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A Publication Presenting Ideas,
Advancements and Opinions
in Dentistry

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Objectives of the American College of Dentists

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

A. To urge the extension and improvement of measures for the control and prevention of oral disorders;

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

C. To encourage graduate studies and continuing educational efforts by dentists and auxiliaries;

D. To encourage, stimulate and promote research;

E. To improve the public understanding and appreciation of oral health service and its importance to the optimum health of the patient;

F. To encourage the free exchange of ideas and experiences in the interest of better service to the patient;

G. To cooperate with other groups for the advancement of interprofessional relationships in the interest of the public;

H. To make visible to professional persons the extent of their responsibilities to the community as well as to the field of health service and to urge the acceptance of them;

I. To encourage individuals to further these objectives, and to recognize meritorious achievements and the potentials for contributions to dental science, art, education, literature, human relations or other areas which contribute to human welfare - by conferring Fellowship in the College on those persons properly selected for such honor.

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FROM THE EDITOR

A Profession Starved for Policy

Dentistry has changed. No sophisticated statistics are required to recognize the differences that have occurred in the one-third century between 1958 and 1991. Caries in children ages six to seventeen as measured by the number of decayed, missing, and filled teeth has fallen by 40% or more. The number of dentists per 100,000 population has reached a high of 60. Of the \$31.4 billion annual American dental bill, third-party carriers write the checks for \$17.3 billion, or 55% — more than ten times the amount twenty-five years ago. In 1958, dentists spent 96% of their time in the office doing dentistry and lab work; now the number is closer to 90%. The title of non-technical labor goes to insurance forms, staff meetings, continuing education, OSHA compliance, etc. The number of auxiliaries employed has tripled during this period to an average of four staff members, including one hygienist. Personnel costs are the largest segment of overhead as they were in 1958. Total staff costs have risen from 30% of expenses to over 40%, while total overhead has climbed

from 45% to 65% or higher in the more productive practices.

Everyone a Winner

During this time of change, dentistry has thrived. The 1985 *Economic Report to the President of Congress* focused on health care. Everywhere the congressional investigators looked, they saw health care costs outpacing general expenses and absolutely no evidence of improved health care or quality of life. This sweeping and damning generalization has a single exception. America's oral health is the best in the world, and continues to get better; this is being achieved with dental expenses rising more slowly than the cost of living.

Edentualism dropped from 13% to 7% between 1957 and 1990. Almost half of the teenagers in the United States are now completely caries-free. Until the 1960s, the proportion of Americans visiting the dentist each year had steadily increased. Now we are seeing no changes or tiny increases. ADA figures show the average monthly patient visits in 1958 as 256 per dentist; in 1991, the number was 255. At the same time, our powerful

technology has increased the amount of dental care a patient receives per visit by 15% to 20%.

During this time dentists have also thrived. Prestige and public respect for the profession are at an all time high. In constant dollars, the net income of dentists has increased by 20% in the past thirty years. This sharp rise in spending power of dentists has been sustained during the period when the average age of practicing dentists dropped by two years, the proportion of women jumped from 1% to 6%, and the dentist's work week shrunk from 40.0 to 37.5 hours. Dental practices are contributing more to their local communities by paying the salaries of three or four auxiliaries for every one they paid only twenty-five years ago.

The Need for a New View

Some readers will find these indicators of the health of the profession and the health of patients discomforting. We are accustomed to thinking in terms of winners and losers; but it appears that everyone is winning. Multiple success certainly does require an explanation.

The concept of dental care has changed. Only a small residual of the

American public defines dentistry as the surgical repair of hard tissue lesions and ancillary services. People now go to the dentist because they desire positive oral health, function, and appearance. This represents a fundamental shift in the definition of dentistry. The public has asked for something different, and the profession has responded. The old logic — disease patterns determine dental care, and its corollary of supply and demand economics — is out of date. For example, while the DMF has been plunging over the past several decades, the F component (filled teeth, representing care received) has remained relatively constant. Over this period, four to five times as many adults have sought orthodontic care. This is because of a change in the public's perception of dentistry and the way orthodontic offices are staffed and is not a result of a dramatic rise in malocclusion. The new reality is that experiences of positive oral health are a better predictor of demand for dental care than is presence of disease. This is a market shift of some consequence.

Dentistry also has changed from being a manufacturing business to being a service. Until the 1960s most of the value added in a dental practice came from the customized manufacture of restorations and prostheses by the dentist. Economic analysis of data from the ADA *Survey of Dental Practice* for the late 1960s shows that

This shift from manufacturing to service can be seen clearly in the changing way practices are valued. The proportion of the sales price of a practice attributed to tangible assets has fallen steadily over the past quarter century. The true value of dental practices is now recognized to be in their service potential, represented in patient records and goodwill.

The College is uniquely positioned to undertake the responsibility as a policy forum for the profession. It is an organization of leaders.

75% of a dentist's time was spent in operative dentistry and in fixed and removable prosthodontics procedures, plus another 4% in lab work. The contribution to gross income from service activities such as diagnosis, prevention, and surgical repairs plus services provided by staff, office location, and other value-added benefits paid for by the dentist but not delivered as a product was 54%. By 1991, the proportion of time spent by dentists doing restorative dentistry had fallen to 51% and service-related value added had increased to 79%.

This shift from manufacturing to service is partially a reflection of changes in American society at large — the service economy is now estimated to be between 70% and 80% generally. It is also a result of basic and clinical sciences research that has made the mechanical aspects of dentistry easier and the knowledge-based aspects more significant. Techniques have become more tolerant; patients have become less so. It is an immutable economic principle that labor cannot be leveraged, but knowledge can. The timing of this shift has created tensions between the practicing profession and dental education.

During the practice lifetime of most Fellows in the College, dentistry has

undergone a fantastic transformation — but the way we talk about dentistry has not. We still use the yardsticks of the fifties and sixties and struggle with the confusing images they create of dentistry as we experience it today. The crying need now is for a new language that will make dentistry meaningful to the profession, our patients, and to other important constituencies.

As a profession, dentistry is held together by a shared rhetoric or world view that must be adjusted and rehearsed to strengthen individual dentists' identity and sense of belonging. This self-created culture is more important in a profession of independent persons than in companies and other organizations where there is constant interaction among members. This world view is a precious resource that provides the background against which we judge who we are, which things have value, and whether we are being successful.

A Policy Forum

The *Journal of the American College of Dentists* will become a forum for creating policy for dentistry. Our new statement of editorial policy states: "The *Journal* should identify and place before the Fellows, the profession, and other parties of interest those issues that affect dentistry and the oral health of the country. All readers should be challenged by the *Journal* to remain informed, inquire actively, and participate in the formulation of public policy and personal leadership to advance the purposes and objectives of the College."

While the *Journal* will continue to publish a few manuscripts of high quality, the central pages will be given over to extensive discussions of the issues facing the profession. For example, in this issue we are privileged to be among the first professional organizations to offer a comprehensive reaction to the landmark Institute of Medicine study of dentistry and dental education. Because this report will provide a framework for debate about issues ranging from accreditation and licensure to research and dental workforce size, it is important that Fellows of the College be informed so that they can take a leadership role in this discussion. In the next issue of the *Journal*, we will take up managed care.

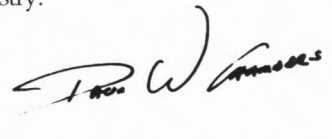
A second innovation in the *Journal* is the introduction of departments. These are short features appearing in every issue and addressing the information needs of the profession's leaders. Examples of departments include: ethics, leadership, history, statistics, organizations whose actions influence dentistry, as well as the customary editorial and letters to the editor. Three of these departments (letters, ethics, and statistics) are based on written reaction from readers. Indeed, the entire *Journal* is intended to invite active participation on the part of all Fellows and readers.

The changes in dentistry necessitate change in focus for the *Journal of the American College of Dentists*. The College is uniquely positioned to undertake the responsibility as a policy forum for the profession. It is an organization of leaders. It has a

national reputation of respect and credibility. Its historical legacy is to call for excellence in turbulent times.

As we proceed with this new mission we must be mindful of four touchstones for how the *Journal* expresses itself. First, many voices and divergent opinions must be heard. Dentistry is so complex that no one person can understand it all, and it is only out of dialogue that clear vision will emerge. Second, words are very powerful. We become what we talk about, so let us cling fast to the high road. Third, the identity and reputation of the profession is a cherished resource. We gather strength from what we represent. It has been said, "You have to stand for something or you'll fall for everything." Fourth, the profession and the *Journal* must be defined in positive terms. Psychologists are consistent in reminding us that a personality built in reaction to others is an unhealthy personality. Our work will not be complete if we only "view with dismay" or "point with alarm." We must also fashion the positive vision.

The new *Journal of the American College of Dentists* is not an archival publication written for libraries. It is the working papers for the future of dentistry.



David W. Chambers, EdM, MBA, PhD
Editor



Letters to the Editor

Dear Editor,

The Fall/Winter 1994 issue of the *Journal of the American College of Dentists* is an excellent publication. Bob Mecklenburg did a wonderful job as acting editor, and the College owes him a debt of gratitude.

Bob wrote in the *Journal* describing the color of its cover, "Please, these covers are platinum." The platinum on the cover of the *Journal* reflects the platinum individual who did a great job as acting editor.

I was particularly fascinated by the article "Communicating Science to Our Patients and the Public" authored by Dr. Irwin D. Mandel. Communication is one of the most important keys to a successful dental practice. To be honest, most patient problems seem to be created by a lack of communication.

Risk communication continues to increase in importance to the dental profession. Patients have the right to know, want to know, and even demand all information about their health and safety. Patient autonomy is extremely important and as professionals we must recognize and understand this.

Dentists today must be knowledgeable and trained as spokespersons on most aspects of dentistry.

Sincerely,

Robert T. Ragan, DDS
Regent, Regency 6
Cleveland, MS

Dear Editor,

I would like to commend Dr. Dominick DePaola for his outstanding article in the Fall/Winter issue of the *Journal* entitled, "Higher Education and Health Professions Education; Shared Responsibilities in Engaging Societal Issues and in Developing the Learned Professional." The article addresses four interrelated issues in a clear and effective manner: (1) the primary forces impacting on dental education; (2) the fact that these forces parallel the forces impacting on higher education and society as a whole; (3) the need for dental as well as health professions education in general to address core societal concerns; and (4) the necessity of interweaving the philosophy and culture of the university into the fabric of dental education.

Dr. DePaola contends that dental education must respond to these issues in an effective manner in order to survive and to create a true learned professional. I strongly support Dr. DePaola's contention.

As a dental graduate of twenty-five years ago, I feel that I was well trained but poorly educated. As a dental educator of today, I feel that our current graduates may share my dilemma. So that dentistry may continue as a learned profession in a complex and ever-changing environment, dental education must assure that our future graduates are truly learned professionals — "learned" as in "educated" not "trained."

Many years ago, our medical colleagues realized the impossibility of accomplishing this task through the predoctoral education program alone. My associates in medical education find it hard to understand how we can expect students to "pull it all together" in four years of undergraduate dental education. With the exploding dental curriculum and the new charge bestowed upon us by Dr. DePaola, the Pew National Dental Education Program, and the Institute of Medicine study it may now be time to address more seriously a question that has been bounced back and forth for over a decade — the need for a mandatory year of postdoctoral training.

Sincerely yours,

Warren M. Morganstein
Senior Associate Dean
University of Maryland
Dental School
Baltimore, MD

The Future of Dental Education: A Report from the Institute of Medicine

Marilyn J. Field

Dental education has undoubtedly made great strides in the 20th century. This progress derives in part from broader scientific and social developments including public policies to promote individual and community health. Beyond these influences, however, lies the dedication of several generations of dental practitioners, educators, researchers, and public officials to improving oral health through educational, professional, and scientific achievements.

Its achievements notwithstanding, dental education faces serious challenges. Six dental schools have closed and others are vulnerable. Dental school enrollments have been cut back substantially from the high levels of the 1970s and early 1980s, but the supply question — whether there are too many dentists in practice and in training — is a continuing source of controversy. The high cost of dental education to students and to universities is an acute worry.

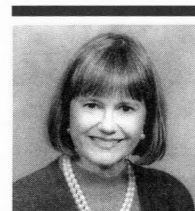
The recently released Institute of Medicine (IOM) report, *Dental Education at the Crossroads*, examines the challenges facing dental education. The project originated from requests from dental leaders and followed a planning

effort that concluded that this was an important topic for study by the IOM. A formally appointed, eighteen-member study committee met for the first time in February 1993 and for the last time in May 1994. The committee was deliberately composed of individuals from within the profession and outside it, from within the higher educational community and outside it. It included three full-time practitioners.

The IOM is the health policy arm of the National Academy of Sciences, a private, nonprofit organization that was created by an 1863 Congressional charter for the furtherance of science and its use for the general welfare. Although it acts as an official, yet independent advisor to the federal government, the IOM also acts on its own initiative and in response to requests from private organizations. Somewhat over half of the funding for the study of dental education came from private sponsors. Major sponsors included the Robert Wood Johnson Foundation, the National Institute for Dental Research, the American Fund for Dental Health, the Health Resources and Services Administration, and the Departments of Defense and Veterans Affairs. The committee report went through an outside review process as required by the Academy.

In considering the future of dental education, the committee had three basic tasks. One task was understanding and describing the current system and its evolution. A second task was trying to assess the forces that would shape dental practice and education in the future. The third was to draw conclusions about the reasonable and desirable steps that dental educators and others should take to capitalize on the positive opportunities before the profession and minimize the negative consequences of change.

The committee undertook an intensive information collection effort. It visited eleven dental schools, meeting with faculty, students, university and academic health center presidents, representatives of other health professions schools, alumni, and representatives of state and community dental organizations. It also held a public hearing at which some two dozen organizations testified, commissioned eight background papers, undertook a mail sur-



Dr. Field is a professional staff member at the Institute of Medicine and served as Study Director for this project.

vey of all dental school deans, conducted telephone interviews with some two dozen university officials, and met with many leaders of organized dentistry. The *Journal of Dental Education* published the eight background papers in its January 1995 issue.

The report is organized around ten chapters, seven of which include recommendations. Virtually all of the twenty-two recommendations anticipate the need for active co-operation from the larger dental community as well as support from university officials and state, local, and national policy makers. The recommendations do not provide a checklist of "one-size-fits-all" remedies for dental schools. Rather, based on the committee's analyses of problems and options, they present strategies for individual schools to adapt to their missions and circumstances.

The committee emphasized four broad objectives for the effective use of health resources to advance the nation's oral health. These objectives are to:

1. Improve our knowledge of what works and what does not work to prevent or treat oral health problems.
2. Reduce disparities in oral health status and services experienced by disadvantaged economic, racial, and other

groups.

3. Encourage prevention at both the individual level (e.g., feeding practices that prevent baby bottle tooth decay, reduced use of tobacco) and the community level (e.g., fluoridation of community water supplies and school-based prevention programs).

Dentistry cannot remain isolated if it is to secure the financial and other resources for a successful passage into the 21st century.

4. Promote attention to oral health (including the oral manifestations of other health problems), not just among dental practitioners but also among primary care providers, geriatricians, educators, and public officials.

It is quite evident that scientific discoveries and technological innovations will continue to change dental practice. It is also clear that there is more to come from the extended application of past scientific developments, for example, those involving fluorides. Outcomes research is focusing attention on the real-world effectiveness of alternative preventive, diagnostic, and treatment strategies. And although we've seen the impact of fluorides on dental

practice for children and young adults, the increase in the population of older patients who are keeping their teeth is in its early days. These patients not only have chronic age-related problems and complicating medical conditions, but also are more highly educated and possibly more demanding in terms of other dental care than their predecessors.

In addition, the management and conduct of dental practice will be altered by other social, economic, political, and technological developments. Comprehensive federal action on health care reform was defeated and state initiatives range from nil to significant. With or without federal action, however, the health care system is restructuring itself in ways that will affect dental practice and dental education. The directions are reasonably clear. They include: continued creation and diffusion of sophisticated information management technologies; ongoing evolution of expectations and methods for assessing and improving the quality and efficiency of care provided in ambulatory settings; intensified pressure for controlled health care costs; further growth of managed care and integrated care sys-

tems as a prevalent, if not dominant method of organizing and administering medical and other health services; and greater emphasis on the contributions of health care to community as well as individual well-being.

Dental education will also be affected by changes in the university environment. Financial pressures on educational institutions undoubtedly will persist, although their severity may vary over time and across schools. Universities and government policy makers will continue to re-evaluate their programs — adding, deleting, and restructuring them. Overall, the world of higher education is likely to become less stable and thus more unpredictable and stressful for its constituent parts.

Five broad themes stand out in the Institute's report. First, dental practitioners will use more medical knowledge in the future and will need to work more closely with other health professionals. The report did not call for a single medical/dental profession, but it did conclude that the dental profession will and should become more closely integrated with medicine and the health care system on all levels — education, research, and patient care.

Second, to prepare both their students and their schools for change, dental educators will need to teach and display desirable models of clinical practice. Using excellent practices in the community as a model, dental school clinics should seek to be more patient-friendly and efficient and to provide students with a greater volume and breadth of clinical experience in prevention, diagnosis, treating planning and execution, and appropriate referral to specialists.

Third, dental schools will need to demonstrate their value to their parent universities, academic health centers, and communities. They can no longer

afford to be centers of excellence in technical dentistry that operate independently and without a clear understanding of the missions and problems of their parent institutions. The mix of contributions will vary from school to school but the fundamental point is clear: dentistry cannot remain isolated if it is to secure the financial and other resources for a successful passage into the 21st century.

Fourth, continued reforms in accreditation and licensure are necessary to resolve long-standing problems and meet new expeditions for quality assessment and improvement in health care. Although states can be criticized for occasional parochialism and inefficiency, they remain a reasonable locus of governmental responsibility for professional regulation. The relevant task is not to construct a new national licensure system but rather to minimize deficiencies in the present system and to involve all major parties in the process of change.

Fifth, to prepare for an uncertain future, dental schools will need to experiment with different models of education, practice, and performance assessment for both dentists and allied dental professionals. Traditional education and practice will be challenged by a renewed focus on the dental practice team, multidisciplinary health care, and practice beyond the office setting. Experimentation and learning will also help the profession cope with a major uncertainty — whether the future supply of dental practitioners and services will match, exceed, or fall below population requirements for dental care.

The committee noted that the dental community is characterized by much anxiety and discouragement about whether the nation faces a future shortage or a future oversupply of dental services. The committee found no com-

elling evidence that would allow it to predict either outcome with sufficient confidence to warrant recommendations that dental school enrollments be increased or decreased. If a shortage in dental services should develop, responses should emphasize more productive use of allied dental personnel, continued elimination of ineffective or inefficient services, and, only if these steps prove inadequate, increased dental school enrollments.

In addition, tensions between the academic and practice communities too often impede efforts to revise educational standards, rationalize professional licensure, and improve community health. Politically, much of organized dentistry views distance from health care reform as a way of insulating the profession from demands for change and accountability. Indeed, compared to other health professions, dentistry may experience a less rapid restructuring of its place in health care. The IOM committee urged, however, that any such reduction in pressure should be used not as a time to reinforce resistance to change but as an opportunity to achieve a smooth transition for patients, practitioners, and educators. Efforts to manage and resolve tensions should be a high priority for educators, practitioners, policy makers, and others in the dental community. Dentistry will not thrive in the next century if its educational and intellectual foundations are compromised by unrelenting conflict.

Copies of the 345-page report *Dental Education at the Crossroads* can be obtained from the National Academy Press for a cost of \$49.95. Orders are accepted by phone at (800) 624-6242 or (202) 334-3313 in the Washington metropolitan area.

Dental Education at the Crossroads

Summary of Recommendations

Recommendation 1

To support effective and efficient oral health services that improve individual and community health, the committee recommends that dental educators work with public and private organizations to

- ☐ Maintain a standardized process in the U.S. Department of Health and Human Services to regularly assess the oral health status of the population and identify changing disease patterns at the community and national levels;
- ☐ Develop and implement a systematic research agenda to evaluate the outcomes of alternative methods of preventing, diagnosing, and treating oral health problems; and
- ☐ Make use of scientific evidence, outcomes research, and formal consensus processes in devising practice guidelines.

Recommendation 2

To increase access to care and improve the oral health status of underserved populations, dental educators, practitioners, researchers, and public health officials should work together to

- ☐ Secure more adequate public and private funding for personal dental services, public health and prevention programs, and community outreach activities, including those undertaken by dental school students and faculty and

- ☐ Address the special needs of underserved populations through health services research, curriculum content, and patient services, including more productive use of allied dental personnel.

Recommendation 3

To improve the availability of dental care in underserved areas and to limit the negative effects of high student debt, Congress and the states should act to increase the number of dentists serving in the National Health Service Corps and other federal or state programs that link financial assistance to work in underserved areas.

Recommendation 4

To stimulate progress toward curriculum goals long endorsed in dental education, the committee recommends that dental schools set explicit targets, procedures, and timetables for modernizing courses, eliminating marginally useful and redundant course content, and reducing excessive course loads. The process should include steps to

- ☐ Design an integrated basic and clinical science curriculum that provides clinically relevant education in the basic sciences and scientifically based education in clinical care;
- ☐ Incorporate in all educational activities a focus on outcomes and an emphasis on the relevance of scientific knowledge and thinking to clinical choices;

- ☐ Shift more curriculum hours from lectures to guided seminars and other active learning strategies that develop critical thinking and problem-solving skills;
- ☐ Identify and decrease the hours spent in low priority preclinical technique, laboratory work, and lectures; and
- ☐ Complement clinical hours with scheduled time for discussion of specific diagnosis, planning, and treatment-completion issues that arise in clinic sessions.

Recommendation 5

To prepare future practitioners for more medically based modes of oral health care and more medically complicated patients, dental educators should work with their colleagues in medical schools and academic health centers to

- ☐ Move toward integrated basic science education for dental and medical students;
- ☐ Require and provide for dental students at least one rotation, clerkship, or equivalent experience in relevant areas of medicine, and offer opportunities for additional elective experience in hospitals, nursing homes, ambulatory care clinics, and other settings;
- ☐ Continue and expand experiments with combined M.D.-D.D.S. programs and similar programs for interested students and residents; and

- ☐ Increase the experience of dental faculty in clinical medicine so that they — and not just physicians — can impart medical knowledge to dental students and serve as role models for them.

