Average	-2.72	NS	-5.37	NS	-3.38	NS
Third Year Academic Achievement – Cumulative Average	-2.21	NS	-4.38	NS	-2.42	NS
Fourth Year Academic Achievement – Cumulative Average	2.21	S	4.59	S	2.25	S

\* Sig = Significance; S = Significant at .05 level; NS = No Significance

# NB scores were divided into thirds: 1 = upper third; 2 = middle third; and 3 = lower third

**TABLE 4**  
**Relationship Between the Average National Board Examination Scores (Part II)**  
**and Academic Achievement in Dental School**

Academic Achievement in Dental School	Average National Board Examination Scores (Part II) <sup>#</sup>					
	Upper Third and Middle Third		Upper Third and Lower Third		Middle Third and Lower Third	
	t	Sig.*	t	Sig.*	t	Sig.*
First Year Academic Achievement — Cumulative Average	0.15	NS	2.64	S	2.43	S
Second Year Academic Achievement — Cumulative Average	-0.56	NS	-3.72	NS	-3.33	NS
Third Year Academic Achievement — Cumulative Average	-1.36	NS	-4.90	NS	-3.50	NS
Fourth Year Academic Achievement — Cumulative Average	1.01	NS	4.35	S	3.43	S

\* Sig — Significance; S = Significant at .05 level; NS = No Significance

# NB scores were divided into thirds: 1 = upper third; 2 = middle third; and 3 = lower third

scores, AGC, and AGS — and whether these, in turn, are related to academic achievement, the relation among all 5 of these factors was studied. However, for this report, Tables 1 and 2 do indicate that NB scores are not related to a student's undergraduate performance in college or to the student's two composite scores on the DAT.

#### DISCUSSION

This study shows that the National Board Examinations for a group of students at one dental school over a 4 year period were not related to the respondents' academic achievement in the second and third years of their training. Further, the NB scores were not related to other achievement variables such as average grade in college, average science grade in college, and the composite scores (academic and manual averages) of the dental aptitude test.

While dental school applicants obviously require intensive assessment to discover whether or not they have the ability to meet the technical and intellectual demands of dental training, the data from this study suggest that the above achievement variables are not indicative of success on the National Board Examinations. Further, since many dental schools are concerned with their methods and techniques for assessing students for promotion into the clinical years of study and of their educational programs, it seems advisable for promotion committees to study ever more critically other variables over and beyond the student's academic record and his scores on the National Board examinations.

Although the results of this study came from one dental school only, these findings could be useful for independent dental schools which are involved in a searching analysis of their methods for evaluating their students and of their professional programs.

However, since all of the study subjects came from predominantly white, urban settings, further research is required to explore whether these results can be extrapolated to the total dental student population, or whether the results will be similar for all regions and subcultures.

#### SUMMARY

The National Board Examination scores for a group of students at one dental school were studied in relation to average grade in college, average grade in science, dental aptitude test scores, and academic achievement in the 4 years of training. The data indicate these findings:



1. Academic achievement in the second and third years of study at the dental school at which the research was conducted was not related to scores on the National Board Examinations.
2. Academic achievement in the first and fourth years of study was related in part to the scores on the National Board examinations.
3. The National Board Examination scores were not related to other achievement variables such as average grade in college, average grade in science, or the dental aptitude test scores.

#### ACKNOWLEDGEMENTS

The authors thank Rosemarie Bogal, NIMH Fellow of the School of Social Work and Research Assistant in the Department of Sociology for her efforts in these research data.

The senior author wishes to acknowledge the Public Health Service Fellowship at the Harvard University Medical School, granted by the Health Service Research Training Committee, which greatly facilitated the presentation of this aspect of the research project. To all the dental students who have participated in this research during the 4 years of their dental education, we extend our sincere thanks.

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AMERICAN COLLEGE OF DENTISTS  
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 THE NEED FOR DENTISTS (Continued from Page 118)

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6. The following is a list of new dental programs in universities:
  - The University of Colorado, Denver
  - Southern Illinois University, Carbondale
  - SUNY, Stonybrook, New York
  - Boston University, Boston
  - University of Oklahoma, Oklahoma City
 The following is a list of dental programs closed for lack of funds:
  - Loyola, New Orleans
  - St. Louis University, St. Louis
7. The others were: Ultrasonic cleaning along with high volume evacuation devices.

The Pennsylvania State University  
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## NEWS OF FELLOWS *(Continued from Page 84)*

Edmund F. Ackell, of Gainesville, Florida, has been named Vice President for Health Affairs at the University of Southern California. He will be responsible for the coordination and overall direction of USC's health science schools: Dentistry, Medicine, and Pharmacy.

