

SUMMER 1982

JOURNAL

AMERICAN COLLEGE of DENTISTS



DENTAL RADIOLOGY

—Trends, Issues and Problems

AUGMENTING LICENSING EXAMINATIONS

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, stimulate and promote research;

(d) 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;

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

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

(g) 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;

(h) 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.

The JOURNAL

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of the AMERICAN COLLEGE of DENTISTS

**A Quarterly
Publication
Presenting
Ideas & Opinions
In Dentistry**

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Social Trends Affect Dentistry

FROM THE EDITOR'S DESK

Trends in society are much larger than the professions and we in dentistry are carried along with these trends. Though we try our best to stand firm against what we feel are harmful changes, we are swept along with the current of present social philosophies.

Trends seem to travel in cycles. We observe these cycles in politics, in architectural styles, in fashions, in religion and in government. One cycle we are particularly alarmed about these days concerns the trend to de-professionalize the professions and to downgrade standards that protect the public in the area of dental care. Dentists are frustrated, puzzled and appalled by this situation which, if it continues full cycle, might return us to the conditions of the early 1900's. In that era, there were few standards for dentists and almost no protection for the public. The attitude was *caveat emptor* (let the buyer beware) for the patient.

During the 1920's, the dental profession began to organize itself better. It developed a code of ethics and better standards. The American College of Dentists, with its high principles, was formed. With the cooperation of the profession, states developed regulations and licensing procedures for dentists for the purpose of protecting the public. With its high ethics and its integrity, dentistry acquired a professionalism which has deserved and received considerable respect from the public over the past fifty years.

Now, in the last five years, we are suddenly seeing changes and a



Keith P. Blair

disturbing trend to tear down professionalism. The Federal Trade Commission now assumes that all health professions are trades to be regulated by the FTC and that FTC Trade Rule Regulations can supersede and pre-empt state laws in regulating the health professions.

Federal courts have started trends (or followed trends) with decisions that give new liberal interpretations to old laws: professions do not have the right to regulate themselves; the public has the right to see and hear everything from X-rated shows to dental advertising.

Social trends don't have to continue in one direction. They can be reversed or changed to a better direction by a grass-roots effort to educate a public which is definitely interested in good health and strongly in favor of quality care.

We must try to adapt, as much as possible, to the changing times without sacrificing our professional

principles. There is nothing wrong with institutional programs to promote good dentistry and to motivate the public to have dental treatment.

The bottom line is that if we want to affect the direction of social trends, we must reach the people who have a hand in developing these trends. Such a list would include state legislators, members of Congress and state and federal government officials.

And how do dentists reach the ears of the persons who are in position to affect social changes? Through *political action* at all levels of government. That includes action through political action committees (PAC's) and action through individual activities. The ADA's ADPAC and the ADA's Washington, DC office are doing a fine job for dentistry but they need all the help (and the contacts) they can get.

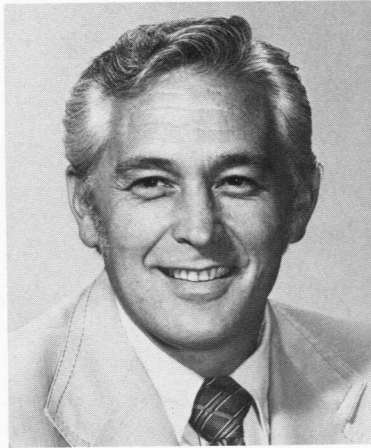
Dentists simply must get outside their office walls to become informed and involved regarding political activities. Dentistry needs to combine its efforts with other health groups who are similarly affected by trends and who have similar goals. These are essential actions to cope with the social trends that affect dentistry.

Traditionally, dentists have not been interested in political action. It is important for us to start participating in all areas of the country if dentistry is to meet the challenge of the trends in society.

Sitting back and wringing our hands will not help.

Keith P. Blair

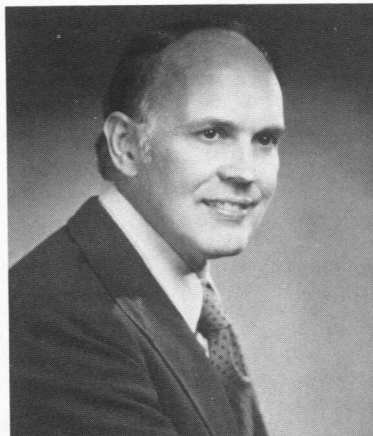
NEWS OF FELLOWS



Arthur A. Dugoni

W. Arthur George, Associate Dean, University of Pittsburgh School of Dental Medicine, was the first Honorary Member to be elected to the Pennsylvania Prosthodontics Associate Section of the American College of Prosthodontists.

James A. Harrell, Sr. of Elkin, North Carolina is the new President of the Academy of General Dentistry. Very active in community affairs, Dr. Harrell is a three-term mayor of the city of Elkin. His father was a dentist and two of his sons are dentists.

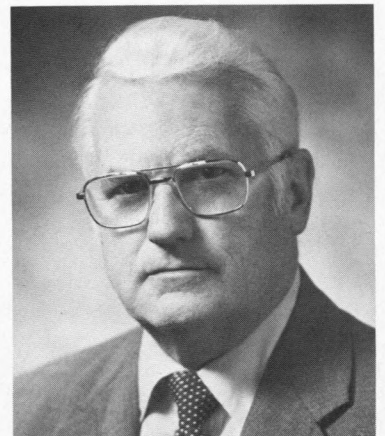


James A. Harrell, Sr.

Arthur A. Dugoni, Dean of the University of the Pacific School of Dentistry, has been installed as the President of the California Dental Association at the CDA House of Delegates meeting in San Diego. He has also received the Distinguished Service Award of the Pierre Fauchard Academy, Northern California Chapter.

Manuel I. Weisman of Augusta, Georgia, an Associate Professor at the Medical College of Georgia School of Dentistry was elected to a three-year term as Trustee to the American Association of Endodontists and appointed Chairman of the Research Section of the Endowment and Memorial Foundation of the AAE.

Robert J. Nelsen, former Executive Director for the American College of Dentists, has been selected to be the recipient of the Dr. Fones Medal at the Mid-Season Meeting of the Connecticut State Dental Association. The award is in recognition of Dr. Nelsen's outstanding achievements and contributions to the profession.



Robert J. Nelsen

Edward J. Forrest, Dean of the University of Pittsburgh School of Dental Medicine has been named the 1982 recipient of the Pennsylvania Dental Association (PDA) Annual Award which is the PDA's highest honor. The award is presented to individuals "whose significant attainments and high standing have been of such character as to have materially advanced the science and art of dentistry and whose public life and activities have been of such nature as to reflect great credit on the profession".

Robert E. Lamb of Dallas was honored as Distinguished Alumnus of the year by the Baylor Dental Alumni Association. The award is given "in recognition of constant devotion and outstanding contributions to the art and science of dentistry." He has been the Secretary-Treasurer of the Texas Section for ten years.



Dr. Robert E. Lamb, left, with Mrs. Lamb, receives the Baylor University Dental Alumni Association's Distinguished Alumnus Award for 1982 from Dr. Morris L. Barrington, president of the Baylor Dental Alumni Association.

Frank Pavel of San Diego was elected President of the American Board of Oral and Maxillofacial Surgeons. The Board establishes fitness and competency criteria and examines and certifies qualified candidates. Dr. Pavel is an Associate Clinical Professor of Surgery at the University of California at San Diego Medical School and is in private practice in San Diego. He is an internationally recognized authority on the surgical correction of dentofacial deformities.

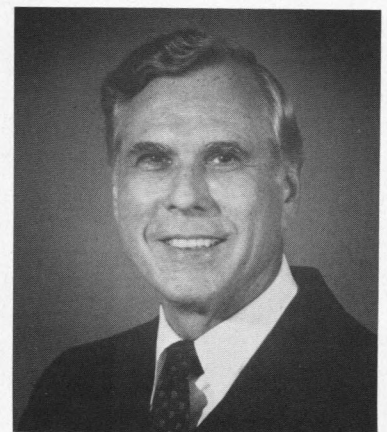


Frank Pavel

Robert L. Heinze of Rockville Center, New York has received an Award of Merit from the University of Pennsylvania Dental Alumni Society in recognition of his services and his devotion to the advancement of dentistry. Dr. Heinze served on the Board of Regents for the American College of Dentists and has been in active practice in dentistry for almost sixty years.

Clifton O. Dummett, chairman of the department of community dentistry at the University of Southern California served as a member of the U.S. Health Team which was invited to assess health practitioner training in Nigeria earlier this year.

Russell V. Brown, Dean of Marquette University School of Dentistry has been chosen as president-elect of the American Society of Dentistry for Children (ASDC). He will begin his term as president in October 1982.

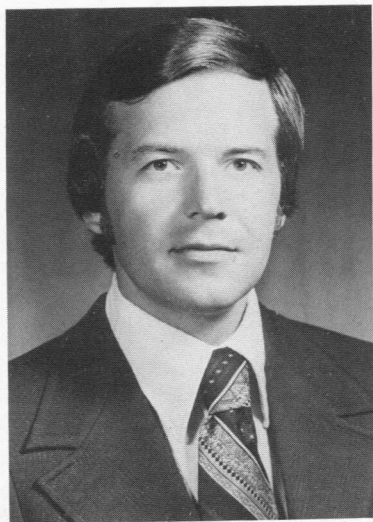


Russell V. Brown



William P. Humphrey

Leonard K. Schreiber of Morrow, Georgia has been appointed Professor Emeritus and Head Emeritus of the Department of Dental Hygiene at Clayton Junior College, Morrow, Georgia by the Board of Regents of the University System of Georgia. The appointment followed his retirement as Head of the Department of Dental Hygiene.



L. Don Shumaker

William P. Humphrey of Denver received an Honorary Degree of Doctor of Science from the University of Colorado. Dr. Humphrey is widely recognized for his work in pediatric dentistry and is particularly noted for his pioneering efforts in developing the stainless steel crown, presenting hundreds of clinics and papers on the use of steel crowns. This year Dr. Humphrey was also named the Alumnus of the Year by the University of Kansas City Dental School. He formerly served a term on the American College of Dentists' Board of Regents.



Erik D. Olsen

Erik D. Olsen, President of California Dental Service, was elected President of the Delta Plans Association. He was also elected to a second three-year term as a member of the Association's Board of Directors.

L. Don Shumaker of Cleveland is the President-Elect of the Ohio Dental Association. He has also been appointed to serve as Speaker of the House of Delegates for the Academy of General Dentistry.

Russell I. Todd of Richmond, Kentucky, author of several books as a traveler, philosopher and humorist has received an Honorary Degree of Doctor of Laws from Cumberland College at Williamsburg, Kentucky.

E. Jeff Justis, Memphis, Tennessee has been honored by the Memphis Dental Society for his many years of service to the profession. He was president of the Tennessee Dental Association, served on the ADA Board of Trustees and was ADA Treasurer for three years.



E. Jeff Justis, Sr. of Memphis was honored by the Memphis Dental Society at a formal appreciation dinner and presented with a beautiful grandfather clock. Guest speakers included TDA President William Manning, ADA Trustee Joseph Hagan, ACD President Richard Reynolds, ADA Past President Frank Bowyer and former Tennessee Governor, Winfield C. Dunn. Pictured above with the clock, left to right, are Dr. Frank Bowyer, Mrs. Justis, Dr. E. Jeff Justis and Dr. Justis' niece, Yvonne Justis.



At the Spring Board of Regents meeting, Regent Leo E. Young, right, presents a check for \$500. to the American College of Dentists Foundation from the Southern California Section. Accepting on behalf of the Foundation is Odin M. Langsjoen, Foundation President, left.



Not to be outdone at the Spring Board of Regents meeting, and to continue the friendly rivalry between the two California Sections, Regent Robert A. Cupples, left, also presents a check for \$500. from the Northern California Section to the American College of Dentists Foundation. Happily accepting the contribution is Foundation President Odin M. Langsjoen, right.

