

Alumni Bulletin

SCHOOL OF DENTISTRY

Spring Issue 1971



Indiana University-Purdue University at Indianapolis

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Indiana University School of Dentistry ALUMNI BULLETIN

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IN OCTOBER, 1970, a symposium entitled "Dentistry—Year 2000" was held in Indianapolis as part of the sesquicentennial celebration of Indiana University. The symposium was co-sponsored by the Sesquicentennial Committee of the University and by the Johnson & Johnson Company, New Brunswick, New Jersey.

Because of the importance of the subject matter and the excellence of the papers, a major portion of this issue of the Bulletin is devoted to the proceedings of that meeting. Three of the papers are published while the remaining two have been abstracted.

I believe that you will find these reports stimulating and relevant to the future of dentistry. Dr. Derry and I once again wish to thank the participants, the supporting agencies, and those who were in attendance.

Ralph W. Phillips

Dentistry—Year 2000: Health Sciences

Joseph F. Volker, President, University of Alabama in Birmingham

Indiana University is celebrating its 150th year. Although it could very well use the occasion to review past accomplishments, it has chosen instead to speculate on what may occur in the immediate future. As the oldest member of the panel, I am comforted in the knowledge that I will not personally be held responsible for the validity of my predictions.

Little more than a century has elapsed since the first American dental school became a member of the university family. Today, all accredited dental schools have bona fide university affiliations. Although this relationship has many advantages, it brings with it a major commitment to the traditional academic responsibilities of transmission, extension, and utilization of knowledge. To meet these challenges, most American universities have found it necessary to develop new relationships between the health sciences. Almost without exception, they have moved toward the creation of academic health centers. In these, medicine has a central role, complemented by varying combinations of dentistry, pharmacy, nursing, public health, veterinary medicine, hospital administration, allied health sciences, etc. Whenever possible, faculty and facilities are shared. Although there are those who believe these changes will cause dentistry to lose its identity and control of its destiny, I am convinced of the contrary. From personal experience, I can attest that the benefits of assimilation far outweigh those of isolation.

When dentistry first joined the university family, the emphasis was on the transmission of knowledge, or teaching. As the integration became more complete, a commitment to research—the extension of knowledge—became manifest. Today, there is an increasing involvement in service—the application of knowledge. During the next thirty years dentistry's commitments to each of these areas will continue, but its contributions will be made in partnership with its academic colleagues.

At present, and for the foreseeable future, the health sciences will be under the immediate and continuing influence of two major explosions that have characterized the last half of the twentieth century—the population explosion and the knowledge explosion. The former has made it necessary for the university to greatly increase its output of all kinds of health practitioners, including dentists. The latter has demanded that the university continuously revise health sciences curricula so that its graduates render the best possible health care to the public.

During the last several decades, we have seen the attitudes of health services consumers change dramatically. Whereas in the past they were content to think of good health care as a privilege, today they consider it a right. In the years immediately ahead, their expectations will cause them to scrutinize with increasing sophistication the university's programs in health sciences education. They will also, through elected representatives, influence legislation, both federal and state, that relates to the health professional's education, research, and practice.

Another vital force in molding the health sciences in the coming decade will be the students. It is evident that they are no longer willing to leave all of the decisions as to what, when, and how they will be taught to the administration and faculty. Increasingly, they will demand that their point of view be heard and considered in such areas as curriculum, facilities, licensure, etc.

One thing is certain. Such diverse factors as the population explosion, the knowledge explosion, the rising expectations of the public, and the changing character of students will assure that the health sciences within the university will undergo substantial change, and this, in turn, will be reflected in the pattern of health care the public receives.

Thus far, my presentation has been concerned with generalities, and it would probably be much easier for all concerned if I should continue in this vein. A third of a century's association with the university and the profession precludes that possibility. Accordingly, I propose in the remainder of the time allocated to me to use more concrete illustrations of problems that exist or lie immediately ahead.

In the late 1930's I was a candidate for the Ph.D. at the University of Rochester. At that time, the biochemistry department had a primary interest in the lipids, and graduate and professional students were expected to be rather knowledgeable in this area. Fortunately, this requirement could be met in part by mastering the information contained in 169 pages that comprised the small but excellent monograph, *The Biochemistry of the Lipids*, authored by Henry B. Bull. By 1943 this reference source had been replaced by *The Biochemistry of the Fatty Acids and their Compounds, the Lipids*, a 387-page summary by Walter R. Bloor. The latter publication in turn was replaced during the 1950's by a 2,966-page compendium *The Lipids, their Chemistry and Biochemistry*, authored by Harry J. Deuel, Jr.

It was predictable that the accelerated rate of growth of our knowledge of lipids would result in the creation of specialty journals. In the closing months of the 1950's the *Journal of Lipid Research* appeared, and in the mid-60's a companion publication *Lipids* was inaugurated. Both have six issues annually and contain as many as 25 articles per journal issue.

A comparable example can be cited in clinical dentistry. In the latter part of the 19th century a complete dental education was assured by mastery of *The American System of Dentistry* (1886-1887) edited by Wilbur Litch. This three-volume work had a total of approximately 3,000 pages. It may be contrasted with the present required undergraduate textbook list at the University of Alabama School of Dentistry, which exceeds 18,000 pages.¹

There is every reason to believe that the knowledge explosion will continue and further complicate the university's attempts to fulfill its obligations to prepare

students to be health practitioners. It is no longer feasible to solve our dilemma by extending the curriculum. Rather, we must be more selective and effective in presenting information to our students. The intelligent use of all forms of audiovisual technology and computer aided instruction is mandatory.

There is an acute need for major curriculum surgery. Even so-called established truths must be reevaluated and if necessary discarded. A pertinent example is the doctrine of "extension for prevention," which applies to treatment of interproximal caries of the posterior teeth. It is time-consuming and demands a substantial degree of skill. Traditionally, this has been accomplished by removal of the lesion and extension of the cavity preparation into self-cleansing areas. The practice has been defended on the assumption that if this were not done the margins would be prone to caries. Until recently, the validity of the basic assumption had never been adequately tested.

In a carefully designed and executed study covering approximately four years, 105 patients received a total of 531 test amalgam restorations. One-half of the restorations were underextended according to present operative standards. The experiment was designed so that the experimental underextended restorations had control restorations with classically extended margins in contralateral teeth in the same mouth. The occlusal aspects of the preparation were extended in the



Dr. Volker, center, with Dr. Dayton Krajicek, Asst. Chief, Medical Director for Dentistry, left, and Dr. L. Rush Bailey.

normal manner. Comparable techniques and materials were used in the restoration of all teeth, and identical methods and accessories were used in recording at selected intervals the possible presence of marginal caries. During the entire study only one case of recurrent caries was observed that was not attributable to a defective margin.²

These observations suggest that extension for prevention cannot be justified as a routine procedure. They indicate that the risk of reoccurring caries around non-extended restorations, even in persons with moderate to high caries susceptibility, is low, provided that good care is exercised in the placement of the filling.

It may be anticipated that other "sacred cows" of dentistry will be scrutinized. Some of them undoubtedly will be sustained, others demolished. This is as it should be if dentistry is to be worthy of designation as a science as well as an art.

A growing public concern about both the availability and cost of dental service is easily documented. This has been actively promoted by the population explosion. The extent of this concern is reflected in many scholarly articles in both the scientific and lay press. It is dealt with in depth in the Report of the National Advisory Commission on Health Manpower appointed by President Johnson. It was my good fortune to serve on the Commission. We predicted that the demand for dental services would increase between 100 per cent and 125 per cent between 1965 and 1975, a time when the supply of dentists would increase by only 16 per cent. Despite the construction of new schools, these trends seem likely to continue for the remainder of the century.³

Similar observations with regard to supply and demand are applicable to virtually all of the health professions. Obviously universities must continue to expand their existing health professional schools and create new ones. At the same time, they will increasingly become centers for experimentation in the delivery of health care. This in many instances will require that the university health sciences schools conduct research in the use of auxiliaries.

It is relevant that the *Survey of Dentistry* by the American Council on Education concluded almost a decade ago that "future increases in the productivity of the profession will . . . be more difficult to attain . . . unless a major shift occurs in the use of auxiliary personnel, including the lifting of some legal restrictions on their functions."⁴ Regrettably, very few universities have responded to this challenge. Our University has been an exception. Its faculty has been engaged in a series of well defined and carefully executed clinical studies for many years. They have shown that individuals with a high school education and two or less years of training can perform time-consuming chairside functions that presently are carried out only by dentists. These include placing rubber dams and matrix bands and inserting, carving, adjusting, and finishing amalgam and silicate restorations. The proficiency of the trainees is comparable to that of advanced dental students. All the research functions are reparable and can be re-done without excessive harm to the patient's oral health. No recommendation has been made that subprofessional personnel perform procedures requiring professional skills and knowledge, i.e., diagnosis, treatment plans, administration of anesthetics, and severance of hard and soft structures.^{5, 6}

It is relevant that the new type of ancillaries could be employed under the immediate supervision of licensed dental practitioners, primarily in the private sector, providing a system of dental care for all Americans consistent with our tradition of private enterprise. Unfortunately, these efforts met resistance from the Alabama Dental Association, which requested that the faculty discontinue their studies in this area. Very possibly the Association fails to understand that one of the university's traditional responsibilities is to seek the truth, and this cannot be accomplished unless adequate information is available for those who will make the final judgment.

Another function of universities is to focus discussion on society's problems. The substantial number of symposia and conferences on the delivery of health care con-

firms that they are taking the responsibility seriously. Of particular interest was the Harvard School of Dental Medicine's centennial observance. It was devoted to oral health care in the United States and selected foreign countries.⁷ In a recent address I reviewed the proceedings of the conference and made further comment on the problem:

"In New Zealand, 93 per cent of all school children receive dental care. The scope of the service is evident from a comprehensive survey revealing that 91 per cent of the decayed deciduous teeth of children, 6 to 12 years of age, had been filled. These services are largely provided by subprofessional personnel, designated as dental nurses, who work in school clinics. Annual reports of the New Zealand Department of Health indicate that in 1966, 1,118 of these nurses treated 480,000 children. They inserted 2.5 million restorations and found it necessary to extract only 558 carious permanent teeth.

"Upon completion of primary school, free dental treatment is provided until the 16th birthday. This takes place in the offices of private dentists. The practitioners are paid on a fee-for-service basis at rates mutually agreed upon by the dental profession and the offices of the state dental service. The report shows that through this arrangement 172,000 children received 293,000 treatments at an average cost of \$13.00 per completed treatment in 1966. Children who pass their 16th birthday pay full private fees. Almost 90 per cent of the dentists are in full-time private practice, and nearly all of them participate voluntarily in the state adolescent oral health service.⁸

"In Scandinavia the level of dental health care for children is at least and possibly more impressive than in New Zealand. It has been reported that 86 per cent of the decayed teeth of all Norwegian school children have been filled, and 80 per cent of all Swedish school children between 7 and 16 years of age receive complete dental treatment, including orthodontics. Unlike New Zealand, dental care for children in Sweden is provided by dentists in government clinics rather than by dental nurses. As in New Zealand,

dental care in the over 16 group is an individual rather than a state responsibility.