Recommendation 6

To prepare students and faculty for an environment that will demand increasing efficiency, accountability, and evidence of effectiveness, the committee recommends that dental students and faculty participate in efficiently managed clinics and faculty practices in which

- ☐ Patient-centered, comprehensive care is the norm;
- ☐ Patients' preferences and their social, economic, and emotional circumstances are sensitively considered;
- ☐ Teamwork and cost-effective use of well-trained allied dental personnel are stressed;
- ☐ Evaluation of practice patterns and of the outcomes of care guides actions to improve both the quality and the efficiency of such care;
- ☐ General dentists serve as role models in the appropriate treatment and referral of patients needing advanced therapies; and
- ☐ Larger numbers of patients, including those with more diverse characteristics and clinical problems, are served.

Recommendation 7

The committee recommends that postdoctoral education in a general dentistry or specialty program be available for every dental graduate, that the goal be to achieve this within five to ten years, and that the emphasis be on creating new positions in advanced general dentistry and discouraging additional specialty residencies unless

warranted by shortages of services that cannot be provided effectively by other personnel.

Recommendation 8

To permit faculty hiring and promotion practices that better reflect educational objectives and changing needs, the committee recommends that dental schools and their universities supplement tenure-track positions with other full-time nontenured clinical or research positions that provide greater flexibility in achieving teaching, research, and patient care objectives.

Recommendation 9

To expand oral health knowledge and to affirm the importance of research and scholarship, each dental school should

- ☐ Support a research program that includes clinical research, evaluation and dissemination of new scientific and clinical findings, and research on outcomes, health services, and behavior related to oral health;
- ☐ Extend its research program, when feasible, to the basic sciences and to the transformation of new scientific knowledge into clinically useful applications;
- ☐ Meet or exceed the standard for research and scholarship expected by its parent university or academic health center;
- ☐ Expect all faculty to be critically knowledgeable about scientific advances in their fields and to stay current in their teaching and practice; and
- ☐ Encourage all faculty to participate in research and scholarship.

Recommendation 10

To build research capacity and resources, as well as foster relationships

with other researchers, all dental schools should develop and pursue collaborative research strategies that start with the academic health center or the university and extend to industry, government, dental societies, and other institutions able to support or assist basic science, clinical, and health services research.

Recommendation 11

To strengthen the research capacity of dental schools and faculty, the committee recommends that the National Institute of Dental Research

- ☐ Continue to evaluate and improve its extramural training and development programs;
- ☐ Focus more resources on those extramural programs with greater demonstrated productivity in strengthening the oral health research capacity of dental schools and faculties; and
- ☐ Preserve some funding for short-term training programs intended primarily to increase research understanding and appreciation among clinical teaching faculty and future practitioners.

Recommendation 12

To affirm that patient care is a distinct mission, each dental school should support a strategic planning process to

- ☐ Develop objectives for patient-centered care in areas such as appointment scheduling, completeness and timeliness of treatment, and definition of faculty and student responsibilities;
- ☐ Identify current deficiencies in patient care processes and outcomes, along with physical, financial, legal, and other barriers to their correction; and
- ☐ Design specific actions — including demonstration projects or ex-

periments — to improve the quality, efficiency, and attractiveness of its patient services.

Recommendation 13

To ensure that dental education and services are considered when academic institutions evaluate their role in a changing health care system, the committee recommends that dental schools coordinate their strategic planning processes with those of their academic health centers and universities.

Recommendation 14

To respond to changes in roles and expectations for provision of outpatient health services including dental school clinics, the Commission on Dental Accreditation and the American Association of Dental Schools should

- ☐ Reexamine processes for assessing patient care activities in dental schools and ensuring the quality of care and
- ☐ Begin to evaluate new options such as eventual participation by dental schools in separate accreditation programs for their ambulatory care facilities.

Recommendation 15

To consolidate and strengthen the mutual benefits arising from the relationship between universities and dental schools, each dental school should work with its parent institution to

- ☐ Prepare an explicit analysis of its position within the university and the academic health center;
- ☐ Evaluate its assets and deficits in key areas including financing, teaching, university service and visibility, research and scholarly productivity, and internal management of change; and
- ☐ Identify specific objectives, actions, procedures, and timetables to sus-

tain its strengths and correct weaknesses.

Recommendation 16

To provide a sound basis for financial management and policy decisions, each dental school should develop accurate cost and revenue data for its educational, research, and patient care programs.

Recommendation 17

Because no single financing strategy exists, the committee recommends that dental schools individually and, when appropriate, collectively evaluate and implement a mix of actions to reduce costs and increase revenues. Potential strategies, each of which needs to be guided by solid financial information and projections as well as educational and other considerations, to include

- ☐ Increasing the productivity, quality, efficiency, and profitability of faculty practice plans, student clinics, and other patient care activities;
- ☐ Pursuing financial support at the federal, state, and local levels for patient-centered predoctoral and postdoctoral dental education, including adequate reimbursement of services for Medicaid and indigent populations and contractual or other arrangements for states without dental schools to support the education of some of their students in other states;
- ☐ Rethinking basic models of dental education and experimenting with less costly alternatives;
- ☐ Raising tuition for in- or out-of-state students if current tuition and fees are low compared to similar schools;
- ☐ Developing high quality, competitive research and continuing education programs; and
- ☐ Consolidating or merging courses,

departments, programs, and even entire schools.

Recommendation 18

To protect students and the public from inferior educational programs and to reduce administrative burdens and costs, the committee recommends that the Commission on Dental Accreditation involve concerned constituencies in a sustained effort to

- ☐ Expand the resources and assistance devoted to schools with significant deficiencies, and decrease the burden imposed on schools that meet or exceed standards;
- ☐ Increase the emphasis on educational outcomes rather than on detailed procedural requirements; and
- ☐ Develop more valid and consistent methods for assessing clinical performance for purposes of student evaluation, licensure, and accreditation.

Recommendation 19

To improve the current system of state regulation of dental professionals, the committee recommends that the American Association of Dental Examiners, American Dental Association, American Association of Dental Schools, and specialty organizations work closely and intensively to

- ☐ Develop valid, reliable, and uniform clinical examinations and secure acceptance of the examinations by all state licensing boards as replacements for state or regional clinical examinations and as complements to current National Dental Board Examinations;
- ☐ Accelerate steps to eliminate examinations using live patients and replace them with other assessment methods, such as the use of "standardized patients" for evaluat-

ing diagnosis and treatment planning skills and simulations for evaluating technical proficiency;

- ☐ Strengthen and extend efforts by state boards and specialty organizations to maintain and periodically evaluate the competency of dentists and dental hygienists through recertification and other methods;
- ☐ Remove barriers to the movement of dental personnel among states by developing uniform criteria for state licensure except in areas where variation is legitimate (e.g., dental jurisprudence); and
- ☐ Eliminate statutes and regulations that restrict dentists from working with allied dental personnel in ways that are productive and consistent with their education and training.

Recommendation 20

Because the prospects for a future oversupply or undersupply of dental personnel are uncertain and subject to

unpredictable scientific, public policy, or other developments, the committee recommends that public and private agencies

- ☐ Avoid policies to increase or decrease overall dental school enrollments and
- ☐ Maintain and strengthen programs to forecast and monitor trends in the supply of dental personnel and to analyze information on factors affecting the need and demand for oral health care.

Recommendation 21

To respond to any future shortage of dental services and to improve the effectiveness, efficiency, and availability of dental care generally, educators and policymakers should

- ☐ Continue efforts to increase the productivity of the dental work force, including appropriately credentialed and trained allied dental personnel;
- ☐ Support research to identify and

eliminate unnecessary or inappropriate dental services; and

- ☐ Exercise restraint in increasing dental school reenrollments unless other, less costly strategies fail to meet demands for oral health care.

Recommendation 22

To build a dental work force that reflects the nation's diversity, dental schools should initiate or participate in efforts to expand the recruitment of underrepresented minority students, faculty, and staff, including

- ☐ Broad-based efforts to enlarge the pool of candidates through information, counseling, financial aid, and other supportive programs for precollegiate, collegiate, predoctoral, and advanced students; and
- ☐ National and community programs to improve precollegiate education in science and mathematics, especially for underrepresented minorities.

...Oral Health Objectives

Linda C. Niessen

National data on oral health status of the U.S. population result from surveys conducted most often by the U.S. Department of Health and Human Services. Responsibility for the conduct of these national surveys often rests with the National Institute for Dental Research or the National Center for Health Statistics. Although the timing of the surveys is less frequent than national surveys on many other health problems, important changes in the oral health status of Americans have been identified.

Getting the Data

The most significant change in the oral health status of the U.S. population which has occurred over the past forty years is a notable improvement of oral health. Caries has decreased, while tooth retention has increased. Unfortunately, despite improvements oral health problems remain very common. Although the overall percentage of children in 1986-87 who were caries-free between ages 5-17 increased to 50% from 37% in 1979-80, only 20% and 16% of 16 and 17 year olds, respectively are caries-free. Over 70% of children in the teenage years (ages 14-17) still have experienced tooth decay. (One should note, the reason for the decline in percentage caries-free results from the eruption pattern of permanent teeth.)

Of greater concern is the disparity in oral health status between low and

middle-to-high income individuals. Children in low income families have more dental caries and low income adults experience greater tooth loss than their middle or high income counterparts.

Disparities in the use of dental services are related to income, race, and dental insurance. Children in families with low incomes visit the dentist less frequently than middle or high income children. Whites visit the dentist more often than African-Americans. In fact, an Institute of Medicine report *Access to Health Care in America* noted differences in dental utilization as an indicator of disparities in access to health care.

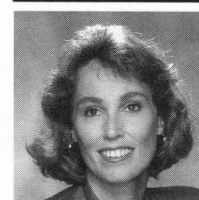
While tooth retention has increased considerably, the population is also aging. Thus, the oral health needs of a population with more chronic diseases, more dentate homebound, and nursing home residents will require dental practitioners to be more knowledgeable about general medicine and the effects of chronic illness and medications on the oral cavity and the effect of oral diseases on systemic illness.

The implications of the Institute of Medicine report on the future of dental education for the profession, for dental education, and for the American College are many. The report identified a need for the dental school to more actively participate in the identification of community oral health needs on a regular basis. The report has highlighted the significant differences in oral

health status between the "haves" and the "have nots" of our society. Is this a situation that we will allow to continue? Are we willing as a profession to share Dr. David Nash's vision of dentistry as "a profession committed to access, no matter what one's social or economic circumstance" and a vision that "acknowledges that the good of the profession is best achieved by vigorously pursuing the good of society" ("Values and health care reform," *Journal of Public Health Dentistry*, 1993, 53, 67-69).

As health professionals granted a public trust (and a monopoly license) to improve the oral health of the population, it is our responsibility to find creative solutions to improve the oral health status of all. Oral diseases should not and must not continue to be a measure of socioeconomic status in our society.

As a profession of clinicians, educators, and scientists, we must respond by working together to eliminate the discrepancies in oral health status between our children (who were lucky enough to be born into a dental family and are generally caries-free) and children who



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are bearing the burden of dental diseases.

The call to action will require us to be creative, flexible and collaborative. The dental school may need to step out into the community as the practicing community takes a step into the dental school. But the models for academic-community collaboration to improve the oral health of the public already exist. They span the country. They have received funding from public agencies, foundations, and industry. In the 1980s the University of Iowa collaborated with the Iowa Dental Association to conduct an oral health assessment of the citizens of Iowa. The University of Maryland's dental school currently conducts Project Independence, an unique program designed to meet the oral health needs of women whose dental appearance inhibits their ability to gain employment. Funded by the State of Maryland, the dental care is provided by dental students. Oral Health America, America's Fund for Dental Health has supported some innovative academic-community based projects, such as the Massachusetts Long Term Care Project, a program to improve the oral health of Massachusetts long-term care residents. Colgate's Bright Smiles—

Bright Futures is an example of an industrial-academic collaboration designed to improve oral health to underserved children.

Outcomes Research and Practice Guidelines

The first recommendation of the IOM report also addresses the importance of using scientific evidence, outcomes research, and formal consensus processes in devising practice guidelines. As a science, dentistry must continue to develop and expand its knowledge base. Various dental specialty organizations as well as the American Dental Association have or are in the process of developing clinical guidelines or practice parameters. The Agency for Health Care Policy and Research through its Medical Treatment Effectiveness Program currently funds the development of clinical guidelines in medicine. Teams of experts called Patient Outcomes Research Teams (PORTs) examine the effectiveness of medical treatments for a specific condition based on the outcomes of alternative courses of care. Treatment effectiveness is examined using a series of steps which include a literature review, evaluation of data from current prac-

tice, development of conclusions and recommendations on effectiveness and appropriateness based on the data, and dissemination of the results. As new products and technologies develop, we must evaluate the effectiveness of these products and technologies. Do they result in better patient outcomes? Dental faculties need to become skilled in conducting outcomes research. Dental schools must become centers of clinical research providing answers to the questions both consumers and practitioners are asking.

Stephen Jay Gould wrote in *Eight Little Piggies*, "Change occurs in infrequent bursts and stability is the usual nature of systems and species." The IOM report, as an infrequent burst, can serve as a catalyst to affect change throughout the dental profession. This change will require action by all sectors of dentistry, working toward a common goal — a goal to improve the oral health of all and to insure access to all for needed dental services. Or it can become another report on the shelf collecting dust. The challenge lies with each of us. Are you ready to commit to action?

...The Mission of Education

Richard E. Bradley

Reading and responding to the recommendations in the IOM report brought to mind the many papers, meetings, and debates that have accompanied the evolution of dental education. Not unlike the Flexner report of 1910 and the Gies report of 1926, the IOM report on dental education will likely gain respect for its influence on the changes that dental education will undergo as we enter a new century.

Appropriately, the IOM study recognizes some seventy years of surveys and reports dealing with curriculum problems that "persist to a considerable extent today." The report groups the problems into five broad concerns. First, "basic science concepts and methods are weakly linked to students' clinical education and experience; second, the curriculum is insufficiently attuned to current and emerging dental science and practice; third, many problems remain in implementing comprehensive patient care as a model for clinical education; fourth, linkages between dentistry and medicine are weak; and fifth, the overcrowded dental curriculum gives students too little time to consolidate concepts and develop critical thinking skills that prepare them for lifelong learning." Recommendations addressing these issues that form the chapter entitled "The Mission of Education" are grouped into six major headings with a series of subrecommendations.

Integrating Basic and Clinical Sciences

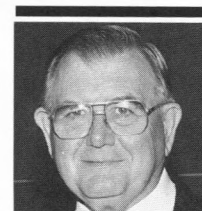
It was obvious to the IOM committee, as it has been to dental educators for some time, that there has been a deficiency in the manner of presenting basic and clinical science curriculum to dental students. A basic science curriculum taught in a vacuum does little to educate students in its relevance to clinical practice. This is particularly true, as stated by the report, if PhD trained basic scientists are not familiar with clinical correlates. The traditional curriculum, which places basic and pre-clinical sciences in the first two years and the clinical sciences in the last two years, is inadequate to satisfy the objectives of a scientifically based curriculum. The four year integrated dental curriculum enhances the continuity of basic and clinical sciences throughout the predoctoral program and does more to reinforce the "scientific principle." The report, however, points out the important link "between science and practice must be demonstrated by dental faculty in both the classroom and the clinic."

The report emphasizes problem-based learning as "perhaps the notable example of such new approaches that could meld scientific principles with clinical instruction," but stresses that even though a number of dental schools have introduced a "problem-based curriculum" there is a paucity of research to document its educational outcomes. Here, dental education can turn to medicine for guidance, since

several medical schools have used this approach for up to twenty years and report greater student satisfaction, higher faculty evaluations, and better clinical functioning. Standardization of clinical instruction accompanied by the scientific method is the desired outcome of all clinical instruction. Unfortunately, there is considerable variance in the clinical preferences of the dental faculty, which tends to confuse students and create an aura of distrust in the teaching of clinical dentistry.

Focus on Outcomes and Relevance of Science

Most dental schools have initiated active outcomes analysis. One of the main recommendations of the Commission on Dental Accreditation is outcomes assessment, and this subject is getting more attention from dental educators. Teaching with the scientific method and learning with understanding is the essence of this recommendation. Nothing does more to enhance clinical dental education than for the faculty to identify complex clinical problems and challenge students to use recently acquired basic science and clinical information for solutions. Fact-



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oriented science courses do not prepare students for this type of problem solving. It seems ironic that while higher education generally has given up teaching factual regurgitation, many dental schools still present material in this fashion, creating student disinterest and nonretention of information. Dental schools which have their own basic science units or basic science faculty, apart from the medical school, have the best chance of remedying some of the above concerns. Also, as more dentists obtain PhDs in basic sciences and enter teaching and research, there should be a better opportunity to correlate basic and clinical science teaching. To effectively satisfy this recommendation, all clinical faculty must be better versed in the basic medical sciences.

Active Learning Strategies

The long used and defended lecture mode of teaching is not efficient and frequently leads to student disinterest. Many schools have already adopted alternative forms of instruction, e.g. computer simulations, self-paced instruction, and small seminar-type groups of students that allow time for critical thinking and problem-solving. These teaching methods have a common theme — they encourage and require the student's active participation in the learning process. The IOM committee recognized cost barriers to the introduction of some active instructional methods, including costs for acquisition of computer hardware and software, physical facility reconfiguration, and faculty training in newer teaching methods. However, these educational methodologies have the potential to reduce total curriculum hours, allow faculty redeployment, and free other resources for new uses. Postgraduate dental education, which has traditionally used such methodologies, might serve as positive reinforcement for their validity.

Reducing Low Priority Coursework

An often discussed objective in dental curriculum reform, included in the IOM recommendations, is to reduce time spent in low priority preclinical technique, clinical laboratory work, and lectures. This recommendation bears scrutiny in redesigning the curriculum for the future. The IOM report highlighted the fact that many dental laboratory procedures now taught in the preclinical sciences are often performed by dental technicians or other personnel in actual practice. This recommendation will still evoke some controversy because of the difficulty in identifying what dental students should perform to competency versus what they should understand to properly instruct the dental technician. This issue is also intertwined with licensure requirements. There still are dental licensing examinations that require laboratory procedures used in denture construction and crown and bridge prosthesis, which, in turn, influence the course content of the preclinical dental curriculum. It is safe to predict, however, that preclinical laboratory instruction will decrease to make way for more relevant subjects that reflect modern dental practice.

Balancing Clinic and Discussion Time

New diagnostic technology combined with traditional methods demand devoting appropriate time to this subject, coincidental to clinical patient treatment. The IOM emphasized the importance of setting aside time for in-depth discussions that translate diagnostic findings into appropriate treatment planning. Further, this concept allows interaction and discussion of various patient conditions with peers, thus broadening understanding of the many facets of diagnosis and treatment planning. Again, this is similar to teaching

methodologies used in postgraduate education where students defend their treatment before their peers and mentors. Success in this teaching approach requires faculty who are well rounded generalists and who can call for specialty faculty consultation when appropriate. Practically speaking, setting aside time for discussion groups requires reorganizing and finding time in an already crowded curriculum, an issue cited repeatedly in the IOM report. Time for such changes must come from eliminating redundancies and restructuring existing schedules. It is appropriately suggested that freeing summers would have benefits for the students; however, using some summer time might allow offering specially designed clinical experiences that meet the intent of this recommendation.

Basic Science for Dental and Medical Students

Linking basic science instruction for dental and medical students has a number of components designed to create closer integration of medical and dental education and, as stated in the report, is based "...not (on) institutional arrangements or degrees but on educational and clinical substance." The committee recognized the need to address certain requirements before the recommendation could be met. Basic science courses, taught jointly or not, must be relevant to oral disease and not be separated from clinical care. This requires that basic science dental faculty also be familiar with clinical medicine in order to reinforce relevant scientific concepts. Basic science courses jointly taught to medical and dental students by medical basic science faculty frequently have been unsatisfactory in preparing the dental students as the priority was slanted to medicine, leaving dental students with too little relevant information. The report further states

that the heavy load of preclinical courses carried by dental students, compared to medical students, put them at a definite disadvantage. Based on these factors, the IOM committee recognized the difficulty in responding to this recommendation. Practical considerations of class scheduling, physical facilities, and building medical knowledge within a dental faculty must be overcome before this "integration" becomes a reality.

Student Rotation Experiences

The report recommended that schools "require and provide for dental students at least one rotation, clerkship, or equivalent experience." This is not unlike the requirements accompanying federal capitation grants of the 1970s; dental schools initiated rotations through a number of health-related extramural sites, bringing dental students in close contact with other health care professionals. As the capitation grant authority expired, many dental schools eliminated the rotations and returned most clinical experiences to the dental school. This recommendation provides opportunities for dental and medical students to learn together during clinical treatment, bringing the professions closer in order to offer the most effective treatments. These programs also would serve to bring the dental schools into closer contact with their university health science counterparts and to alleviate some of the "isolationism" noted by the committee. The committee gives as examples: rotations or clerkships in physical evaluation, urgent care, emergency medicine, pediatrics, and geriatrics.

While the IOM report addresses dental education, the committee could have suggested medical student rotations in dentistry, such as in pediatric dentistry, stomatology, oral surgery, and pathology. However, the report did

state, "medical schools would have to make curriculum adjustments and widen their perspectives so that future generalists and specialty physicians would regard oral health as a part of their concern with total health."

MD-DDS Programs

The report cites a number of combined MD-DDS programs, most dealing with postgraduate oral surgery education. One can interpret from the report that the committee was anxious to see expansion of experimental MD-DDS programs as yet another avenue for closer participation with medicine. This concept resulted from committee discussions on whether dentistry should become a medical specialty. Some members believed this could be a long-term solution to bring the two disciplines together. Interestingly, the majority of the committee disagreed with the concept but felt that some experimentation in this area would be appropriate, along with continuing to review expansion of the MD-DDS programs for interested students and residents.