American College of Dentists

FOUNDATION

The American College of Dentists Foundation was established so that funds contributed to the Foundation could be used for educational, literary, scientific and charitable purposes. Available funds may be used to:

1. Foster and maintain the honor and integrity of the profession of dentistry.
2. To study, improve and to facilitate dental health care.
3. To promote the study of dentistry and research therein, the diffusion of knowledge thereof, and the continuing education of dentists.
4. To cause to be published and to distribute addresses, reports, treatises and other literary works on dental subjects.
5. To promote suitable standards of research, education communication, and delivery of dental health care.

All contributions to the Foundation are tax-deductible as charitable gifts. Individuals, associations and other foundations are all eligible to support the work of the American College of Dentists Foundation which is classified as a Section 501 (c) (3) organization under the IRS Code.

"F.A.C.D." The Title of Fellowship

The title of Fellowship in the American College of Dentists (F.A.C.D.) is conferred on all members of the College and may be used following one's professional degree on certain limited occasions. It should be noted that the title "F.A.C.D." is not a degree but a recognition.

In order to conform to good taste and accepted procedures, the use of the letters F.A.C.D. is limited; it is not used in all cases where degrees are used. An accepted guide is as follows:

1. It is not used on office doors, office buildings, office name plates or stationery. Your professional degrees (D.D.S. or D.M.D.) only should be used here.

2. It may be used in college registers, where faculty listings are presented, together with all other degrees and titles.

3. Its use following the name of the author of an article published in a journal at the discretion of the editorial board. Some journals limit the title to the professional degree as alone. Some include both academic (A.B.) and professional degrees; some include all degrees of the writer. The decision should remain with the members of the editorial board, who can be informed of the Fellowship at the time of having the paper presented.

4. It should be used, together with both academic and professional degrees on the title pages of textbooks of which the author is a Fellow of the College.

5. When signing a professional register, ordinarily the professional degree only, is given; however, in some foreign countries, when signing a visitor's register at a dental college, for example, one is expected to add all degrees for both information and identification. Previous policy of those signing earlier is a guide.

SECTION ACTIVITIES

Michigan

The Annual Meeting was divided into two events—a Special Session business meeting and the Annual Banquet. The special session was for the purpose of defining and identifying objectives and goals that the Section might want to pursue.

Keynote speaker for the special session was the ACD Executive Director, Dr. Gordon H. Rovelstad who was introduced by Regent Dr. Paul S. Butcher. Dr. Rovelstad presented a brief history of the College and its original objectives. He indicated how these same high ideals and standards of excellence are still being pursued today by the American College of Dentists. He discussed the modernization of the ACD central office and the new computerized system now in operation which should provide more efficient service for the membership.

Dr. Rovelstad expressed his concerns about the philosophies and attitudes of dental students and new graduates who seem to have little insight into professionalism. Another concern is the large decline in the number of dental school applicants.

Section Chairman Charles De-fever reported on the results of a recent survey of the Michigan Section in which two-thirds of the respondents indicated their desire for the Section to sponsor recognition awards or scientific programs (or both).

The Silent Bell

Dr. Donald Hallas discussed the activities of the Grand Rapids area

Fellows. The concerns of this group for some meaningful project led to the creation of a Distinguished Service Award. The award is presented annually to one or more members of the local component dental society who have made continued and outstanding contributions to the profession. The recipient(s) of the Distinguished Service Award are honored at a dental society meeting and presented with a unique "*Silent Bell*", which is a personalized, engraved brass bell *without a clapper*, that is symbolic of quiet dedicated contributions to the profession without proprietary or commercial interests.

Sponsorship of this award by the American College of Dentists will be denoted on the program.

Claude L. Raby, Jr.

Metropolitan Washington D.C.

The Section meeting was held at the Shoreham Hotel in Washington with the Section acting as host for the 50th Annual Spring Meeting of the District of Columbia Dental Society.

The breakfast, attended by over 150 members and guests, heard Senator John Glenn of Ohio discuss the existing state of our defenses and the roll of government in solving the problems of the economy.

John R. Salcetti

Nominations Due February 1, 1983

Nominations for Fellowship Candidates to be inducted at the 1983 Convocation at Anaheim, California should be submitted no later than February 1, 1983.

For Nomination Forms, write to
The American College of
Dentists
7315 Wisconsin Avenue
Bethesda, MD 20814

Carolinas

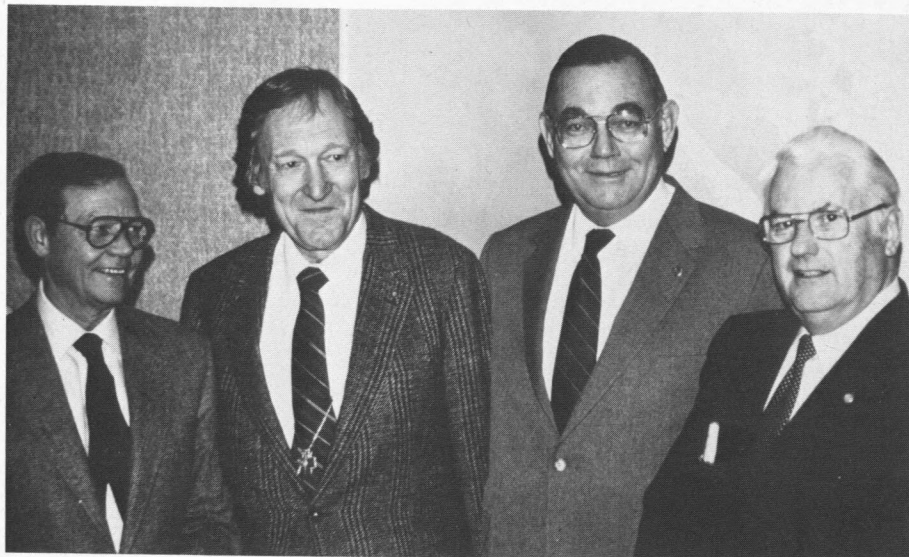
The Carolinas Section enjoyed a weekend annual meeting at Midpines, N.C. for husbands and wives.

Dr. Clarence Sockwell of the University of North Carolina School of Dentistry brought the doctors up to date on composites and current techniques.

A report was presented that would challenge the profession to hold to the code of ethics and to resist attempts to further change the laws regulating dentistry, that would allow changes detrimental to the dental health of the public. This report will be discussed more thoroughly at our next meeting.

New officers for 1982 will be Dr. Frank Hines of Columbia, S.C., Chairman; Dr. Jack Shankle of Chapel Hill, N.C., Vice Chairman; and Dr. Larry Williams of Benson, N.C., Secretary-Treasurer.

Larry A. Williams



American College of Dentists leaders at the Carolinas Section meeting in MidPines, N.C. Left to right, Charles W. Horton, outgoing Chairman for the Section; William C. Draffin, Immediate Past-President for the ACD; Charles W. Fain, Jr., ACD Regent for Regency 3; Robert J. Nelsen, former ACD Executive Director



Dr. Charles W. Horton is presented a plaque in recognition of his leadership as Section Chairman. Left to right are Robert J. (Jack) Shankle, Section Vice Chairman; Franklin B. Hines, Jr., new Section Chairman; outgoing Section Chairman, Dr. Horton; and Larry A. Williams, Section Secretary-Treasurer.

Washington State-British Columbia

The annual meeting of the Section was held in Spokane, Washington at the meeting of the Washington State Dental Association.

Section Chairman George Dore reported on the perceived need to invite younger but qualified practitioners to membership in the College. He also expressed concern that some apparently well-qualified nominees were not accepted for a reason not fully understood. It was decided to send a newsletter to the Section members explaining the nomination process and the need for new members.

Chairman Dore also announced that the first recipient of the *Ferrier Prize*, for the student most proficient in operative dentistry, was Mr. Howard Carlson, a senior at the University of Washington Dental School. This award will be given in alternate years to a University of Washington and University of British Columbia junior dental student. The fund for the Ferrier Prize was started by a gift from the estate of Fellow Walden I. Ferrier which has been augmented by contributions from Section members and largely through the efforts of Dr. Bruce B. Smith.

The highlight of the evening meeting was our guest-speaker, Dr. Karl-Acke Omnell, the new Dean of the University of Washington Dental School. He described his view of the problems of the dental school and offered his optimistic outlook for the future of dentistry.

Charles V. Farrell

Southern California

The Section held its annual breakfast meeting with the International College of Dentists in conjunction with California Dental Association Spring Scientific Session at Anaheim.

Our main speaker was ACD President Dr. Richard Reynolds who emphasized the positive side in current dental affairs.

Dr. Leon Ashjian was honored and presented with a recognition plaque for his six years of service on the ACD Board of Regents as the Regent for Regency 7.

Among the many dignitaries present were Dr. Robert Cupples the ACD Regent for Regency 8 and Dr. Burton Press, the ADA President-Elect.

Following the meeting, a Section officers meeting was held to consolidate plans for the Section to act as the Host Section for the activities connected with the annual Convocation at Las Vegas in November.

Section officers installed by Regent Leo E. Young were Admiral William H. Molle, Chairman; Jack F. Conley, Vice-Chairman; and Richard B. Hancock continuing as Secretary-Treasurer.

Lennart E. Karlson

Oklahoma

The Section meeting was held in Oklahoma City during the Oklahoma State Dental Meeting.

The Orthodontic Department at the University of Oklahoma College of Dentistry has established an Orthodontic Library as a memorial to the late Dr. Harry H. Sorrels of Oklahoma City who was a Fellow in the Oklahoma Section. It was Dr.

Sorrels idea to establish a library at the College of Dentistry dedicated exclusively to orthodontic publications and other materials.

The Section voted to donate \$250. to the Dr. Sorrels Library Fund in memory of Dr. Sorrels.

In line with reports from other areas of the country, there has also been a decline in student applications at the University of Oklahoma College of Dentistry.

It was proposed that a joint meeting be planned for next year with the International College of Dentists at the Oklahoma State Dental Meeting.

Walter E. Dilts

New Jersey

The meeting was held at the Ramada Inn in Clark.

Guest Speaker was Dr. Gordon Rovelstad, Executive Director for the College who spoke on, "Old and New Directions; What is it to be in dentistry?"

Dr. Rovelstad discussed the future objectives of the College, the activities of the College, dues structures and the financial status, and the changes in the format of the Journal.

In looking to the future, Dr. Rovelstad sees a change in the character of practices with a 30-40 per cent reduction in caries and a challenge to the dentists to establish new roles in dental treatment. Graduating classes must concentrate on quality, not quantity, in their graduates.

In conclusion, he urged that ACD Sections must take on projects that have an impact on the future of dentistry

Clifford W. Doeringer

A POSITIVE VIEW

An address before the Southern California Section
by the President of the American College of Dentists,

Richard, J. Reynolds.

It is a pleasure for me to represent the officers and Regents of the American College of Dentists and to bring you their greeting and best wishes. Let me hasten to assure you that we are sensitive to Section problems and needs, and that we stand ready to provide whatever support and assistance you possibly may require.

It occurred to me that in the time I have been allotted, it might be somewhat refreshing to say something positive for a change rather than dwelling on the doom and gloom that we are hearing from all sides regarding the state of our profession. Obviously, it would be totally absurd to deny the validity of our concerns and the problems confronting the dental profession. It has been said that "to have faults, and to be making no effort to amend them, is to have faults, indeed." These are trying times, and although things may be difficult, therein lies the opportunity for constructive change. The bad news is constantly before us: the state of the economy, high interest rates, inflation, the burgeoning national debt, unemployment, the shifting of the monetary potential away from the U.S. to other countries, and our own in-house prob-



Richard J. Reynolds

lems of oversupply of dental manpower and the current concern over the lack of busyness.

The good news is that labor, management and the federal government are finally awakening to the grim reality that past practice involving inordinately high labor costs, fringe benefits, days off, restrictive government regulations, inefficient manufacturing techniques, and environmental concerns have caused us, as a nation, to lose our competitive position. Speaking of environmental concerns, may I say, that while we should be concerned about environmental protection, the worst

possible environment is being broke, hungry, and out of work. Our problems can, and must, in the interest of our national welfare, be solved through recognition that the laws of the marketplace can no longer be ignored. We must be aggressive in our determination to recapture our competitive position and unwavering in our commitment to produce products made in America which are of superior quality and competitively priced. In the words of H.L. Mencken, "It is dangerous to make predictions, especially about the future." However, it is safe to say that the

Dentistry is acknowledged to be the most cost-effective of the health professions and is looked upon as the leader in peer review.

economy will rebound as it always has in the past periods of economic recessions. Some of our concerns and problems are over-dramatized, some will be self-correcting, and

some won't even happen. To call attention to a few examples, I should like to mention that we are witnessing a dramatic reduction in the applicant pool and in the size of the classes in our dental colleges. While this is not entirely a desirable situation, it nevertheless will tend to correct the oversupply of dentists.