"Obviously, the Swedish system requires that a substantial number of the practitioners be full-time government employees. Approximately 35 per cent of all Swedish dentists are employed by the Swedish Public Dental Health Service, and 60 per cent are classified as private practitioners. The remaining 5 per cent are involved in teaching, research, and administration.⁹

"For comparative purposes, cognizance should be taken of reports that only 23 per cent of the decayed teeth of American children in the 6 to 15 age group have been filled.

"The situation in the low income families is even less favorable. According to Harold Hillenbrand, who recently retired as Executive Director of the American Dental Association, 'nearly 70 per cent of the children whose families earn less than \$4,000 annually do not receive dental services . . . At present there are approximately 7 million youngsters who are eligible for public assistance. Since the birth rate among the indigent is higher than among the non-indigent, it is expected that by 1970 the number of children on public assistance could reach 15 million.'¹⁰

"Although the picture in more affluent groups is not as alarming, it is discouraging. Examination of 250 Alabama freshman nursing students between 18 and 19 years of age revealed an average of five decayed and four missing teeth per person. This total was roughly comparable to the number of teeth that had been filled. It suggests that even in a highly selected and motivated group only 50 per cent of the decayed teeth had received minimal care.¹¹

"In New Zealand, the dental health care system operates with a dentist to population ratio of 1 to 3000, but the number of dental nurses is substantially in excess of the number of dental practitioners. The Swedish system of dental health care functions with a dentist-to-population ratio of 1 to 1160 and is expected to become even more favorable in the near future. It is relevant that as late as 1933 the dentist-to-population ratio in Sweden was 1 to

7000. Obviously, there has been a tremendous expansion of the dental education facilities of the nation, but this progress has been costly. To finance these and other improvements in health, education, and welfare, it has been necessary for Sweden to impose very high taxes. In 1967, these equaled 40.9 per cent of the gross national product as compared with 28.3 per cent in the United States.¹²

"If the United States adopts the Swedish approach to oral health care, its citizens must be prepared to greatly expand their support of dental education. There is very little evidence that this is being contemplated or could, considering other national needs, be given a high priority. If the United States adopts the New Zealand approach, substantially less funds will be required, but the nature of dental practice will be markedly altered. In either instance, a large percentage of the dentists will become government employees."¹³

I believe that before the public commits itself to a substantial and continuing expansion of dental educational facilities it will examine very carefully the economics of the present system of the delivery of oral health care. At the moment, the public is generally aware that dental fees are rising more rapidly than the cost of living index, that the government is paying an increasing share of the nation's health bills, that dentists are in short supply, and that substantial federal funds are being appropriated to support the education of dentists.

These factors and others have combined to bring current dental practice under the scrutiny of professional economists, and an increasing number of their observations are being published. The recent report, "The Economic Rationale of Occupational Choice," is in this category.¹⁴ The authors have used data from the 1960 census to establish a rank order for lifetime earnings of 67 categories of workers. Their basic model, which takes into account many variables, including time and money spent in preparation for a career, has yielded interesting information. According to them, the discounted net lifetime earnings of dentists are the highest of any of the 67 groups studied. The latter included phy-

sicians; manufacturing officials; electrical, mechanical, and civil engineers; lawyers; judges; pharmacists; chemists; and finance, insurance, and real estate executives. It is predictable that in the years immediately ahead dental education and dental practice will frequently be included in studies undertaken by other academic disciplines, i.e., sociology, law, philosophy.

The essayist is quite aware that the theme of this program is dentistry in the year 2000 and that the panel members were challenged to project their concepts of what the "state of the art" will be 30 years hence. In the time allotted, I have attempted to identify some of the major forces that are influencing all aspects of university operations and particularly how they are and will continue to affect the health sciences. To this end, I have tried to use examples that are particularly pertinent to dentistry. This is a large order, but hopefully my remarks have heightened your appreciation of the directions in which we are moving and the speed with which these changes are taking place.

Let us remember, however, that we can advise and speculate, but the decisions that will shape the future are the prerogatives of our heirs. Perhaps Thomas Jefferson, with the wisdom of an octogenarian, understood this best when he wrote:

Can one generation bind another, and all others, in succession forever? I think not. The creator has made the earth for the living, not the dead . . . A generation may bind itself as long as its majority continues in life; when that has disappeared, another majority is in place, holds all the rights and powers their predecessors once held, and may change their laws and institutions to suit themselves. Nothing is unchangeable but the inherent and unalienable rights of man. . .¹⁵

REFERENCES

1. Joseph F. Volker. The continuing confusion in communications. *Ala. J. Med. Sci.* 7:136-142, 1970.
2. A. E. Thomas. Evaluation of principles of cavity preparation design. Abstract #2. *Program and Abstracts of Papers, 48th General* (Continued on page 63)

Dental Research in the Year 2000

*Seymour J. Kreshover, Assistant Surgeon General, U.S. Public Health Service,
is Director, National Institute of Dental Research, National Institutes of
Health, Bethesda, Maryland.*

As I approach with much hesitancy the task of projecting dental research into the Year 2000, I recognize that two courses were open to me: either to respond by the quite legitimate ploy of raising questions about the future, or to follow the more foolhardy and hazardous course of crystal balling. This dilemma necessarily led me to ponder which tactic I might find to be more in character—a self-searching exercise that reminded me of two answers to a college philosophy examination dealing with the medieval discussion on the number of angels that could be supported on the point of a pin. One student wrote a delightful essay with all sorts of reflections back to the Renaissance, discussion of the views of the church, and on and on in a most entertaining manner. The other answer that I particularly liked covered but two lines. “Before discussing this subject,” it said, “I need to know three things: the diameter of the pin, and the mass and specific gravity of the angels.”

Well, believe me, I, too, feel the need for having some more specific information to handle my essay. Indeed, my experience in budget planning has convinced me that it is extremely hazardous to prognosticate the trends of research even for thirty months.

But in order to establish a base from which to project thirty years hence, let me begin with some notes from an old historical record that some of you may have heard me relate before.

Published in the *American Anthropologist*, this account describes the culture of the Nacirema, a fascinating North American group of people living in the territory between the borders of Canada and Mexico, the Atlantic and the Pacific, and gives us a parable of sharp focus. The fundamental belief underlying the whole system of this people's culture appeared to be that the human body is ugly and that its natural tendency is to debility and disease. Prominent, therefore, in is tribal culture

were the healers. In the hierarchy of these magical practitioners, but below the medicine man in prestige, were the specialists whose designation was best translated as “holy-mouth men.” The people of the territory had an almost pathological horror of and fascination with the mouth, the condition of which was believed to have a supernatural influence on all social relationships. Were it not for the rituals of the mouth, they believed, their teeth would fall out, their gums bleed, their jaws shrink, their friends desert them, and their lovers reject them. They also believe that a strong relationship existed between oral and moral characteristics as witnessed in a ritual soap ablution of the mouth for children which was supposed to improve their moral fiber.

The daily body ritual performed by these people also included a mouth rite. Despite the fact that the natives were so punctilious about care of the mouth, this rite involved a practice which struck the uninitiated stranger as quite revolting: it being reported that the ritual consisted of inserting a small bundle of hog hairs into the mouth, along with certain magical pastes and powders, and then moving the bundle in a highly formalized series of gestures.

In addition to the mouth rite, the people would seek out a holy-mouth man once or twice a year. These practitioners had impressive sets of paraphernalia, consisting of a variety of augers, awls, probes and prods. The use of these objects in the exorcism of the evils of the mouth involved almost unbelievable ritual torture of the subject. The holy-mouth man would open the client's mouth and, using the above-mentioned tools, enlarge any holes which decay may have created in the teeth. Magical materials would be put into these holes, and if there were no naturally occurring holes in the teeth, large sections of one or more teeth could be gouged out so

that the supernatural substance could be applied. In the client's view, the purpose of these ministrations was to arrest decay and to draw friends. The extremely sacred and traditional character of the rite was evident in the fact that the natives returned to the holy-mouth men year after year despite the fact that their teeth continued to decay. So ends my historical note!

However one may view the future with regard to a particular enterprise, it can have little meaning without some sense of its broad and societal setting. Today, medical and dental research teams are generally managed by large parent institutions—be they governmental agencies or nongovernmental organizations—each responsible ultimately to political decision makers, and each highly competitive with the other for fiscal support.

Recall that a mere twenty-five years ago few, if any, university or government officials had the vision to anticipate the tremendous scientific advances that would be made by 1970, nor could they foresee our contemporary phenomenon of institutionalization of scientific enterprises. Such rapidly moving events, it seems to me, permit a clearer vision of the next quarter century when the scientific system of Federal-non-Federal organizational partnerships in political arenas will undoubtedly be even more pervasive, not only with respect to increasingly competitive relationships between mission-targeted Federal agencies but also among universities, states, and regions for Federal research dollars. Seemingly, then, the Year 2000 will see institutional systems for science even more complex than today. Some also would forecast that, much as scientists have been honored, and much as they would agree that policies governing scientific institutions ought to be determined by the scientists themselves, it will probably be political forces (in the best sense of the term) that will largely govern future decisions and directions of scientific institutions.

It has been said that the American scientific edifice is a monument to many dedicated scientists and public servants,

but that none can deny it is also the product of a multiplicity of unconnected crash programs, somewhat haphazard coordination, and perhaps simple political accidents. The future will probably witness more of the same—but with greater and greater interaction between science and so-called public policy. Indeed, one might reasonably anticipate that the American scientific enterprise in the decades ahead will become even further imbedded in national goal missions representative of triumvirate government-university-industry efforts.

While the exercise of this symposium to conjecture about the Year 2000 is in itself an adventure, any reasonably well-conceived view of the future must necessarily take into account an assessment of current institutional potential for meeting future needs and opportunities. Neither can we ignore how fashions and popular trends in research greatly influence contemporary American science. Thus, for example, there has been the fashion of molecular biology and the focus on the pursuit of pure science with the relegation of those interested in application to second-class citizen status. Today, however, with the rising trend toward so-called "big science," we are seeing a shift in the attention of some agencies away from basic science and toward strongly mission-oriented programs. An expression of this orientation was voiced by Alvin Weinberg when he commented that urgent support of a field is justified only if that field is likely in some way to solve a pressing human need; and that the biological sciences merit support because out of them come the means of alleviating some of man's most primitive suffering—illness and premature death.

The setting for our own field of dental research in the next century would appear then to be assured of these mixes of big science, strong mission orientation, and institutionalization on an ever grander scale—all in a milieu of demanding societal and political forces.

It would seem quite beyond the pale of reason to prognosticate on a broad front of state-of-the-art developments in dental re-

search—both from the standpoint of time and my wish to add as few errors as possible to the record of this symposium. I should say, too, that I consulted freely with some of my associates and owe them the credit for the more reasonable of the projections I will make.