Dental Faculty Experience in Medicine

The report recommended increasing the experience of dental faculty in clinical medicine so that they — and not just physicians — can impart medical knowledge to dental students and serve as role models. Success in this area depends on the background and education of faculty and the availability of faculty development programs to expand knowledge of clinical medicine. Most dental schools have courses that could enhance the clinical faculty's knowledge of medicine, e.g., internal medicine, stomatology, general pathology, pharmacology, physical diagnosis, and clinical immunology. The ultimate importance of this recommendation is its emphasis on having dental faculty

reinforce the relative importance of oral health to the general health of the patient.

Patient-Centered Care

While the IOM report noted that many schools have adopted comprehensive patient care programs, the schools visited by the committee acknowledged that implementation was "less than an ideal compromise." However, dental educators have accepted the premise for some time that dental students must learn clinical dentistry in a setting centered around comprehensive patient care.

The IOM report notes that there are a variety of programs in dental schools identified as "comprehensive patient care." Many of these fall short of fulfilling a true patient-centered philosophy and have considerable shortcomings in appropriate faculty staffing. If the comprehensive care program is to be directed by "generalists," as the report suggested, then the problem becomes one of gathering a cadre of "master clinicians" who have extensive education and expertise in general clinical dentistry. While the use of dental specialty faculty is essential in such programs, the generalists must assume the difficult task of calibrating and standardizing the evaluation of student competency. It is encouraging, however, that a number of dental schools have initiated innovative clinical experiences which embrace the general dentistry concept.

The recommendation that "patients' preferences and their social, economic, and emotional circumstances are sensitively considered" hits at the heart of one advantage of the comprehensive patient care philosophy versus the traditional unit requirement system: There is a greater opportunity to satisfy the varied needs of a diverse population of patients if their total welfare is the center of teaching and learning. It is clear

from the amount of attention given this subject that the IOM committee has strong feelings about its implementation.

Dental Team Emphasis

The IOM committee heard testimony reinforcing the principle that successful dental practices require teamwork and the proper use of well-trained allied dental personnel. The report refers to Nash's "high performance dental team," reflecting new and challenging roles for dental hygienists, dental assistants, and dental laboratory technicians. The recommendation in this area coincides with the dental profession revisiting the issue of patient treatment by allied dental personnel. With the birth of multiple dental delivery systems, cost effectiveness and dental team management of patient needs will be increasingly important and must be an integral part of the clinical curriculum.

Quality and Efficiency of Care

The report speaks to the importance of evaluating dental delivery systems, in particular those offered in dental schools and dental faculty practice plans. Outcomes analysis is a major standard for dental accreditation and hence, many dental schools have already initiated planning and programs in this area. Careful evaluation of dental school based clinical delivery systems has been undertaken with commensurate changes to enhance efficiency and create a more friendly learning environment. However, much remains to be done.

General Dentist Role Model

Clearly, the IOM report favored the concept of the general dentist assuming the primary role in the teaching of comprehensive patient care. As stated earlier, this idea has been adopted by several dental schools with varying suc-

cess. One of the key elements in a comprehensive patient care program led by generalists is the proper understanding and teaching of the appropriateness of specialty intervention. It was significant to note that the IOM committee recognized one of the most difficult areas of faculty recruitment will be obtaining "master clinicians" in general practice, which, ironically, is the very thing that is essential if such programs are to succeed.

Size and Diversity of Patient Pool

Most educators agree that a desirable objective of clinical dental education is to have large and diverse patient pools. However, evidence indicates a wide variance in patient demographics. Obstacles to be overcome include geographical locations of dental schools, which negate adequate patient pool, finite curricular time for complex clinical treatment, and increasing competition for dental patients by the private sector. Notwithstanding such obstacles, innovative program possibilities can be initiated. Here again, patient-centered teaching programs can do much to attract an improved patient flow. Capturing a diverse patient pool is quite another story, but one that some schools have addressed by seeking special, dentally underserved populations, e.g., handicapped persons, migrant workers, and indigent children.

Postdoctoral Training

The committee recommended that postdoctoral training, predominantly in general dentistry, be available to all dental graduates. This recommendation closely follows the trends cited in another IOM study on postdoctoral education and the growing demand for positions in general dentistry. The committee was quick to point out, however, that the recommendation speaks only to "increased opportunities rather than

requirements for general dentistry residencies." They recognized a number of obstacles to this requirement, including fiscal restraints, availability of generalist faculty, shortages of patients needed for postdoctoral education, and the need to revise state statutes should this become a requirement for licensure. Nevertheless, dental education seems to be moving in the direction of a required postdoctoral experience in general dentistry, reflecting the feeling of more than 60% of the deans surveyed for the IOM report, who felt that a year of postgraduate training should be required by 2005. The basis for discouraging the addition of specialty residencies is that the proportion of dentists who are specialists has been increasing since 1970, a trend which could lead to a contradiction of the primary care mission of dentistry.

Flexible Faculty Hiring and Promotion

If dental education is to significantly improve its curricula, a major restructuring of the faculty must occur. The IOM report made a good case for allowing greater flexibility in faculty management, emphasizing that the diverse backgrounds of dental faculty — a characteristic that can enrich education, research, and patient care — may cause difficulties when major changes in the curriculum are attempted. Some schools already have adopted non-tenure-track positions both in the clinical and research disciplines to partially negate some of the disadvantages of the tenure system. While a case still can be made for retaining the tenure system in the university structure, it is increasingly apparent that more flexible arrangements must be created to allow dental faculty to respond to the changing curriculum. Again, this will not be an easy task because of long-standing university governance procedures and the re-

cently enacted non-mandatory retirement policies. The IOM report sees a variety of possible solutions for faculty assignment and suggests approaches such as renewable contracts, reliance on part-time faculty, and more generous sabbatical policies for those who forego tenure. These could coexist with the tenure system and still satisfy institutional standards of excellence.

National Health Service Corps

The high cost of dental education to the student and its associated problems were emphasized by the IOM. The report noted in 1994, 75 repayment positions in the National Health Service Corps (NHSC) were approved; however, 350 dentists were on the waiting list. Further, the NHSC Scholarship Program reduced the number of scholarships from twenty-two to five between FY 1991 and FY 1993, and doesn't mention dentistry for 1994. It also indicated that in FY 1993 the Health Resources and Services Administration listed more than 1,000 dental shortage areas which required 2,000 dentists. Therefore, the recommendation for increasing dental slots in the NHSC appears quite appropriate in light of the background information presented in the report and as emphasized, financial assistance is becoming increasingly im-

portant to those students who come from lower and middle income families.

Other Observations

There were a number of other important suggestions and observations cited in the IOM committee that were complementary to the main recommendations, including: increased clinical experience at non-traditional sites; PhD training programs to adequately prepare students for faculty research positions; the importance of faculty development and its increasing importance in building and sustaining faculty excellence; more emphasis on the evaluation of the effectiveness of continuing education; maintenance of faculty salaries and benefits; and, greater research involvement by clinical faculty to enhance links between basic science and clinic education.

The committee was concerned about current policies for admission, education, graduation, and licensure of graduates of foreign dental schools. These concerns were largely the result of the extremely high failure rate of foreign graduates on National Board Dental Examinations.

The IOM study stressed initiatives taken by some dental schools to improve student satisfaction and quality of

life, pointing out "unhappy student memories may mean meager alumni contributions."

Most of the recommendations and suggestions in the IOM study do not come as surprises. They obviously reflect the extensive testimony heard by the committee from various constituencies. As stated in the report, "the agreement on the educational problem is widespread and the agreement is also uniform on the obstacles to effect change." The impact of this report may be enhanced because of such agreement. The IOM committee is commended on its open approach and willingness to listen to all interested parties. They have presented a formidable challenge to dental educators and universities to better prepare dental students for the realities of our current environment and the changes that will occur in the future.

The American College of Dentists historically has been interested in dental education and initiated a number of supportive programs. It is hoped that future discussions of the IOM recommendations will include representation of the College.

...The Mission of Research

Harald Loe

It is generally considered that educational institutions engaged in active research programs provide a better teaching environment than those that are scientifically inactive and that an educator who is also a researcher is a better teacher than the one who is not. Also, it is anticipated that biomedical research through mechanisms of scientific transfer within the educational system will favorably influence patient care.

The validity of this precept has, to my knowledge, never been tested in formal experiments but, like most axiomatic propositions, is more or less accepted on the inherent merit of the argument. Moreover, the modern history of the medical sciences strongly suggests a high degree of interdependence exists between the generation of new knowledge, scientific progress, and patient care; education and the teaching environment plays a central role in this relationship.

The Committee on the Future of Dental Education fully embraced and articulated this concept throughout its report.

The chapter dealing with the mission of research reiterates that research and patient care, though critical in their own right, are essential to the educational enterprise. In addition to generating new knowledge, important scholarly activities include dissemination of research findings, educating clinicians to critically assess scientific and technological innovations, and educating fu-

ture researchers. Truly, the scope of responsibilities is broad and offers an expansive continuum of opportunities for scholarly exertion.

The committee made three recommendations on oral health research having to do with strengthening the research efforts in dental schools, encouraging collaborative research, and the role of the National Institute of Dental Research in ensuring the supply of future researchers. These recommendations call for the adoption of research as a fundamental mission and priority in each dental school — it is not seen as an elective activity. These are forceful goals and aspirations intended to increase the quality of the educational environment and solidifying the position of dental schools in academic health centers and universities — besides having effects on the progress of oral health research itself.

A Long Standing Concern

Similar advocacies have been heard before. The IOM report makes the point that the Flexner report on medical education was a landmark event when it appeared in 1910; it still provides guidance to medical and dental education, especially in its promotion of the full-time faculty concept and an education grounded in scientific research and thinking.

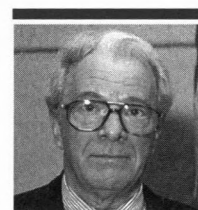
The Gies report, published in 1926, centered on dental education in the university, admissions criteria, pre- and post-doctoral curriculum, and dentistry

as a medical specialty. The Gies report did not contain a major treatise on research, but implied that research in dental schools at the time was substandard and ought to be “as the best in a good university.”

Since 1926, we have had a succession of studies of the state of dental education, none of which dealt with research as an integral component of the educational process. The last report in 1976 did not even mention the word!

Against this background, this latest attempt to describe the interdependency of research, education, and patient care stands out by its clarion call for an enhanced intellectual life in dental schools through active participation in the scientific effort. The questions are: *How well prepared are the schools for a focus on science? What about the financial and human resources needed for a meaningful involvement in dental research?*

Prior to 1948 and the entrance of the National Institute of Dental Research (NIDR), research in the oral health sciences was minuscule and concentrated in just a few schools. Research was encouraged but rarely supported. This situation changed dramati-



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cally with the evolution of the NIDR programs. From a very modest start, the total NIDR expenditure for grants to faculty in dental schools grew and was approximately \$115 million in FY 1993. However, both the demand for research support and the cost of doing research have substantially increased. Actually, \$115 million was able to support only 20% of the grant applications submitted that year.

The Current Extent of Dental Research

Almost all U.S. dental schools are involved in research to some extent, but the range of the efforts is quite large. Probably fewer than half of the U.S. dental schools today might be considered to contribute to the dental research effort in a substantive way. Implementation of the recommendations of the IOM report, therefore, is important to the collective effort but it also requires a sizable increase in funding.

The current annual expenditure in support of sponsored research and research training is estimated not to exceed \$200 million, of which the country's dental schools receive \$125 million. This amounts to approximately 10% of the collective dental schools' revenue of more than \$1 billion. "By way of comparison," the report states, "all sources of research and training grants and contracts contribute about 20% of medical schools' revenues." This, however, is not a fair comparison.

It is worth noting the broad scope and high quality of the background data and analyses used for the IOM study. Also, in reading the entire text one finds the thoughts are thoughtful, the reasoning is reasonable, and the recommendations are commendable. However, one limitation appears in comparing research resources in dental and medical schools where comparisons are not equivalent. The committee should have separated support of research in the basic science departments, which, in most institutions, is accounted for only in the medical school side of the ledger. The practice of juxtaposing dentistry with medicine and dental schools with medical schools is inappropriate and misleading. The corollary to dentistry is a clinical discipline in medicine (e.g., otolaryngology, ophthalmology, etc.); the organizational counterpart to a dental school is one of the major clinical departments in the medical school. If these conjectures are not observed, elaborations of statistical characteristics, as in this case, or other important data may prove to be grossly flawed or outright irrelevant.

Building Research Capacity

The problem of increasing the research work force is also a complicated issue. In the first place, it is difficult to make an accurate estimate of the existing work force. An analysis by the American Association of Dental Schools (AADS), using somewhat strict criteria, identified 910 oral health research

workers among the 3,300 full-time faculty members in U.S. dental schools during the 1992-93 academic year. On the other hand, the American Association for Dental Research (AADR) now has about 5,000 members. Most likely, the correct number of scientists is somewhere between the AADS low and the AADR high. Whatever the exact number, the IOM report emphasizes a need for more researchers.

The NIDR, which has a special responsibility for research training, agrees there is a shortage and has already asked the National Academy of Sciences to assist in assessing the future needs and types of researchers in the oral health sciences. In a report last year, the Academy called for doubling the number of trainees for oral health research. Another IOM report, strongly recommended that an effort be made to train more clinical scientists and that "half of the dental school faculty should be clinical scholars...the other half should be scholarly clinicians."

NIDR currently spends almost \$20 million per year on training and developing young talent for a career in the oral health sciences. Fifty to sixty individuals with various training experiences and research capabilities graduate from these programs every year; most are recruited by dental schools across the country. However, at this rate, there is an average of one candidate for each dental school per year, which is hardly enough to maintain a steady state.

Finally, there is the seemingly constant mismatch between funding of research and the demand for research support. The congressional appropriation for NIDR this year is approximately \$175 million. As already mentioned, this does not come close to meeting the current demand and need for research. A doubling of the training effort and a resulting increase in the requests for research support would require substantial augmentation of the NIDR budgets in future years.

The last fifty years of dental research has brought remarkable improvement in the clinical management of caries and periodontal diseases. This has allowed a broadening of the scope of oral health research, which now encompasses every aspect of the structure and function of the dental, oral, and craniofacial tissues — in development, maturation, and aging — as well as the derangements resulting from systemic diseases and disorders. The style and focus of oral health research have

changed, and large paradigm shifts have occurred in several clinical areas. However, the full measure of these changes have yet to materialize as dental school curricula and teachings have been slow to adopt the changes. Strengthening the research effort in the dental schools, as recommended in this report, is apt to accelerate this science transfer for the benefit of the patients and the profession — and for enhancing the stature of the dental schools in the university.

...Patient Care

John F. Hasler

The future viability of the profession of dentistry rests, in part, upon the level of excellence of the dental schools' academic programs. One essential component of the dental education mission is patient care. Perhaps nowhere else is the potential for rapid change so great as in the way dental schools will manage their clinics, both intramurally and extramurally. Schools must rethink how and where they should educate their dental and dental hygiene students and residents, reconsider how they should practice, determine who their patients will be, and what they want their practices to become.

The marketplace and emerging managed care are driving forces changing the financing of patient care. Dental schools will have to consider carefully how they will continue to attract sufficient patients for their educational and fiscal needs. With this will undoubtedly come conflict between the way dental schools and the profession view the role and operation of student-based patient care clinics. For most dental schools, obtaining sufficient funding to operate their programs and meet their strategic directions, let alone foster innovation, is an ongoing fiscal challenge.

New Care Models

One of the most likely sources for additional revenue is increased patient care. To attain this will require increased student productivity and reduced clinic

operation costs. Therefore, as schools expand their patient care opportunities, reaching outside into the community may become essential. The schools and the profession must remember that the best clinical education occurs in a setting of exemplary patient care. When this care competes, or is perceived to compete, with other practitioners in the community, conflicts in co-existence will develop.

The IOM report, *Dental Education at the Crossroads*, concludes that the typical dental school clinic is not user-friendly. It focuses excessively on completed procedures — not patients, and additional emphasis must be placed on the efficiency, quality, and accountability of care from the patients' perspective. Most innovative dental school administrators will agree with these conclusions. Faced with the oncoming need to expand their patient base, alone or through managed care networks, it will become mandatory that many, if not most, dental school clinics change. For some, to become more patient-centered will be a dramatic change.

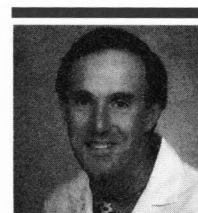
To improve their economic viability schools will have to become more patient-centered and efficient. And, they may have to reach out and join or establish community clinics, primary health care centers, or perhaps even carefully-coordinated partnerships with private practices. In reaching out to the community, schools will have to balance financial and academic obligations

to ensure that undue emphasis is not placed on the former over the latter.

The patient care recommendations in the IOM report call for schools, through a strategic planning process, to affirm that patient care is a distinct mission. In moving more to patient-centered care, attention must be directed to better appointment scheduling, completeness and timeliness of patient treatment, and more defined faculty and student oversight responsibilities. If the patient care process and outcomes, together with physical, financial, and legal barriers, are adverse, then the quality of patient care, the delivery model, and the students' education will be affected adversely. A reexamination of the quality, efficiency, and attractiveness of the patient services will become central in the decision-making process for facilitating change. Clearly, however, incentives for students, faculty and institutions, will be needed to bring about this change.

The Need for Partnerships in Patient Care

The American College of Dentists should consider this IOM study and its patient care recommendations very carefully. Partnerships for change will



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be needed to attain the recommendations, many of which will not come quickly or easily. The dental schools will need to assume a leadership role, in partnership with: the American Dental Association and its Commission on Dental Accreditation and Council on Dental Education; the American Association of Dental Schools; the American College of Dentists; and, the local components of organized dentistry. It will be essential that the profession and the practicing community view the dental schools' achievement of quality patient care and economic viability as their success.

A further partnership should also be formed among the dental schools, individual practitioners, the research community and public health officials to improve access to dental care and the oral health status of underserved populations. However, schools cannot do so in the absence of means to compensate their clinics for reduced fee or pro bono care to the underserved, including compensation for associated educa-

tional costs, as is the case presently for graduate medical education. The profession must understand and accept that schools must increase the revenues from their patient care services to maintain and improve the quality and patient-centered aspects of treatment and to provide additional revenue for program enhancements and innovation. Acting in partnership, the profession and the dental schools should foster more adequate public and private funding for quality personal dental services, public health and prevention programs, and community outreach activities. In many communities the dental schools, through their existing or future extramural programs, may be better positioned to care for the underserved. Certainly, reinforcing to students their responsibility to their communities justifies the movement by dental schools into this area.

Health care in America is changing. Dentistry must be a more equal partner in primary health care and its reform. Perpetuation of the status quo in many

dental school clinics is neither appropriate nor educationally sound. Notwithstanding the perceived or real message from the history-making 1994 political elections, the need for new partnerships among institutions, dental professional organizations, government, and the private sector has never been greater. The IOM's recommendations in "The Mission of Patient Care" are not only appropriate, but also mandatory considerations by the profession at large. The American College of Dentists, an organization committed to excellence, can and should play a role in helping to ensure that these recommendations proceed from words to deeds. Leadership from within the College can even be viewed as an opportunity to raise the profession to a higher level. Now is the time to become proactive and involved for the betterment of our students, patients, dental education institutions, and the profession at large.

...Dental Schools and the University

Charles A. McCallum

The Institute of Medicine is to be congratulated on its willingness to undertake an independent assessment of dental education. It is appropriate to highlight the recommendations concerning the relationships between dental schools and universities because of a changing economic climate. Although several of the twenty-two recommendations touch on this relationship, one speaks specifically to strengthening the dental school's position by devoting attention to explicit planning, inventorying assets, and identifying strengths and weaknesses.

Dental education over the years has evolved from apprentice training, to more formal education within schools of dentistry (some of which were proprietary), to eventually becoming university-based. As a result of their affiliation with universities, and particularly, the academic health science centers and the attendant intellectual stimulation and resources available through such a relationship, dentistry has been better able to meet its missions of education, research, and patient care. This has contributed immensely to improving the oral health status in the U.S. and recognition of dentistry as a truly learned profession, as attested to by the high ranking it receives in many national polls. The report clearly emphasized that dental schools must remain a viable and appreciated contributor to the university in order to fulfill their fu-

ture obligations of meeting the health needs of people.

After World War II universities and their health professions schools enjoyed considerable fiscal and public support from the government and private sectors. This was done to assure better health and enhance the quality of life of people in this country. Recently, public support of education, government, and many other institutions has decreased considerably. Universities are being challenged because of perceived high costs, lack of accountability, arrogance, and seemingly a lack of interest in helping to solve societal and community problems.

Universities are constantly assessing and, where appropriate, eliminating programs if they are too costly, do not contribute, or are not essential to the university's mission. This process becomes even more intense in today's atmosphere of fiscal constraint and public cynicism toward institutions.

Between 1984 and 1994, six universities, all private, closed their schools of dentistry; currently several other schools are considered in danger of being eliminated. The IOM report concluded that dental schools are at a high risk for closure by their parent universities for a variety of reasons including: high costs; isolation within the university; limited involvement in the issues facing surrounding communities; resistance of alumni and faculty to change; declining quality and number of appli-

cants; and at times, a perceived or actual conflict between the practicing profession and their academic colleagues. Universities in their review of existing programs take into account all of these factors as they look at how to downsize and cut costs in response to public opinion and shrinking resources.