Gerald E. McGuirk of Flushing, New York has been elected General Chairman of the 50th Annual Greater New York Dental Meeting which will be held at the New York Hilton, November 30 — December 5. Irving E. Gruber, of Baldwin, New York has been appointed to the new post of Executive Director of the Dental Meeting.

H. Curtis Hester of Upper Montclair was recently appointed to the New Jersey Board of State Dentistry.

Phillip Schwartz of East Orange, New Jersey and Sol Kessler of Livingston, New Jersey were recently named to serve as examiners for the Northeast Regional Board.

The 1973 Century Club Medallion Award of the College of Dentistry at the Brookdale Dental Center, New York University, was presented to Homer Cree Vaughan, past president of the American Prosthodontic Society. Dr. Vaughan is clinical professor of Removable Prosthodontics at NYU and currently Director of the APS International Circuit Courses which began in 1964 to foster an international exchange of scientific information. This award is presented for "outstanding and distinguished leadership, for meritorious service to alma mater, for extensive contributions to excellence in dental education and for humanity and humility."

## BOOK REVIEW

Conscious-Sedation in Dental Practice: Bennett, C. Richard. St. Louis, C.V. Mosby Co. 1974, 212 pp. with 84 illustrations. \$15.

Concerned with the dangers of anesthesia and anesthetic procedures, the author, from his wide experience as a teacher of anesthesiology, pharmacology and physiology has prepared this short but comprehensive book on the alternatives that are available.

He considers in some detail concepts, and principles as well as techniques for the use of suggestion in pain and anxiety control, inhalation sedation with nitrous oxide and oxygen, sedative and hypnotic drugs and intravenous conscious-sedation.

The text is well illustrated, and should prove of value to the student or the graduate dentist seeking basic and authentic information on the subject. A useful bibliography and a glossary of technical terms are appended.

## Letters to the Editor

*The following letters were received in response to the Editorial, "Third Party Programs — Implications for the Future" which appeared in the January 1974 Journal.*

Dear Dr. Kaplan:

I would like to oppose your plea for acceptance of "Third Party Program". Dentists, I hope will not fall into the trap that the medical profession has. It looks great at the beginning to the dentist and the patient but there is a severe price to pay. The title of the pamphlet you mention, "Who Pays the Bill" should read "He who pays the piper calls the tune." When someone other than the patient pays he also directs the treatment even though indirectly at first. Now that PSRO is becoming a law there is no question that the 3rd party will absolutely and completely regulate the treatment.

The American College of Dentists with its high standards should not stoop to being concerned with "keeping dentists busy in hard times". The good dentists are always busy.

Yours truly,

John C. Hardin, Jr. D.D.S., M.D., F.A.C.S.  
Shreveport, La.

Dear Bob:

As one who was involved with the development of "Who Pays the Bill?", I wish to thank you for your "plug" in the Journal of the American College of Dentists.

The American Society of Dentistry for Children is continuing to work in cooperation with the American Academy of Pedodontics in this important area of activity and we are gratified to know the efforts are of help to the profession.

Thanking you again for your fine editorial and with kindest personal regards, I remain.

Very sincerely,

Roy L. Lindahl, D.D.S.  
Chapel Hill, N.C.

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### CORRECTION

The name of Joseph P. Adamchic of Pittsburgh, Pa. was inadvertently omitted from the list of new Fellows printed in the last issue.

# *The Objectives of the American College of Dentists*

The American College of Dentists in order to promote the highest ideals in health care, advance the standards and efficiency of dentistry, develop good human relations and understanding and extend the benefits of dental health to the greatest number, declares and adopts the following principles and ideals as ways and means for the attainment of these goals.

(a) To urge the extension and improvement of measures for the control and prevention of oral disorders;

(b) To encourage qualified persons to consider a career in dentistry so that dental health services will be available to all and to urge broad preparation for such a career at all educational levels;

(c) To encourage graduate studies and continuing educational efforts by dentists and auxiliaries;

(d) To encourage, stimulate and promote research;

(e) Through sound public health education, to improve the public understanding and appreciation of oral health service and its importance to the optimum health of the patient;

(f) To encourage the free exchange of ideas and experiences in the interest of better service to the patient;

(g) To cooperate with other groups for the advancement of interprofessional relationships in the interest of the public; and

(h) To make visible to the professional man the extent of his responsibilities to the community as well as to the field of health service and to urge his acceptance of them;

(i) In order to give encouragement to individuals to further these objectives, and to recognize meritorious achievements and potentials for contributions in dental science, art, education, literature, human relations and other areas that contribute to the human welfare and the promotion of these objectives—by conferring Fellowship in the College on such persons properly selected to receive such honor.



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