Recent events have drawn a great deal of attention to proposed pro-competition health care legislation. These bills are designed to hold down health care costs, but have grave implications for the continued viability of dental prepayment programs. 75 million Americans are now covered by dental plans, representing 6.3 billion dollars per year in dental care. In spite of the anxiety generated by pro-competition legislation, it now appears that dental insurance, with its copayments, deductibles, and limits, might be exempted. Congress is several weeks or months away from serious consideration of this legislation, and much can happen between now and then. In national polls, our profession has been ranked second in terms of public confidence and esteem. Contrary to published reports that we suffer from an inordinately high rate of stress-related personal and social problems, these allegations are undocumented, false, and misleading. Perhaps you have seen the March, 1982 issue of Harper's magazine featuring an eleven page article entitled, "The Secret Lives of Dentists". The premise of the article is that we dentists are the way we are because we are overly sensitive to the public perception of dentists, generally. According to the writer of the article, a dentist is not an interesting individual, but a drudge whose uniform looks like a bowling shirt, whose office looks like a futuristic beauty parlor, whose fingers taste like soap, and who wanted to be a physician but wasn't smart enough to get in medical school. We are supposed to suffer disproportionately from physical and emotional debilitation, suicide,

drug abuse, and divorce. The negative comments and generalizations made are not substantiated by the facts. A review of the literature on occupational hazards and emotional stress among dentists resulting in possible maladaptive behavior, morbidity and mortality, was the subject of a report prepared by the Bureau of Economic Research and Statistics of the ADA. The conclusion reached was that dentists are healthy and have an overall death rate from all causes that is lower than the white, male population of equivalent ages. No

In spite of our worries about alternative delivery systems . . . 95% of all dental treatment is still being done in private offices.

study has found excessive rates of death from leukemia or cancer that might suggest problems of occupational exposure to radiation, mercury, or other equipment hazards. On the basis of available data, it would appear that very few dentists have occupational hazards and stresses resulting in death.

Dentistry is acknowledged to be the most cost-effective of the health professions and is looked upon as the leader in peer review. We can take pride in the phenomenal success of our preventive efforts.

In spite of our worries about alternative delivery systems and the growth of retail dental centers, 95% of all dental treatment is still being done in private offices.

The FTC has been a thorn in our side, and its rulings have done violence to the traditional values of our code of ethics and state dental practice acts. FTC chairman, James Miller, has informed Congress that he opposes exemptions for the professions from FTC jurisdiction and enforcement of anti-trust and consumer protection laws. Sen. Robert Kasten, R-Wisconsin, Chairman of a Senate subcommittee with jurisdiction over the FTC, told those

attending the ADA-ADPAC Public Affairs Conference in March that the FTC has gone too far in the area of regulation. He questioned the FTC role in pre-empting state laws and affirmed that states are doing an adequate job of regulating the professions, and that double layers of laws are not needed. Mr. Miller said the FTC was trying to regulate the professions only in those instances that involve restraint of trade, price-fixing, and/or boycotts. The Commission's legislative authority expires this fall. There are bills in both chambers to place restraints on continued unauthorized FTC activities in dentistry and other state regulated professions. In the Senate, the McClure-Melcher Bill, which originally failed by a mere two votes, 47-45, has been introduced as S 1984 by Senator James McClure, R-Idaho, and Senator John Melcher, D-Montana. It has 10 co-sponsors and would amend the FTC act to clarify that the commission does not have jurisdiction over state regulated professions. In the House, similar legislation co-sponsored by Rep. Thomas Luken, D-Ohio, and Rep. Gary Lee, R-New York, HR3722 has 166 co-sponsors. It would impose a moratorium limiting FTC activities involving state regulated professions and their non-profit professional associations.

It was gratifying that the FTC withdrew its request for General Accounting Office approval of a proposed denturist study. The ADA provided extensive commentary to the G.A.O. in which objections to the study as proposed were outlined. Moreover, it was equally gratifying that the FTC decided to retreat on its investigation of independent hygiene practice. As in the case of denturism, violent objections were raised to the proposed study, and several state associations were quick to register their disapproval.

Historically, the common bond of all professions has been the Code of Ethics, for it is through voluntary adherence to such standards of conduct that members of a pro-

fession manifest their moral and ethical accountability. Professions, like religions, have custody over the credentials and the manner in which persons are admitted and maintain their membership. The obligation to abide by common beliefs, principles, and ethics characterize professions as well as religions; because these ideals and objectives serve the common good, both are entitled to the prerogative of self-governance and the freedom from interference. Sir Thomas Browne, 17th century physician and philosopher, held that common opinion and tradition are entitled to a legitimate presumption in their favor. If a thing has been long believed or practiced, we ought not to discard it unless we obtain clear evidence that it is mistaken or outmoded; in other words, if it ain't broke, don't fix it.

A few years ago, I was privileged to visit and inspect dental facilities in Hungary, Russia, Poland, and Yugoslavia. This experience gave me an overwhelming sense of pride in American dentistry. These Iron Curtain countries, under rigid political control, are, dentally speaking, at least 30-40 years behind the United States. The pre-eminence we enjoy has been the result of a highly developed sense of order and organizational freedom within our profession, which has made possible the interchange of knowledge, and the enjoyment of certain rights, responsibilities, and privileges unknown in those countries.

I should like to emphasize that we should have no concerns about the progress of our profession from a technological point of view. There is constant and dramatic progress in the research and development of new instruments, materials, techniques, and sophisticated equipment, computers, stereo microscopes, and electronic devices.

Permit me to call your attention to a matter of concern regarding the College. A demographic analysis of the American College revealed an inordinate imbalance of

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older Fellows in the make-up of our membership. 27.6% of our total membership are life Fellows. Of the remaining active Fellows, only 30% were between the ages of 35-54. 70% were over 55. These statistics point up the clear need for an infusion of younger blood into the College, and each of us must assume the responsibility of recognizing those of our younger peers who exemplify the requisite leadership and professional qualities for Fellowship, and nominate them at an earlier age. Obviously, this is not to say that we advocate a crash program for the recruitment of new Fellows. It is suggested, however, that persons of merit who are deserving of consideration for Fellowship not be inadvertently overlooked or made to wait far beyond the point of their eligibility. To allow this to happen is manifestly not fair to the individual, and not only defeats the purposes and objectives of the College, but deprives the Sections of the added strength they otherwise would have. Incidentally, you will be glad to know that the entire nominating procedure was critically analyzed at a special meeting of the entire Board of Regents. It was reaffirmed that the process is valid and democratic, and is designed to identify individuals by accomplishment rather than to allow friendship, associations, or special favors to enter into the selection process. The nomination form, however, was reviewed carefully, and was found to be too complicated and bulky, and therefore in need of revision. Several changes were recommended which will have the

effect of simplifying, streamlining, and facilitating the nominating procedure. Unfortunately, in many instances the nomination form is not completed properly or the sponsors fail to elicit the full extent of the nominee's accomplishments. For this reason, about 1/3 of the nominations submitted fall short of presenting sufficient credentials, leaving the Credentials Committee no alternative but to recommend disapproval. The importance of exercising extreme care in completing the nomination form, paying scrupulous attention to the nominee's professional achievement and his community involvement, cannot be over-emphasized.

A word or two about attendance at Section meetings—a perennial problem. In every section, a hard core of dedicated Fellows take their Fellowship seriously. They are the ones who can be depended upon to attend faithfully the Section meetings, and to fulfill good naturedly and energetically, their particular assignments and responsibilities. Regrettably, there are those who passively remain on the College roll and pay their dues, but beyond that, do nothing. We all have individuals in our Section membership who have seldom, if ever, even attended a Section meeting. Certainly a prestigious professional organization such as the American College of Dentists should be able to expect more from those chosen for the honor and distinction of Fellowship.

Let me conclude by saying that I am optimistic about the future of dentistry. We do have problems, but we have a lot going for us. As a result of my travels over the country, I am convinced that through the collective energies and conscientious efforts of the thousands of dedicated colleagues throughout the length and breadth of our land, we will ultimately prevail in maintaining the integrity and dignity of the dental profession.

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DENTAL RADIOLOGY

TRENDS, ISSUES AND PROBLEMS

Lauriston S. Taylor*

Keynote address at the National Center for Health Care Technology Assessment Forum on Dental Radiology

One may well ask why a whole conference of this magnitude should center upon questions of dental radiology. A couple of decades ago it would have been downright unreasonable. But for the past decade or so, radiation in any form or application raises in the minds of many, perceptions of risk out of all proportion to the realities of the situation. This has been engendered by many sources. There are those who, for whatever reason, oppose nuclear power or weapons and try to reinforce their positions by raising the spectre of radiation injury, cancer, impotence and sterility. There are the various news and related media which, in competition to sell their products on the competitive market, promote radiation scare stories rather than the simple facts. And then there are the assorted congressional committees—some 20, a year or so ago—which seek their political brownie points by offering public platforms to many who have otherwise lost their accreditation among their professional colleagues. Dental radiology is one of the sufferers along the way, in that

it attracts a negative attention out of all proportion to its potential for causing radiation injury. Yet the spectre of injury is constantly displayed to the patient. However the issues be stated or titled, the overall issue is the protection of patients against the "ravages of X-rays". I shall discuss briefly a few aspects of the problem.

Dental radiology is one of the sufferers along the way, in that it attracts a negative attention out of all proportion to its potential for causing radiation injury.

Status of our Radiation Effects Knowledge

To quote myself,¹ "Today we know about all we need to know for adequate protection from ionizing radiation". If there are remaining problems they lie mainly in the practical clinical application of our knowledge, and separately in the conveyance of that knowledge and understanding to the public, in

general, and the patient, in particular. What do we know?

We know that:

Ionizing radiation, delivered in sufficiently large amounts, can cause determinable effects or injuries to any biological system. However, for any particular effect observed, radiation would not necessarily have to have been the causative agent. Practically any effect caused by radiation can occur from many non-radiation causes.

Radiation effects increase exponentially with dose when delivered acutely in moderate amounts, say 100 rads upwards, to the regions observed. Precise relationships are difficult to establish for the reason that radiation delivered to one part of the body may not necessarily produce any normally detected result in that area and yet have an effect on some other part of the body not necessarily exposed. However, for practical protection purposes, we postulate that for *acute* doses of radiation to any part of the

*Past President, National Council on Radiation Protection and Measurements

body, the effect is proportional to the dose. This errs in the safe direction.

There may be long latent periods between the time of exposure and the appearance of any effects that might reasonably be attributed to that exposure. Very large doses (above 500 rads) can show effects within minutes or hours. Low doses (below 50 rads) may not show any effects for periods up to several tens of years, if ever. In general, the lower the dose and the rate at which it is delivered, the longer will be the period of latency before the effect manifests itself. There is a generally inverse relationship between dose and latent period. The problem of cause/effect identification becomes especially difficult in the low-dose region, say below 25 or 50 rads, delivered acutely, for which the latent period may be 3 to 5 decades.

Practically any effect caused by radiation can occur from many non-radiation causes.

During such a long period any individual would be subjected to hundreds other insults, any number of which might produce the same effect as the radiation. Meaningful dose-effect relationships can therefore only be obtained by highly sophisticated statistical methods. With all of our available statistical techniques of today, the number of subjects needed to show a statistically significant result, one way or the other, to exposure of a few rads per year runs into the billions and hence becomes impractical.

Man has always lived in a radiation environment which, except for a very small increment due to weapons testing, has been essentially constant. Galactic radiation levels have changed little, except for rare but very large changes associated with reversals of the earth's magnetic field.