Focus on Finances

Finances were cited as the unanimous first choice by university presidents when polled by the IOM committee relative to the problems facing their universities and their schools of dentistry. In addition, forty-seven of the fifty-four dental deans surveyed agreed that their greatest concern was funding problems. It was a somber conclusion that unless the issue of fiscal integrity is addressed and resolved more dental schools could be "at risk." Currently, dental schools are running an average deficit of \$1 million per year. Managed care programs, which exclude dentistry, and those clinical programs which cannot become competitive in the managed care market could escalate that deficit considerably. The report cited the average expenditure for a



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dental student in 1992 as \$53,000, which is one of, if not the most costly educational program in universities. (The cost of medical education was estimated to be \$38,000 in a 1993 study.) About 30% of the expenditure per dental student is covered by fees, tuition, and clinic income. The remainder must come from other resources, including subsidization by the university. In part, this high cost of educating dental students is due to the fact that dental education is not currently reimbursed by third-party payers and dental schools must operate expensive, faculty-intensive clinical facilities. It is interesting to note that expenditures per student nationally varied widely (\$26,300 to \$91,600). However, correlation between higher cost per student and better student performance, as measured by success on licensure examinations or in practice has yet to be documented.

To emphasize the importance of fiscal matters, twenty of the twenty-nine pages in this chapter of the IOM report dealt with finances. Suggestions for addressing fiscal problems included increasing the size of the classes to take advantage of unused clinical facilities. This could be accomplished by regionalization, where some schools could be closed and enrollment accommodated in schools with excess clinical capacity. Other suggestions for increasing revenues included increasing tuition, sponsored research, alumni contributions, income from continuing education programs, obtaining reimbursement for dental indigent care, and increasing patient care revenues from faculty practice plans and postdoctoral general dentistry programs.

Expenditures might be decreased by limiting the number of tenured faculty,

consolidating departments, eliminating unnecessary courses, and using new technology to replace costly faculty. Because no single financial strategy would solve the problems of fiscal constraints in schools of dentistry, the committee recommended that schools collectively and individually take a variety of actions to increase revenues and decrease costs. The committee strongly emphasized that schools should develop and employ a strategic plan focusing on both financial and non-financial issues.

The recommendations and suggested actions presented in the report are well conceived. They provide great insight and suggest possible solutions to the problems facing dental education.

Becoming More a Part of the University

A top priority for dental schools must be a commitment to contribute positively to the mission of their universities and visibly demonstrate their importance. The dean should become familiar with the institutional goals and provide leadership on how the school can actively participate to meet the university goals. Today's universities are becoming more involved in a service commitment to the community. If the university is addressing the issues of the aged, the disadvantaged, economic development, international programs, diversity, managed health care systems, and/or access to and cost containment of health care, the school should become a major player in these endeavors.

Dental schools should emphasize accountability, continuous quality improvement, and outcomes and should publish evidence of their successes. The performance of graduates on na-

tional and state licensing examinations and the leadership provided by their graduates in academics, learned societies, and the community must be documented.

Schools of dentistry must avoid isolation as it invites vulnerability. Faculty should become involved in interdisciplinary research throughout the university. In service areas the school of dentistry should be prominent in caring for the institutionalized, the disadvantaged and other special population groups e.g., immunosuppressed and handicapped patients. Participating with physicians, nurses, pharmacists, and social workers in clinics conveniently located and at non-traditional hours suitable to the patients should be explored. Above all, isolation in practice, as well as other academic areas including education, should be avoided.

As a strategic financial plan is developed, it is important to review the matter of tenure and the utilization of more faculty who would serve on a part-time basis and bring special expertise to the clinical education and training of dentists. Studies to ascertain how many full-time faculty are needed is appropriate. Reconsideration of tenure will require the understanding and support of the university and its community of scholars.

Achieving essential change will require extensive study by each school and the support of a broad constituency that includes the university, the faculty, the profession, the public, and health policy makers at the local, state, and national level. The Committee on the Future of Dental Education provided us with valuable recommendations and directions which should serve us well.

...Accreditation and Licensure

Newell H. Yapple

The long anticipated IOM study on dental education will serve as a great focus of discussion within and outside of the dental communities. Of particular interest were the chapters dealing with the relationship of the dental schools to the profession and the public on the divisive issues of accreditation and licensure.

IOM criticisms of the accreditation process indicated it is too expensive, too focused on procedural details, and too inflexible toward educational innovation. Additionally, the committee reported that the process tolerates some inferior programs.

Major recommendations suggest expanding resources and assistance devoted to schools with significant deficiencies and decreasing the burden imposed upon schools that meet or exceed standards. The emphasis on educational outcomes should be increased while reducing detailed procedural requirements. Additionally, more valid and consistent methods for assessing clinical performance should be developed for education and licensure.

Streamlining Accreditation

The IOM criticisms and recommendations regarding accreditation are well recognized in the accreditation and educational communities and have served as the basis for debate and action for the past several years. Significant steps have been taken by the Commission on Dental Accreditation to

reduce costs both to the American Dental Association (ADA) and the accredited schools or programs. Cost-cutting measures include the increased utilization of electronic transfer of data. Standards for outcomes assessment have been established and procedural standards are being de-emphasized by the commission. As the predoctoral standards are rewritten over the next several years, it can be anticipated that the IOM recommendations will be further considered and acted upon. Recognizing and assisting the schools with significant deficiencies is undoubtedly the greatest challenge to the commission, education, and the profession. With the IOM study as a catalyst, the dental communities hopefully will address this most vexing and persistent problem. Public accountability demands no less.

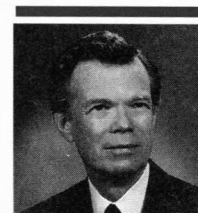
Summarizing accreditation, the IOM study recognized serious problems within the current accreditation process and recommended significant reforms within the existing system and process. While the issue of governance of the commission was noted in background information, the IOM committee took no position on autonomy and independence — an issue of considerable importance to many of the dental communities.

Coordinating Licensure Changes

Licensure deficiencies noted in the IOM report were concentrated in five areas including: (a) the use of live pa-

tients in clinical examinations; (b) variations in the content and relevance of clinical examinations; (c) unreasonable barriers to movement of dentists and dental hygienists across state lines; (d) inadequate means of assessing continuing competency; and (e) practice acts that unreasonably restrict the use of appropriately trained allied dental personnel. The IOM committee recommended improving the current system of state regulation of dental professionals to develop valid, reliable, and uniform clinical examinations accepted by all state licensing boards; accelerating steps to eliminate live patients and replace them with other assessment methods; strengthening and extending efforts to evaluate continuing competency; removing barriers to movement of dental personnel among states; and eliminating statutes and regulations that restrict dentist from working with allied dental personnel in more productive ways.

The licensure issues raised by the IOM report are well known to the dental communities. In the last several years there has been significant progress in examination standardization as best exemplified by development of *Guidelines for Valid and Reliable Dental*



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Licensure Clinical Examination by the ADA and the American Association of Dental Examiners (AADE), which also includes a minimum common clinical core. The new *NERB/CRDTS CORE* examination is specifically designed to conform to the guidelines and will be administered in 1995. Additionally, many regional and state licensure examinations have replaced some live patient procedures with various forms of simulation. The AADE is working on means to evaluate continuing competency.

The issues raised by the IOM report will be debated and fought over by the various dental communities for the foreseeable future. Resistance to elimi-

nating live patients in clinical examinations will persist among examiners. Practitioners and regulators from sunshine states will continue to obstruct freedom of movement efforts.

The IOM committee report recommended reform and modification of the existing examination and licensure process, recognizing the responsibility of the individual states for professional regulation. Of significance is the lack of endorsement for the concept of eliminating clinical examinations and granting entry-level licensure based upon graduation from an accredited school and completion of a postdoctoral training program, as recommended by the Pew Health Professional Commission.

Additionally, the report did not support a new national licensure system, but rather advocates reform of the existing process.

The IOM report did not break new ground in its findings and recommendations on accreditation and licensure. The educational, regulatory, and practicing communities presently are going forward with most of the recommendations. Hopefully, the IOM study will serve as a catalyst for discussion and continuing resolution of areas of concern, while staying within the current systems of accreditation and state licensure regulation.

...Work Force Issues

John W. Stamm

The dental work force analysis offered in the IOM report, *Dental Education at the Crossroads*, is remarkable for the evident skill in balancing the views and expectations of numerous communities in the dental health care field. The discussion presented by the IOM committee is deft, as it considers simultaneously the extensive and sophisticated background information it generated, as well as the more politically charged perceptions prevailing in the wider dental services marketplace. The resultant dental work force perspective reflects the committee's respect for pragmatism and common sense.

The work force chapter developed four recommendations dealing with work force supply, effectiveness and efficiency, distribution, and diversity.

Work Force Supply and Model Development

The decision to abstain from recommending an increase or a decrease in the supply of dental personnel is one of the most profound of the report's twenty-two recommendations. The committee had the latest information at its disposal, including a detailed paper by Capilouto *et. al.* (*Journal of Dental Education*, January 1995) reviewing several of the existing dental work force projection models. These models represented the efforts of the American Dental Association, the American Association of Dental Schools, the U.S. Bureau of Health Professions, and the U.S.

Bureau of Labor Statistics. The committee was attentive to the accuracy of these models, but recognized that if projections have an impact on altering work force production policy, then a successful projection will be inherently inaccurate to the degree that policy changes tied to the prediction had an effect.

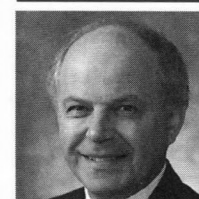
In addition, the committee took seriously the concerns in the 1980s regarding busyness in dental offices. It assessed the implications from the six dental school closings during that same decade and factored in various demographic projections for the U.S. to the year 2020.

Although arguments currently exist both for increasing and for decreasing the relative supply of the U.S. dental work force, the IOM committee stated plainly that it was not sufficiently persuaded by, and therefore could not recommend on behalf of either argument. Nor did the committee claim that current dental personnel production would balance with likely dental service requirements in the future. In short, the committee maintained an agnostic stance. In effect, it came closest to supporting the balanced supply-requirements position without actually doing so, a fine distinction that the committee took pains to articulate.

Instead of stating its own dental work force prediction, the committee gave dental work force planning advocates an alternative approach to coping with future needs. Implicitly, the committee hoped that a reliance on current

dental personnel supply and service requirements will permit achieving a balance that is sustainable into the foreseeable future. Should its position be in error, the committee suggested various scenarios that might be implemented under the specific future conditions of dental work force oversupply or undersupply. These alternatives are described explicitly in the report and are worth careful attention.

Perhaps as a way of lamenting the lack of sufficient, solid information for clear cut policy recommendations, the IOM committee appropriately urges strengthening the monitoring and forecasting capacity relative to the requirements and supply of dental services. Dentistry's current initiatives for predicting need, demand and supply are qualitatively good, but are only emerging and need nurturing and development to better serve the public and the profession. Moreover, since the methods for simply projecting numbers of dental personnel are increasingly reliable, there is greater need for robustness in anticipating requirements for dental services and in forecasting the impact of technological changes in dental services that will be offered in the future. It also will be useful to monitor more definitely the ever changing qual-



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ity of dental care, because quality of services is likely to be a component in future, more fully specified forecasting models of dental supply and demand.

Work Force Efficiency and Effectiveness

The recommendation on work force efficiency and effectiveness included three very important components. First, the committee favored dentistry's long-term trend of increasing efficiency in the production, and hence in the supply of dental services. Taking the dental office as the unit of production, adopting various new technologies has increased the supply of services available per unit of time. In this context, approaches to improve training and which deploy dental care personnel in more effective ways are included under the new technologies rubric as used above. There is little doubt that allied dental personnel have been a strong contributing factor in increasing efficiency in the production of dental services. Analogous increases in work efficiency apply to most other health professionals practicing in the U. S. over the past twenty to thirty years.

Research on Dental Services

The second component of this recommendation dealt with the effectiveness of available dental services. A major theme throughout the IOM report was encouraging dentists to adopt more explicit evidence-based practice behaviors. The public would be better served if dentists and dental hygienists place greater reliance on treatment and prevention modalities for which effectiveness has been demonstrated through formal outcomes assessment protocols. Outcomes assessment is a major thrust in the public and private sectors. In health care, this focus began with the randomized clinical trial movement of the 1950s and health services research

of the 1970s. Outcomes assessment in education was linked to the thrust for greater public accountability. Industry outcomes assessment has recently developed strong connections with total quality management technologies.

Outcomes assessment and evidence-based practice are not entirely new to dentistry. However, the profession has historically tended toward empiricism; efforts to validate patient care technologies formally are generally a more recent phenomenon. Such efforts create an unfortunate tension in dentistry because of the misapprehension that the narrow, specific questions posed as part of the outcomes research process are an implicit attack on dentistry. In reality, efforts to place dentistry into the mainstream of evidence-based care are consistent with the mission and desires of most dental professional and are vital to keeping the profession in the state-of-the-art zone desired by most dental patients.

Future Personnel Needs and Dental School Enrollment

Third, and related to the first component of this recommendation, it is likely that increased efficiency in providing dental services will continue, without accompanying loss in work satisfaction. The policy implication is that dental service supply increases resulting from greater technological efficiency are preferable to expansion in number of provider personnel. The challenge will be to estimate the rate of the growth in efficiency in order to determine with more confidence whether projected increases in dental service supply will meet anticipated dental service requirements.

Improved Access to Dental Care

The IOM report expressed concern about the geographic distribution of dental personnel and recommended re-

energizing the National Health Service Corps (NHSC) program to place more dental graduates in rural areas of the U.S. The committee underlined the problem of inadequate funding for the dental component of the NHSC and noted that too few of the designated dental shortage areas had been reviewed and updated to qualify for assistance through NHSC funds. Moreover, the U.S. Health Resources and Services Administration has approved only seventy-five dental vacancies as potential sites for student loan forgiveness initiatives; only twenty-three of these were filled at the time the IOM report was drafted.

In theory, an effective coupling of a designated dental shortage area with the NHSC should be a win-win situation. Unfortunately, results have been disappointing for a variety of reasons. The time and circumstances may be such that a fresh approach is needed to deal with putting patients and dentists together in underserved areas. In particular, financial arrangements that rely more on assistance with practical market place solutions deserve greater attention. In the current national climate it would appear to be extremely important to recognize a greater role for significant state initiatives to solve what are in essence local and county dental care access problems.

Diversified Work Force

The IOM report also reminds the reader that dentistry has made much progress in efforts to diversify its work force. The enrollment of women into the nation's dental schools has been especially successful. In 1993, 38% of first-year dental students were female, compared to 2% in 1970. Among the dental practitioners forty years and under, 20% are women, a figure that is certain to rise in the coming years. It also appears that most other minority groups are

gaining stronger representation in the dental work force.

African-Americans are, unfortunately, not a sufficient part of the diversification trend. This is a source of frustration to the dental profession, academic dentistry, and public agencies, not to mention African-American people themselves. Dental schools are trying hard to change this trend. Anecdotal reports suggest that efforts to enroll African-American students have led to intense competition among the dental schools, as well as between dental and medical schools on the same campus. Moreover, the impetus to attract and enroll qualified African-American students in U.S. dental schools has dramatically bid up the price of student financial support for them.

The IOM report did a superb job presenting quantitative data and providing thoughtful and sensitive analyses of past, current, and likely future trends. In the short term future, these trends give no rise for optimism. As the committee correctly noted, there is no easy, single, or rapid solution. The dental schools and their universities must work diligently and enthusiastically with a complex web of programs and initiatives that, over time, will achieve the goal of bringing more African-Americans into the dental work force.

Summary Perspectives

"A qualified dental work force is a valuable national resource." Overall, the recommendations pertaining to future dental personnel requirements move in the direction of letting market forces guide work force policy. Dentistry, more than other health professions, has demonstrated that working constructively with market forces can lead to relatively rapid, if at times painful, adjustments to the work force supply pipeline. The 1980s changes in dental education relative to work force prepa-

ration clearly did not represent the "trickle-down" work force policy that has been the object of recent criticism in medicine. Hopefully, state and federal policy makers will give credit to dentistry for substantial and proactive efforts to date to titrate its work force.

The committee is commended for giving significant emphasis to dental care access issues while avoiding recommendations and expectations that dental schools clearly can not meet. Dental schools play a very important role in teaching future professionals about the intellectual and ethical issues related to caring for individuals whose economic access to dental care is inadequate. Moreover, dental schools can and should be part of the dental work force that is increasing access to dental care. Students must see that dental school faculty are committed to helping the economically disadvantaged obtain needed dental services. However, the current trend of declining federal and state resources to dental schools will diminish their capacity to provide dental care to disadvantaged populations. Helping the economically deprived finance their dental care remains an important and a yet to be resolved issue in society.

Although not featured prominently in the work force chapter, the committee made cogent recommendations in other sections of its report that challenge dental schools to educate a future dental work force better prepared for the inevitable and rapid changes taking place in the practice of dentistry. Moving the educational process closer to the university mission and integrating dental education more effectively with relevant clinical and basic training offered in the nation's medical schools are persistent themes in the IOM study. The IOM also gave strong support to the concept of a one-year postgraduate clinical training opportunity for each

dental graduate from U.S. dental schools. This experience was not construed as a fifth year of dental school. Taken together, these recommendations would put the new dental work force in an advantageous position to practice evidence-based dental care for the public, provided that sufficient such information is actually being generated on behalf of the dental care system.

The profession and the dental schools in the U.S. can take justifiable pride in the quality of the dental work force produced to date. Although it offered little comment, the IOM committee almost certainly assumed no future deviation from the quality standard currently associated with dental education. Moreover, quality of dental services is an important variable for developing more meaningful forecasting models, as advocated in the report.

From the perspective of a dental school in the mid 1990s, there is a threat to future work force quality, namely the shrinking resources available to dental education. In an environment where modern technology and more complex organizational structures are the rule, it is distressing to find that dental schools must rely on less support from state, federal, and other sources. This is a long-standing concern of private and state-related schools, and is becoming very acute in the public schools that traditionally have carried a larger dental research capacity. Although educators are seen as biased in these matters, continuation of current financing trends for dental schools will eventually and inevitably compromise the quality of the future dental work force. Projecting to 2020 under these circumstances, the valuable national resource offered by a qualified dental work force could be at risk in the not too distant future, unless wiser policies prevail.



The National Academy of Sciences/ Institute of Medicine

Sherry L. Keramidas

Over a century ago during the height of the Civil War, our nation's leaders grappled with a multitude of questions grounded in science, technology, and health. They recognized the need for an independent advisor in these vital areas. On March 3, 1863 President Lincoln signed the congressional charter creating an independent science/technology advisor — the National Academy of Sciences (NAS). As stated in its original charter the "Academy shall, whenever called upon by any department of the government, investigate, examine, experiment, and report upon any subject of science or art." Since its founding, the NAS and its affiliated institutions — the National Academy of Engineering (NAE), the National Research Council (NRC), and the Institute of Medicine (IOM) — have existed as a private, non-profit entity providing independent, objective scientific advice to the nation.

The NAS, the NAE, and the IOM also are professional societies of elected, distinguished scholars, scientists, and professionals dedicated to scientific and technological progress for the public welfare. Election to the 1,700 member NAS, the 1,700 member NAE, or to the 600 member IOM is among the highest professional honors.

The work of the NAS organizations

is undertaken through committees of experts from academia, industry, non-profit institutions, and government. Within a single year, the NAS organizations use more than 6,400 distinguished volunteers serving on nearly 645 committees. These committees produce more than 200 reports for use by government, industry, professional, and private organizations. The work of each committee is reviewed by separate panels of experts before completion. Historically, many NAS reports have shaped critical policy initiatives for the nation — the synthesis of penicillin, sanitary engineering, radiation exposure, nutrition guidelines, the relationship between nutrition and chronic disease, injury control, improving quality of care in nursing homes, licensing and distribution of prescription drugs, the human genome project, the national AIDS initiatives, standards for science education, need for scientific and health personnel in the future, and methods for disposing of nuclear weapons.

The Institute of Medicine (IOM) is the newest of the NAS organizations, established in 1970. Its unique role and purpose were delineated in its charter: "...rising expectations of better health and of improved quality of life for all members of our society now include good health care as a universal human right and as a goal of this society. The

provision of such care places increasingly heavy demands on the health services and on their complex relations with other sectors of society. The resulting expansion of requirements for health manpower and the continuing need to provide for further scientific progress present grave challenges to our medical and social institutions. These developments have generated the need for a national institution, composed of individuals of distinction and achievement, committed to the advancement of the health sciences and education and the improvement of health care."

The IOM is governed by a twenty-one member council composed of leaders representing an array of health-related disciplines. The IOM's activities are supported by its professional staff located in Washington, D.C. The programs of the IOM are subject to review and approval of the Research Council Governing Board, the principle administrative arm of the NAS. IOM committee reports also are reviewed by the Re-



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port Review Committee of the Research Council.

Policy studies and projects undertaken by the IOM and other NAS affiliates arise from requests from Congress, government agencies, private organizations, or from issues identified by members and expert volunteers. Study concepts and proposed approaches are carefully reviewed and analyzed by the governing structures of the NAS. Evaluation typically encompasses the importance and scope of the topic, the availability of an appropriate information base, the potential benefit of the effort to national issues and discussions, and whether the organization is the appropriate entity for undertaking the work. Approved projects are initiated with a well-defined statement of work.

The IOM/NAS is not part of the federal budget. Much of the support for the IOM has been provided by major endowments and foundations (The Commonwealth Fund, The Howard

Hughes Medical Institute, The Robert Wood Johnson Foundation, The Henry J. Kaiser Family Foundation, W.K. Kellogg Foundation, The John D. and Catherine T. MacArthur Foundation, The Andrew W. Mellon Foundation, The Richard King Mellon Foundation, and The Pew Charitable Trusts). As study concepts are identified and developed, the IOM and other NAS organizations often seek support from other government and private organizations. The IOM's recent report, *Dental Education at the Crossroads*, was supported by The Robert Wood Johnson Foundation, The American Fund for Dental Health, the National Institute of Dental Research, the Health Resources and Services Administration, the Department of Veterans Affairs, the American Association of Retired Persons, and CIGNA Dental Health, Inc. The role of funding sponsors of projects is clearly defined and restricted to assure the objectivity of the effort.

Although the IOM and NAS projects are initiated under defined procedures, the organizations typically invite input from the communities of interest through requests for nominations to study panels and requests for input, testimony, and other information used by committees. Reports are disseminated through a variety of mechanisms, with many reports available through the National Academy of Sciences Press.