It would seem probable that by the Year 2000 most of the current problems which define dentistry will be resolved by empirical, immediate-goal-related research. Also, if dentistry as the separate profession we have known and dental research as a distinct vocation persist thirty years hence, it will be out of sheer recidivism and not necessity. By that time dental caries and chronic periodontitis should have been reduced to minor significance in the overall professional assignment in this country. My simple reservation is that success in the application of important new knowledge to public use may not be much greater in thirty years than it is today. Accordingly, I would hope that current attention to studies of factors that motivate populations to seek or accept health care will rapidly move from attention to results. On a more optimistic note, it is very likely that such caries as will develop in the 2000 A.D. mouth will be detected at a precavitation stage, and that if adhesive sealants are in widespread use for protecting occlusal surfaces, they will be applied by auxiliaries or dental nurse types in school clinics where newly erupted teeth can be examined and treated promptly. The next thirty years also should bring us closer to understanding and thereby retarding the aging process, and make possible the development of biologically younger people. This should register significantly on the incidence of periodontal disease. However, we may expect, in parallel, many more old people spared the ravages of chronic disease, but who had lost some or all of their teeth before the millennium. These millions will need replacements. Full dentures, as constructed today, are life-like, hygienic, and comprised of excellent materials. However, they continue to rely on extremely limiting physical principles for retention. By the Year 2000, implanted abutments, totally compatible with human

tissue, will introduce a new dimension in the retention of full artificial dentures.

It is likely, too, that, well before the Year 2000, research in anesthesiology will offer refinements in anesthesia, analgesia, and amnesia that will make today's sessions in dental operatories seem Victorian by comparison. Thus, all types of dentistry, whether performed in or out of hospitals, will be affected by a generous selection of better and safer anesthetics developed in our pharmacology research laboratories. In parallel with these developments, there should come new and better understanding of the mechanisms of oral-facial pain and new approaches to its prevention.

In further generalization about the professional base upon which dental research will be structured, it is likely that we will see orthodontic, transplant, and implant procedures carried out in the province of orthopedics. Soft tissue conditions and diseases will probably be handled by dermatologists, otolaryngologists, and various branches of surgery. Indeed, in the field of oral surgery, it is likely that the control of wound healing will spearhead quite revolutionary changes. For example, adhesive preparations for the coating of open lesions may well replace sutures and bandages. Also, the control of the rate of wound healing without keloid formation, through such procedures as activation of cells, stimulation of matrix formation, and suppression of degenerative processes, will be a boon to plastic surgeons. Indeed, there is no theoretical reason why the embryological processes could not be reactivated where necessary for tissue replacement.

In other scientific advances, the next three decades should see a better understanding of the role of genetic control of diseases through selective alteration or substitution of specific genes. Thus, by surgical or pharmacological means, such as administration of enzymes to those with deficiencies, it should be possible to alter the genetic make-up in such a way that an individual would not have third molars, would have compatibility between tooth size and jaw size, would have less risk of palatal or lip clefts, and would have genetic predisposition to noncarious teeth.

For many of the cited advances, the population in 2000 A.D. should remember to acknowledge the enormous achievements of physics and chemistry that came largely in the early post World War II days.

Turning to other fields, it should be noted that immunology is just beginning to have an impact on the course of dental research. This has taken the form of an increasing awareness of the role that immune reactions play in the pathogenesis of oral disease. As you know, modern research in immunobiology is providing important insight into the complex nature of the immune system and the factors that regulate it. One of the major goals for the future, therefore, is to strive for immunoregulation in the host; that is, the ability to shut off or turn on various functional capacities of the immune system as an aid to therapy.

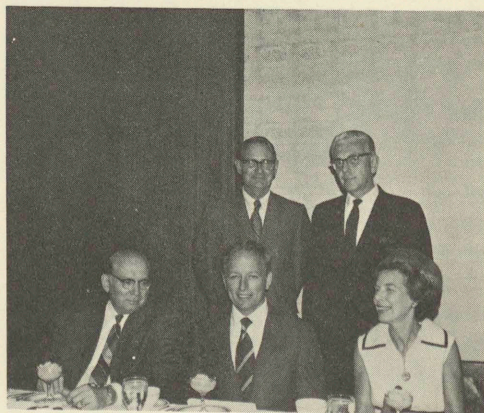
Immunology had its beginning in the field of infectious diseases. Bacterial and viral diseases posed a real threat to mankind and were immediately challenged by a surge of basic research leading to active and passive immunization procedures. In succession, over the past 70 years or so, extensions of these early experiments have led to a clearer understanding of the biological basis for allergy, transfusion reactions, graft rejection and such phenomena as immune complex disease. It becomes obvious that a more complete knowledge of the pathogenesis of acute and chronic allergic inflammation will have a dramatic impact on the course of dental research in the next several decades when one realizes that the underlying mechanisms operative in periodontal disease and other oral inflammatory diseases are akin to the destructive inflammatory mechanisms which affect tissues in other parts of the body.

Thus, I would expect that by the Year 2000, the application of basic immunological concepts to clinical aspects of oral tissue diseases will have brought dental research closer than ever before to allied biomedical fields which also aim to prevent and cure diseases of the human body.

Touching again on the subject of problems of oral-facial growth and develop-

ment, it is likely that the most fruitful avenues of research effort between now and the Year 2000 will be in diagnosis and treatment, along three principal lines—myophysiologic, endocrinologic, and biomechanics. Hopefully, scientists may soon perfect simple procedures to determine the severity and degree of malocclusion a child will develop long before he reaches that point. Thus, by analyzing the child at a very early age in terms of gene structure, muscle mass, hormone levels, and dental and bone development, it would be possible to accurately determine the characteristics of the defect that would develop should there be no intervening preventive or corrective procedures.

In the most simplified wrap-up to my anticipations for the next century, I would say that the mouth of Vintage 2000 A.D. man, woman, or child will have been entirely included in medicine; largely in such specialty fields as dermatology, neurology, and oncology. I would say, too, that physicians (and here I include a category of professional oral diagnostician and therapist) will have made the long-delayed discovery of the accessibility and convenience for examination and biopsy of oral mucosae, glands, vessels, nerves, muscles, and bone for purposes of diagnosis of systemic or disseminated abnormalities of these systems. The mouth, then, will quite incidentally have become a part of the medical body. God bless dental research!



Seated, Chancellor Hine, Dr. Denton Cooley, banquet speaker, Mrs. R. W. Phillips. Standing, Dr. Phillips, Chairman, and Dr. Robert Fuller, Vice-President, Johnson & Johnson Company.

The Practice of Dentistry in the Year 2000

Ben W. Pavone, Dean, University of California School of Dentistry

What can the dental patient look forward to in the year 2000? Can he anticipate the high degree of esthetics and comfort that dentistry should be able to deliver thirty years from now? Or will he suffer the same apprehensions, fears, and concern about his health and the retention of his teeth that he now does? Many in this audience were either in dental school or in practice twenty to thirty years ago. Would you say that the practice of dentistry has changed significantly in the years since then?

Some of you may answer in the affirmative, noting that we have refined our technology and that we now have a better understanding of dental disease. The more critical observer, however, will point out that our practice has been almost completely treatment-oriented, influenced only slightly by prevention. He can cite as evidence that during the past thirty years, the only notable change in the four major dental problems and diseases—caries, periodontal, occlusal, and hard and soft tissue—has occurred with the control of dental caries through fluoridation. Our critic will also submit that changes in the delivery of care during the past thirty years have been miniscule.

Let us concede that little has occurred during the last thirty years that has had an appreciable influence on private practice. But will this condition continue? Label me a pragmatist, not an alarmist, when I state positively that momentous changes are already developing that will have a profound effect on your practice during the period from 1970 to 2000 A.D. These changes—some incipient, others matured—fall into the categories of social, economic, political, scientific, and organizational developments. First, let us consider the scientific and organizational factors.

THE PROBLEM OF PAIN

Historically, the dental patient has been fearful of the possibility of pain during

dental procedures. Granted, the use of local anesthetics has relieved some of this concern, but wouldn't it be exciting if the apprehension related to anesthetic injections could be eliminated? I predict that by 2000 A.D., the patient can look forward to the administration of a tablet, similar in appearance to aspirin, which will provide within minutes sufficient anesthetic action to control the pain attendant upon routine dental procedures. This tablet will provide complete anesthesia, will not be habit forming or have undesirable side effects, and will allow total consciousness.

GROUP PRACTICE

I foresee that group practices of varying degrees of complexity will be established, gradually replacing solo practice as we now know it. There will be attempts to establish groups from individual practices located in the same office buildings, but these will be only moderately successful. The most effective group practices will be designed to provide quality comprehensive care in the most efficient manner possible. The foundation for the practice will be the most thorough and complex diagnosis and treatment planning program that neoteric thinking can develop. Our colleagues from other health professions, such as the physician and the pharmacist, will be continually available for convenient consultation. Physical facilities will be planned for multipurpose, multidisciplinary use, yet they will be pleasant, efficient, and comfortable for both patient and practitioner.

The patient will enter a diagnostic center equipped with devices that only the most imaginative can anticipate. Patients will complete their own acquaintance and history forms and, with the help of auxiliaries, will undergo a series of tests, including blood, urine, saliva, plaque, and PH samplings. Tests for blood pressure and respiratory rate and cytological tests will be routine. A new type of x-ray

camera will project pictures instantly on a screen. A self-operated camera will be invented to record the form and color of teeth and supporting structures for subsequent treatment reference. An automated profilometer will register the shape and dimensions of the head and face. With the aid of fast-setting impressions and stones, models will be prepared by auxiliaries within minutes. A patient's maxillo-mandibular relationships will be determined by tiny transistorized beads, imbedded in the occlusal surfaces of the teeth, which will record these movements on a pre-sensitized electronic monitor. The recorded tape would then be transferred to an articulator to show the existing occlusion.

All diagnostic material will be collected on data cards for immediate retrieval. Computers will serve as a bank for medical and dental histories and for developing and recording treatment. The data bank will include such items as drug prescriptions, health problems, hospital visits, diagnostic and financial data. These records will follow the patient wherever he goes and will be available to all medical, dental, and other health practitioners. Since all patients will be eligible for dental care by the year 2000, and since dentists

must be able to retrieve complete records by any patient within minutes, a national dental record system will be essential. Obviously, this information-gathering system will introduce significant economies in the health care system and will minimize duplicate records and overlapping services.

Group Practice in the year 2000 A.D. will include all the specialties and services necessary for total oral care and comprehensive health care. The Group Dental Clinic will include a large operatory equipped for all types of major surgery, including special care for the handicapped and the elderly. With the invention of a safe, tablet anesthetic, all surgical procedures can be accomplished in this operatory, thereby minimizing reliance on overcrowded hospital facilities. The clinic will also include an emergency room which will be open 24 hours per day to provide emergency service for the community.

Whereas dental offices are presently located in areas where economic success can be reasonably assured, it is expected that in the future, with most people eligible for dental service, group practices will be established on a geographic basis related to need and population ratios. The encouragement for this type of geographic distribution of group clinics will be through the mechanism of federal grants.



Dr. Pavone

RESTORATIVE DENTISTRY

Now let us address our prediction to the field of restorative dentistry. Haven't we heard that with the prevention of dental decay there will be little demand for operative or prosthetic dentistry? Unfortunately, the increase in demand and eligibility for care will more than offset the influence of prevention. Today's decay-crippled child of six years of age will be only 36 years old in 2000 A.D. Our 20-year-olds with prevalent oral disease will be only 50 in the year 2000. As bright as the picture of caries prevention appears, it will take more than thirty years to have any appreciable effect on the sequelae of dental decay. Furthermore, there is nothing on the horizon to indicate that either periodontal or occlusal problems will be substantially reduced by the year 2000.