There is uncertainty about the existence of threshold effects for ionizing radiation; that is, dose levels above which an effect will almost certainly occur and below which it will almost certainly not. It is generally believed that there are few threshold effects, although there are clearly some.

Dental radiography must have an intended good effect upon the patient's well-being. Any lessor or contrary reason would make radiography improper.

For the purpose of numerical protection standards, it is assumed that unless the contrary is clearly identified, any radiation will cause an effect, if not an injury. The development of a clearcut position on this question runs into complications depending upon the effects selected and how they are described. There are some demonstrated threshold effects in genetic dose-effect relationships. A skin erythema is definitely a threshold phenomenon. For internal body burdens of radium, there is what may be reasonably described as a "practical threshold," if not an absolute threshold of injury. The threshold problem perhaps hinges about our ability to observe what may properly be described as an effect. It might well be that thresholds do indeed occur at exposure levels below those for which we

have an observational capability. Under these circumstances, we face a situation where we cannot say with any certainty that there is or is not a threshold. This has led to the adoption by the radiation protection community of the general postulation that thresholds do not exist and that therefore for any level of radiation, no matter how small, there may be an effect however undetectable. Here we encounter a further difficulty. If one is concerned about the degree of hazard in the dose region where effects cannot be found or identified, to what extent should an attempt be made to further "reduce the hazard" to some fraction of what could not be found in the first place? The question is "How large is half of something that cannot be measured?"

Dose effects are not cumulative.

There must be some process of repair or recovery or replacement of cells, both of a genetic and somatic nature, if for no other reason, other than that based on modern radiation therapy techniques. It has been known for at least fifty years that the total amount of radiation delivered to a tumor and surrounding tissues can be enormously increased by the simple expedient of introducing "rest periods" between each treatment. Without some sort of recovery phenomena in play, there could be no reasonable radiation therapy today which, of course, is not the case.

Today we know enough about dose-effect relationships to state unequivocally that at least *for low Linear Energy Transfer (LET) radiations* the relationships cannot be strictly linear over the whole dose range* and that for high doses they are almost certainly non-linear. In general, the deviation from linearity has been such as to make our actual radiation exposure effects less than predicted by the linear relationship alone.

The difficulty, of course, is that since we do not know the precise relationship—and perhaps it doesn't make too much difference anyway—it is assumed, as a matter of cautious procedure, that the dose-effect relationships are linear throughout the entire dose range. This assumption is constantly being subjected to hard scrutiny because, if taken too literally, it leads to unnecessary and unjustifiable restrictions on the use of ionizing radiations.

It is as professionally improper not to do an indicated radiograph as it is to do one that is clearly not indicated.

In spite of the scientifically accepted conditions just outlined, plus other caveats not stated here, our numerical regulatory protection standards are based upon the unproven assumption or hypothesis of a single, linear dose-effect relationship for all doses and dose rates, without a threshold of effect.

Having put our radiation knowledge into its proper position of risk importance, let us turn to a number of factors which can, nevertheless, improve our dental x-ray practices.

Risk and Risk Benefit Balance

The first general concept of a risk philosophy in radiation protection was advanced by the National Council on Radiation Protection (NCRP) in the late 1940's when it adopted the assumption, and treated it as fact, that there was no threshold of dose below which some radiation effect might occur.³ This led naturally to the broad philosophy, that since any dose, however small, might have some adverse effect (risk), also however small, the deliberate application of radiation to a person must occur only when some expected benefit to that person was expected to result. This has led to the oversimplified cliché of balancing risk

against benefit. As a vague principle it is sound but as a practical matter it is quantitatively impractical if not impossible.

Any application of X-rays to a patient must be sharply limited to those situations expected to be of benefit to the patient. As so well put by Robert Nelson,⁴ there must be an intended good effect of some kind.

Risks, by definition, are always relative to something—they represent a comparison and, as such, can be evaluated in some terms. Benefits, on the other hand are far less tangible and may redound to the person at radiation risk or to some third party not at radiation risk at all. In the medical and dental case the first party benefit is the one of concern. The benefit is better health, less pain, better appearance and so on. But how do you describe and compare these with each other? Does a patient perceive appearance as more valuable than health? Some obviously do, but what are the units for comparison? And vastly more difficult is a comparison with some negative effect such as a theoretical risk of X-ray exposure. In fact, since there are no common units between a risk and a benefit (probably not even a clear definition of the two) there can be no way to balance one against the other in any meaningful manner. About the most we can say is that any *proper* dental procedure is of some benefit to the patient while the risk is theoretical and probably unimportantly small.

ALAP—ALARA⁵

At the time that the NCRP put forward its first post-war detailed numerical radiation protection standards recommendations it was concerned, lest with the new radiation tools available, that the new atomic industry might exploit its workers by needlessly exposing them to radiation up to the very limit of the proposed standards. It therefore admonished that, even while working within the prescribed maximum permissible dose (MPD),

*Footnote: X-rays, gamma rays, and beta rays

the exposure of persons should be kept as low as practicable (ALAP) below the MPD.⁶ The International Commission on Radiation Protection (ICRP) subsequently made the same recommendation but called it "As low as reasonably achievable" (ALARA).⁷ ALARA is now the acronym most commonly used and misused by the government. As events proved however, the atomic energy contractors operating under the safety pressures of the Atomic Energy Commission (AEC), followed the already well-established principle of setting their internal working standards at 1/5 to 1/10 those required by regulation. The ALAP philosophy worked as intended and industry used its own initiative, imagination and enterprise to insure its conformance with the basic standards. The same principles should be applied in dental offices to its workers and to patients, even though their x-ray exposure levels are not under regulatory control at present—and hopefully never will be.

However a warning must be voiced. There is a current trend within at least two Federal regulatory agencies, to interpret the ALARA principle as urging a lowering of the basic MPD's to some level as low as can be "reasonably" achieved. Who decides what is reasonable? A main argument used to support this is "industry has clearly demonstrated its ability to operate at levels well below the MPD, therefore let us make those levels official". Of course there is a major flaw in this simple argument; as soon as lower MPD's are set under the ALARA or any other such principle, industry immediately re-establishes its own working levels at 1/5 to 1/10 of the new standards and the process starts all over again. It becomes a bottomless ratcheting process with the public paying the needless price for bureaucratic enterprise. While this problem may seem remote from the dental office, don't overlook it—the penchant for governmental meddling with our protection stan-

dards is both pervasive and invasive.

The ALAP or ALARA principle as intended by its originators was to encourage on the part of the users—not the regulators—innovation, inventiveness, ingenuity and good practices within a uniform radiation standards control system. It is a philosophy. It cannot be codified; it cannot be quantitated; it cannot be regulated—else it loses its entire meaning. And because it cannot be codified it cannot be adjudicated or audited.

Selection of Patients for Radiological Procedures

So having briefly covered certain aspects of our dental radiology situation it might seem that we have no central purpose to this discussion. Not so! We still have the patient to serve in the most efficacious manner reasonably achievable. (The language "reasonably achievable" is appropriate here because it is as incumbent upon the dentist to judge just how much he should attempt to do for a patient, as it might be for some to see how little can be done).

As I have perused the material in my files, I am struck by the frequency with which the terms "moral" or "morality" have appeared. Whether this applies more to dental radiology than to other aspects of dental care, I am not certain. In the radiological case I believe I understand, in part, why the terms may frequently be used. In my particular professional circles one of the comments most often heard centers about a perceived misuse (and risk) of dental X-rays. "They are too routine", "done for improvement of income or for medico-legal protection of the doctor", "used to check on Medicaid work", "children shouldn't have them"—and so on. To the extent that good and proper dental practice involves broad issues and judgments in "patient selection," many of the final actions may properly be said to hang upon the

personal convictions and attitudes of the dentists. But so does it, in almost any health related enterprise and, for that matter, in almost any profession or business.

Since I do not believe that we have any serious deficiencies in our knowledge of radiation and how to use it "safely," the problems before us today are essentially non-technical and hence may be classified as moral. Perhaps the word "properly" should have been used above instead of "safely" thus avoiding what is meant by safe—a term much abused, and usually carelessly used in the radiation arena. Webster says, "Safe is: free from or not liable to danger of any kind; free from hurt, injury or damage; not exposed to danger; secure from harm—", etc. Since in normal life nothing can really be safe, we have to regard and explain it as a relative term. It is one of those four letter words we should use only with great circumspection.

Robert Nelsen,⁴ in his very perceptive discussion of possible hazards in dental radiography, speaks of the morality of the use of X-rays as an action understood to be specifically a human action, used freely and with advertence (with care and heed). This implies that the use of X-rays is elective by the doctor and that he is fully cognizant of the problems attendant upon their use. The first decision to be made is whether the needed information can be obtained by some other means involving less *real* risk to the patient as compared with the *theoretical* radiation risk. If such other means exist, radiography is contra-indicated. If not, radiography should be undertaken without debate. The properly experienced dentist should be able to make those decisions quickly but not capriciously.

Dental radiography must have an intended good effect upon the patient's well being—any lesser or contrary reason would make radiography improper. The kind and number of exposures must depend upon the information needed to address the patient's treatments,

and that cannot be otherwise obtained. On its face this would seem to exclude *routine* full-mouth x ray examinations, even for new patients. It is to be noted that dental schools seem to differ sharply on this practice. It should also be noted that radiographs, once made, may be useful for purposes not specifically related to the patients care and this should not be forbidden. Abuse of such use should be guarded against.

At times, patients who may be especially concerned over their perceptions of radiation hazards will question the propriety of a radiograph that shows only a minor or no pathologic condition. It should go without saying that even such negative results can be of great assistance to the dentist and also a net benefit to the patient. There can be no morally wrong action if the original intent was correct and proper. It is a matter of professional judgment and should rarely be questioned. It is as professionally improper not to do an indicated radiograph as it is to do one that is clearly not indicated. Here again is a common source of misunderstanding on the part of the patient.

There are, in addition, other improper acts of omission or com-

Since the public is so deeply disturbed about dental X-Ray hazards, as it perceives them, would money be better spent in educating (better informing) the public rather than pursuing further . . . reductions . . . in the doses?

mission that may be important in the overall dental radiographic picture—these relate to careless personal techniques. To list a few that are frequently heard:

- Use of over-age film or film stored under improper conditions such as to cause background fogging.
- Inadequate developing solution control.
- Improper development procedure such as over-exposing the film and under-developing the exposed film.
- Mis-alignment of the film, tooth and beam that may require a re-take.
- Selection of film speed. On this question there is substantial disagreement. Most dentists (I am told) use the fast film because "that is what the in-

spectors will ask about". It has however, a coarser grain and for the detail the slightly slower film is frequently to be preferred. This is a case where we can be penny wise and pound foolish as far as unnecessary radiation exposure is concerned. In view of other variables the difference is probably unimportantly small.

- Cones and diaphragms, once installed and checked should not be a matter for further concern.

There have been instances of deliberate mis-use of radiographic procedures or use for improper purposes:

- Psychological dependence to impress patients.
- A source of extra income.
- Proof of dental treatment in connection with insurance claims.
- Demonstration of treatment performed for medico-legal protection of the dentist.

(There can be circumstances when films taken for normal proper purposes would serve equally well in the two cases above. With the legal pressures on the medical and dental professions as they exist today, perhaps some respite from

Table I. Average Annual Radiation Exposure of the Population^{6,8}

Source	Dose, (millirads)	Comment
Natural Radiation*	~100	Bone, marrow dose (BMD)
	~100	Genetically significant dose (GSD)
Medical & Dental ^{11,12}	103	BMD
Medical	20	GSD
Dental	2.9	BMD (2.8% of total BMD)
Dental ¹¹	<0.1	GSD (<0.1% of total GSD)
Dental Porcelain	10,000–15,000	Alpha radiation to basal mucosa. (Range for individual 60–130 rads) Beta radiation 900 mrad
Television	.5	GSD
Fallout	2	GSD
Natural gas, cooking	5	Bronchial epithelium
Air crews	500	GSD (individuals)
Building materials	3.5	BMD
10th floor office,	add .7	—
Bethesda	add 3.5	—
Denver	≤250	—

* Very roughly, 1/3 galactic, 1/3 terrestrial, 1/3 internal

these situations should be sought or at least encouraged).