The National Academy of Sciences and indeed the Institute of Medicine were created to meet vital national needs to understand the scientific, technological, and health related issues that underlie the challenges and opportunities of our day. The intellectual resources and talents drawn from all sectors of society and the focus on collaborative, non-partisan efforts have lead to referring to this organization as a unique national resource.

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Information (Not Time) is Money

David W. Chambers

The world's leading authority on the value of things — the IRS — tells me my (volunteer) time is worth nothing. That is okay by me. I figure if time really is money, I would be as rich as Sam Walton of Wal-Mart, if I can just live that long. It may be possible to waste time, but no one knows how to stretch it. Sam Walton's trick had nothing to do with his spending more time in retailing. His computerized check-out systems are networked and each day these nationally linked computers cut purchase orders for merchandize based on current purchases. This ensures the availability of hot items and drastically reduces expensive markdowns of excess stock. Sam Walton was in the information business.

America in general is rushing toward the information age. For every one person who earns a living by making something, there are more than two who add value through manipulating information. The wealth of this country, and every developed nation, is now deposited in offices rather than factories. As we enter any such new territory, we must become familiar with the terrain and novel rules and customs. Leadership in the 1990s requires mastery of information skills.

Understanding Information

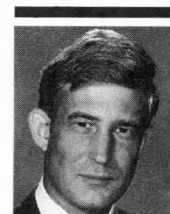
In its Latin origins, information meant the knowledge that went into making something such as a wheel or a sword. It was know-how. But over the centuries, the intrinsic connection between information and the creation of concrete objects grew more distant. We have deskilled manufacturing through modular assembly, robotics, and job redesign to permit individuals with minimal training to perform routine tasks. At the same time, information has acquired a distinct identity and value; it can be created, enhanced and transformed, bought and sold many times over, independent of any immediate application — just as a trader on the Chicago commodities exchange can make a fortune without ever owning anything.

At the middle of this century, information was defined by engineers as the reduction of uncertainty. Twenty years later, it was organized data; the stuff you get out of computers. As we approach the twenty-first century, information has become a business concept, specifically a key term in marketing. Information is the value added for the consumer by transforming physical materials or other information.

There is an often-told story that illustrates this point. As I recall the tale, a

small community in Connecticut had an antiquated electrical power system that had been kept functional for many years by an old gentleman. Several months after he retired, the power system shut down and none of the available technicians or consultants could revive it. In desperation, the city fathers asked the former manager to return to see if he could resuscitate the city's power. The old man came and, as was his custom, had a cup of coffee and a donut, then examined the equipment for several minutes. Finally, he stopped in front of one piece of machinery and kicked it, immediately restoring light to the entire township.

The city fathers were pleased with this result until they received the bill. The old man asked for \$4,018. They had heard about how simple it had been to correct the deficiency, so they demanded an itemized statement. Several weeks later they received a scribbled reply: Travel \$10, overhead (coffee and donuts) \$3, kicking \$5, knowing where to kick \$4,000. This



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story has something to tell us about dentistry valuing its services in terms of procedure codes.

The Information-Based Office

Information is changing the practice and profession of dentistry. The cost-effective computerized clinical record is only about five years away. Its display will be highly visual and its input will be verbal and electronic instead of manual. It will be more accurate, quicker, and will support more analysis than current record systems. Computer-enhanced radiography is here now.

So-called expert systems allow for exhaustive, instant, and accurate searches of patient knowledge bases such as indications and contraindications for drugs and diagnoses to support the dentist's decision making. More commonly available decision support systems (DSS) include spreadsheets which capture important data on practice characteristics, patient information, and personnel to monitor key practice variables and even model hypothetical changes. Cephalometric analysis on the computer is an obvious improvement. The cost of intraoral cameras and computer image manipulation software is falling rapidly, thus putting within the reach of every dentist and patient a

graphic understanding of the present condition and the results of possible treatment alternatives.

Even more revolutionary than these simulations is work being done on virtual reality. *Simulations* display what the world would look like in response to certain logical commands, typically from a keyboard. For example, architects use computer models of office designs to show what your new office would look like viewed from the north,

of their training. The opportunities in dental education and licensure examination are exciting. It is even theoretically possible to create virtual simulations of actual cases such as a complex surgical extraction. Thus a practitioner could rehearse various approaches to a complex procedure several times before having to perform it.

The information contained in a dental chart has expanded tremendously over the past several years, particularly

The surprising losers will be those who embrace tomorrow's equipment to do yesterday's work.

from the east, or from above. In *virtual reality*, the computer reads the behavior of an individual and adjusts the "virtual world" in response. A virtual reality tour of your new office would require putting on a visor and actually moving your body and head, with each movement changing the computer representation to correspond with the virtual change in your orientation. This creates a true interaction with both actual and potential (virtual) worlds. Sound and tactile interaction can be added to virtual reality to create life-like representations of dental procedures. Airline pilots now routinely use virtual reality as part

in the medical area, allowing for more complete and accurate patient care. As larger actuarial databases are developed, the probability of insurance companies or dentists being driven out of business by inappropriate fee schedules decreases because of reduced surprises. Outcomes based care decisions — using analysis of public or personal databases of the outcomes of various therapeutic interventions to guide treatment choice — makes both scientific and economic sense. In a very literal way, every sustained improvement in dental care, both generally and in each practitioner's office, is information

based. Research is a formalized and sophisticated application of information. The wisdom of experience is the same thing on a personal basis.

The Technology Trap

Many otherwise talented and *au courant* individuals will miss the information revolution. It has already happened to those who have chosen to stick with yesterday's technology because they are familiar with it. The surprising losers will be those who embrace tomorrow's equipment to do yesterday's work. Several large studies of American productivity have shown substantial increases in the manufacturing section where robotics and other types of automation have changed the way goods are produced. But there has been a surprising lack of increased productivity in the white-collar sector. This is because we have failed to redesign office work. Increased speed has been offset by increased volume.

The fault lies in our definition of technology. We have mistakenly identified technology with equipment, and high technology with computers and other products based on integrated circuits. That view is as misleading as identifying dentistry as only restorations, and good dentistry with nothing but better restorations.

Mescon, Albert, and Khedour's text *Management* is typical of those used in MBA programs. They offer the customary definition of technology in the following terms: "the combination of skills, equipment, facilities, tools, and relevant technical knowledge needed to bring about desired transformations in materials, information, and people." Equipment is only one aspect of technology. Sometimes, greater improve-

ment in efficiency, quality, and work satisfaction can be achieved by changing other parts of the technology mix, including better trained people and more effective scheduling and work procedures. Sometimes the money spent on new equipment is wasted — or can even damage productivity — if it is not carefully integrated into the mix of technology. The same thing can happen if one hires more talented individuals (one part of technology) without changing their job responsibilities (another part). As a general rule, the effectiveness of technology is partially determined by its capacity and partially determined by overall changes in the way work is done.

The most recent ADA *Survey of Dental Practice* reports that 93% of dentists have computers in their offices, used mostly for accounting and word processing. Five percent have intraoral video systems. During the next decade, the profession will be bombarded by a dazzling array of electronic technology. Dentists will be required to make choices of great complexity and significance. Information technology decisions will be difficult because the field is evolving rapidly and there are no clear standards; the expenses can be large; choices will involve how one connects with the rest of the world; dental training does not prepare individuals for these choices; and the correct choices will involve large-scale changes in the way dentistry is performed. Dentists will have to go to school on this question. An exciting example is the American College of Dentists' InfoTech seminar this July.

The selection of new dental technology for the dental office, especially electronic technology, cannot be made

on the basis of the features and capacity of technology itself. The following is the best selection criteria: Alternative A is the way the office is organized currently. Alternative B is the way the office can be reorganized if the new piece of technology under consideration were added and appropriate adjustments made. Alternative C is the way the office would be organized if the same amount of time and money required to purchase and install the new technology were spent making any other improvement in the office. Selection criteria: Which alternative (A, B, or C) adds the greatest value to the practice measured in terms of patients' oral health?

Most Americans will be unsettled when the new computer tracking maps are introduced in cars. Unlike the conventional objective maps, where the world remains fixed and we imagine ourselves moving through it, our car will be a fixed point in the center of the screen and the world will change and reorient itself in response to our changing position. Because virtual reality has a subjective perspective, it will challenge our world view based on objectivity.

The information revolution is more than adding another technique to the armamentarium. It is a change in focus. We must get used to looking at the pattern of things rather than the things themselves. This was recognized by the Taoists in China almost three thousand years ago. "Thirty spokes share one hub. Adapt the space therein to the purpose in hand, and you will have the use of the cart."



Recommended Reading

Abbey, L.M. & Zimmerman, J.L. (Eds.). *Dental Informatics: Integrating Technology Into the Dental Environment*. New York: Springer-Verlag, 1992. ISBN 0-387-97643-4; 348 pages; (price unknown).

Informatics is a new term for a new field — the study of information and its use. There are nineteen chapters covering such useful topics as the role of information in improving patient care and in health care delivery systems, but the book is intended primarily for scholars.

*Burrus, D. *Technotrends: How to Use Technology to Go Beyond Your Competition*. New York: Harper Business. ISBN 0-88730-700-0; 373 pages; about \$14.

Emerging technologies and their likely applications are identified. The central thesis is that it is the use, not the technology, that matters and that once a technology is available it will be used, by someone — often to affect your life.

California Dental Association *Journal*. Entire November 1994 issue.

An excellent example of how dental journals are keeping the profession informed of breaking computer technology such as office management software, the computerized record, intraoral cameras, and digital radiography.

Evidence-Based Medicine Working Group. Evidence-based health care: A new approach to teaching the practice of health care. *Journal of Dental Education*, 1994, 58, 648-653.

Describes a new paradigm in medical care delivery that uses computer technology and integrated databases to expand the information available to individual practitioners and accumulate data from each care giving situation.

Mayer, J.J. *Winning the Fight Between You and Your Desk: Use Your Computer to Get Organized, Become More Productive, and Make More Money*. New York: Harper Business, 1993. ISBN 0-88730-674-8; 247 pages; about \$18.

Don't buy computer software without reading this book first. Mayer is the man who has organized the desks of some of America's top CEOs. Mayer identifies management tasks such as appointments, addresses and communication and then tells you which software works best for them.

*Toffler, A. *Power Shift: Knowledge, Wealth, and Violence at the Edge of the 21st Century*. New York: Bantam Books, 1990. ISBN 0-553-29215-3; 611 pages; about \$7.

The author of *Future Shock* sees the evolution of history as moving from physical power, to manufacturing wealth, to information. We are entering the information age in economics, politics, and every aspect of our personal lives. Power will flow to those who are comfortable with information.

*Wurman, R.S. *Information Anxiety: What to Do When Information Doesn't Tell You What You Need to Know*. New York: Bantam Books, 1989. ISBN 0-553-34856-6; 316 pages; about \$14.

The book is written by an architect who has made a career of helping people understand information, including the "Smart Yellow Pages." It is about practical ways to organize the information you receive so that you are not overwhelmed by it.

Editor's Note

Summaries are available for the three recommended readings preceded by an asterisk (*). Each summary is about four pages long and conveys both the tone and content of the book with extensive quotations. These summaries are designed for busy readers who want the essence of these references in fifteen minutes rather than five hours. Summaries are available from the ACD Office in Gaithersburg. A donation to the ACD Foundation of \$15 is suggested for the set of summaries on information; a donation of \$50 would bring you summaries of all the leadership topics for a full year.



Master Planner: William J. Gies and Dentistry's 20th Century Coming of Age

Eric K. Curtis

The 1920s, said Alistair Cooke, were a watershed — perhaps *the* watershed of history. The United States had emerged from World War I as the leading industrial and financial power of the world. Science and technology were not only making rapid advances, but also fueling great expectations: these were the years in which commercial airlines, talking movies, household radio, and even cellophane would come into their own. The Roaring Twenties also roared for dentistry. One reason is William J. Gies.

Few people have exerted as much influence over the development of 20th century dentistry as Gies. He spent his professional life at Columbia University pursuing dental research. Along the way, however, he almost single-handedly shaped dentistry as we know it.

"I admire dentistry as one of the most useful, effective, and desirable agencies for the promotion of comfort, health, and welfare," Gies wrote in 1936 of his passion to promote the profession. "I admire dentistry for its nobility of purpose, its efficiency in procedure, its value in achievement and its

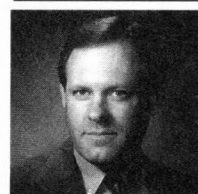
progressive effort, through self-examination and self-criticism, continually to make itself better and more serviceable. My appreciation of the dental profession as it exists today, my faith in its future, my wish for its cumulative support, and my desire to see it fully esteemed everywhere at its true value, are among the sentiments that hold my abiding active interest."

A remarkable interest at that, since Gies, a PhD biochemist, was not even a dentist. Launching his career around the turn of the century, Gies first noticed dentistry when his research interests turned toward saliva. As he involved himself in dental caries research, Gies became concerned that American dentistry was not being taken seriously. After all, the United States had invented dentistry as a health care calling separate from medicine, and American dentists were esteemed the world over for their advanced skills.

At the same time, more people wanted more dental care. The mass-produced and affordable automobile encouraged a sense of freedom and prosperity. The era's economic and social developments were leading to a burgeoning urban middle class with a

growing demand for such a personal service as dentistry. In the decade from 1910 to 1920, the population grew 15%. The number of dentists in the same ten years increased by 40%. Dentistry had matured from its 19th century role as a largely secondary, part-time pursuit to a serious calling with a coherent, authoritative identity. A political cartoon of about 1915 portrays Woodrow Wilson as the nation's dentist, taking care of the rotten teeth of business and labor alike by signing into law the Federal Reserve and Clayton Antitrust Acts. Dentists were no-nonsense, can-do people who got the job done.

Yet the very tradition of mechanical acumen that made U.S. dentistry the finest in the world was ironically its greatest weakness. In 1910 the British physician William Hunter, in a lecture to a Canadian medical school faculty, delivered a scathing denunciation of American dentistry. He accused dentists



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of ignoring patient health in their pursuit of technical virtuosity, dismissing the entire profession with his famous description of a crown as "a mausoleum of gold over a mass of sepsis."

Although Hunter dramatically overstated his case, dentists were appalled. Gies cast a cool eye on the scene and began what would be a long, critical appraisal. "What were the reasons for the prevailing indifference to dentistry in scientific educational and medical circles in 1909 (the year Gies became involved with dental research)?" he wrote. "Among the reasons were these: (a) Dentistry was generally regarded as an occupation that was more trade than profession. (b) It was provincial in its tendencies and relationships, and did not induce its practitioners to participate actively in public affairs. (c) Its science, chiefly that of prosthetic mechanics, had exerted little influence beyond the useful applications. (d) Its growth in professional quality had been greatly retarded by a system of journalism that was predominantly nonprofessional, under editorial leadership that was commercial and selfish. (e) Its edu-

cational system was mainly proprietary, chiefly technological, and weakly biological."

Gies eventually became a major force for change. Although profoundly practical, dentistry lacked a systematic application of science. Declaring that research is "the register of a profession's achievement and standing," Gies



founded the *Journal of Dental Research* and stayed on as volunteer editor for seventeen years. He also founded the International Association of Dental Research.

Dental education was one of Gies' greatest interests. He was responsible for founding schools of dentistry and dental hygiene at Columbia, and

helped form the American Association of Dental Schools. He conceived the notion of a standard national board dental examination.

In 1920, the influential and forward-thinking Carnegie Foundation for the Advancement of Teaching tapped Gies to study the state of dental education in the United States. The foundation had previously sent Abraham Flexner to conduct a similar analysis of medical education. Flexner's report set the criteria for modern medical training.

Dentistry, like medicine, in the 20th century's first decades was at a crossroads. Education among the schools was erratic and often unscientific. Dental schools, for example, routinely accepted high school graduates, and taught liberal arts courses such as English. And out in practice nagging questions remained about dentistry's place in health care.

There were many dental educators and practitioners who argued for a merger of dentistry with medicine. Gies, however, envisioned dentistry as a co-equal branch of medical science. He called for an expanded dental cur-

riculum comparable to that of medicine — but decreed for the sake of technical superiority that dentistry should remain a separate profession. Gies' report, published in 1926, reflected the optimism of the age. That same year Robert Goddard launched the first liquid fuel rocket, and in the cartoons Buck Rogers rocketed to the stars.

Dentistry began the count down for its own lift-off. The impact of the Gies report, officially known as *Bulletin Number 19*, was heightened by several developments. For one thing, the Committee on the Costs of Medical Care, one of a number of government-sponsored and private studies on various aspects of American society in the 1920s, was already busily questioning many American medical traditions. For another, the Great Depression at the end of the decade would lend new urgency to examinations into the institutional basis of American life. There was also increasing pressure to expand dental care to broader segments of the population. Voluntary humanitarian organizations of lay people, such as the Red Cross and parent-teacher organizations, demanded increasing facilities for medical and dental treatment.

So dentistry, like the society it served, was prepared for change. Proprietary schools should be closed, Gies argued, and they were. Dental schools should become integral parts of univer-

sities, he said, and they did. Gies stressed the importance of biomedical sciences in curriculum, and called for the participation of full-time instructors for dental clinical subjects. He strongly believed dental schools should conduct graduate education in such areas as orthodontics and oral surgery, and offer graduate degrees in basic sciences. Gies recognized the crucial role of prevention in dental health, and to that end contended, "Dentistry should ... be essentially a children's service."

Not all of Gies' radical ideas, such as his suggestion that national board exam scores be used as a basis for dental licensing reciprocity, were implemented. Still, his conclusions were partially responsible for today's emphasis on research and professional journalism, as well as a major reorganization of dental education, where current predental requirements and dental school curricula still carry his imprint. They also led to a complete change in dentistry's image. In a scant generation, writes sociologist Peter Davis in his 1980 book *The Social Context of Dentistry*, dentistry was transformed from an occupation of uncertain public standing and very mixed social composition to an unchallenged standing of profession whose new recruits were drawn "largely from the elite" of society.

Gies' professional life reveals an energetic picture of dentistry's evolution

and early 20th century emergence as a scientific health care profession. Evaluating dentistry with both deep pride and unflinching honesty, Gies appreciated dentistry's heritage and promise even as he decried its weaknesses. His clear thinking and unembarrassed approach to problem solving have served as a model for later generations of leaders.

Two aspects of Gies' vision of dentistry seem especially relevant in the 1990s. The first is his urging that dentists expand their professional relationships to include non-dentists, and that they actively participate in public affairs. The second is his counsel that dentistry extend its usefulness — and influence — by addressing scientific and social concerns beyond immediate clinical applications.

"Dentistry has the qualities of a noble profession," said Gies later in life, assessing the object of his secular ministry. "It has high ideals, important duties, special opportunities. It has identity, personality, self-respect, responsibility, solidarity, continuity — *a soul*." The 1990s, as did the 1920s, promise the uncertainties of rapid social and economic change. For dentistry today, Gies' description is not just a nod of approval, but a call to action — both a benediction, as it were, and an invocation.



The Case of the Unsound Business Decision

Unsound Business Decision

Dentistry is a business as well as a healing profession; the successes and failures in each area spill over into the other. This is a case about an unsound business decision that nearly ruined a young professional's career. The true story was told by a Fellow from California. The Fellow owns the building where the new dentist was practicing.

The new practice was slow to start for Beth (a fictitious name). In an effort to increase patient flow, the dentist joined a PPO. The terms of the one-year contract were detailed and typical of such arrangements. A discount of 30% from the usual, customary, and reasonable fees was part of the contract.

In one sense, the program was a success for Beth. Within a few months, her new patient visits increased noticeably. Very soon, she was running 60% PPO patients, 30% from the traditional fee-for-service pool, and 10% Denti-Cal (a state Medicare system that normally pays at the 60th percentile).

The problem is that Beth's overhead had begun to stabilize at about 70%. One-third of the way into the first year of the PPO agreement, it was evident that income was running only a few points above expenses, and the margin was so close that no volume humanly possible would generate income needed for living expenses and to pay back educational loans.

The problem came to light in a discussion about why the office rent had not been paid when due.

Not all ethical issues are profound moral dilemmas to be debated by scholars. Many are apparently small decisions embedded into the normal routine of professional life.

The American College of Dentists has taken a leadership position with regard to ethics and professionalism in dentistry. Part of this responsibility involves continuing to place before Fellows and others practical ethical issues for analysis and discussion. Ethics is neither entirely a private matter nor an academic one. Several Fellows were invited to analyze the first case, you are invited to comment on the second one.



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The case of the "Unsound Business Decision" is an example of the decision-making problems that routinely challenge professionals. In this particular case, the landlord dentist is challenged by the dilemma of balancing a sound business decision, with its inherent legal issues, against a perceived professional obligation. How he responds to this problem will be determined by his interpretation of the moral and ethical professional codes he has embraced.

The distinction between the definition of moral and ethical is often problematic, resulting in a wide spectrum of

application. For practical reasons, the word obligation is the key to resolution of this dilemma. The young dentist entered into a legal contract in good faith and a questionable level of knowledge about the economics of today's dental practices. The landlord dentist likely entered into this contract with the same good faith and perhaps, an incomplete understanding of the tenant dentist's professional and business capacity to uphold her end of the bargain.

Questions can be raised of the landlord dentist based on the presumption that he should be more knowledgeable and experienced and could have led the young professional into a better decision regarding office overhead. On the other hand, there are obvious limits in how prescriptive and paternalistic a senior dentist can be.

If the term moral is interpreted to identify what ought to be done, the landlord may well have an obligation to advise on options to the original contract. This obligation is based upon the belief that being a member of the dental profession has a value that influences the individual's relationship with other members of the profession as well as the community at large.

In this case the landlord could offer the tenant numerous business options that would provide her the opportunity to be successful both professionally and personally. These could be constructed in a manner to make the landlord legally whole while providing the tenant flexibility in repayment. These business decisions are so basic that even perceived heartless financial institutions use these practices.