What then will be the changes in the practice of restorative dentistry?

I predict that the use of silver amalgam, silicates, porcelain and gold will disappear by the year 2000. There will be only one filling material—a composite plastic which will be color stable, wear-resistant, dimensionally accurate, hard, and non-toxic, and which can be used as either a direct or indirect filling material. This plastic will come in all shades and will be used for all types of restorative procedures, including occlusal rehabilitation and esthetical correction. Whereas the principal efforts in 1970 have been to control the ravages of dental decay and periodontal breakdown, the dental patient in 2000 A.D. can expect the optimum in esthetical dentistry through the combined use of the new plastic restorative material and new methods of tooth movement. The attention to and interest in esthetical dentistry will create a new dental specialist who will be motivated by an overwhelming demand for quality service.

IMPLANT DENTISTRY

Research and experimentation with subperiosteal or endosseous implants will continue. During the past decade, there have been significant developments in establishing procedures for the implantation of individual teeth. The use of posts and wired reinforcements has had some success in stabilizing endosseous implants. However, I do not predict that this procedure will replace the conventional methods for replacing lost teeth in partially dentulous mouths. Instead, I envision the development of research projects as a team approach between the pathologist, histologist, surgeon, orthodontist, and restorative specialist in developing a method of implanting pre-formed acrylic teeth into existing or surgically prepared sockets. Stability will be provided by producing a mechanical lock with a plastic glue. We already have ample evidence that methyl-methacrylate plastics and cements are readily acceptable to the human tissues. Consequently, it is within the realm of possibility that a socket can be surgically prepared to receive a previously selected and prepared artificial

plastic tooth. Prefabricated acrylic teeth could be made to fit the space buccolingually, mesio-distally, and occlusogingivally. This procedure would be far more efficient and desirable than the preparation of abutments and the construction of pontics.

SPECIALTY PRACTICE

I predict that a substantially larger percentage of practitioners will engage in specialty practice, and that there will be a vastly increased demand for their services.

Oral Surgery

There will be more sophistication in the practice of oral surgery as the need for simple exodontia decreases and the demand for complex and specialized oral surgery increases. A new team effort between oral surgeon and prosthodontist will develop through the greatly increasing use of implants, particularly full denture implants. As the demand for health services increases, I envision a growing reliance on the well-trained oral surgeon for the treatment of traumatic injuries, congenital defects, and lesions of the oral cavity.

Orthodontics

The requests for orthodontic treatment will overwhelm the manpower available; consequently, I anticipate significant changes in the delivery of these services. Simplified procedures will be developed, thereby reducing reliance on full mouth banding and extra-oral appliances. New procedures will include plastic tooth implantation, surgical intervention and the use of intra-oral appliances yet to be invented. The more complicated cases will be treated by the orthodontic specialist and the less complex cases by pedodontists. The orthodontist will be assisted by a specially trained auxiliary who will take impressions, fabricate and adjust appliances, and perform other related procedures under the direct supervision of the orthodontist.

Pedodontics

I predict that dentistry's most significant contribution to public health, prevention of

tooth decay among children, will change the nature of pedodontic practice in the year 2000. With a diminishing need for restorative dentistry, pedodontists will concern themselves with preventive and minor orthodontics. There will be a gradual phasing out of children's dentistry as we know it today, with those interested in treating children turning toward the specialty of orthodontics. It is projected that more than 75% of the children in 2000 A.D. will require the services of an orthodontist, thereby overwhelming the most optimistic manpower estimates.

Prosthodontics

I do not predict, as many others do, a marked reduction in the need for full and partial dentures, at least before the year 2000. This observation is supported by the realization that prevention of dental disease will have its principal effect only on the young, and that expansion of dental services to the total population will precipitate an overwhelming demand for full and partial prosthodontics. The millions of people who will be wearing full and partial dentures in the 70's and 80's will require remakes, adjustments, and new prostheses in the year 2000. The prosthodontist will devote increasing attention to esthetics and the application of new procedures, such as implantation, to make dentures more comfortable and functional.

Endodontics

All of us are aware of the expanding requests for endodontic services in 1970. This is unquestionably the fastest growing specialty of our time, and I predict that it will continue its growth during the next three decades. As preventive measures develop and as patients become eligible for complete care, I foresee a gradual reduction in the need for endodontic service. However, this will not occur until after 2000 A.D.

Periodontics

Unfortunately, there is little evidence from the research sector that the answer to prevention of periodontal disease is imminent or even probable by the year

2000. With periodontal disease prevalent in more than 90% of the population over 30 years of age and with only a small percentage of these persons now receiving adequate periodontal treatment, I envision an overwhelming increase in demand for treatment of periodontal disease. Accordingly, I foresee an enormous expansion in the need for the periodontal specialist, primarily to diagnose and treat the more complex cases. But how will the whole spectrum of periodontal disease, from simple gingivitis to acute periodontitis and severe periodontosis, be treated?

The general dentist, who will direct and supervise all dental care in the office, will refer advanced periodontal cases to the specialist and the simple and moderate cases to a specially trained hygienist, currently known as the "four-year hygienist" who, it is expected, will have completed a rather sophisticated training. She will probably be trained to perform much of the treatment now being provided by the periodontal specialist, such as deep scaling, curettage, measuring pockets, charting periodontal conditions, taking medical and dental histories, and developing a series of observations for the attention of the supervising dentist. All of the hygienist's data accumulation, summaries, and observations will be reviewed by the supervising dentist, as will be required by law. There will be a change in the new curriculum for the four-year hygienist to include more diagnosis of periodontal disease, and extended clinical training which will teach the hygienist to perform more of the routine periodontal procedures. She will not, of course, be trained to perform moderate or complex surgery, or to treat or diagnose advanced periodontal disease.

The two-year dental hygienist will continue to provide oral prophylaxis services, but she may also be trained to assist the dentist in a variety of procedures newly permitted under authorized expanded duties. The treatment of the periodontal patient will not be as complex as it seems, since all patients will be treated in a group-practice setting, thereby permitting easy interchange and referral of patients.

HOME CARE

When we discuss periodontal disease, we must also consider home care. Home care will be more successful in 2000 A.D. than it is today. Devices, materials and procedures for the control of periodontal disease, which are yet to be developed or invented, will allow the dentist or hygienist to expect better results from instructions on preventive measures. Tooth pastes, mouth washes, and cleansing devices will contain additives which will restrict the action of harmful bacteria and will break down the formation of disease-causing plaque. Group practices will include automated instructional devices designed to educate patients in the proper use of home care materials. However, as in 1970, success will still depend on the ability of the patient to perform these procedures conscientiously and efficiently.

OCCCLUSION

It has often been said that dental decay occurs in more than 90% of the population under 20 years of age and that periodontal disease occurs in more than 90% of people over 30 years of age. When it is realized that occlusal discrepancies occur in more than 90% of the population of any age, and that very little has been accomplished toward the prevention of occlusal disorders, it is easy to anticipate that the treatment of occlusal disorders will receive major emphasis in the year 2000.

The complexity and difficulty of diagnosing and treating occlusal disorders have limited the availability of such service in the past. It is a discipline requiring extensive training and experience, and one which cannot be delegated to auxiliary personnel. When one contemplates the incidence of occlusal problems and the extended eligibility under a probable national health insurance program, it is safe to forecast that the diagnosis and treatment of occlusal discrepancies in the year 2000 will overwhelm the available manpower.

It is probable that a new specialist, the occlusionist, will evolve by 2000 A.D. He

will specialize in the treatment of the occlusal aspects of temporo-mandibular joint disorders, rehabilitation of dentitions by restorative procedures, and improvement of adult occlusion by a variety of methods not yet developed. The specialist in occlusion will treat difficult adult cases while the general dentist will treat the simple or moderate problem. It is assumed that the orthodontist and the pedodontist will retain the responsibility for diagnosing and treating malocclusions in the young patient.

The current increasing interest in the study of occlusion will gather considerable momentum during the next three decades, probably becoming the most important discipline in dentistry by the year 2000.

ORAL PATHOLOGY

We have already considered the impact of anticipated changes in the incidence of three major dental problems—caries, periodontal problems, and occlusal problems on the practice of the future; accordingly, it is appropriate to consider the fourth major problem area, that involving diseases of the soft tissues of the oral cavity. The prevention of soft tissue lesions is an unlikely possibility. Instead, I look for essential improvements in methods and training for early recognition and control of soft tissue pathology. The practitioner in 2000 A.D. will be trained to identify these lesions and will have the armamentarium and assistance to develop an accurate diagnosis. This new emphasis on the importance of early recognition of pathology of the oral cavity will give impetus to the development of oral pathology as a major specialty.

HOSPITAL DENTISTRY

Much has been said about the future of hospital dentistry, particularly that the use of hospitals and hospital services by dentists will increase significantly during the 70's. There is no doubt that the provision of dental services in the hospital environment will receive increasing attention, especially in regard to the treatment

of the hospitalized patient. It has also been stated that, because of the increasing use of general anesthesia, more dental patients will be treated in the hospital. Furthermore, it has been estimated that many of the handicapped and elderly can be treated with greater comfort and efficiency in the hospital atmosphere. I agree that treatment of hospitalized patients will receive increased emphasis, both in near and long term planning. But I am convinced that the hospital will not be used as extensively for dental care in the year 2000 as it will be in the year 1980. Hospital construction is extremely expensive; consequently, hospital beds will be reserved for higher priority medical cases.

As I have stated previously, I foresee the development of dental group clinics, which will include staff and facilities for the performance of special surgical procedures and for the care of the handicapped and the elderly. With the development of a simplified tablet-type anesthesia, office procedures will be simplified and reliance on already overcrowded hospitals will be reduced. Furthermore, if the cost of hospital care increases according to present estimates, strong support can be expected for the development of hospital-type facilities in group practice clinics for the treatment of special cases.

RESEARCH AND ITS INFLUENCE ON PRIVATE PRACTICE

From the foregoing prognostications, it may appear that I am something of a skeptic regarding the probabilities for prevention of dental problems and diseases, other than caries, by the year 2000. However, my conclusions are based on the assumption that the potential for the prevention of dental disease of all kinds rests with research, and research can be accomplished only by those trained in research protocol and research methodology. The major advance in developing research potential has been the increase in resource manpower, equipment, and facilities made possible through the research grant mechanism and through research training. Several years ago I would have

said that the results of research would have a profound effect on private practice in the year 2000. Today I think otherwise. Inadequate funding for research projects, which delays the development of competent research manpower, will have a long-lasting negative effect on prevention, and it may take a decade or longer to recover the lost momentum. Therefore, research and its application to the control of dental disease, with its consequent effect on private practice, will not have the influence that was expected a few years ago. Yet the need for dental manpower to diagnose and treat dental disease for the total population will reach its highest level during the next three decades.

ECONOMICS AND THE DELIVERY OF HEALTH CARE

Private practice as we know it today will have ceased to exist in the year 2000. Have no doubt about that prediction! Forgive me if I disturb your sense of security in planning for the practice of the future, or dash your hopes concerning any ideas you may have had regarding whom you would treat, how you would treat them, the fees you establish, even the hours you would work. Please excuse me if I shatter your tranquility by prophesying unsettling changes in the control and conduct of dental practice. But fasten your seat belts, for the trip to the year 2000 will be turbulent!