Comparative Sources of Radiation Exposure

Let us look briefly at the dental x-ray exposure situation to see if we are regarding it in a reasonable perspective in comparison with other sources of radiation exposure. A few will be listed; the numbers will be rough but no more so than warranted by all measurements and assumptions through which they are derived. Doses will be expressed in millirads per year, averaged over the whole population, and will be (mostly) either the total bone marrow dose (BMD) or the genetically significant dose (GSD).^{8,9,10} "See Table 1 on previous page."

Noting that dental x rays contribute, roughly, some 3 millirads or 3% of the total carcinogenic and genetic health-oriented radiation to the population, we should examine three issues:

- 1) In view of the magnitude of the useful dose, in relation to other, largely unavoidable doses, what level of effort and cost should be expended on further reductions?
- 2) Have we already possibly exceeded a reasonable cost-effectiveness limit beyond which further dose reduction costs are excessive?
- 3) Since the public is so deeply disturbed about dental x ray hazards, *as it perceives them*, would money be better spent in educating (Better informing?) the public rather than pursuing further and probably costly reductions in the doses from dental radiology?

Let us take a small example:

Some years ago it was recommended that the diameter of the dental X-ray beam at the end of the cone not exceed three inches. This drew criticism and the counter-recommendation that the beam diameter not exceed 2-3/4 inches. (Could that have been because 2.75

Table II. % Distribution of Dental Films by Beam Size		
Year	Beam	Diameter
	≤ 3 in	≤ 2.75 in
1964	80%	44%
1970	87%	54%

Let us examine this further:

Table III	
Given:	
3" dia. field:	area $A_3 = 7.07$ sq. in.
2.75" dia. field:	area $A_2 = 5.94$ sq. in.
Dental film:	area $A_F = 2.19$ sq. in.
Dental BMD, average:	3 millirad/year
Dental GSD	0.1 millirad/year
Difference in areas A_3, A_2 :	16% ($1/6$) $\cong 0.5$ mrad*
Ratio of film area to field area, $\frac{A_F}{A_3}$	$\cong .31$
$\frac{A_F}{A_2}$	$\cong .37$
2/3 of Dose is useless $\cong 2$ mrad (BMD)	
and $\cong .006$ mrad (GSD) (Forget it)	

*Footnote: It is assumed that any BMD or GSD is roughly proportional to the cross sectional area of the beam (and hence the volume of scattering tissue)

inches is close to an even metric value of 9 cm? I don't really know).

In any case, the argument is apparently persisting for it is noted in some recently published material, comparisons are made between the doses for each field size.¹³ The success of a dose reduction program seems in part, to be based upon an increase in the fraction of exposures that have been accomplished with beam diameters no greater than 2.75 inches. (Table 2) (Table 3).

An X-Ray film's . . . values lie in the knowledge, skill and judgment of the radiologist who reads and interprets it

That means, that for the three inch field, 69% of the beam has no useful effect, while for the 2 3/4" field, 63% of the useful beam has no useful effect. In other words, of the total beam directed upon the patient roughly 1/3 is utilized effec-

tively for the radiograph while 2/3 appears, in a sense, to be wasted and the patient exposed needlessly.

Since all of the 3 millirads, average per year must originate in the radiographic procedures, and yet only 1/3 of that is efficacious, it would seem, off hand, that here is a big chance for improvement. But is it really? By reducing the field size from 3 to 2.75 inches the unnecessary irradiated volume is reduced by 1/6 of the total, the equivalent of 1/2 mrad of the average annual population exposure. When we are talking about 0.5 millirads in a year, we are in the range below the normal daily variations in galactic or terrestrial radiation to which everyone is exposed. When the argument is carried over to the G.S.D. we are talking about fractions of 0.1 mrad, or .033 mrad useful and 0.066 mrad wasted.

The obvious answer to this situation is to limit the beam to a rectangular field just the size of the film, thus achieving 100% effective exposure. But equally obvious is the impracticality of accomplishing this on any large scale, if at all. And

anyway why go to so much trouble and expense? If there are any *average* effects from these low *average* exposures they are undoubtedly so small as to be lost in the morass of insults that we all suffer from unrelated causes.

Now to be fair, there are variations in how far these comparisons may be made, but in any case we end up by having to consider unproductive dosages on the order of 1/6 (16%) depending upon the relative diameters of the beams. The normal differences are unimportantly small. This small exercise is an illustration of how easily we may lose our sense of humor over what may really be trivia.

It should be emphasized that the numbers used are averaged over the whole population. Not all individuals have medical or dental care of some kind, nor do all dental patients have X-ray examinations. For genetic considerations, whatever doses may be administered to them are averaged with the whole population. For individuals, mean exposures at the skin entrance for posterior bitewing examinations are on the order of 300 mR—still a very small amount, especially if not occurring more than once a year.¹⁴ (Extremes cited were some 50 and 3000 mR).

All of the items I have discussed above may play some role—minor or major—in good radiology. But the crucial role lies with the dentist—not the average dentist, but each individual one. The dental X-ray film has a value proportionate to the ability of the person who interprets it. "Its value lies in the eyes of the beholder".⁴ This exposes the moral issue involved in all diagnostic uses of radiation. The issue may have several ramifications:

- 1) Is the film produced with the reasonably least amount of radiation required to present the information anticipated for the symptoms shown by the particular patient?
- 2) Is the quality of the film image adequate for the purpose intended.
- 3) After careful examination of the image, followed by sufficient reflection, is the observer (the dentist) competent to make the value judgment (diagnosis?) to adequately evaluate the presence or absence of pathology.

As Nelsen points out, an x-ray film has no intrinsic value other than its residual silver. Its values lie in the knowledge, skill and judgment of the radiologist who reads

If we continue to allow people to be frightened away from dental and medical care because of unnecessary radiation fears, we are assuming an anti-health stance that is professionally intolerable and dangerous to the health of the nation.

and interprets it. Since actions resulting from such judgment involves another person (the patient) they carry a concomitant moral attribute.⁴ In the total measure of effectiveness (benefit) and the gross exposure (cost), what lies behind the eyes of the "beholder" of the film image, is of much more consequence than minor variations in beam size.

The following question should be asked: Is the accuracy of the film interpretation on a par with the techniques of imaging and the effectiveness of radiation protection? This is my question to the dental profession.

In closing, let me make my personal position clear. I am not pro-radiation in the sense of relaxing our protection standards (if there is such a position). Although I may have seemed to downgrade the radiation hazard problem, I do not want to relax a reasonable striving to further improve radiation practices so long as they contribute to better dental care. Correct in detail or not, my remarks are intended to point up some of the kinds of problems we should be concerned with. I am pro-efficient health

care and I am concerned that if we continue to allow people to be frightened away from dental and medical care because of unnecessary radiation fears, we are assuming an anti-health-care stance that is professionally intolerable and dangerous to the health of the nation.

References

1. Taylor, L.S. Some non-scientific influences on radiation protection standards and practice. The Sievert Lecture. Health Physics, 39, 851-874 (1980)
2. Weinberg, Am. Letter to Editor. Science 174, 546 (1971)
3. NCRP. Permissible dose from external sources of ionizing radiation NBS Handbook 59, pages 20 and 26, Sept., 1954.
4. Nelsen, R. Hazards in roentgenography—a discussion of the philosophy of risk in the use of dental x rays. The Dental Clinics of America, pp. 771-778, Nov., 1960.
5. Oral radiological services. Health Services Directorate, Health Services and Promotion Branch, Department of National Health and Welfare, Ottawa, p. 22, Dec., 1979.
6. NCRP. Permissible dose from external sources of ionizing radiation. NCRP Report No. 17. NBS Handbook 59, p. 74, Sept., 1954.
7. Implications of commission recommendations that doses be kept as low as readily achievable. ICRP Report No. 22, April, 1973.
8. Taylor, L.S. Let's keep our sense of humor in dealing with radiation hazards. Perspectives in Biology and Medicine 23, 325-334 (1980).
9. NCRP. Radiation exposure from consumer products and miscellaneous sources. Report No. 56, Nov., 1977.
10. Taylor, L.S. The NCRP study of radiation exposure from consumer products. Proc. symp. on Pub Health aspects of radioactivity in consumer products NUREG/CP-0001 Feb. 2, 1977.
11. Population dose from x rays, U.S. 1964. P.H.S., Pub. No. 2001, pg. 77, Oct., 1969.
12. Schleen, B., T.T. Tucker and D.W. Johnson. The mean bone marrow dose to the adult population of the U.S. from diagnostic radiology. HEW Pub. (FDA) 77-8013, pg. 12, Jan., 1977.
13. Manny, E.F., et al. An overview of dental radiology. NCHCT Monograph Series, p. 17, Nov., 1980.
14. Ref. 7, p. 18.

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AUGMENTING LICENSING EXAMINATIONS

A Need for Change in Light of the Realities of Dental Practice

H. Barry Waldman*

Dramatic changes have occurred in the practice of dentistry and the delivery of services. Decreasing numbers of independent practitioners, changing availability of manpower, technological advances, increasing use of auxiliaries, third party payment mechanisms, advertising and a general transformation in the actual types of services provided to patients, are but a few of these developments. The increasing attention directed to these changes has to some degree overshadowed the profession's long term concern with licensure examinations and reciprocity. It will be the thesis of the presentation that *because of this avalanche of change* which is impacting on the profession, the licensing examination process should be *augmented* to ensure the applicant's preparation for the evolving practice of dentistry.

The arguments for and against particular licensing examination formats, the general need for and problems associated with reciprocity and national licensure and the general advisability of *any* licensing examination for graduates from

accredited schools has filled the journals for years.¹⁻¹⁰ In the presentation by Taintor et al¹¹ on the necessity of updating dental examining boards, the authors focused their attention on an added issue. Their concern (in their capacity as endodontists) was with the traditional procedures used to test the applicant's manual dexterity—in light of the increasing knowledge of pulpal biology, mechanics of stress related to tooth morphology and cavity preparation criteria and

Dramatic changes in the delivery of dental services require the expansion of the function of licensing boards.

the infrequent use of these testing procedures in later practice. In the authors' brief discourse, they cite the positive impact that emphasis on diagnosis and treatment planning in the North East Regional Board has had on the increasing attention to these subjects in the curricula of the dental schools in the region served by the Board.

It is in this positive sense that we shall consider the examining pro-

cess in an effort to identify, 1. accomplishments, (particularly related to the National Board and North Eastern Regional Board examinations), 2. areas of concern regarding the current format, and 3. subject matter which should be considered for inclusion in the examining process. The point of reference for this discussion shall be the American Association of Dental School's long standing statement in its admission publications that, "the widespread concept that a dentist is one who 'fixes' teeth is descriptive of only one area of a dentist's responsibility."^{12,13}

Accomplishments

Since 1928, the testing of didactic knowledge of dental school graduates has been delegated by the dental state boards to the National Board of Dental Examiners. Accepted by only a few states at its inception, the National Board is relied upon today by all states except Alabama and Delaware. The National Board is a competitive examination, with the distribution of the raw scores to establish 85 percent as the average and 75 percent as the passing grade. Part I reviews the student's knowledge of the traditional basic science sub-

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Table I. Number of U.S. and Canadian dental students participating in Part I and Part II of the National Board Examination and percent failure by academic year.¹⁵

	Part I		Part II	
	Number taking complete exam	Percent Failure*	Number taking complete exam	Percent Failure*
1970	—**	8.95%	—	7.45%
1971	—	9.65	—	7.31
1972	—	9.45	—	9.45
1973	—	7.74	4574	8.50
1974	5178	8.01	4732	10.86
1975	5385	7.58	5184	8.35
1976	5541	7.61	5594	7.62
1977	5840	7.26	5232	6.59
1978	6014	7.57	5554	8.77
1979	5919	8.35	5674	9.15
1980	6254	8.99	5148	9.91
1981	5778	7.93	5887	9.07

*Includes both partial and complete failures

**Numbers of students are not available for the early 1970s.

jects, including anatomic sciences, biochemistry, physiology, microbiology, pathology and dental anatomy. Part II addresses the clinical subjects, including operative dentistry, pharmacology, prosthodontics, oral surgery, pain control, orthodontics, pedodontics, oral pathology, oral radiology, endodontics and periodontics. Between eight and eleven percent of the first time student candidates fail one or more examinations in each section.¹⁴ Throughout the 1970's there has been only minimal change in the percent of students who fail components of the examinations (Table I).