Society today is challenged by the problem manifested by acting within the law while disregarding moral or ethical parameters. Professionals would be well served if they focus on ethical or moral standards; the legal matters will follow naturally.



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Is there a moral issue involved here? Unless the dentist is over charging Beth for the office space, wherein we might argue from a fairness perspective that he is exploiting this inexperienced dentist, it is not clear this dentist has a moral obligation to help a beginner with business decisions — especially if his counsel has not been sought. While the details of the case do not help us judge whether the dentist is exploiting Beth, she is being exploited by the PPO. One wonders whether she consulted an attorney or financial advisor before committing herself to the contract. Inexperienced professionals often fail to see the legal and financial implications of the contracts they sign and thus end up in the situation Beth finds herself in at the moment. The ADA Division of Legal Affairs developed its Contract Analysis Service specifically to help dentists make sound business decisions. It is not in the interest of the profession or society to have professionals exploited by the benefits industry. But whose responsibility is it to see that Beth isn't exploited? Where some might argue that the dentist has a moral obligation to see that there are sufficient dentists to meet the health care needs of the community, there is no moral duty to help a new dentist develop a successful practice.

What should be done? There are good reasons for offering Beth assistance even if there is no moral duty to do so. Some are pragmatic; like avoiding the interpersonal and financial costs of terminating the lease agreement and finding a replacement. Some relate to the dentist's conception of his role and responsibility toward others. Does he

view his peers as colleagues or competitors? Does he see himself as having some responsibility for mentoring the next generation of professionals? Behaving competitively rather than cooperatively would be inconsistent with the ideals of the ACD and with recent themes of the ADA — to embrace and support young professionals. In reflecting on this case, one wonders what efforts each party made to establish a collegial relationship. Was she friendly and respectful toward him? Did he make sincere and repeated efforts to make her feel welcome? Did he offer to assist her with business decisions? Did he regularly invite her to discuss her progress? Even if she rebuffed his attempts, a collegial response would be to offer assistance again. He could help her analyze the terms of the contract to see if there are ethical ways to minimize her contractual obligations to the PPO. He could help her analyze overhead costs and find some ways to reduce overhead. At 70%, she is over the national average. If she is not totally booked, could he help her find additional work to supplement her income while building her practice?

Is there a general principle in this case? In addition to the principle of justice that would apply to the rental contract the dentist established with Beth, the principle of beneficence might also apply. Many of us believe that we are morally obligated to benefit patients because of the role we have voluntarily assumed; but not all of us apply the principle of beneficence to our relationship with the larger society and with our colleagues. In fact, some philosophers have argued that because beneficence potentially demands extreme generosity in the moral life, it is commonly virtuous, but not a duty, to act beneficently. From this perspective, the help offered to Beth would be based on personal or social ideals that go be-

yond the call of duty. The ACD and the ADA have advocated that a cooperative rather than competitive relationship between colleagues is an ideal that the profession wishes to promote; hence the establishment of mentoring relationships and other acts of beneficence to young practitioners.



David C. Hillson
Private Practice
Albuquerque, NM

Moral issues seem to appear everywhere. This one is disguised as a business problem. The short-term and narrow personal interests of the senior dentist is to get all the rent. That may not even be possible without taking a broader and more professional view of the issue. The young dentist in this case needs both financial relief and business advice. As a general rule, more senior dentists are in a position to give both, and a sense of professionalism urges that this should be done. The rent could be restructured during the PPO period, and some "wisdom of experience" about managed care would be in order.

I remember how much I was helped when I was starting my practice. That made me proud to be part of this profession. It would certainly make me feel good to give something in return.

The *Journal* invites comment on *The Policy Problem* case below from Fellows and other readers. Views should be 200 - 400 words and should be faxed to the Editor (David W. Chambers) at (415) 929-6435 no later than Friday, 5 May 1995. Submissions will be peer reviewed and edited to fit with other responses. The most useful combination of responses will be published in the June issue of the *Journal*.



In the Next Issue

The Policy Problem

You have just been appointed to a state advisory committee representing organized dentistry in a multi-group effort to support a state law mandating fluoridation of drinking water. You are surprised by the diversity of perspectives represented on one side of this political issue.

One of your colleagues is eloquent in "raising prudent concerns about proceeding with due caution" on a matter that has potential for fundamentally rearranging the economics of private dental practice. He seems to have great command of statistics showing how much caries has fallen in the United States over the past thirty years. He asks, "Just for the sake of argument, let's weigh how credible we seem as a profession when we represent ourselves to the public as supporting legislation that would put us out of business."

Another of your colleagues seems to have read the data differently. He believes that fluoride has expanded the American oral health care bill by allowing teeth to remain in the mouth longer and therefore they will receive more care. He cites evidence that helmet laws cost states money by prolonging the lives of accident victims and recounts stories of very expensive medical miracles. His view is that fluoride should be supported by the profession but it is misrepresentation to suggest that it will put dentists out of business.

A consultant on the committee with many years of experience fighting anti-fluoridationists is irritated with both of the previous committee members. He points out that the economics of oral health and the scientific background on fluoride are such complex issues that the public, and even many lawmakers, are turned off by the detail. Anti-fluoridationists have been so successful because they present a single clear position based on emotion and characterize the profession as bogged down in inconsistent and irrelevant research studies.

Your committee doesn't seem to be going anywhere fast. At this point, you are not certain where you stand.

What is your obligation as a public trustee with regard to the factual foundations of public policy issues?

What is your obligation with regard to dealing with differences between yourself and others?

Can an issue be presented differently to different communities of interest?



The Earning Potential of Professionals

Leaders have the capacity to make both words and numbers come alive. They master these skills by practice and are not content to accept the analyses and conclusions of others. This regular department of the *Journal* presents examples of key data in areas of importance to the profession and invites reader reaction. To initiate this department, we invited several Fellows to comment on recent statistics on professional earning potential.

An article appeared in the 5 May issue of *The New England Journal of Medicine* ("A comparison of the educational costs and incomes of physicians and other professionals" by W.B. Weeks, A.E. Wallace, M.M. Wallace, and H.G. Welch) which compares several professions in terms of economic return on investment. Costs and time in education, average earning streams over one's career, and opportunity cost of foregone investments were compared for graduates of "selective" MBA and law programs, for physicians in primary care and in specialties, and for dentists. The data to the right summarize the comparisons among these professions. They are used by permission of *The New England Journal of Medicine*.

Income, Hours Worked, and Cash Flow* According to Age and Profession

Annual Income (Thousands)

Ages	19-24	25-29	30-35	36-45	46-55	56-64
Business	3.6	68.6	96.0	110.1	108.8	102.6
Law	3.6	47.0	86.2	117.6	135.2	131.5
Dentistry	3.6	28.8	76.0	97.9	100.2	80.9
Med Specialty	3.6	16.0	113.2	208.8	208.9	169.2
Primary Med	3.6	18.9	80.2	104.4	117.7	108.6

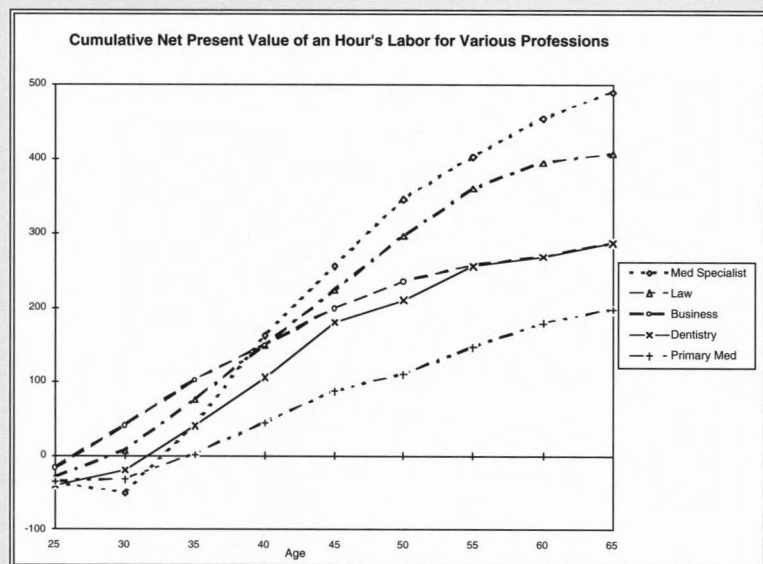
Annual Hours Worked

Ages	19-24	25-29	30-35	36-45	46-55	56-64
Business	2300	2520	2520	2520	2520	2520
Law	2300	2062	1995	1893	1755	1574
Dentistry	2300	1888	1613	1613	1613	1613
Med Specialty	2300	2407	2479	2730	2618	2488
Primary Med	2300	2424	2506	2674	2667	2544

Annual Hourly Cash Flow

Ages	19-24	25-29	30-35	36-45	46-55	56-64
Business	-4.6	14.4	24.9	30.3	30.2	28.6
Law	-4.6	8.2	26.3	43.7	58.6	64.3
Dentistry	-4.6	0.4	24.1	37.2	41.9	31.2
Med Specialty	-4.6	-6.4	30.4	62.5	67.3	55.8
Primary Med	-4.6	-5.3	17.0	24.8	31.9	30.7

* Cash flow is defined as income minus educational loan repayments minus "opportunity cost" defined as the earnings of a typical high school graduate (about \$15,000 in the youngest age group and \$30,000 in the oldest).



Edward C. McNulty
Private Practice, Former Regent
New York, NY

In recent years there has been a segment of the profession that has coalesced around the issue of perceived lack of business and come to the conclusion that the profession will never recover economically. Therefore, I read with particular interest the May 5, 1994

article in the *New England Journal of Medicine* comparing the educational costs and incomes of physicians and other professionals. The table and figure are jam-packed with interesting data which substantially weaken the view that dentistry is in economic decline.

Once dentists go into practice, they earn an average of \$48,000 a year (ages

27 to 29) quickly rising to \$76,000 (ages 30 to 35) and topping out at \$97,900 (ages 36 to 45) to \$100,200 (ages 46 to 55) and then declining to \$80,900 per year (ages 56 to 64). These 1991 figures are slightly less than what is earned by primary care physicians and graduates of the top business schools and appreciably less than medical specialists and lawyers who graduated from top schools.

Of great interest, however, is the fact that once one's career is established, the number of hours worked by dentists is dramatically less than the hours spent working in medicine, law or business. As a result, dentists have a much higher annual cash flow per hour than primary care physicians; slightly higher than that of business school graduates; and only lower than for medical specialists and lawyers. Thus dentists work fewer hours per year in their practices, allowing them more time to pursue quality of life goals compared to professionals with similar educations.

The figure also negates the perception that the dental profession is not doing well economically. When the cumulative hours adjusted net present value of the educational investment is measured according to age, dentists

end up doing much better than primary care physicians and compared favorably with business school graduates. Only lawyers and medical specialists show superior cumulative ratings. It is revealing that given the investment that is required for a dental education, the economic return combined with the hours worked puts dentists near the top for remuneration of similarly educated professions. While lawyers and medical specialists may earn more, they are working longer hours for their pay. The dental profession should continue to attract qualified people, especially considering the facts that the net return on investment is so positive and that they develop equity ownership in their practices. Most importantly, their opportunity to participate in quality of life endeavors make their career choice more attractive.

Like all professions, dentists' earnings follow a bell curve, with a rapid rise in the early practice years, a long plateau of high earnings, followed by a slow fiscal decline toward retirement. Perhaps a majority of the vocal doom-sayers come from this latter segment of the profession who wish that the good old days would return. Our profession is surely changing, as it always has, but new exciting avenues of treatment are opening up for us to deliver even better dentistry to the public we serve.



Stephen Corbin
Office of the Surgeon General
Rockville, MD

Most anyone who has graduated from dental school in the last half century can attest to the following: the academic and technical demands of a dental education are considerable; the costs of obtaining a dental education are substantial and rising to prohibitive levels; and, during the years of dental educa-

tion, one can exist on little sleep and a consistent diet of macaroni and hamburger. A review of dental editorials and articles in current dental journals and commercial publications reflects the belief that dentists work hard for their income, many dentists feel that they are underpaid and underappreciated for the services they provide. Most dentists worry quite a bit about their ability to maintain and increase their incomes amid a changing health care and economic environment. The sum of these views reflects some fact, some intuition, and quite likely some fancy as well. The data provided from a recent article offer comparative career financial return data from a model that examined several professions compared to a high school level of preparation.

The table is quite instructive for comparing dentistry with other popular professions. It is noteworthy that income streams vary considerably between the professions of law, dentistry, primary care medicine, specialty medicine, and business. Protracted professional training denies dentists and physicians meaningful income in the early years while those in business and law get a substantial financial jump start and avoid the large and prolonged costs of professional medical and dental education. It is also noteworthy that dentists spend considerably fewer hours per annum practicing their profession than do all of the other groups compared. This should not be surprising. Desirable, controllable work schedules is one reason that many choose to go into dentistry. This is not a reflection, necessarily, of how hard individuals work for their compensation. Dentistry is physically taxing work that includes exposure to a wide variety of hazards, some of which are life endangering.

Annual cash flow per hour for the comparison groups indicates that to-

ward the end of a professional career, attorneys and medical specialists are doing extremely well. Undoubtedly, this explains the abundant supply of attorneys and medical specialists. The fact that dentists are doing only marginally better than business people is due, in large measure, to the much shorter work schedule for dentists. Primary care physicians do worse than dentists because they work so many more hours.

The accompanying figure summarizes the cumulative, hours-adjusted net present value of educational investment according to age and profession. The early years for medical specialists are punishing and debt-producing. Compensation for the early sacrifice becomes apparent shortly after completion of professional education for medical specialists and they zoom past the other comparison groups after age forty years. Dentistry catches up with business by age fifty-five and stays even until the end of the professional career. Primary care medicine lags behind all of the comparison groups after about age thirty-three years. In a comparison not depicted on the figure, but reported in the text, dental specialists and attorneys at law firms realize better returns on their educational investment than do specialist physicians. One caveat — dental public health specialists are undoubtedly the only category of health service provider that, on average, earn less than their general practice counterparts.

What does all of this mean? It surely means your income will not change as a result of this research nor will your back hurt less. It does mean that dentists, *on average*, do not have it so bad financially, all things considered. Data from the American Dental Association consistently demonstrate that "real incomes" for dentists continue to rise much faster than the rate of general inflation as measured by the Consumer

Price Index and are much better than average incomes in this country.

One may argue that these data are drawn from a model, not reality. But the model presented is a reasonable one and the assumptions and data upon which it is based are not out of line. The results may not change how you feel, but they may change how you think. Dental education is expensive. Dental practice is physically, financially, and psychologically challenging. All things considered, which of the other groups reflected in the analysis would you rather have opted to be a part of?



Ian Bennett

**Retired practitioner and dean
Vancouver, BC**

Model building is a delicate business. I would want to assure myself with regard to the comparability of groups on such matters as selection of which type of individuals are in each group, costs of the educational programs, age and gender composition of each group, what was being done with the hours not worked, and stress levels.

Assuming reasonable comparability, the table appears to indicate that dentists work considerably fewer hours per year than all the other professions except lawyers over fifty-five years of age. At age thirty-six to forty-five, the procedure based medical specialists worked 70% more hours than the dentists. Business graduates worked 56% more hours than the dentists. These numbers seem hard to believe.

The figure appears to demonstrate that, until age thirty-five, dentists do less well than business and law graduates, about the same as procedure-based specialty medicine, and better than primary care medicine. By age sixty-five, the law graduates and procedure based

medicine graduates lead by a wide margin.

This information, if accurate, would be of significance to the dental profession in its negotiations for fee rates. It could also be useful in recruitment of dental students. It would be valuable to have school specific data tied to the actual costs in each dental school and the area where most of the graduates practice. The AADS might consider this as a service to its institutional members.



David W. Chambers

**Editor, JACD
Sonoma, CA**

Relative to other professions, medicine and dentistry entail highly leveraged educational investments. In addition to educational debt, there are substantial opportunity costs of not being able to earn a living while in school and one's career is shortened by the time spent in education, thus reducing the chance for recouping losses. According to the *New England Journal of Medicine* article "A Comparison of the Educational Costs and Incomes of Physicians and Other Professionals," it remains a sound investment. The projected internal rate of return for dentists in general practice is 20.7%; 27.1% for specialists. This compares favorably with 29.0% for business, 25.5% for lawyers, 15.9% for physicians in primary care, 20.9% for physicians in specialty practice, and 7.5% for three-year T-bills. It has always been the case that investing in one's self is worthy; especially so in dentistry today.

The report raises important issues about timing of educational debt. The direct costs of education across professions is similar (business: \$97,800, law: \$108,500, dentistry: \$130,200, and medicine: \$135,400). What puts the health care professionals at an initial

disadvantage is the length of time required for education.

Because of the variable lengths of training periods, this study uses the accounting convention of net present value (NPV). Would you rather have \$1000 now or \$1200 next year? Unless you think you can invest the present \$1000 at better than 20%, the latter alternative is more attractive. This is the principle upon which bonds are priced. A bond with a three-year maturity and a face value of \$1000 would sell for \$840, assuming a 6% discount rate. Investing \$840 at 6% for three years equals \$1000. The time value of money is a system for bringing all future expenses and income to a common point in time (net present value) so that comparisons among alternatives make sense. (These calculations are easily performed by all spreadsheet software.)

The table on page 45 presents the net present value of an hour invested in five careers. Considering all likely educational expenses and projected income streams, an hour invested in dentistry is worth approximately \$300 if one practices to age sixty-five. The same hour invested in law practice after graduating from a prestigious law school is worth about \$425, but only worth about \$175 in the career of primary care medicine.

The NPV slopes for law, dentistry, and primary care medicine are similar — differences in earning potential are almost entirely a function of the length of time it takes to complete training. Business is the most low-cost/low-return of the alternatives explored. Specialty medicine is the most leveraged: until an average age of thirty-three the NPV is worst, and by age forty it is best of the careers studied.

I believe the following considerations are supported by these data:

1. Perceived return on educational investment will be no barrier to con-

tinuing to attract qualified applicants to dental schools.

2. Dental schools will continue to attract qualified applicants who are interested in a balance of opportunity to serve, quality of life, and earning potential.

3. The first dozen years of practice are critical to one's career; it is during this period that the largest swings in the direction of the earnings curve occur.

4. Net present value is determined by the prevailing interest rate. These projections favor medicine and dentistry because their high impact education dollars are at current low interest to be repaid with anticipated cheaper future dollars. Those who were educated in the high interest late 1970s and early 1980s experienced a less favorable lifetime career earnings curve. This in fact corresponds to a dramatic shift of applicants away from dentistry toward business at that time.

5. Proposals to mandate a fifth year of dental school or a required year of postdoctoral general dentistry training must be evaluated carefully with regard to their financial impact; their most likely consequence could be to depress the curve of expected earnings for dentists toward the same level that exists for primary care medicine.

6. The thought that physicians will embrace health care reform by reducing the current level of 80% specialists to 50% is unrealistic.



In the Next Issue

The American Association of Dental Schools and the American Dental Association collaborate in monitoring changes in the dental workforce. Significant policy turns on the numbers of applicants and graduates for positions in dental, dental hygiene, dental assisting, and dental laboratory technology programs. The data below are reproduced, by permission, from the AADS *Deans' Briefing Book - 1993-1994*.

What do these data mean for the dental profession and for oral health?

Fellows and other readers are invited to submit interpretations of these data for publication in the *Journal*. Responses should be from 200 - 400 words and are subject to peer review and may be edited to fit with other responses received. Fax your responses to the Editor (David W. Chambers) at (415) 929-6435. Last date for accepting submissions is Friday, 5 May, 1995.