A national dental health care program will be instituted in the 70's. During the early years, the fees, rules, regulations, and controls will be more or less acceptable to the profession. But complexities and confusion will prevail because parallel with a national program will be the development and expansion of a growing number of local and state programs, private insurance plans, service corporations, and group insurance programs. Problems are the bed-fellows of large national programs, and there will be frustrating moments while these are being resolved. Resolution may take the form of discus-

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Dental Education—Year 2000

(An abstract)*

Alvin L. Morris, Vice President, University of Kentucky

It would be a sterile experience to attempt to examine dental education thirty years hence without considering the social and educational milieu in which it is destined to exist. Consequently, I wish to record my assumptions about society in the year 2000 upon which my predictions will be based.

It is assumed that, while the rate of population increase will be a more controlled phenomenon by the turn of the century, a continued population expansion will occur over the next thirty years leading to an approximate doubling of the current population.

The United States will be a much richer nation thirty years from now. There will be a significant modification in the application of wealth, however, which will have an impact on the dental profession. I believe that peace in our troubled nation and world will not be realized if the rich get richer and the poor get poorer. As part of a pragmatic quest for peace, rather than a national mood of benevolence, the rich will be called upon more and more to act and spend on behalf of the poor. This phenomenon will find expression in our relationship with developing and struggling foreign nations as well as on the domestic scene.

By the year 2000, great strides will have been realized in our "war on poverty." The richer we become as a nation, the more money we can and will spend on personal services, and the greater will be the tendency to distribute these services more equally. As the demand for personal services increases, there will be an increasing demand for professionals to provide the services.

A basic assumption is that the dental needs of the public will not be drastically

altered by the turn of the century. Specifically, I do not believe our population will be "caries free in 2003" nor do I believe that prosthodontics will cease to be a part of dental practice. Most patients will demand endodontic therapy as an alternative to tooth loss. Almost all patients will demand periodontal therapy as a routine component of dental care. The greatest impact from the standpoint of dental education, however, will be the marked increase in demands for orthodontic care for children. The last basic assumption upon which predictions will be made is that the health manpower shortage which exists today will be more serious in the year 2000.

Many important changes in dental education in the coming decades will link dental schools closer and closer to their universities, and programs in dental education will become more and more dependent upon other university disciplines.



Dr. Morris

* The full text of Dr. Morris's address was published in the May, 1971 issue of the Journal of the American Dental Association, Vol. 82, pp. 954-964.

I do not believe violence will be an overriding issue on our campuses at the turn of the century. As a matter of fact, our present pre-occupation with violence will be short lived. This is not meant to imply that campuses will not continue to be foci of political and social activism. Nor can I be optimistic that our universities will cease to be in conflict with society at large. As Clark Kerr has said, the campus is more central to society than ever before. It is the center for new ideas, and new ideas are often disturbing.

One of the most predictable factors in higher education's future is that the system will be required to accommodate a massive increase in students. There is little doubt that education will be by far the largest industry in the United States at the turn of the century. Since, in my opinion, dental schools are not going to share proportionately in the predicted increase in student enrollment, dental educators will be selecting students from an expanded pool of applicants. Students entering dentistry in the year 2000 will possess a level of educational sophistication far beyond that of our present students. High schools and universities will have introduced flexibility into their four-year programs to permit various kinds of acceleration of bright students. Consequently, it will be common to find students with only one year of "formal" college who are perfectly capable of negotiating the dental curriculum.

There are trends which lead me to predict that, by the turn of the century, there will be complete unionization of faculties of higher education in America.

Management of all personnel groups within the University is destined to become an increasingly-complex and difficult task. Union demands, plus the necessity of complying with new and complicating Federal and State legislation, will result in university administrators withdrawing, where possible, from the direct employer role. The obvious question will develop: "Why should we be in the food service, and maintenance business?" In the future, universities will contract with outside agencies for these services.

There will follow an application of this principle in the area of educational programs.

It should be noted that providing instruction beyond high school is not today the exclusive province of colleges and universities—industry, the military services, TV stations, and publishing companies are all in the act. I predict, over the next thirty years, private industry will enter the field of higher education in a big way. Using highly-trained personnel, and capitalizing on the latest developments in the fields of television and computer-aided instruction, companies will be packaging large segments of the university curriculum.

I give considerable emphasis to predicted changes in higher education because of what I regard to be their important and unavoidable implications to dental education.

It is my opinion that, thirty years from now, practical examinations will have been discarded from State Board examinations. As a result of much closer cooperation between State Boards and dental schools, practical examinations will be recognized as an unnecessary step in measuring a recent graduate's fitness for practice. This change in attitude will coincide with a growing awareness that patients whose dental care is financed through third parties will simply not be available for examining procedures.

While National Board examinations will largely supplant examining procedures at the state level, they will not totally replace them. Most State Boards will continue to give a one-day, written examination and thereby discharge their responsibility under local statutes. While total reciprocity between states will not be realized, cooperative arrangements on a regional basis will greatly increase the potential mobility of dental health personnel.

In the year 2000, State Boards of Dental Examiners will be almost totally preoccupied with periodic re-licensure procedures whereby dentists in practice over five years will be re-certified as eligible to receive third-party payment for

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Dentistry in the Year 2000— Community Dentistry

(An abstract)*

*Clifton O. Dummett, Professor and Chairman, Department of Community Dentistry,
University of Southern California*

Population, political power, poverty and pollution are among the most significant issues which were widely examined in the fabulous sixties, and are looming as the directional determinants of the social seventies.

POPULATION

The need for more dental professional manpower is dire and imminent. Solutions to the problem have included shortening the time of preparation, creation of professional hierarchies, experimentation with character of practice and the delivery of dental services, and many other innovations. As yet, none has been completely successful in satisfying projected health needs.

Community dentistry has been supporting extensions in the use of auxiliary personnel, and will probably do so more intensively in the future.

Pressures will be brought to bear on the profession to have the dental hygienist effectuate a number of procedures in addition to those which she is legally expected to accomplish at present. There have been suggestions about her performing routine operative procedures, administering general anesthesia, and rendering needed periodontal care.

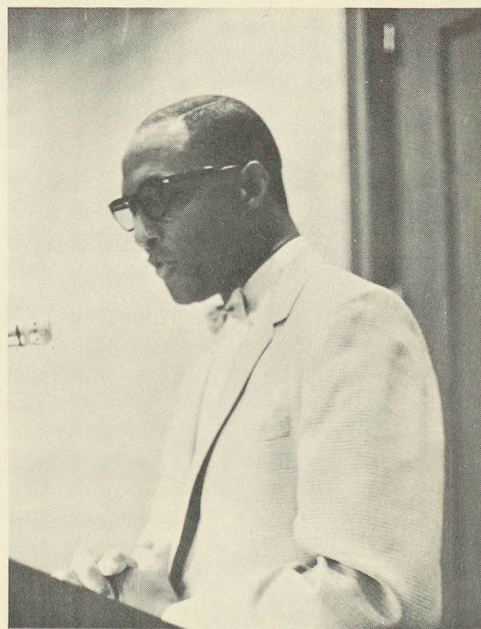
It is not too difficult to imagine that the dental hygienist of the future will be the dental health education specialist with responsibilities for informing the public and extra-professional personnel about dentistry, its philosophies and functions.

Of specific benefit to dental practice would be the shorter trained, more clinically

oriented, and better utilized prophylactic technician.

There have also been suggestions about new duties which the dental assistant would perform, such as making study casts and roentgenograms, polishing restorations, placing of rubber dams, and inserting temporary filling materials and periodontal dressings.

An additional member of the auxiliary team is the dental health aide who can contribute especially in the disadvantaged communities, but should not be limited to these environments. While at the Watts center, the author learned just how effective health aids could be. These persons were indigenous to that community, and acted as intermediaries between the community and the health center.



Dr. Dummett

* The full text of Dr. Dummett's address was published in the February, 1971 issue of the *Journal of the American Dental Association*, Vol. 82, pp. 280-185.

POLITICAL POWER

By the year 2000, there is a great likelihood that even more power will be vested in the federal government. It has been confidently predicted that the nation's economy will be directed by the trade unions, management and the government, with the last assuming the most powerful role. The philosophies of community dentistry have been responsible to a great extent for publicizing and stimulating an appreciation of governmental relations. During the next thirty years there will be complete acceptance of the fact that among the subject matter areas for training dentists will be social welfare, political science, American culture, economics, human values and motivation, personality development, government organization, health legislation, methods of financing dental care, systems for the delivery of health care, biometry and epidemiology. This will mean a complete repudiation of dentistry's formerly self-imposed insularity.

POVERTY

In the year 2000, the chances are that poverty and its accompaniments will still be here.

It is hoped, however, that there will be a substantial change in the attitudes of health personnel in preventing sickness among the population in general and the poor in particular. Preventing illness will be financially rewarding to private practitioners as it is not now under either private or federal health plans. There have been discussions concerning federal aid for physical examinations of which oral examinations are an integral part. This is a first step in preventive and community health. As an integer in the provision of health, dentists will have to become competent in providing comprehensive, high quality, preventive and curative health treatment on the basis of need, and this means care afforded for special groups in clinics, hospitals, neighborhood health centers, group and specialty practices.

The consequences of failure or refusal to recognize these indications, are disturbing to contemplate and it is possible

that physicians, dentists and paraprofessional personnel will find themselves subjected even more than they are at the present, to many of the sincere but nevertheless inadequate judgments of men and institutions, less knowledgeable about matters of health, disease and disability.

Over the years there has been provider insensitivity to the social issues in health. Dentists have been in the forefront of this indifference and have contributed their fair share to the apathy which first permitted the federal government to intervene. Increased federal input in medical care will dictate even more federal intervention.

Many more Americans are demanding dental care today than in 1940. Even though the various types of oral health services presently being rendered are likely to change somewhat in the future, the new demands for mainstream dentistry will have added significantly to costs that have already been escalating. Compelled to increase patient loads, dentists, like other health personnel, have increased the costs of care and indulged in other expensive practices in order to stem the tide of overdemand.

There will be a prodigious growth in the number of plans and programs to help people withstand the costs of health care. Prepaid dental programs are most popular at present, and are all designed to assist families in more easily carrying the economic burden of their dental care. National Health Insurance Programs have been promoted and chances are that future programs will have found the means of covering all citizens without individual limit over the entire range of health services, including dental services, nursing home care, psychiatric treatment and pharmaceuticals. The fault with many existing programs and legislative provisions is that so often dentistry has been excluded. The committee of 100 for National Health Insurance recently proposed a new health plan to cover all Americans and this plan did include dental care for children up to age 15 at the start of the plan, with an increasing eligibility age each year until all age groups are included.

Howard R. Raper: Dental Pioneer

Paul Barton, Professor of Community Dentistry and Journalism

The occasion was a dental society dinner some years ago, and after assuring everyone that the speaker of the evening needed no introduction, the master of ceremonies set out to provide quite an elaborate one. He declared that the speaker was the author of the book *Man Against Pain*, a landmark work on the history of anesthesia, and that many years earlier he had led the way in persuading dental schools to teach the subject of radiography. In collaboration with the Eastman Kodak Company, he went on to say, the speaker had introduced the interproximal bitewing examination in 1925, and he had been the major influence in making X-ray diagnosis a part of general practice.