If the profession is to survive . . . the dental graduate must be prepared to face difficulties and practice situations that more established practitioners never anticipated.

Each school of dentistry receives percentile rank performance reports on their students, thereby permitting an ongoing review in terms of national comparative data.

Consistent poor performance or a sudden decrease in percentile standings can indicate ongoing or developing difficulties in the educational program or faculty performance. Similarly, improved or consistent favorable performance can be the reward of improving and ambitious faculty and curriculum efforts. Thus the National Board Examination provides an annual supplemental review of the educational program that is carried out periodically by the Commission on Accreditation.

Finally, and most significant, the National Board Examination provides a single national standard for determining the level of didactic knowledge of those entering the dental profession. However efforts to establish a similar basis for determining clinical capabilities have not been as successful. It was not until 1969, with the establishment of the North East Regional Board (NERB), that initial steps were taken in the direction of national performance standards for clinical activities. Today candidates for licensure in 14 states* and

*Connecticut, Illinois, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, West Virginia.

the District of Columbia can participate in a single examination at 30 dental school testing sites and qualify for licensure in the 15 jurisdictions. Under these arrangements, approximately half of the graduates of the dental schools in the United States are able to complete the clinical examination close to their usual source of patients, with the support of familiar dental assistants and technicians and using those techniques and procedures taught in their particular school of dentistry.¹ Similar regional arrangements now exist in the jurisdictions served by the three regional examination programs established during the 1970s.*

In each of the four regions testing procedures are uniform throughout the respective jurisdictions. They are created by educators and examiners of the particular region. Collins¹ referring specifically to the NERB, comments that, "It is designed to reflect as accurately and fairly as possible the professional performance and judgment level of each candidate in relation to the entire group being tested. That level must be at least a minimally acceptable one, that assures and guarantees the safety of the public who will be entrusted to his care by the process of licensure."

Referring to the NERB, failing candidates are required to take re-examination only in those sections of the examination in which they sustain a failure. Evidence of completed remedial education must be submitted with the application for re-examination if failures have occurred in three of the five testing areas in a single series or if two successive failures have occurred in one or more test subjects. (The

*Central Regional Dental Testing Service (Incorporated 1972) Colorado, Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota, Oklahoma, South Dakota, Wisconsin, Wyoming.

Southern Regional Testing Agency (Incorporated 1975) Arkansas, Kentucky, Tennessee, Virginia

Western Regional Examining Board (Incorporated 1976) Arizona, Oregon, Utah, Colorado, Montana

Table II. Number and percent of current graduates who were examined and failed the North Eastern Regional Board Examination by examination section, 1979 + 1980^{17*}.

Exam Section	Number Examined	Failure After First Attempt		Failure After Second Attempt		Failure After Third Attempt		Failure After Fourth Attempt	
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
Comp. Treat. Planning	4,476	86	1.92	6	.13	0	—	0	—
Diagnosis, Oral Medicine and Radiology	4,500	219	4.86	28	.62	4	.08	0	—
Restorative	4,500	474	10.53	59	1.31	13	.28	0	—
Prosthetics	4,500	189	4.20	10	.22	1	.02	0	—
Periodontics	4,500	57	1.26	0	—	0	—	0	—

*Current graduates do not include individuals who completed their studies prior to 1979 and took the examination for the first time or who were repeating failed sections in previous exams.

test subjects include: 1. comprehensive treatment planning, 2. diagnosis, oral medicine and radiology, 3. restorative, 4. prosthetics, and 5. periodontics.) Re-examination may be taken at any testing site during the spring, summer or winter series.¹⁶ Relatively few candidates are unsuccessful in passing the examination after a second attempt. (Table II) In general, the performance on the various licensing examinations has remained consistent for the past thirty years, both prior to and since the establishment of the various regional examinations. (Table III)

Concern regarding the current format

Relation of examinations to practice situations

The review of examinations in terms of their relevance to job activities is not specific to the dental licensing process. Societal efforts to redress past inequities based on racial, ethnic, religious and sex discrimination, as well as a general concern for over-regulation, has drawn the public's concern to civil service examinations and entrance requirements for em-

ployment and education opportunities. In addition, these reviews have been supplemented by the passage of "sunset legislation; which seeks to terminate unnecessary regulations and the very agencies responsible for their development.

Thus, comments by Taintor et al¹¹ on the necessity of updating dental examining boards can no longer be considered as the isolated and usual attacks on state boards. Their assertions that, in spite of the many changes in dentistry, we are currently testing what we tested 70 years ago" should be considered in the same sense as efforts by other groups which are demanding review of civil service examinations to determine their relevance to job functions. The authors refer to the often used gold foil procedure as a manual dexterity review, rather than a test procedure to consider the performance of services in actual practice. They suggest an endodontic laboratory or clinical procedure as a more useful review of dexterity because of its relevance to later practice.

Ismail,¹⁹ in his presentation before the 1981 NERB Deans-Educators Conference reviewing the reliability of the examination procedure (see following section) suggested the transformation of the clinical full prosthetic examination into a more relevant combined fixed and removable partial denture and complete laboratory and clinical review. Stahl,²⁰ at this

Table III. The performance on the four regional and state dental licensing examinations by recent graduates for selected years.^{18*}

Year	Number Passed	Number Failed	Percent Failure
1950	2998	248	7.6%
1960	3579	337	8.6
1965	3488	388	10.0
1970	3219	321	9.0
1972	4328	384	8.1
1973	4443	517	10.4
1974	4945	656	11.7
1975	5369	678	11.2
1976	5576	674	10.7
1977	5843	622	9.6
1978	5875	699	10.6
1979	6181	478	7.1

*The numbers represent the sum of candidates by individual schools of dentistry. Since individual graduates took more than one licensing examination in particular years, the numbers exceed the graduates for the particular year.

Table IV. Percentage of patients receiving specified dental services, 1950, 1959, 1969 and percent distribution of dental visits by primary reason for visits, 1977^{22,23}

	1950	1959	1969	1977
Oral examinations	14.8%	20.1%	27.8%	16.1%
Prophylaxes and other preventive treat.	15.4	20.8	29.5	13.1
Fillings (including inlays)	40.0*	—	—	32.0*
Amalgam restorations	—	44.6	37.2	—
Gold inlays	—	1.8	1.1	—
Other fillings	—	—	9.7	—
Extractions	13.0	13.0	9.8	5.7**
Crowns and bridges	1.9	2.5	3.9	13.5
Full dentures	2.3	2.3	2.0	8.2
Partial dentures	1.4	1.4	1.3	—
Orthodontics	3.5	3.7	6.5	2.5
Periodontics	2.4	3.2	2.5	1.6
Endodontics	1.2	1.7	2.9	5.2
Other	—	—	—	1.8

*not further subdivided

**Includes all oral surgical procedures

same meeting, suggested the gradual adoption of a simulated examination format to replace restorative, prosthetic and periodontic clinical procedures. Similarly, Dubin²¹ suggested that periodontics be incorporated in the didactic component of the NERB with the "Periodontal Examination" be(ing) gifted to the Periodontal Specialty Boards rather than meet the minimal competency requirements of N.E.R.B." He further suggested that the complete examination "revert back to the full upper and full lower setup on an anatomical articulator." His thought was that "this might help change the prosthetic curriculum at our dental schools by having more intensive education and training to qualify the candidates to excel, surpass and transcend any and all threats of the harmful and illegal 'denturists.'"

In the past 30 years there have been extensive changes in the types of services delivered in dental practices. (Table IV) Surely, it is within the capabilities of the examiner and the educator to continue to challenge the manual dexterity of the candidate while transforming the clinical phase of the licensing examination process to more closely reflect the services currently provided in dental practice.

Reliability of examination scoring

It is beyond the purpose of this paper to consider whether an examination of the clinical capabilities of a candidate on any single day is comparable to an evaluation of a student's performance during an extended period of time in school. However, repeated questions regarding the reliability of the current exam format should be addressed in terms of any effort to augment the testing procedures. For example, Hangorsky²⁴ recently reported that there was "a discrepancy between the NERB examiners and the fourth-year dental faculty in assessing the clinical capabilities of candidates." His findings "raise serious questions about the validity and reliability of licensure examinations."

Similar questions regarding the reliability of the clinical components of the NERB were raised in the reports at the 1981 meeting of the Deans-Educators Conference. Ismail¹⁹ suggested that, "the validity and reliability of the assessment procedures (on the prosthetic component of the examination) is questionable as to whether it indeed measures the candidate's performance objectively, and not subjectively . . ." Stahl²⁰ commented on

the need for "longer indoctrination of examiners in order to improve objective judgment." Spettel²⁵ reflecting on the less than one percent failure rate in the spring 1981 periodontal component of the NERB reported that, "The periodontal clinical examination continues to be a difficult exercise to assess and standardize from the standpoint of the examiner and hence, the low failure rate may be a reflection, on the part of the examiners, to be lenient rather than exacting in grading."

Finally, Hangorsky²⁴, sighting the difference between the reports of two examiners in a NERB dental hygiene examination, comments that, "the methods of assessment used by the two examiners are so dissimilar as to make it appear that two different examinations were given."

On the other hand, one must also consider the magnitude of the testing process. In the 1981 spring NERB series 2227 dental candidates and 2160 dental hygiene candidates took their respective examinations in 30 dental schools and 50 dental hygiene sites. More than 170 examiners from 15 different jurisdictions were involved in the dental candidate segment of the examination. Surely any effort to review thousands of candidates

is fraught with difficulties. In recognition of this reality, a series of annual meetings have been held between dental school deans, educators and examiners to provide a forum for the exchange of viewpoints. It is hoped that "through continuing and repeated orientations and instructions, through the audio-visual demonstrations conducted each year and challenging exercises . . . (that there will be) a decrease in subjectivity and an increase in objectivity in the grading of the candidate's performance . . ."

If we accept Collins^{27*} view that the licensing examination is a "necessary monitor", Minervini's²⁸ perception of the board examinations as a "performance yardstick" which provides dental schools with feedback on effectiveness and Cross^{27**} comment that board examinations are a necessary "rite of passage" to ensure competence, then the steps taken by the North East Regional Board and other regional testing programs, despite their many difficulties, must be encouraged in their efforts to establish uniform national criteria for practice.

Subject matter which should be considered for inclusion in the examining process

It is not uncommon to hear clinical department chairmen complain that time allotted for clinical and preclinical training has been reduced drastically to accommodate such activities as behavioral sciences, community dentistry, and extramural programs. . . . it can only result in a decrease in clinical competency for the new graduate.³⁰

Any effort to augment the licensing process must come to terms with these thoughts by the former

editor of the Journal of the American Dental Association. Variations which redirect the emphasis from the traditional clinical testing process could impact on the educational program to prepare the student for licensing examinations and eventual practice. "The curriculum in dental schools is influenced to a great degree by state boards. Deans and faculty of dental schools want students to pass the state boards . . ."¹¹

The boards can have an influence on upgrading dentistry, but only if they are progressive, and if they do not hold back the profession by demanding antiquated means of looking at dental care for patients.

But what of the converse situation—what is the impact on those segments of the curriculum which are not reviewed by the various licensing procedures? Is there no concern for those areas of the dental curriculum and eventual practice which elevates our ministrations to the level of a profession? To assume that either the periodic dental school accreditation process or that internal school review mechanisms are adequate in these fields would seem to run counter to the basic arguments favoring the licensing examination process. As Collins²⁷ comments, "Over a period of years, the Northeast Regional Board's analysis have (sic) found consistent strengths in some schools, and abysmally continuing shortcomings in other schools."

If, as noted earlier, the emphasis on diagnosis and treatment planning by the NERB has had a positive effect on increasing attention to these subjects in dental schools, would not a similar concern raise the level of effort for those subjects which students and others perceive as requiring further educational effort. For example, in a 1980 study requested by the ADA Board of Trustees and conducted by the American Association of Dental

Schools, of those students indicating they needed additional clinical experience prior to entering private practice, 74 percent reported a need for practice administration experience.³¹ In another area, Waldman³² suggests the need for increased commitment in the curriculum to present the impact that "the social and psychological environment, the interplay of personalities, the deprivation of poverty and the persecution resulting from intolerance" have as "agents of disease."