Fig. A

Dental School Applicants 1950-51 - 1993-94

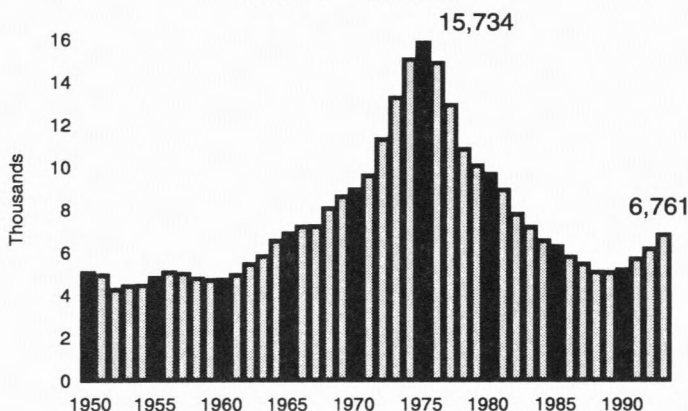


Fig. B

First-Year Pre-doctoral Enrollment 1950-51 - 1993-94

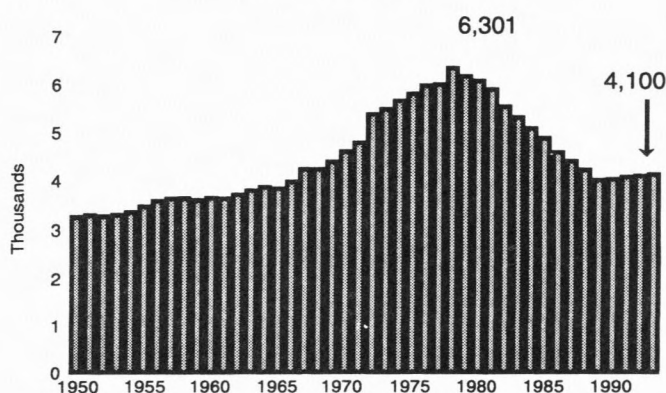


Fig. C

**Dental Hygiene
Graduates-Enrollment
1969-70 - 1993-1994**

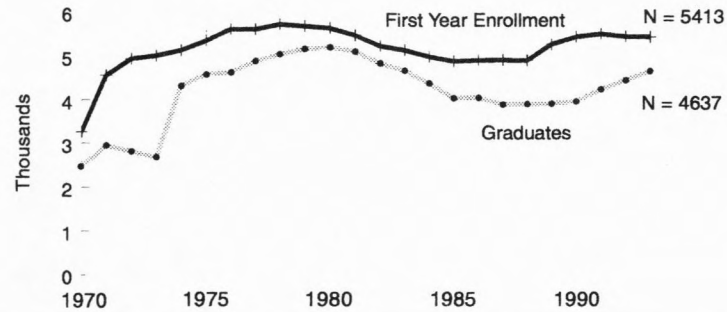


Fig. D

**Dental Laboratory Technology
Graduates-Enrollment
1969-70 - 1993-94**

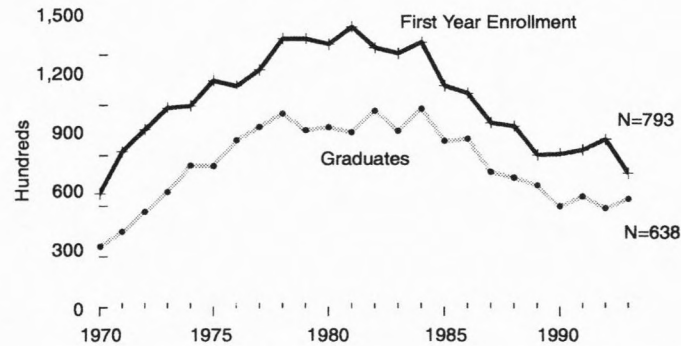
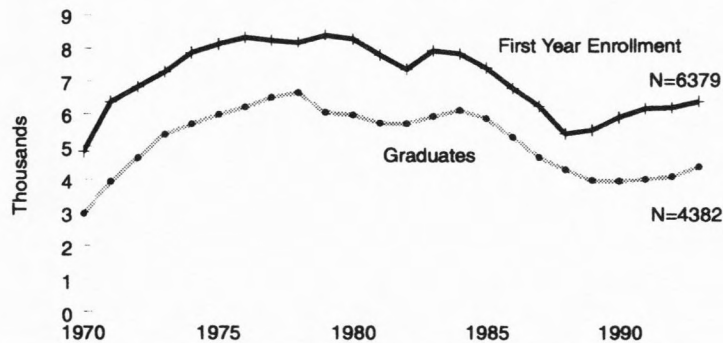


Fig. E

**Dental Assisting
Graduates-Enrollment
1969-70 - 1993-94**



Making College Membership a Personal Matter

Juliann S. Bluit

In formulating my message, I was reminded of a quotation from the 1990s best seller *Megatrends*, by John Naisbitt, which helped us realize there were and are some profound factors or "new trends" which will exert a significant influence upon our lives. In his introduction, Naisbitt states "As a society, we have been moving from the old to the new. And we are still in motion. Caught between eras, we experience turbulence. Yet, amid the sometimes painful and uncertain process, the restructuring of America proceeds unrelentingly."

This passage struck a nerve — not only to me as an individual, but also as a member of the Board of the American College of Dentists. As a College we must recognize that the world is not the same as it was when Doctors Conzett, Friesell, Black, and King first met at the Copley Plaza in Boston for an open discussion about a "college" in dentistry.

Naisbitt goes on to note, there have been several critical aspects of the restructuring of society. We are moving from a society oriented toward short-term considerations and rewards to one that favors much longer perspectives. Concerns for permanency versus short-term fixes and immediate self-indulgent gratification can be added to this hypothesis.

You have heard the phrases which herald another era — *retooling*, *repositioning*, *downsizing*, and let us not forget *new paradigms*. This translates to "stop and take a look at yourself." See if what you're about and where you're going is still valid. Is the way you did business in the past the way you should continue? Are there new considerations which should be taken into account given the changes around you?

Strategic Planning For ACD

Cognizant of our changed world, or perhaps because of serendipity, keen insight, or maybe just our intellectual acuity, the ACD Board embarked upon a very important strategic planning endeavor under the leadership of then President Al Wasserman. Many of us approached this activity with a bit of trepidation believing that it was more "pie in the sky" and a plan to be laid on the bookshelf beside the others.

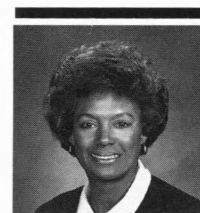
But this time it was more than a Mensa exercise. It was a critical analysis of where we had been and where we would like to be. We became sensitized to the critical issues that our College must address in the very short-term to ensure that we will remain strong as the calendar approaches the 21st century.

Let you wonder if we had concern for our existence, we did not. But quite honestly, each of us began to ask very

important questions: What is the mission of the College? How can we make this College an active and progressive entity? How can we influence policy, achieve recognition, and capitalize on the unique knowledge and talents of our Fellows? How can we rise to new heights among dental organizations so that we are the ones called to the table to discuss the issues facing our profession?

Under the direction of our Executive Director, Dr. Sherry Keramidas, the Board set about establishing future directions. A certain energy emanated from the discussion and envisioning of greater efficiencies and effectiveness; new ideas and philosophies; and new programs and projects to help us reposition, revitalize, and align. We became empowered to go beyond the status quo of an honorary society to envision ourselves in a very different light.

Let me assure you, however, that we never compromised the mission of the College or the trust of our founders. We will always remain true to their vision to elevate the standards of den-



Presented by President Bluit as her President-Elect's address at the 1994 Convocation in New Orleans.

tistry, to encourage graduate study, and to grant Fellowship to those who have done meritorious work. But we have added the concept of advancing the standards and efficiency of the dental profession.

Having laid the foundation, let me build a framework for our future thrusts: First, we pondered the benefit, other than recognition by peers, of fellowship in the College. There must be more than being a distinguished honoree! Second, with tongue in cheek, we verbalized that there were others deserving of the same recognition we had received when inducted into the College at a very impressive ceremony. We believe this is one of the highest honors our peers and colleagues can bestow upon us for our achievements. At the same time, we jealously guarded our achievement. Third, while we extolled the virtue of being on the cutting edge in policy, we in fact, were infrequently asked for our input. Fourth, we've stood for a time, looking at our past involvements, while society evolved. Our past accomplishments slowly became a mirage, distanced by time and exaggerated by the rapidity of societal and professional changes over the past several decades.

That was the past; now is the present! I am excited, and I think you should be also. Here we are entering the olympic stadium and assuming the

lead position. I know we will continue to run far ahead of the pack.

Referring back to *Megatrends*, there is a quote by Walter B. Wriston, Chairman of Citicorp in 1981 who said, "The philosophy of the divine right of kings died hundreds of years ago, but not, it seems, the divine right of inherited markets. Some people still believe there's a divine dispensation that their markets are theirs and no one else's — now and forevermore. It is an old dream that dies hard, yet no businessperson in a free society can control a market when the customers decide to go somewhere else. All the king's horses and all the king's men are helpless in the face of a better product."

He continues by saying, "Our commercial history is filled with examples of companies that failed to change with a changing world and became tombstones in the corporate graveyard."

Carpe diem — seize the day has become an admonition for your Officers, Regents, Editor, and staff. Our mission is active involvement — for you, the Fellows — to help devise and implement programs to benefit not only ourselves, but also the greater professional community, our dental schools, organized dentistry, and policy-making bodies.

What have we done and what are we doing? Under the guidance of Presidents Scures and Wasserman, we have

become proactive. A year ago we co-sponsored an outstanding symposium at the National Institutes of Health entitled "Frontiers in Clinical Dentistry." I wish that each of you could have attended, or that we could repeat this program. From the latest in implants, HIV infection, restorative materials pros and cons, periodontal assessments, we heard the experts share the latest research.

The American College of Dentists was also able to provide testimony to the Institute of Medicine Committee on the Future of Dental Education. The recommendations of the IOM will be unveiled early in 1995. These recommendations have a potential for completely revising the dental education process.

Our comments to the IOM, emphasized serious ethical concerns that exist today and will persist tomorrow. Regulations, third-party payers, escalating debt of students, and increased competition surely will complicate the practice of dentistry for our young colleagues. These issues as well as equity, continued clinical competency, measures of quality assessment, and supply and demand issues require our attention.

Let us not forget that the American College of Dentists — the conscience of the profession, can guide ethical practice and moral sensitivity in clinical practice. Recently your College partici-

pated in planning the first intensive course in bioethics in dentistry, sponsored by Georgetown University's renowned Kennedy Institute of Bioethics. Some of the best known individuals in the field of ethics participated. And yes, several Fellows of the College participated as lecturers. Attendees, the best measure of success, have said this was an outstanding event. In fact, just two weeks ago, when I was in Charleston, South Carolina, an ethicist on the faculty, spoke of her attendance and praised the course as being a profound experience.

The Future Has You In It

What about the future? Our efforts of the past two years are footholds; we must continue to climb to new heights so the American College of Dentists

future technologies and explore implications for you in your offices and in your life. We also will explore the ethical and professional issues surrounding the technology future.

Our leadership trust and promise will be manifest in the directions the College will take through its participation with other associations and in other programs this next year. We are gaining recognition through several of the activities I previously mentioned. This year we shall find additional opportunities for involvement. We also hope to offer you, the Fellows, opportunities to expand and fine tune your leadership skills. We have some exciting plans for our annual meeting in '95!

I offer a suggestion as a means of capturing the leadership skills among our Fellows. With the reservoir of

dent award recipients. Nearly every section recognizes dental students. Fifteen or twenty years later, how many of these individuals have we nominated for fellowship? Did they indeed maintain the same caliber of participation that we cited in their student years? I am pleased that in my own Regency, several of our student awardees are now Fellows. Do you have similar experiences? To help unfold this mystery, I will send each section a brief questionnaire asking you to list your award recipients as far back as you can go. Let's take a look. I bet that some have become leaders in their dental societies; some have become leaders in their academic institutions; some have become leaders in civic activities. How many of them are Fellows?

Programming and heightened visibility will enhance retention of Fellows — which, incidentally, is really quite high. But nomination of new Fellows is up to us. We must look around to propose new people for fellowship.

For me, this special moment came in 1974 when I was sponsored by an individual known well by many of you, Norm Olsen. He provided mentorship and encouraged my ardent participation. My gratitude for this tribute is best demonstrated by my nominating other persons who exemplify the ideals of the College and the profession.

We have a lot to accomplish. We are building the future. As Ken Dychtwald, stated in his book *Age Wave*, that the evolution of society has brought us to a third level or the "troisième age" with its own focus, special opportunities, and challenges. It is a period of growth from a somewhat selfish focus to a higher, more global, and altruistic perspective.

The history of the College runs in parallel. Our first years dealt with our development, organization, and perpetuation as an important group of

Our mission is active involvement — for you, the Fellows — to help devise and implement programs to benefit not only ourselves, but also the greater professional community, our dental schools, organized dentistry, and policy-making bodies.

will be the invited experts, the first on the invitation lists, the body which is solicited first for an opinion, the signatory that is highly regarded.

Progress is made by increments, not giant steps. I would like to share the things I feel we can and should accomplish.

In 1995 we mark our 75th anniversary. The highlight of the year and our future is captured in the phrase, "Recognizing the leaders of today, building leadership for tomorrow." In July 1995, we will hold a conference on "Future directions and issues in information technology." This two and one-half day meeting will call upon the expertise of information technology companies, government agencies, health related organizations, and others. It will highlight

unique talent and variety of knowledge of our Fellows, what greater opportunity for participation in component and constituent society meetings than to have a lecture or half-day program sponsored by your Section? With a relatively small amount of effort, the visibility and activity of the College could be enhanced 1,000%.

Speaking of sections, this year will mark the first time sections will compete for the newly established Section Achievement Award. I know you're all smart people, so it does not take a genius to figure out what I'm suggesting. *Go for it!*

Membership, budgeting, and retention of fellowship must be addressed. Therein rests the future of the College. We have spoken of tracking our stu-

highly respected leaders. We gained recognition and emerged as a valued and respected entity.

In our second phase, we began to focus on issues pertaining to the profession and found that with growth of a young profession we could serve as the beacon of its conscience. The productivity and rapid expansion of our relatively young profession also required that we focus on the social and professional responsibilities of the profession and its members. We were caretakers, ensuring that the level of professionalism our founders envisioned was not eroded.

As we enter the current and particularly significant period in our history, our 75th year, I submit to you that we too enter a "troisieme age," with a two-fold purpose:

1. To give back to our profession the benefits of our individual lessons, resources, and experiences accumulated and articulated over our professional lives.

2. With our tremendous talents and collective intellect, creativity, and imagi-

nation, to further develop — in a very significant way by our presence and identity — a distinctive presence in helping to formulate policy and protocol, influence decisions, and further strengthen and weave the fibers of our profession for its future.

Thank You

Before closing, I must share with you my thanks and gratitude for the special honor you have accorded me over the past eight years to serve as a Regent, Officer and now as President-Elect of the American College of Dentists.

What greater honor? What greater challenge? What greater opportunity? This is a time for us to take advantage of what I think is a very unique moment in time.

On a very personal note, I must tell you that this time last year my mom said to me that she hoped and prayed that she would be able to experience my installation as President of the College. Somehow, I know that she is sharing this moment, though not by my side today. She is beaming as I embark

upon this next year as President of this most esteemed College.

Reflect for a moment on the time you were inducted and leave here with that same sense of pride and excitement, of being recognized for your achievements. Now vow to give back and share some of the experience by participating even more fervently in your Section. Vow to commit to assisting your Section envision more activities and programs. Promise to yourself and to us that you will perpetuate our College by identifying and nominating one of your worthy, but heretofore un-nominated colleagues for fellowship.

I know that you would be extremely disappointed if I did not mention the "G" word — the gender item. And so I will. Yes, I am very humble, very proud that you have given me your support and, I might add, the first but by no means the last woman to serve as your President.

THE GOLDEN THREAD

Louis J. Atkins

To you Fellows and soon-to-become-Fellows of the American College of Dentists, and to our guests: "Good afternoon and welcome." I shall try to exercise the wisdom of Bob Bryan, a close friend and mentor, and the past president of The University of Florida, who, upon learning of my appearance here today, tendered this advice: "Be accurate, be brief, be seated." I promise to be as brief as possible, no matter how long it takes.

While thinking of what I might say, under this tight mandate, I asked myself what could I share that would be of interest and value to a gathering of such distinguished people. The *Journal of the American College of Dentists* addresses many of our needs as dentists. Certainly the *Journal* deals with our professional lives and service to our communities. Having been a part of such service myself, it was easy to recall Albert Einstein's reply when asked about the purpose of man's existence, "Man exists to serve," he said. I find it inspiring to be here in a ballroom filled with people who are dedicating their lives to the service of humankind. Thus, anything I might say about service would seem redundant.

I decided instead to talk about something dear to us all, which we might overlook in the steady stream of traffic in the typical dental office. I want to deal sparingly with statistics, the health care debate, and the state of the world. I have decided to get personal. The title of my talk is "The Golden Thread." I want to discuss the threads that give stability in times of change, and about happiness. In order to guide your thinking, I present two quotations:

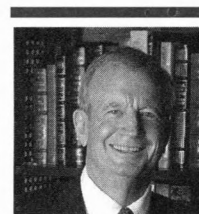
"Action and reaction, ebb and flow, trial and error, change — this is the rhythm of living." — *Bruce Barton*

"Those only are happy who have their minds fixed on some object other than their own happiness." — *John Mills*

Let's begin with change. We have frequently heard it said that the only things certain in life are death and taxes. I would like to add a third: change. When I studied literature in college, I learned that one of the great themes of life is that people don't like change. C. F. Kettering put it more bluntly. "The world hates change; yet it is the only thing that has brought progress." Tolstoy observed, "Everyone thinks of changing the world without changing themselves." Could that be

our problem? We hear things like, "Somebody needs to do something about the drug problem, about the crime rate, the environment, and yes, the health care crisis." As health care professionals, that means *we* must change.

Believe it or not, the health care crisis is not an invention of Bill Clinton. George Washington spoke of it, and reference to it is found in the legislative books of our founding colonies. In more modern times, we know it reaches back to 1969 when then-President Richard Nixon announced it in a special message. He was joined by John Knowles of Harvard and Martin Cherasky of the Einstein School of Medicine who hastened to confirm it. The news media covers it in detail. The obstacles for individual health care are enormous. The challenge at present seemingly exceeds our reach and grasp. What about the poor; the uninsured? How can we manage AIDS and



Address presented by
Dr. Atkins at the
Convocation ceremony
on October 21, 1994 in
New Orleans.

other contagious entities if we neglect anyone...?

If the present crisis has existed since at least 1969, why haven't we solved it yet? Because we are too afraid of change? Just this month, I saw on the TV program "20/20," the story about a doctor who found a cure for peptic ulcers, which he insisted were caused by bacteria. The drug companies debunked and reviled him. Colleagues ridiculed his theory and continued to prescribe the same drugs. Finally, in desperation, the doctor infected himself with the bacteria he maintained caused peptic ulcers and when he developed them, he cured himself with a two-week dosing of antibiotics.

The doctor who proposed this maverick idea — a direct link between bacterial infection and peptic ulcer disease — is no longer regarded as a "wild card" among health professionals. Several months ago, the National Institutes of Health hosted a consensus conference at which some of the nation's leaders in the treatment and scientific investigation of digestive diseases agreed that more than 90% of peptic ulcers are caused by a bacterium called *Helicobacter pyloric*.

To bring the story up to the minute, a University of Florida gastroenterologist — Dr. Phillip Toskes — has been appointed chairman of a three-year campaign beginning in September to educate both physicians and the public regarding this bacterial infection and its link to peptic ulcer disease. The campaign is aimed at informing everyone of the importance of obtaining an early diagnosis of the bacterial infection and seeking appropriate antibiotic treatment in order to prevent the ulcers.

I relate this story simply to reinforce the message that accepting change and adapting to change often means listening to maverick notions, asking new questions and exploring new avenues to improve patient care and the delivery of that care. Am I optimistic in thinking that as dentists we would not be so self-serving that we would be unwilling to consider new techniques and treatments if the possibility existed that they would benefit our patients and serve our community? Let us all hope that we are not so afraid of change, not so afraid to change the way we have always done things, not so selfish that we would place our personal interests ahead of our patients.

And now let's talk about happiness. It occurred to me that I probably should define it. I had no idea what a task that would be. I looked in a book called *Twenty Thousand Quips and Quotes*. According to that volume, happiness is many things. One source said, "Happiness isn't something you experience. It's something you remember." (Oscar Levant) That seems rather nice. Still another idea, "A woman never knows what real happiness is until she gets married, and then it's too late." (anonymous)

Needless to say there were many more quotes and quips about happiness. However, the one I liked best hit my nail on the head. It said, "The greatest essentials of happiness are something to do, something to love, and something to hope for." Doesn't that about sum it up? We are responsible for our own happiness. It is not something we attain by chasing after it. Happiness grows at our own firesides and in our own hearts. If we are to be happy, we must have something to do. By choosing to be dentists, we have something worthwhile to do. By placing the welfare of our patients above our self-interest, we have something to love. And by

Convocation Address

keeping an open mind toward the inevitable changes that will affect our work to an astonishing degree, we have something to hope for. Indeed, we can be happy because our minds are fixed on something other than ourselves.

There is a reason I entitled my remarks as I have. During colonial times and to this day, the rope used on British ships is manufactured with a golden thread at its center which practically and symbolically represents strength.

I ask of this group that we entwine a golden thread in the fabric of our lives. Let any change we contemplate

be based on the golden thread of good character, a basic sense of empathy and compassion in dealing with those less fortunate than we are, and the unshakable knowledge that all the good things we enjoy are not a divine right, but a privilege which continually must be earned.

When we absorb ourselves in the care of others — our families, our friends, colleagues, and our patients — we incorporate this symbolic golden thread within our lives. We are strengthened by this invisible thread and, without struggle or even conscious effort, happiness becomes a by-

product of our lives.

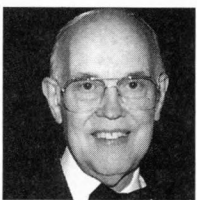
Change whirls at rapid speed around our individual lives and our profession, and we are called upon to respond and to adapt. I feel confident that this group — you my colleagues — will continue to serve with unwavering dedication to the provision of high-quality, compassionate patient care as well as to the general advancement of dentistry, and that you — we — will accept with good grace the changes that are required of us. I am equally confident that we need not stop and check our pulses to see if we are happy. We simply and surely will be.

Profiles in Professionalism: 1994 ACD Awardees

William John Gies Award

The William John Gies Award was established by the American College of Dentists in 1939 to recognize Fellows for outstanding service to dentistry and its allied fields. This award embodies the highest levels of professionalism, and it is the highest honor the College confers on its members. In 1994, the College honored two Fellows with The William John Gies Award: Dr. James A. Harrell, Sr. and Dr. Frank J. Orland.

Dr. James A. Harrell, Sr.



Born in Elkin, North Carolina, James A. Harrell, Sr. received his DDS from the Medical College of Virginia. In his dedicated service to his country, Dr. Harrell served in the United States Army from 1942-44, in the United States Navy Dental Corps from 1944-46, and again in the Navy Dental Corps from 1952-54.

Dr. Harrell has dedicated his life to the dental profession and to his community, and has offered his leadership in these areas for nearly fifty years. James Harrell has practiced dentistry in Elkin since 1946. In addition to his dedication to his patients, he served as a leader in his local, regional, and national professional organizations and served as First Vice President of the American Dental Association. He was equally dedicated to the American College of Dentists. He was President of the College in 1990. His dedication

continued through his leadership of the "Campaign for the 90's," that enabled the College to purchase its national office.

Dr. Harrell's fund-raising skills are well recognized, and he was sought out to lead a fund-raising committee for the Dental School of the University of North Carolina. Under his guidance, the school far exceeded its goals.

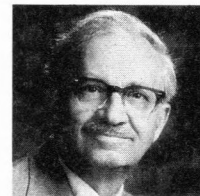
James Harrell's professional dedication is equally rivaled by his community service. He served three terms on the Elkin City Council and three terms as Mayor. His leadership resulted in major improvements and growth of the city. His civic involvement also encompasses his active involvement and leadership roles with the Boy Scouts of America, the Kiwanis, and the Elkin Jaycees. He has served as President of both the YMCA and the United Fund, and has been the Director of the Yadkin Valley Bank and Trust and the Hugh Chatham Memorial Hospital.