In solemn tones (but with a twinkle in his eye), the M.C. then let fly with the following:

"Our speaker has written more, published more, lectured more, and just plain talked more on the subject of toothache than any other man, living or dead. He will now address you on . . . I have not been advised on the subject matter, but I suppose it will be TOOTHACHE."

That speaker was, of course, Dr. Howard R. Raper, a pioneering force in dentistry and one of the most illustrious alumni of the Indiana University School of Dentistry.

Reporting on the incident later in his *Dental Survey* column, Dr. Raper noted that he knew he was being kidded by the M.C., an old friend, but also that the offbeat introduction had enlightened him about himself. He wrote: "Although I had never thought of it, I suspect that maybe I have talked more about toothache than anybody else. If I have, one reason is that I have had so little competition. It is easy to establish a record when the competition is weak."

In Dr. Raper's opinion, the weakness of the competition is due to the fact that the dental profession has placed so much

emphasis on the presently unattainable goal of preventing all dental caries that the realistic and attainable goal of preventing virtually all toothache by timely diagnosis and treatment of caries is seldom even mentioned in dental health education material or elsewhere. More on this later.

Today, at the age of 84, Dr. Raper lives in what appears to be a very active retirement in Albuquerque, New Mexico. He and his lovely wife, Thelma, reside in a trim, one-story, adobe-style stucco house on a quiet street a mile or so from downtown. A spacious workroom at the rear of the house is furnished with two large desks, half a dozen tall green file cabinets, a ponderous old office typewriter in mint condition, many books, photographs, and plaques, and a diploma from the University of New Mexico, which Dr. Raper received when the University conferred the Doctor of Laws degree upon him in 1956.

Dr. Raper spends several hours in this workroom most days, reading and writing and in general seeking to advance the campaign against toothache through correspondence and through strategy sessions with like-minded visitors. It should be noted that not everyone shares his views regarding the direction that dentistry's educational programs should take. There have been some crisp exchanges on this topic, and Dr. Raper points with a wry smile to a file drawer labeled "Rhubarbs."

This almost incredibly productive career began on October 7, 1886, when Howard Riley Raper was born in Chillicothe, Ohio, the youngest of seven children of a newspaper editor and his wife. Dr. Raper was the only one in the family who didn't go into newspaper work in some form, but even so the family's journalistic background exerted considerable influence upon him. For one thing, he became and continues to be one of the most lively and articulate writers ever to grace the dental profession or any other. His column "As I See It," was for many

years a popular feature in *Dental Survey* and he has contributed to numerous other publications.

In addition, Dr. Raper feels that the journalistic atmosphere in which he grew up had a lot to do with the development of a strong sense of public responsibility.

"Around the house there was always a lot of talk about politicians and what they were doing or not doing," Dr. Raper recalled not long ago. "As a newspaper editor my father was always interested in what was right for the public, and that idea has always guided my own thinking. For example, when I was teaching X-ray diagnosis in Indiana Dental College, I might have been satisfied to let it go at that, if it hadn't been for my family background. As it was, though, I felt that I had the responsibility of trying to get it taught in other schools too. I knew I had an obligation to the people."

Despite his later achievements as a dental student and professor of dentistry, Dr. Raper had an inauspicious beginning in school. In fact, he wanted to quit grade school, but his mother told him he would have to go to work if he did. He recalls: "I went down to the shoe factory and got a job on the production line. It lasted 10 days, and that is where I learned to swear." Later, however, he got a part-time job from a local dentist, sweeping out the office, mixing plaster, etc. It captured his interest and eventually changed his life.

Dr. Raper was a member of the class of 1906 at Indiana Dental College, and ranked at the top of his class for all but the last semester, when he was beaten out by two points. After serving as an intern at a state hospital and practicing over the winter in Geneva, Indiana, he joined the faculty of the dental school and continued there until 1917, when he moved to New Mexico for reasons of health. At the school in Indianapolis he carried out various instructional assignments in Operative Technique, Materia Medica and Therapeutics, and Radiography. For the last three years of his service there, he also held the administrative post of junior dean.

In 1910 Dr. Raper became the first to introduce a course in dental radiography into a dental curriculum. Nearly 50 years later, Dr. LeRoy Ennis of the University of Pennsylvania asserted in an address at the Centennial Meeting of the American Dental Association (September, 1959) that this had been the beginning of "the most important advancement in the field of X-ray." Dr. Ennis also praised Dr. Raper for "his constant pressure on the Institute of Dental Pedagogics that finally resulted in what we have today,—the teaching of dental radiography in every dental school in America."

Dr. Raper published an article in *Oral Surgery, Oral Medicine, and Oral Pathology* in January, 1953, which noted that he took off enough time from college work in 1915 to open an office at 506 Hume-Mansur Building and began a practice devoted exclusively to dental radiography. He wrote:

Although the office practice grew rapidly, I still gave more than half my time to college work; and my experience as a radiodontist was influencing my teaching. By about 1914 or 1915 I was commencing to expound what was, for its time, a radical opinion. I was telling my students that, "there is no satisfactory solution to the pulpless tooth problem, except along the line of preventing pulpless teeth." And that, to this day, remains the most important thing I have to say on the subject of dentistry.

As part of his trail-blazing in radiography, Dr. Raper published his text *Elementary and Dental Radiography* in 1913, with a second edition in 1917. Products of his research in this field included the Bite-Wing Film Packet and the Raper Angle Meter.

One of the most influential of his many articles was "How to Prevent Toothache." Originally published in *Hygeia* in 1932, it was reprinted as a booklet by the Eastman firm and millions of copies have been distributed. It has been out of print for some years, but a new edition is planned.

Among Dr. Raper's many honors are the Indiana University Distinguished Alumni Service Award, the Callahan Medal from Ohio State University, and

the "Dentist of the Half Century" Award, presented by the New Mexico State Dental Society in 1950.

Although he is obviously best known for his contributions to dental science, Dr. Raper likes to think of himself also as a "publicist." He believes that making accurate information on dentistry widely available is essential if the public is to be served properly. In particular, he feels that the straight facts about the prevention of caries and the prevention of toothache should be made known.

In all the fanfare that has accompanied the campaign for prevention of caries, he believes that the public is likely to become confused. He put it this way recently:

If and when our methods of preventing dental caries become effective enough to prevent all decay for the average person, we may then rely on this way of preventing toothache. However, for the present, the best we are able to do is to lessen the number of cavities, not prevent them altogether. Ninety-five per cent, or more, of people still have varying numbers of cavities, in spite of our strenuous efforts at prevention. How effectual prevention of caries may become in the future, as a means of preventing toothache, remains to be seen. For the present, the average person dare not depend on prevention of caries alone as a means of preventing toothache.

One of the first steps toward teaching the prevention of toothache is to let people know, in no uncertain terms, that dental caries is a treatable disease; that it can always be arrested and often cured by filling. The prevailing opinion is that the disease is not treatable, never curable; and that the *only* way to control it is to prevent it.

The concept that prevention is, under all circumstances, *always* better than cure is a false one. To the extent that it is effective, and for those who have not yet developed the disease, prevention is indeed better than treatment. But for those who already have the disease, treatment is more important. Couple that statement now with this one; over ninety-five per cent of people remain susceptible to and fall victim to dental decay. Take these two facts into account and we commence to realize how important treatment of caries by filling is to dental health.

Dr. Raper is much concerned about the slighting manner in which the filling of teeth is often dismissed nowadays as "old-fashioned drill'em and fill'em" den-

tistry. He believes also that organized dentistry is at fault for not producing and distributing lay educational materials that will appropriately emphasize the importance of operative dentistry. In particular, he contends that the filling of teeth should be upgraded in the minds of profession and public alike.

As an illustration of how a dental practitioner can lose perspective, Dr. Raper once wrote about a young dentist who remarked that he had just had his best month. "It was all good work," the young man said. "Nothing trivial—no fillings, no prophylaxes, no pyorrhea treatments. Just dentures and bridges."

To counter such a viewpoint, Dr. Raper believes that strong departments of Community Dentistry should be developed to instill in the student a sense of his responsibility to the public. Further, he feels that in seminars or other educational sessions concerning dental care, laymen (such as top-ranking public relations experts) should be on hand to represent the public. He has said: "One of the great deficiencies of medical (including dental) education is that the public takes no part in it. Without this balancing force, physicians and dentists have been known to become so engrossed in their own interests that they forget all about the rights and interests of the people whose welfare they are supposed to serve."

Dr. Raper also thinks it would be a fine idea, in this age of specialization, to have a practice "limited to the preservation of teeth." As he visualizes this, it might be a group practice, with a clinic director (perhaps a specialist in preventive dentistry), a radiologist, an operative dentist, a periodontist, an endodontist, possibly a pedodontist. Patients requiring oral surgery, dentures, or bridges would be referred elsewhere. The idea would be to emphasize the saving of the natural teeth.

To present his views on the various lines of defense against toothache and loss of teeth, Dr. Raper has developed a chart, a copy of which accompanies this article. Following up on the military parallels in his chart, he notes: "Even a casual study of this chart reveals a serious defect in tactics: Our strongest Line of

Read chart left to right.

CHART I: FIVE LINES OF DEFENSE

Ways and Means of Preventing Toothache and Loss of Teeth A Study in Strategy

Facilities for Saving Teeth The Lines of Defense

ASSESSMENT OF STRENGTH OF EACH OF THE LINES OF DEFENSE

LINE 1

PREVENTION OF CARIES

Professional Care: Periodic Prophylaxis.
Home Care: Regular Brushing, Diet
Fluorine Therapy: Local and Systemic.

Capable of reducing the number of cavities, but not a dependable defense against toothache and loss of teeth. Hopefully, our strongest line of the future. Not strongest today.

LINE 2

TREATMENT OF CARIES PREVENTION OF TOOTHACHE

Early Diagnosis: Regular Bitewing Exams.
Coronal Surgery (Cavity Preparation)
Lost-Tissue Replacement (Filling)

Strongest, most reliable of the Five Lines of Defense. Effective in preventing advanced caries, pulp and periapical disease (toothache), foci of infection, risk of metastatic complications, and loss of teeth.

LINE 3

TREATMENT AFTER TOOTHACHE

(Endodontics)

Surgery: Intradental and Periapical.
Therapy: Local and Systemic

An effective defense against loss of teeth after toothache. However, due to technical complexities and cost of treatment, limited in its capacity to save great numbers of teeth.

LINE 4

PREVENTION OF PERIODONTAL DISEASE

Professional Care: Periodic Prophylaxis
by Dentist and/or Hygienist.
Home Care: Brushing, Massage, Diet, Mild
Therapy.

An important line of defense, rewardingly effective for faithful patients not too handicapped by susceptibility. Always helpful, but less predictably effective than Line 2.