The ADA Council on Dental Education reported in its 1976 study that almost half of the schools provide less than 150 hours of instruction in the total curriculum in the various subjects broadly grouped together as the behavioral sciences. The mode for *all* schools was between 50 and 99 hours) Some of the subjects included in this grouping were: quality assurance and peer review, health care economics, jurisprudence, epidemiology of disease, biostatistics, forensic dentistry, care of special patient populations (aged, handicapped, chronically ill and home-bound) practice administration and social issues.³³

Yet at a time when "there is a strong hue and cry in the private practice sector for dental schools to return to former levels of emphasis in the restorative dentistry disciplines, irrespective of educators' views that today's graduates are the best ever produced when evaluated comprehensively,"³⁴ it would seem unrealistic to expect licensing examinations to be used as the method to encourage faculties to emphasize traditionally unsupported subject areas.

But dramatic changes *are* transforming the practice of dentistry and the delivery of services. The diagnostic and technological prowess of most practitioners, which has improved the practice of our profession to the point that it now serves as the model for many of our colleagues in other countries, can no longer in itself preserve the profession. If the profession is to

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survive (and in turn better serve the general population) the dental graduate must be prepared to face difficulties and practice situations that more established practitioners never anticipated.

If, as Taintor et al¹¹ comment, "an examination is necessary, it should be appropriate; it should be something that is not retrogressive but progressive. Let us make it something that will help stimulate education rather than hold it back."

Encouraged by augmented licensing examination review, the traditional basic science programs in dental school would place greater emphasis on the behavioral sciences, sociology, the principles of health insurance, etc. (Medical National Board Examinations now include sections on the behavioral sciences and public health. The California Dental State Board is currently considering examining applicants on community dentistry subject areas.²⁹) Review of state practice acts (already required by some states) would be augmented to require the demonstration of a knowledge of quality and peer review procedures, auditing steps, varieties of delivery patterns, health economics, advertising and the like.

At first, such an effort may seem to transcend the examining boards traditional responsibility; i.e. the establishment of minimal standards to ensure the safety of the public. But is it? The education of generations of health practitioners has been guided by the teaching acumen of the educator, the periodic review of the accreditation process and the ever present awareness of board examination requirements. To date, dental examining boards have performed masterfully in carrying out of their function.

If the dentist is more than the widespread concept of someone who "fixes" teeth; if the profession is to continue to prepare individuals for an evolving and demanding career, then examining boards must exert their influence in continuing their *dual function*—ensuring minimal standards for professional practice and stimulating the educational process.

The boards can have an influence on upgrading dentistry but only if they are progressive, and if they do not hold back the profession by demanding antiquated means of looking at dental care for the patients.¹¹

References

- Collins, W.K. Dental licensure and the development of dentistry in the United States. *Journal American College of Dentists*, 40:41-52, January 1973.
- Diefenbach, V.L. Survey of attitudes in dental licensing procedures, *ibid.*, 40: 83-6, April 1973.
- Hughlett, R.B. National reciprocity opposed. *ibid.*, 40:87-92, April 1973.
- Glenner, R.E. National reciprocity favored, *ibid.*, 40:93-96, April 1973.
- Oltmans, S.J. Licensure by criteria evaluation. *ibid.*, 40:97-99, April 1973.
- Docktor, M. The irrelevance of licensing examination. *ibid.*, 40:100-107, April 1973.
- Dixon, A.D. Should dental students be granted licensure automatically upon graduation?—a dental educator's view. *ibid.*, 43:221-28, October 1976.
- Yee, H.K. Should dental students be granted licensure automatically?—a dental examiner's view. *ibid.*, 43:229-31, October 1976.
- Williams, J.E. and Zwemer, T.J. The role of state boards of dentistry. *ibid.*, 45-105-10, April 1978.
- Thorpe, J.D. A strong case for state boards. *Dental Student*, 54:42-3, June 1976.
- Taintor, J.F. et al. The necessity of updating dental examining boards. *Journal American Dental Association*, 99:17-9, July 1979.
- Admission Requirements of American Dental Schools: 1968-69. Chicago, American Association of Dental Schools, 1968.
- Admission Requirements of U.S. and Canadian Dental Schools: 1980-1981: Washington, D.C., American Association of Dental Schools, 1979.
- Information Sheet for the National Board Dental Examination Program. Joint Commission on National Dental Examinations, 1981.
- Joint Commission on National Dental Examinations. Personal communication December 1981.
- North East Regional Board Bulletin to Dental Colleges, Schools of Dental Hygiene and Licensure Candidates. North-eastern Regional Board of Dental Examiners. undated.
- Zegarelli, E.V. Chairman, Examination Committee, North East Regional Board of Dental Examiners, Inc. Personal communication, November 1981.
- Trend Analysis 1980/81. Supplement 11 to the Annual Report 1980/81 Dental Education. Chicago, American Dental Association, 1981.
- Ismail, Y.H. Review of the prosthetic examination section of NERB. NERB Conference of Dental Deans, Educators and Examiners. Providence R.I. June 20, 1981. 6p mimeo.
- Stahl, S. NERB. *ibid.* 3p mimeo.
- Dubin, N.L. A criticism of the periodontic examination. *ibid.* 3p mimeo.
- Moen, B.D. and Poetsch, W.E. Survey of dental services rendered, 1969—more preventive care, less tooth repair. *Journal American Dental Association*, 81:25-36, July 1970.
- Nash, K.D. et al. Research Triangel Institute, Economics of Scale and productivity in Dental Practice Contract 231-75-0402, U.S. Public Health Service. Vol. I. Final Report. August 1979.
- Hangorsky, U. Clinical competency levels of fourth-year dental students as determined by board examiners and faculty members. *Journal American Dental Association*, 102:35-7, January 1981.
- Spettel, Jr., W.R. A review of the periodontics Examination. NERB Conference, op. cit. 1p mimeo.
- Zegarelli, E.V. Introduction of Dr. Arnett Anderson. *ibid.* 2p mimeo.
- Collins, W.K. The necessary monitor. *Dental Student*, 58:22, 54, January 1980.
- Minervini, G.A. Performance yardstick. *Dental Student*, 58:28, 54, January 1980.
- Cross, J. Change may be necessary. *Dental Student*, 58:29, January 1980.
- Butts, H.C. Dental education: is the pendulum swinging back? Editorial. *Journal American Dental Association*, 90:897, May 1975.
- Graham, J. Do you need more clinical experience before you begin private practice. *The New Dentist*, 11:8-16, January 1981.
- Waldham, H.B. Taking the B.S. out of the behavioral sciences. *New York Journal of Dentistry*, 51:4-7, December 1980-January 1981.
- Council on Dental Education of the American Dental Association. Dental Education in the United States, 1976. Chicago, American Dental Association, 1977.
- Terkla, L.G. Predoctoral dental education in the 1980s. *Journal of Dental Education*, 45:789-96, December 1981.

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CONVOCATION TO INDUCT 188 NEW FELLOWS

The Annual Meeting and Convocation of the American College of Dentists will be held on Saturday, November 6, 1982 at the Las Vegas Hilton Hotel. One hundred and eight-eight new Fellows will be brought into the College during this Annual Meeting and Convocation and will take part in a day-long program of educational, informative activities and concluding with a festive dinner-dance.

President Richard J. Reynolds invites all Fellows of the College to attend and participate in this outstanding program which has been arranged by the Board of Regents with the assistance of the Southern California Section of the American College of Dentists.

The morning program will include a brief business session, an orientation lecture, and an exciting scientific program by Mr. Richard W. Underwood of NASA. Space technology will be the subject for this with attention being given to advances made to science through the Space Program.

The annual luncheon of the College which is traditionally hosted by the local Section will be of interest to all. Sir Phillip Richardson of London, England, author, lecturer and humorist, will give the address.

HEADQUARTERS HOTEL FOR COLLEGE UNIQUE

The Las Vegas Hilton Hotel, site for the Annual Meeting of the American College of Dentists in Las Vegas, is said to be the largest resort and convention hotel in the world with 3,174 rooms, 11 international restaurants, over 3,600 em-0 tional restaurants, over 3,600 employees and a ten-acre rooftop recreation deck. These facilities are located just a few steps from the huge Las Vegas Convention Center. Inasmuch as the activities of the American Dental Association are in these same areas, it is expected that this will be a most convenient location for all participants in the events of the College as well as the American Dental Association meetings which are to follow.

1982 ANNUAL MEETING AND CONVOCATION

SECTION REPRESENTATIVE MEETING—FRIDAY, NOVEMBER 5TH— 4:00 P.M.

The Sections Committee of the American College of Dentists has planned an informative and interesting program for the Annual Meeting of Section Representatives in Las Vegas. This meeting will be a working session in which Section Representatives, Officers and Regents of the College will discuss activities and plans of different Sections. Initial steps will be taken to develop a Manual for Section Officers as well as programs for Section Awards.

All Sections of the College are urged to have representation at this meeting. The annual "Call of Sections" will take place at 4:00 p.m., Friday, November 5th in Ballroom C of the Las Vegas Hilton Hotel.

MEMBERSHIP STATUS OF THE COLLEGE

The American College of Dentists during its 57 years has taken on new dimensions. With the reorganization of the College that has taken place over the last several years, bringing about the formation and activation of 37 Sections and 8 Regencies, there are now included approximately 4,800 Fellows of the College on the rolls today. This includes 3,574 Active Members, 1,117 Life Members, 77 Non-Dues Paying Members, and 32 Honorary Members. With the addition of the new Fellows to take place in November during the 57th Convocation of the College, there will be over 4,989 in the College. This is approximately the same as the numbers of Fellows in the College in 1977 and now represents 4.0 percent of the total numbers of dentists in the United States.

STATEMENT OF OWNERSHIP, MANAGEMENT AND CIRCULATION

The Journal of the American College of Dentists is published quarterly by the American College of Dentists, 7315 Wisconsin Avenue, Bethesda, Maryland 20814. Editor: Keith P. Blair, D.D.S., 4403 Marlborough Avenue, San Diego, CA 92116; Managing Editor: Gordon H. Rovelstad, D.D.S., 7315 Wisconsin Avenue, Bethesda, Maryland 20814.

The American College of Dentists is a non-profit organization with no capital stock and no known bondholders, mortgages or other security holders. The average reader of copies of each issue produced during the past 12 months was 4446; none sold through dealers and carriers, street vendors or counter sales; 4314 copies distributed through mail subscriptions; 4314 total paid circulation; 132 distributed as complimentary copies. For the Spring, 1982 issue the actual number of copies printed was 4600; none sold through dealers, etc.; 4290 distributed through mail subscriptions; 4290 total paid circulation, 284 distributed as complimentary copies; 4574 copies distributed in total. Statement filed with the U.S. Postal Service, September 3, 1982.

A TREASURY OF DENTISTRY

by Gardner P.H. Foley

The contemporary dentist should be appreciatively cognizant of the superbly capable band of pioneers who worked boldly and fruitfully to establish the dental profession in this country on a progressively nurturing basis of advancement. Many of these pioneers were amazing in their versatility of interest and effort, for they labored not only for their profession but also for the betterment of political and social conditions. These leaders are heroes of the profession and should be memorialized pridefully by their professional descendants and beneficiaries. They erected the foundations of organization, education, and literature for the future generations to build on, and thus to create and strengthen during decades of dedicated achievement the stalwart and highly respected status of today's dentists and their profession.

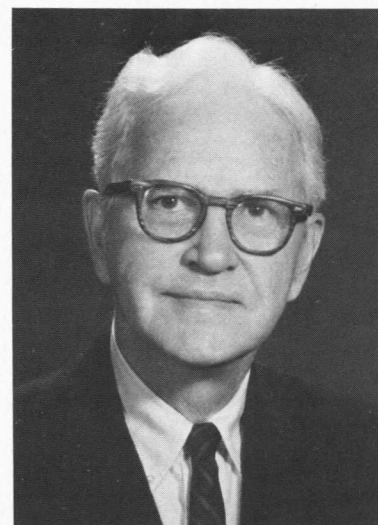
I have chosen to write a sketch of one of those great pioneers as a good example of the interest you should discover in reading about his accomplishments as a leader in dentistry and as a colorful person, perhaps the most colorful of all the fathers of the profession in the United States.