Dr. Harrell's dedicated service extends to the United Methodist Church where he has been a council member, lay reader, teacher, and fund-raiser. In addition, he has served the Eastern United Methodist Conference as a Council member and officer; he is a Life Member of the United Methodist Men, and a Fellow of the Society of John Wesley.

Throughout his life, James Harrell has been a dedicated professional who has selflessly served his patients, his

community, his profession and his family.

Dr. Frank J. Orland



Born in Little Falls, New York, but residing for the past seventy-five years in Forest Park, Illinois, Frank Orland is a man of diversified interests and talents — a dentist, a historiographer, microbiologist, editor, and educator. Dr. Orland's career began with his training at the University of Illinois where he received his DDS and then at the University of Chicago where he received a PhD in microbiology.

Dr. Orland's dental research work began during World War II as he conducted research at the University of Chicago. He also served as a human volunteer for many new therapeutic medications that originated in the dental and medical facilities at the university. While pursuing an academic career, he still carried on limited clinical dentistry.

Dr. Orland's research made important contributions to understanding oral health. His work on the germ-free animal project led to identifying the microbial nature of caries. He also studied the benefits of fluoridation.

Dr. Orland has been a prolific author and a noted dental historian. He prepared the *First Fifty-Year History of*

the *International Association of Dental Research*, and was a contributor to *Microbiology in Clinical Dentistry*. Recently, he completed the *William J. Gies Biography*, published in 1992.

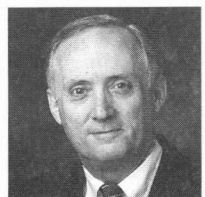
Dr. Orland is a Fellow of the Institute of Medicine, the American Academy of Microbiology and the American College of Dentists. He served as President of the International Association for Dental Research, Chairman of the ADA Council of Dental Therapeutics, Chairman on the AADS Conference on Oral Microbiology and Chairman of the Committee on History of the Illinois State Dental Society. He also served as President of the American Academy of the History of Dentistry and as President of the Society of Medical History of Chicago.

Dr. Orland has been actively involved in community activities in Forest Park, serving as an adviser, community editor, and President of the Historical Society of Forest Park. He was named Citizen of the Year in 1989.

Honorary Fellowship

The ACD confers Honorary Fellowship upon persons who are not members of the dental profession but have made outstanding contributions to the advancement of the profession and to its service to the public. These contributions may be in education, research, administration, public service, public health, medicine and many other areas. In October 1994, the ACD bestowed Honorary Fellowship upon Dr. John P. Howe, III.

Dr. John Prentice Howe, III



A cardiologist by training, Dr. John Howe, has served as President of the University of Texas Health Science Center at San Antonio since 1985. Dr. Howe's commitment to his profession, to health care, and to our society is

clearly evident throughout his very notable career. This includes his long-standing commitment to oral health.

Dr. Howe received his medical degree from the Boston University School of Medicine. He subsequently trained in internal medicine with sub-specialty training in cardiology. After serving two years in the U.S. Army, he returned to Massachusetts to begin a prominent career in academic medicine, rising from Assistant Professor in the Department of Medicine to Vice-Chairman and ultimately Academic Dean of the University of Massachusetts School of Medicine. Concurrently, he served on the staff of the University of Massachusetts Hospital as Associate Chief of Medicine, Director of Patient Care Studies and finally, Chief of Staff. While serving as Chief of Staff and Associate Dean of the medical school, he completed the Harvard Business School Program in Health Systems Management. In 1980 he was appointed Vice Chancellor of the University of Massachusetts at Worcester, a position he held until accepting the Presidency of the San Antonio Health Science Center in 1985.

Dr. Howe is a Diplomate of the American Board of Internal Medicine and Diplomate, sub-specialty of Cardiovascular Diseases. He is a Fellow of the American College of Cardiology, the American College of Chest Physicians, and American College of Physicians.

Dr. Howe also has been a vital and active leader in his community. He is a member of the American Heart Association, San Antonio Chapter, and served as its President in 1988. He is a member of the Board of Directors of the American Red Cross, Greater San Antonio Chamber of Commerce, and the San Antonio Economic Development Foundation. He also has been President of the Higher Education Council of San Antonio.

Dr. Howe's dedication to oral health

and the dental profession are exemplified by two recent efforts. Dr. Howe chaired the Institute of Medicine's Committee on The Future of Dental Education. This very prominent and vital committee was charged with examining the current status of oral health and dental education and shaping a vision for the future — an imposing task important to dentistry. Dr. Howe was an outstanding and creative leader of the IOM committee.

During his presidency at the University of Texas, Dr. Howe has been able to effectively stimulate growth within the dental school amid an era of reductions and closures. His efforts have resulted in tremendous growth in research programs, increased clinical productivity, curriculum innovations, and excellent integration with other academic and clinical programs. Dr. Howe has been able to create an example of vision and opportunity for dentistry and health care.

Merit Award

The supporting services of dentistry are vital to the profession, providing key elements which enhance the effectiveness of dental care delivery and the growth of the profession. The ACD's Award of Merit was established by the Board of Regents in 1959 to recognize unusual contributions in dentistry and its services to humanity by persons who are not Fellows of the College.

Ms. Anne Hecker



Ms. Anne Hecker had an extensive career in dental association management, meeting planning, and communications. She joined the Washington State Dental Association (WSDA) in 1965 as a Staff Assistant, and then served as Public Relations Director and

Assistant Executive Director. In 1987, she became Executive Director, a position she held until her retirement in June 1994.

During her many years with the WSDA, Ms. Hecker worked with every association standing committee. She also served as Executive Assistant for the ADA Eleventh District Caucus. Her efforts led to significant growth in the WSDA's programs and accomplishments. Ms. Hecker applied her journalism training to enhance professional communication within the state and between the WSDA and the public. Ms. Hecker has been recognized for her professional writing and communication skills. She was President of Women

in Communications and received the organization's Distinguished Service Award in 1986.

Prior to joining WSDA, Ms. Hecker was an editor for the National Aeronautic Association; an editor, National Association of Clinic Managers and Washington Federation of Clubs; managing editor, *Northwest Medicine* (Washington, Oregon and Idaho Medical Associations); and freelance writer for the American Institute of Architects. Ms. Hecker also worked as staff correspondent for United Press in Oregon and Wisconsin, for the Time/Life Bureau in Seattle, and as an investigative reporter and contributing editor for the *Seattle Argus*.

Ms. Hecker has been active in her community, serving as public relations consultant for the Seattle Urban League and for the Continuing Dental Education Program at the University of Washington. She chaired the Public Relations Committee for the Seattle-King County Camp Fire Council and served on the National Board of Directors for Camp Fire.

Ms. Hecker received a bachelor's degree in journalism with honors, from the University of Oregon and did graduate work at the University of Wisconsin.

Ms. Hecker and her husband, Robert, currently reside in Seattle.

Barry Joseph Agranat
Watertown, Massachusetts

Andrew L. Allen
Brunswick, Maine

Richard Frank Andolina
Hornell, New York

Gordon Arbuckle
Indianapolis, Indiana

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Asheboro, North Carolina

Oded Bahat
Beverly Hills, California

Philip Jeffrey Bales
Astoria, Oregon

Ravinder Kumar Bali
New Delhi, India

Gary S. Barr
New Braunfels, Texas

Joachim O. Bauer
Granite City, Illinois

R. Scott Beavers
Carrollton, Illinois

Colin Scott Bell
Dallas, Texas

Howard Cline Bell
Jacksonville, Florida

William J. Bennett
Williamsburg, Virginia

Joel Berg
Houston, Texas

Alvin S. Berger
North Haven, Connecticut

Eli V. Berger
Birmingham, Michigan

Leonard Bernstein
Brookline, Massachusetts

Allan Berry
Miami, Florida

Harold H. Biddle
Honolulu, Hawaii

Michael E. Biermann
Portland, Oregon

John William Blair
Calgary, AB, Canada

Hugh Allan Block
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John Valentine Blomfield
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Plainville, Massachusetts

Ann Michael Boyle
Cleveland, Ohio

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Halifax, NS, Canada

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Terry L. Buckenheimer
Tampa, Florida

Vaughn Evans Bullard
Laurens, South Carolina

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Indianapolis, Indiana

Henry Frank Cannaday
Winnsboro, Texas

Curtis E. Carlson
Bellevue, Washington

Fredrick D. Carlson
Fairmont, Minnesota

James William Cartwright, Jr.
102nd Medical Detachment

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Chicago, Illinois

Joseph M. Caruso
Newhall, California

Paul S. Casamassimo
Columbus, Ohio

Gennaro L. Cataldo
Revere, Massachusetts

Robert D. Charny
Hatboro, Pennsylvania

Lewis Clayman
Detroit, Michigan

Elverson Deville Coates, Jr.
Monroe, Louisiana

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San Antonio, Texas

Kent Cohenour
Oklahoma City, Oklahoma

Raymond A. Cohlmi
Oklahoma City, Oklahoma

Robert A. Colantino
Springfield, Illinois

Andrew Richard Collins
Cambridge, England

Nelson B. Conger
Dalton, Georgia

Dean Paul Copoulos
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Houston, Texas

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Redmond, Washington

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Poole, Dorset, England

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Montrose, New York

Timothy James Curry
St. Joseph, Missouri

David Kennon Curtis
Columbus, Mississippi

Eric Kay Curtis
Safford, Arizona

Jeffrey B. Dalin
St. Louis, Missouri



Friendship Class

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South Burlington, Vermont

David Lewis Danner
Pekin, Illinois

Clive R. Debenham
London, England

A. Timothy DeConinck
Warren, Michigan

Eladio DeLeon, Jr.
Wuerzburg Dental

Diane C. Dilley
Chapel Hill, North Carolina

Robert J. Doherty
White Plains, New York

Sara Jean Donegan
Elm Grove, Wisconsin

David Michael Donnelly
San Diego, California

Joseph Anthony Draude, Sr.
Parris Island, South Carolina

Richard A. Eklund
San Antonio, Texas

Augusto R. Elias
San Juan, Puerto Rico

Samia A. Elias
Baltimore, Maryland

Robert Allen Faiella
Duxbury, Massachusetts

John Hopkins Ferguson
Milledgeville, Georgia

Catherine Mary Flaitz
Houston, Texas

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Hot Springs, Arkansas

Kenneth Earl Follmar, II
Los Gatos, California

Sidney Frederick
Lafayette, Louisiana

Paula K. Friedman
Boston, Massachusetts

Clark David Galin
Plantation, Florida

L. Thomas Gallegos
Washington, DC

Louis James Gallo
Covington, Louisiana

H. Hugh Gardy
Maywood, New Jersey

Jerry J. Garnick
Augusta, Georgia

William Donald Gay
St. Louis, Missouri

Gerald Gelfand
Woodland Hills, California

Kathleen Diane Gentry
Crested Butte, Colorado

Roger B. Gerstner
Omaha, Nebraska

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Gerald Neal Glickman
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Perry V. Goldberg
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Stephen M. Goldstein
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Ronald D. Gore
Newport, Arkansas

David Goteiner
Chester, New Jersey

G. Philip Greeves
Calgary, AB, Canada

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Bloomfield, Michigan

Henry Alan Gremillion
Gainesville, Florida

Joseph Allen Grider
New Castle, Indiana

Robert G. Griego
Phoenix, Arizona

A. John Gwinnett
Stony Brook, New York

Mark Daniel Hackbarth
Brookfield, Wisconsin

Pamela Wallace Hammel
Grosse Pointe, Michigan

Frederick J. Hansing
Ketchum, Idaho

David W. Hanson
Spokane, Washington

Hazel J. Harper
Washington, DC

James Morlan Harris
Washington, Iowa

William G. Harrison
Panama City, Florida

Richard H. Haug
Cleveland, Ohio

Robert F. Hawke
Tucson, Arizona

Darrell R. Hazle
Claremore, Oklahoma

Joel Patton Hearn
Florence, Alabama

James Henry Henderson, Sr.
New Iberia, Louisiana

Pamela S. Herrera
Detroit, Michigan

Joseph T. Hicken
Wilmette, Illinois

David C. Hillson
Albuquerque, New Mexico

Stephan Franklin Holcomb
Warner Robins, Georgia

Gregory W. Holve
Valley Village, California

Lisa Peter Howard
Golden Valley, Minnesota

Maria Lopez Howell
San Antonio, Texas

James D. Hudson
New York, New York

Wyatt R. Hume
San Francisco, California

Carlos M. Interian
Miami, Florida

Bejan Iranpour
Rochester, New York

George O. Isaacson
Princeton, New Jersey

Scott T. Jacks
South Gate, California

Robert John Jakoubek
Charles City, Iowa

Marjorie K. Jeffcoat
Birmingham, Alabama

Carl Henry Jepsen
San Diego, California

Burton Wayne Job
Akron, Ohio

Arthur W. Johnson
Barstow, California

James David Johnson, Jr.
Oak Ridge, Tennessee

Richard I. Johnson
Burlington, Washington

Daniel Ehs Jolly
Columbus, Ohio

John David Jones
San Antonio, Texas

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Lawrence B. Kaye
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Myron Kellner
Lutherville, Maryland

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Lawrence Tennyson Kennedy
Knoxville, Tennessee

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John A. Kirst
Orlando, Florida

Harold Kolodney, Jr.
Jackson, Mississippi

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David Kozloff
Montreal, QU, Canada

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Robert M. Kriegsmann
Greensboro, North Carolina

Terrence Lee Kullbom
Council Bluffs, Iowa

Jayanth V. Kumar
Albany, New York

C. William Lauver
Indiana, Pennsylvania

Ell L. Lee
Green Bay, Wisconsin

Raymond Jon Lee
Ellicott City, Maryland

Harold D. Lester
Louisville, Kentucky

Constantinos A. Levanos
Springfield, Massachusetts

Jeffrey Levin
Richmond, Virginia

Barry Craig Levine
Tampa, Florida

Lawrence M. Le Vine
San Rafael, California

Steven Robert Lindstrom
Howards Grove, Wisconsin

James Michael Linn, Jr.
Metairie, Louisiana

Gloria T. List
Milwaukee, Wisconsin

David A. Little
San Antonio, Texas

Kaneta Rose Lott
Atlanta, Georgia

Riley Hamilton Lunn
Chattanooga, Tennessee

Don A. Lutes
Mt. Pleasant, Texas

William Ralph Maas
Rockville, Maryland

Paul S. Mace
Bridgeton, Missouri

C. Roger Macias, Jr.
San Antonio, Texas

Ian Campbell Mackenzie
Houston, Texas

Dennis Edward Manning
Deerfield, Illinois

Nicholas G. Marinakis
North Reading, Massachusetts

Douglas Dale Martin
Grapevine, Texas

George C. Martin
McGehee, Arkansas

L. Ronald Martin
Jackson, Mississippi

Richard L. Martin
Kokomo, Indiana

Thomas A. Masters
Atlanta, Georgia

Stephen R. Matteson
San Antonio, Texas

Wm. Chadwick McCoy
Chillicothe, Missouri

Judith A. McFadden
Philadelphia, Pennsylvania

Arturo J. Mendez
New Orleans, Louisiana

Charles J. Meyer
St. Peters, Missouri

Richard Carl Meyer
Little Rock, Arkansas

John E. Miller
Anchorage, Alaska

Robert P. Millslagle
Santa Cruz, California

William E. Milner, Jr.
Asheboro, North Carolina

G. Lewis Mitchell, Jr.
Gadsden, Alabama

Orrin Dwight Mitchell
Jacksonville, Florida

Donald C. Moen
Lewistown, Montana

Ronald A. Monica
Wausau, Wisconsin

Ronald Anthony Montana
Ridgewood, New Jersey

Richard Avedis Moomjian
Burlingame, California

William Kenneth Morgan, Jr.
Jacksonville, North Carolina

Leo Don Morton
Highland Park, Illinois

Wataru Motokawa
Fukuoka, Japan

Kathy I. Mueller
San Francisco, California

William Cooper Murdock
Kodiak, Alaska

Richard Bonke Myers
Oneida, New York

Kent H. Nakamaru
Kealakekua, Hawaii

Martin Neil Narun
Pikesville, Maryland

Donald H. Newell
Indianapolis, Indiana

Dennis P.A. Nimchuk
Vancouver, BC, Canada

Michael F. Nolan
Monroe, Louisiana

Lonnie H. Norris
Boston, Massachusetts

John E. Novak
Sugarland, Texas

Jack L. Nugent
Aberdeen, Washington

Sandra Jean O'Neal
Birmingham, Alabama

Peggy Ann O'Neill
Houston, Texas

Angel M. Otero Viera
Bayamon, Puerto Rico

Charles Earl Owens
Southgate, Michigan

Jules B. Paderewski
Savannah, Georgia

Patricia H. Palmer
Augusta, Georgia

Hari Parkash
New Delhi, India

Sandy L. Parrott
Port Huron, Michigan

Stephen David Pascal
Paramus, New Jersey

Michael J. Perpich
Edina, Minnesota

Richard Palese Perry
Oak Park, Illinois

David G. Petersen
Spokane, Washington

Paul Samuel Petrungaro
Palos Park, Illinois

Timothy H. Pfister
Billings, Montana

Clair F. Picard
Mansfield, Ohio

John Martin Purdy
El Paso, Texas

William Gordon Quarles
Gastonia, North Carolina

William Clark Rabe
High Point, North Carolina

George Wayne Raborn
Edmonton, AB, Canada

Michael Keith Reece
Bryan, Texas

Frederick J. Regennitter
Fort Knox, Kentucky

Richard A. Reinhardt
Lincoln, Nebraska

Morton C. Rennert
New York, New York

William Louis Ries
Charleston, South Carolina

Frank Michael Rivelle
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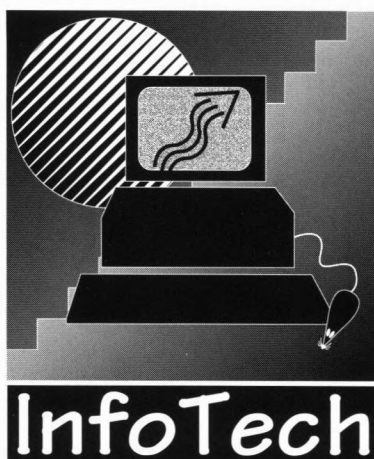
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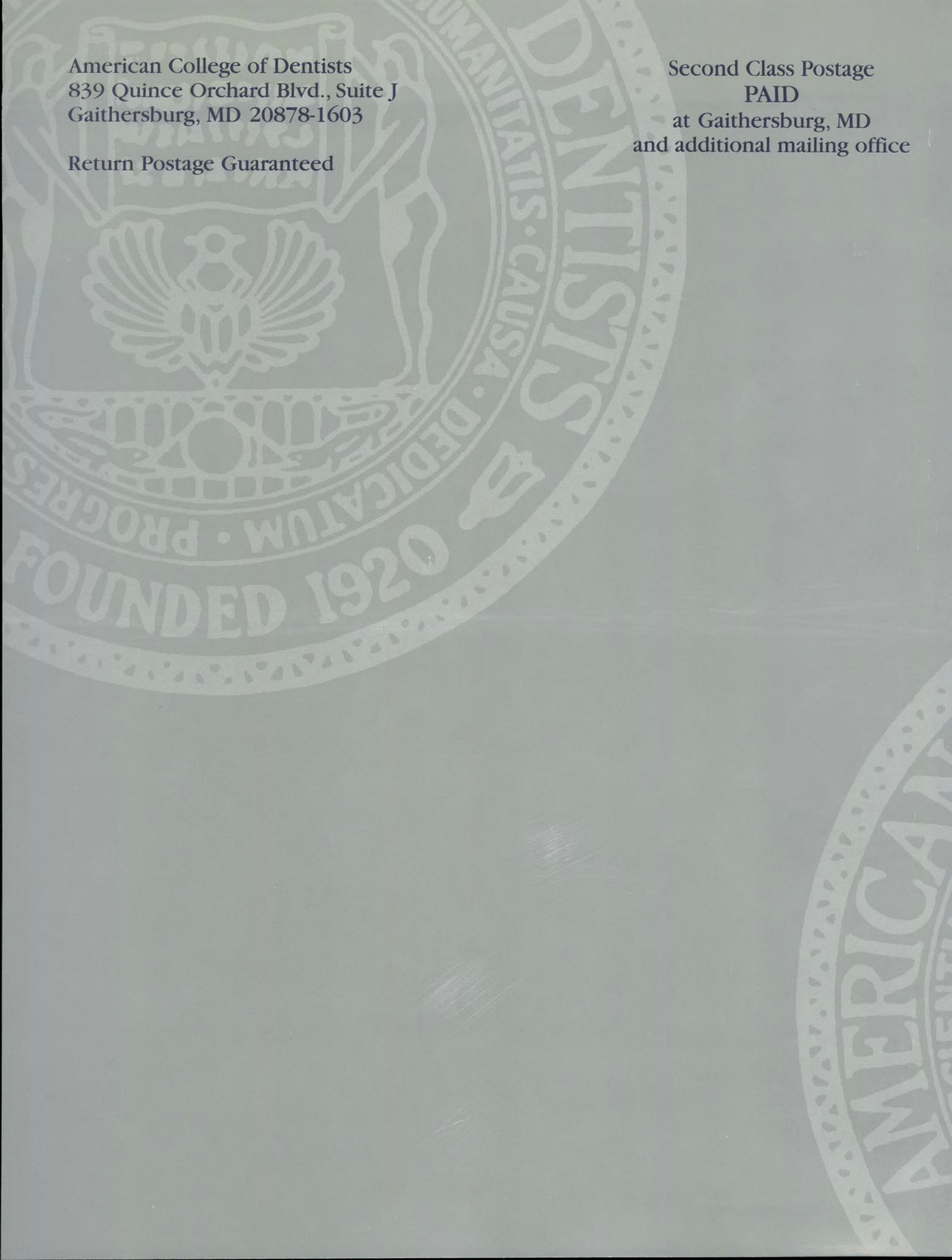
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