LINE 5

TREATMENT OF PERIODONTAL DISEASE

Professional Care: Early Diagnosis,
Periodontal Surgery, Medication.
Home Care: Special Brushing, Massage,
Diet, Mild Therapy

Effective in favorable cases for faithful patients, if treatment is maintained. Despite its great value to afflicted patients, definitely weaker than Line 2 as a means of prolonged dependable prevention of the loss of teeth.

SUPPORTING FACTORS RESEARCH AND LAY EDUCATIONAL PUBLICITY

Vital to All Lines of Defense

Research: Becomes an active factor in defense only when it succeeds in delivering useable new knowledge or products.

Publicity: Becomes an active factor only when its teaching succeeds in providing a motivational guide to action.

Research: Great potential, but uncertainly productive. **Publicity:** Presently, as a factor of defense against loss of teeth, a potent but ineptly used asset: misdirected, out of balance and misleading, largely in consequence of giving relatively excessive attention to Line 1, while neglecting other lines, especially Line 2.

Defense (see line 2) is the one least publicized in our lay educational publicity and most neglected in our thinking and research endeavors. Obviously the first step in readjusting strategy should be correction of this fault."

* * * * *

A visit with Dr. Raper is an instructive and memorable experience. Yet it is hard to find the right words to describe this remarkable man and his prodigious accomplishments. It may be that the following citation which President Herman B Wells read in 1957 as he presented Dr. Raper with the Indiana University Distinguished Alumni Service Award says it best:

TO HOWARD RILEY RAPER

Scholar, teacher, and pioneer in uncharted paths of dental radiography; faculty member of the Indiana Dental College in the early days, beginning his dedication to the study of radiodontia and later bringing into being invaluable techniques and methods through admirable development of resources born of his creative mind and relentless effort; scientist honored throughout the field of dentistry for his knowledge so well expressed in his writings which bring the fruits of brilliant research to the hands of all who will use them; a friend returned, whom we honor for his gifts to mankind and for his long love for this University.



The Achievement Medal of the Alpha Omega Fraternity, bestowed in recognition of outstanding contribution to Dentistry, was awarded to Dr. Maynard K. Hine, Chancellor of Indiana University - Purdue University at Indianapolis and a Past President of the American Dental Association. Illness prevented Dr. Hine from attending the Fraternity's annual convention in New Orleans and the award was accepted on his behalf by Dr. Harry Klenda, Immediate Past President of the American Dental Association.

Chancellor Hine's acceptance address was delivered to the convention by Dr. Klenda and was carried over a special telephone hook-up to the hospital room in Indianapolis where Dr. Hine and his family were gathered.

The award was subsequently presented personally to the Chancellor by alumni and undergraduate members of Alpha Omega in Indianapolis.

Those present at the ceremony were: Seated left to right: Dr. Samuel Patterson, Chancellor Hine, Martin Lebowitz; Standing left to right: Clark Galin, Dr. Myron Kasle, Leonard Scott, Allan Gross, Dr. Stephen Bailie, Dr. Charles Redish.

Chancellor's Comments...

*Maynard K. Hine, Chancellor,
Indiana University - Purdue University at Indianapolis*

In the complex and busy process of providing needed and desired public higher education, research, and service, it often becomes difficult to consider both the forest and the trees. The "trees" represent worthy programs with persuasive supporters, and the "forest" our entire conglomerate of educational programs. The challenge is to perceive and implement effective and rational ways in which varied programs can fit into the larger institutional framework. Some simple yardsticks for determining priorities would be welcomed, at least by administrators, but the dynamic and socially critical nature of our shared mission rules out the simplistic.

If one were to single out a major characteristic that marks both the School of Dentistry and Indiana University - Purdue University at Indianapolis, an appropriate choice would be growth. Higher enrollments, added facilities, and related areas of expansion are anticipated throughout the institution. For IUPUI, an enrollment of some 15,000 is expected to rise by 1,500 in each of the next two fall terms. The School of Dentistry, with an enrollment slightly over 600, projects a climb to nearly 700 by the fall of 1972.

The faculty and staff of the Dental School are relishing the thought of completion of the new addition to their building. And it is significant to note that this facility has been designed so that future additions can (and no doubt will) be made.

Attention should be called to the fact that much is happening *around* the school. The "Downtown Campus" and the Graduate School of Social Service have moved into three new buildings to the east, and the Indianapolis Law School has settled into its new home immediately southeast of the three-building complex and the parking lots of these buildings touch each other. The general character of the campus is changing, as faculty and

students representing a variety of disciplines and professions join the congregated enterprise. On the drawing boards is a new Science-Engineering-Technology Building, which will enable IUPUI to bring a number of Purdue degree programs to the University Quarter Campus. Planning also is well advanced for new facilities that will accommodate student services and more classrooms and faculty offices. Much of the area south of Michigan Street has been converted into parking lots.

North of Michigan Street, the pace of physical progress is also impressive. A major addition to Riley Hospital for Children will be dedicated in late April. This will substantially enhance our capacities for pediatric care and research. This facility includes a mothers'-care pavilion, rooms for numerous out-patient clinics, and space for 135 inpatient beds. Construction of the \$22-million second phase of the University Hospital is to begin soon, adding a six-story service, clinic, and education wing, and an underground X-ray therapy and isotope unit. Both of these projects are parts of longer-range development programs. To assure adequate support for the State-wide Program for Medical Education, a new addition to the Medical Science Building has a high priority for the immediate future.

Along with this bricks-and-mortar advancement has come the approval of more than a dozen new degree programs during the past year. The IUPUI Admissions Director reports an upsurge in applications, and he predicts that this fall's freshman class in the baccalaureate programs will include a number of top high school seniors from the Indianapolis area. And, with four-year programs replacing the former two-year "extension" operations, many students will be at IUPUI twice as long. Having junior and senior undergraduate classes for the first

time will be reflected by further enrollment increases.

These are a few examples of our growth that can be documented. Size, of course, is not to be equated with quality; but we do have opportunities to strengthen programs as we add new faculty and staff, broadening and deepening the kinds of expertise and concern that a fully instrumented institution of higher learning needs. In the emerging divisions of IUPUI, we are recruiting with these general objectives in mind.

Finally, the products of all this effort—our alumni—are also growing in numbers. Last June, some 1,600 degree recipients took part in the first IUPUI Commencement. This June, the total will be above 1,800. Since the Dental School contingent will include 100 candidates for the D.D.S., lilac hoods and tassels will be prominent in the academic procession.

Alumni are invited to attend the ceremony, which will take place at 2:30 p.m. Friday, June 11, in the Indiana State Fair Coliseum. See you there?



One of the first Military Community Oral Health Managers to be commissioned in any branch of the Armed Services is 2nd Lt. Martha LaVerne Kelsey of Monterey, Indiana, second from left.

Major General Robert B. Shira, Assistant Surgeon General of the Army and Chief of the Army Dental Corps, administered the oath of office to Lt. Kelsey and three other dental hygienists who are participating in a new program of broad and imaginative expansion of the duties and responsibilities normally assigned hygienists.

Lt. Kelsey received her Bachelor of Science degree in Public Health Dental Hygiene from Indiana University, and entered the Army last year. She attended the officers' course at the U.S. Army Medical Field Service School.

The oral health managers will assist dental officers in a wide area of activities, to include the conducting of community aspects of the Army's preventive dentistry program.

Lt. Kelsey is assigned to Brooke General Hospital, Brooke Army Medical Center, Texas.

Notes from the Dean's Desk...

Ralph E. McDonald

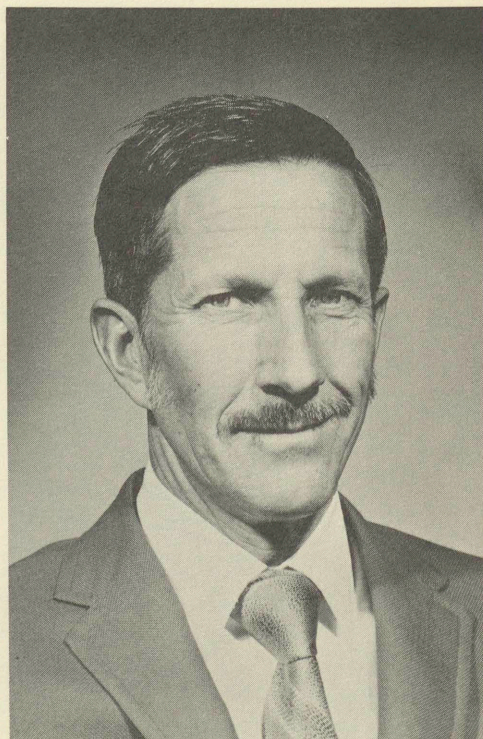
I am pleased to have an opportunity to introduce to our alumni Dr. Melvin R. Lund, our new Chairman of the Department of Operative Dentistry. We were very disappointed when Dr. H. William Gilmore announced that he wished to resign his position as Chairman of Operative Dentistry to enter essentially full-time private practice. We are fortunate, however, to have another nationally known leader in restorative dentistry join our faculty and assume the very important role of Chairman of Operative Dentistry. Dr. Lund received his predental education at Walla Walla College in Washington. In 1946, he graduated from the University of Oregon Dental School. He entered the University of Michigan Graduate Program in 1953, and received his Master of Science degree in restorative dentistry. He has been a member of the faculty of Loma Linda University School of Dentistry since 1955, and formerly held the position of Chairman of Restorative Dentistry. While at Loma Linda, Dr. Lund received recognition from the students for his excellence in teaching. In addition to his academic interests and achievements, Dr. Lund has made noteworthy contributions to international health. During the past summer and on previous occasions, Dr. Lund and his wife, Margaret, took a group of dental students to Guatemala where they provided emergency dental care and health education for people in remote areas of the country. Dr. Lund has made numerous contributions to the literature and conducted an active dental research program. We extend a warm welcome to the Lunds.

It is also pleasant to report that on January 1, 1971, Dr. Robert J. Detamore, a retired Air Force colonel, joined the faculty of the Department of Periodontics as an associate professor. He was formerly chief of dental services at Offutt Air Force Base, Omaha, Nebraska. Dr. Deta-

more is a native of Portland, Indiana, and received his Bachelor's degree from Indiana University in 1943. He holds the D.D.S. from Northwestern and received specialty training at Tufts and at Wilford Hall U.S.A.F. Hospital, Lackland A.F.B., Texas. He is a diplomate of the American Board of Periodontology.

Among his military honors, Dr. Detamore has been military consultant to the Surgeon General, U.S.A.F., on periodontics. His major publications include "Correlation of Histologic and Clinical Findings in Periodontal Treatment" (*Journal of Periodontology*, July 1960) and "Prevention and Control of Root Sensitivity" (*Journal of the Southern California Dental Association*, November 1965).

Dr. Detamore and his wife, Helen, are the parents of two children.



Dr. Melvin R. Lund

Two of the long-time members of the Dental School family have chosen to retire at the end of the present school year. During the past 30 years, students of the School of Dentistry have had the opportunity to study dental anatomy and in more recent years, oral diagnosis under the guidance of Dr. Richard A. Misselhorn. Dr. Misselhorn was born and raised in Kendallville, Indiana, and he is very proud of his Hoosier heritage. He received his A.B. degree in zoology from Indiana University in 1929. During the depression years, when it was difficult to find employment, instead of playing Chinese checkers and bridge while he stayed at home, Dick learned to whittle little wooden figurines and decorate them with home-made colors. Many of the students will recall seeing these wonderful little wood carvings that Dick has displayed in hobby shows. It was though Dean Frederick R. Henshaw's knowledge of Dr. Misselhorn's ability to carve that he was encouraged to enter Dental School. In 1937, Dr. Misselhorn earned the D.D.S. degree and entered the private practice of

dentistry in the Hume Mansur Building, where he remained for twenty years.