John B. Rich was born in New York in 1811; he died in New York in 1910, at the age of 100. Rich is indeed a man to read about although, as the writer, I mind well the warning of a dental editor: "What manner of man he was has

been lost in the indistinctness of many years." At nine years of age, Rich ran away from home, inspired by a desire to see Africa. Unhappy with his dire lot as a cabin boy, the brave lad jumped overboard at Funchal, Madeira, to escape the harsh conditions that prevailed aboard most ships of the era. Rescued by the sympathetic crew of a French ship, he was adopted by a French diplomat.

The kindly man sent young Rich to St. Cyr Military College in France. After graduation from St. Cyr, this fine example of the American boy entered the service of the Khedive of Egypt and, as an officer, participated in the naval expedition against Constantinople. While in Egypt, John Rich married the daughter of the English ambassador to that country.

On his return to New York, with an exceptionally romantic record of travel, military action, and marriage, Rich engaged in a period of newspaper work. Becoming interested in dentistry, he obtained a preceptorship that prepared him to undertake the private practice of dentistry. After a brief episode of practice in Albany in 1836, he returned to New York, where he soon earned a reputation as a particularly knowledgeable participant in the work of dental organization. He was a steadily active member of the Society of Surgeon Dentists of the City and State of New York (1834-1839), the only



Gardner P.H. Foley

local society to precede the founding in 1840 of the American Society of Dental Surgeons, the first national society.

There are several items of organizational data that give strong evidence that John Rich, early in his career, gained the respect of his colleagues. He was elected in 1839 to serve as secretary of the historically important first local society. In 1843, he was elected to membership in the first national society. One of those members who supported vigorously the anti-amalgam resolutions and resultant inspections imposed by the Society on its recalcitrant members, a policy of attempted obstruction that led to the "Amalgam War," Rich resigned in disgust in 1850 when the Society

John B. Rich

Pioneer Dental Leader

rescinded its anti-amalgam policy. He was the last surviving member of the Society.

John Rich was the first president of the American Dental Convention (1855-1883), the second national dental organization, and was a strong supporter throughout its struggling existence. At the Union Meeting of the American Dental Association and the Southern Dental Association held at Old Point Comfort, Va. in 1897, Rich was selected as chairman of the convention that resulted in the joining of the two associations to form the National Dental Association. Accounts of that memorable meeting published in the newspapers and in the dental literature stress the remarkably effective techniques used by Rich to control members of the two groups and lead them to the union of forces in the revived truly national organization with the new name.

In the years 1888 to 1893, Rich practiced in Washington, D.C. He was a member of the District of Columbia Board of Dental Examiners, 1892-1893. At a meeting of the District of Columbia Dental Society in February 1892, Rich was a discussant. In his remarks he expressed some opinions that were typical of his approach to preventive dentistry:

He thought that the deterioration of the human teeth was largely due to the ill health of the patient. A higher state of health depended on

a large amount of proper exercise. Dentists should impress this on their patients, especially women. He deplored the use of corsets by women and spoke of their ill effects. "Fine women will not wear corsets, when once instructed in the injurious effects of wearing them." He said that dentists should become apostles of physical development, as they, as a class, were of poor development.

Early in his professional career, Rich began to teach people how to retain good health and good spirits in old age. He was the founder of the first gymnasium for women in New York. He advocated moderation in eating and proper physical exercise. As a young man, Rich was reputed to be "the strongest man in the world," a good example for those who listened to and read the inspiring messages of this pioneer of physical education.

There are a few other accomplishments of our "hero" that merit notice. He contributed to newspapers and magazines. He was a valuable advocate of the creation of small parks and playgrounds for use by the New York populace. Rich was a tenor singer and probably sang in one or more of New York's churches. In 1844 the Baltimore College of Dental Surgery granted him an honorary DDS degree. Active in several scientific and other societies of his city, he was president of the American Microscopical Society, the Bailey

Microscopical Society, the Physical Culture Club, the Hundred Years' Club, and the Epicurean Club.

In concluding this sketch of John B. Rich, I am delighted to present my subject in the character of "the All-American youth," in a role that most American boys dream about. Walking in Naples one night, he was rudely jostled by an arrogant stranger. When he complained, the stranger cursed him and struck him with a whip. Then Rich hit his adversary, as he could effectively do when motivated so well. The fallen victim's attendants were hard put to revive their master. Rich was thrown into jail, for, in that day, there was no security to person or property in Naples, the governing family believing in the divine right of kings and rule by despotism. Fortunately the incarcerated Rich was traveling by a British passport and was able to get word of his predicament to the captain of a British frigate stationed in the bay. That gallant officer sent word to the Neapolitan officials that unless Rich were released in an hour, he would fire on the city. "But he struck the Duke of Padua, the brother of the king," replied the city officials. "I don't care if he took the keys of St. Peter at the gate," said the captain. "You turn him loose." And from the jail, with the prospect of death almost a certainty, the 20-year-old Rich went on to live a productive life for American dentistry.

Is Dentistry A Viable Organism?

Odin M. Langsjoen*

Response To Change

Laws of basic science frequently are applicable to other areas of activity not normally considered to be scientific in nature. Who can deny Newton's first law of motion: "A body at rest tends to stay at rest and a body in motion tends to remain in motion unless acted on by an outside force." This law also speaks with disturbing veracity to the behavioral sciences. In a similar sense, laws that apply to living things, such as a cell, a tissue, or an organism, may also apply to organizations like dentistry, since the life blood of any organization is its human element.

A review of dentistry's recent history reveals interesting parallels between the profession's reaction to environmental stimuli and the response of human cells and tissues to their ever changing, sometimes hostile, environment.

Life in all its forms is a continuous struggle to live and function within a given environment and the environment within which dentistry lives and functions has not always been a utopian atmosphere devoid of external and internal stimuli.

In our studies of biology and its antithesis, pathology, we learn that a tissue responds to stimulation with growth and action. A tissue's response to *excessive* stimulation is irritation, injury and inflammation. When excessive stimulation becomes chronic, the tissue or organ-

ism responds with change. That change may take a variety of forms. For example, a tissue may become *hyperplastic* by increasing the number of cells as in a callous formation; or it may enlarge by increasing the size of its cells as in *hypertrophy* of the tongue from thrusting. Further, a tissue may respond with a cellular change from a more specialized form to a less specialized form as in the *metaplasia* that occurs when ciliated respiratory epithelium is transformed into squamous epithelium by the constant irritation of tobacco smoke.

In reviewing dentistry's reaction to its environment since World War II, it's interesting to note how closely the organism, dentistry, parallels the laws of biology in its adaptation to the stimulus of change. After World War II, a great demand for dental services in the United States served as a healthy stimulation to the dental community and it responded energetically with **action** and **growth** on several fronts, particularly technical advances in dental materials and equipment, and in fluoridation of community water supplies. On occasion, when stimulation became excessive, as in the case of irrational charges by anti-fluoridationists, we responded with irritation, wounded pride and inflammatory rhetoric. As the stimulation of demand for service became more sophisticated and chronic in the soaring sixties, we would have been less than a human organism not to have developed some insensitivity and cal-

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lousness to the continued pressure of unmet needs. Nevertheless dentistry, with characteristic altruism responded by working longer hours, incorporating into groups in the interest of efficiency and providing more comprehensive care. This was a true hypertrophy of the functioning unit.

We gave wholehearted support and encouragement to state and national legislation to provide funding for new schools and larger enrollments in existing schools. This increased the number of dentists and auxiliaries and became a true hyperplasia of dental manpower. Further, we engaged in the metaplastic transformation of delegating to auxiliaries some functions previously performed only by dentists. This was a change from a more specialized to a less specialized form of a working unit. All of these responses, well intentioned and laudatory, have served to elevate the dental profession in the eyes of Americans. We have earned the respect and esteem of the public.

Can we now relax? Hardly. The environment continues to change, taking on new dimensions of insult and injury. Dental needs don't translate one hundred percent into dental demands. Dental demands fluctuate with the economy. Consumer groups exert political pressure for more services, less cost and greater accessibility. Government agencies such as the F.T.C. launch injurious attacks on our

Code of Professional Ethics. Court decisions, like the one handed down by U.S. District Judge Russell in Oklahoma open the door to a host of advertising practices. To continue the list of irritations would be to paint a picture of doom and gloom which is not the purpose of this academic exercise.

Our allegory tells us that when an organism's immune system falters and its defense mechanism breaks down, that organism soon becomes ill under the continuous irritations and injuries ever present in the environment. Cells which once functioned normally may react with uncontrolled neoplastic growth and expire for lack of nourishment and purpose.

That dentistry must live and function in an ever-changing and sometimes hostile environment is a problem that could produce an inappropriate or uncontrolled reaction to change by the profession, an act that could harm dentistry's public image.

The solution to our frustrations and problems does not lie in a hope for environmental utopia. Instead, it lies within the immune system of the dental profession itself. That immune system consists of dentistry's resolve, its integrity, its professional ethics, and its high moral standards. If we can keep the immune system intact during these troubled times, our response will be the controlled, appropriate response of a healthy organism.

Dentistry's immune system consists of its resolve, its integrity, its professional ethics and its high moral standards.

OPINIONS IDEAS AND VIEWS

Last June I along with millions of others, received my new telephone directory. In thumbing through the yellow pages I noted, with a heavy heart, that more dentists than ever before have traded their professional stature for what they hope will be personal gain.

Most of these advertising dentists will argue that their commercial activities are their own business. In this case, however, some of us don't think so. The yellow pages of most telephone directories make the Dentists Section difficult to distinguish from the Pest Control Section. In my directory the section which follows Dentists is Deodorizing & Disinfecting. Peculiarly enough, this latter section is very easy to distinguish from dentists because there are no advertisements in D&D.

Those dentists who have chosen to maintain a dignified listing are sandwiched between the quarter page ads of their former peers. I say 'former' peers, because the latter word means equals, and we who have chosen to stay with the inconspicuous listing, at least from the standpoint of physical space, are no longer equal to the advertisers. Therefore the designation, 'former' peers.

A few years ago, one of our

The College and the Future

A VIEWPOINT FROM THE
NORTHERN CALIFORNIA SECTION.

We are the conservators of our profession's future.

current peers, past president of the California Dental Association Dr. Bernard Kingsbury, Jr., observed, "What we are seeing today is the process of a learned profession degenerating to the level of a mundane trade." I agree.

At trade union meetings discussions are not concerned with electrical layouts, pipe-fitting techniques or better methods of loading and unloading ships. If there is any discussion of such things, it is concerned mainly with the safety and welfare of the union members. Most of the discussion revolves around pay and benefits.

By contrast, in the past the discussions at dental association meetings have concerned the welfare of the public which we serve. We have always sought ways to improve our methods to reach higher and higher standards. Unfortunately, however, each year more and more of us have chosen to sneak a page from the labor union book. A few weeks ago I received a copy of a forthcoming orthodontic society program. Under the heading, "Our

Main Clinicians" was listed three 'clinicians' who are not dentists. Their subjects deal exclusively with increasing profits in orthodontics.

We all realize that to stay in business it is necessary to be concerned with profits, but why not have the main clinicians at a dental meeting discuss dental science? Business people should not dominate a meeting supposedly dedicated to improving skills in dentistry.

We don't know the solution to the now well entrenched problem of poor taste dental advertising. The American Dental Association has been forced to capitulate to the directives of the Federal Trade Commission, but we in the American College of Dentists are still free to maintain our own ideals. We are a small Shangri La tucked away between the high and cold peaks of commercialism.

Our mission, like that of the Shangri La of Lost Horizon, is to preserve the ideals of a noble profession. When, hopefully, dentistry emerges once again from its domination by commercialism, the American College of Dentists will be ready. *We are the conservators of our profession's future.*

William E. Elsasser,
Editor, Northern California Section

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