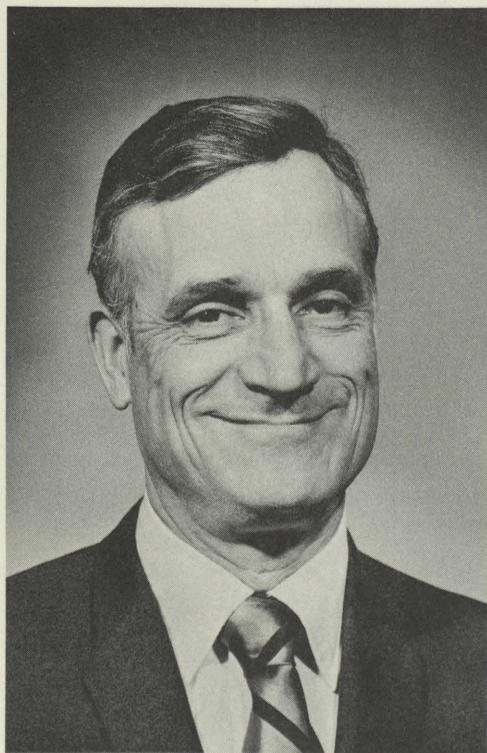
In the fall of 1941, Dr. William H. Crawford, who was then Dean of the School of Dentistry, asked Dr. Misselhorn to accept a part-time teaching assignment in Dental Anatomy, which was the only course offered during the first year of dentistry on the Bloomington Campus. For seventeen years Dr. Misselhorn made the weekly trip to Bloomington. In July, 1957, Dr. Maynard K. Hine asked Dr. Misselhorn to accept a full-time appointment as Professor of Clinical Oral Diagnosis at the Dental School. Since then, Dr. Misselhorn has played an important role in the clinical teaching of dental students.

In 1959, Dr. Misselhorn acquired twenty acres of woods and stream in Jackson County. He cut fifty oak trees and built a log cabin, just as his great-grandfather, Furrow, had done in the early 1840's in DeKalb County, Indiana. Dr. Misselhorn and his family spend many enjoyable week ends hiking throughout the state forest preserve that adjoins his cabin site.

Dr. Misselhorn has been an active member of organized dentistry and has been recognized for his scholastic achievements by being elected to Omicron Kappa Upsilon. He also has been an active contributor to the affairs of the Indiana State Historical Society and the DeKalb Historical Society. In keeping with his interest in history, Dr. Misselhorn recently contributed a rare diary for publication in the January, 1969; June, 1970; December, 1970; and, June, 1971 issues of the *Indiana Magazine of History*. The magazine is publishing excerpts from *One Civil War Diary of Curtis R. Burke*, which is an unusual example of a Southern soldier's record of his participation in the Civil War, as a member of John Hunt Morgan's raiders.

During his retirement, Dr. Misselhorn looks forward to spending many hours in the library reviewing the early history of Indiana and the Civil War.

In retrospect, Dr. Misselhorn says he has known Indiana University under five Presidents and five Deans of the Dental School. He sees great advances in the



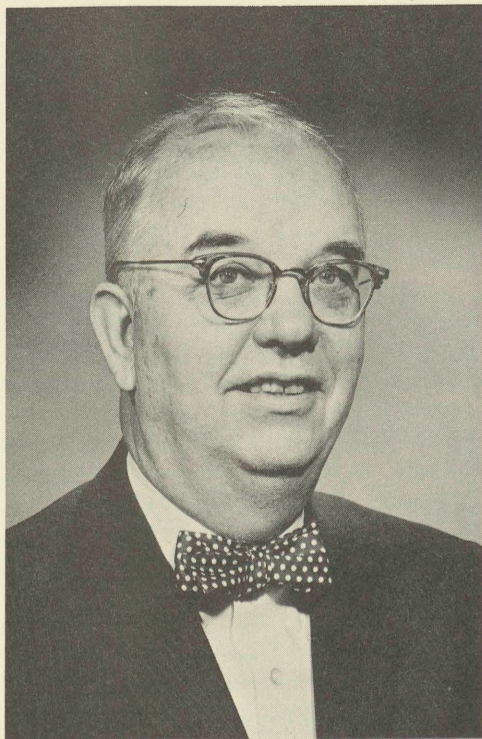
Dr. Robert J. Detamore

education of students of today. Surely, with more of them receiving a broader background in the liberal arts, today's young dental practitioners will contribute most significantly to their communities. A broad liberal education for today's dentist is essential, according to Dr. Misselhorn's philosophy.

Mrs. Cleona Harvey joined the Dental School assisting staff in 1944. She previously served as secretary to the late Herman T. Briscoe, in the Department of Chemistry, and afterward in the office of the Vice President and Dean of Faculties in Bloomington. In 1944, after being away from the University for a year, she returned as secretary to Dr. William H. Crawford, who was then Dean of the School of Dentistry. When Maynard K. Hine was appointed Dean in 1945, she became his administrative assistant and Recorder. When Dr. Hine became Chancellor of IUPUI in 1968, she stayed on to work with the Dean's office. (Editor's note: Mrs. Harvey says Dr. McDonald was really "one of her boys" since he was graduated in the class of

December, 1944, and she came to the Dental School in October, 1944.)

In 1967, she received recognition from President Elvis J. Stahr for twenty-five years' service to the University. In the same year she was nominated for honorary membership in the Indiana University School of Dentistry Alumni Association. For the past seven or eight years, Mrs. Harvey has gone to Bloomington one day a month to meet with predental students. Helping young men and women plan the course of study which would give them a good foundation for dentistry has been one of the great joys of her life. In fact, she says what she will miss most when she retires is the counseling part of her work. During the period she has served the School, 1944-1971, she has seen 1860 dental students and 547 dental hygiene students complete their educational programs. Mrs. Harvey recently stated: "Dentistry and dental education have made great strides in the twenty-seven years I have been associated with the School. I hope that I can live to see more and more improvement in the profession



Dr. Richard A. Misselhorn



Mrs. Cleona Harvey

and in our School, which is really the greatest!"

Although Mrs. Harvey's plans for retirement are not complete, she has said that she would like to continue to counsel students on the Bloomington Campus. We extend our best wishes for happiness as she leaves the Dean's Office.

* * * *

The Boards of Trustees of Indiana University and Indiana State University have recently approved a host-guest agreement that will make it possible for the School of Dentistry to offer new programs in dental hygiene and dental assisting at the Evansville Campus of Indiana State University. The programs will be similar to the programs the School of Dentistry has been offering for the past several years at Fort Wayne and South Bend as a part of a developing state-wide program of dental auxiliary education.

Plans for the Evansville program were developed by David L. Rice, Dean of the Evansville Campus of Indiana State University, Dr. Ralph G. Schimmele, Director of Dental Auxiliary Programs for Indiana University, and Dr. Clyde Parker, of Evansville, Chairman of the Dental Advisory Committee. The current plan is to



Dr. David L. Rice, Dean, Indiana State University at Evansville, and Dr. Ralph E. McDonald, Dean, Indiana University School of Dentistry, sign the Host-Guest Agreement for a Cooperative Program in Dental Hygiene and Dental Assisting Education.

accept a class of dental hygiene students and dental assisting students in August, 1971.

The Committee on Admissions in the School of Dentistry has selected a class of 120 first-year students to enter the program August 25, 1971. (A recently-approved calendar change allows for the early starting date and for the first semester to be concluded prior to the Christmas recess. The second semester will begin in January, with Commencement being held on May 21.) The increased enrollment is possible because of the promise of our new addition being ready for occupancy early in the fall of 1971.

The number of applicants for the next entering class was approximately fifteen percent greater than last year. More than 400 Indiana residents applied for admission. Seventy-five per cent of the students who have been admitted have a baccalaureate degree or will be eligible to receive the degree after a first year in Dental School.

The first year dental class includes eight women, twelve sons of dentists, and only seven non-resident students. The Committee on Admissions, under the chairmanship of Dr. Robert L. Bogan, is to be commended for their year-long activities that have resulted in the selection of another class of well-qualified students.

* * * *

Miss Joan L. Catherman, Assistant Professor and Director of Dental Hygiene Education at Indiana University School of Dentistry, has indicated that she will accept an appointment as Director of Dental Hygiene Education, Council on Dental Education, American Dental Association, on July 1, 1971. Miss Catherman will assist new schools in the development of dental hygiene programs and will play a major role in developing policy for dental hygiene education in the United States. The announcement of the new Director of Dental Hygiene will appear in the next issue of the *Bulletin*.

CONTINUING EDUCATION IN THE BAHAMAS

offered by

Indiana University School of Dentistry Alumni Association

December 2-5, 1971

FREEPORT, GRAND BAHAMA ISLAND

Educational Sessions:

Dean Ralph E. McDonald—Dentistry in the '70's
Mr. Gale E. Coons—An Influence Called I.D.A.
Dr. Robert L. Bogan—Prosthetics
Dr. Ralph W. Phillips—Dental Materials
Dr. Paul E. Starkey—Pedodontics
Dr. Henry M. Swenson—Periodontics
Table Clinics

Program cost includes:

Registration fee
Charter jet transportation economy seating, roundtrip from Indianapolis
Roundtrip transfers, airport/hotel/airport, in the Bahamas
Handling of luggage, including tips
International departure tax and Bahamas departure tax
4 days and 3 nights accommodations at the luxurious HOLIDAY INN on the beach at Freeport, share twin basis, including room tax
Two meals a day (full breakfast and table d'hôte dinner, including banquet on final night and Steak and Seafood Barbeque.)
Welcome rum swizzle party
One hour cocktail party—open bar—hot and cold hors d'oeuvres
Special green fees at the new Shannon Country Club
Free transportation to golf courses
Fully coordinated, supervised and escorted by Grueninger Travel Service

Cost for complete program: (Includes registration fee of \$50.00 per person)

* \$250.00 Individual \$475.00 per couple \$25.00 Single supplement
* Based on sharing twin room

Deposit of \$50.00 per person is necessary to guarantee a reservation. Final payment is due no later than October 15, 1971.

Deposits are refunded in full whenever cancellation is made six or more weeks prior to departure. After that time, non-recoverable payments, made to carriers, tour operators or for cables will be deducted.

CONTINUING EDUCATION IN THE BAHAMAS APPLICATION

Detach and return with check

Deposit: \$50.00 per person

NAME

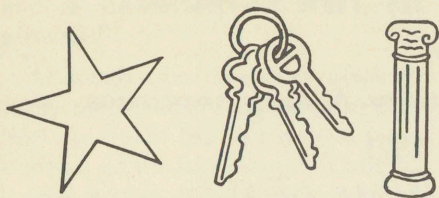
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Please make check payable to INDIANA UNIVERSITY SCHOOL OF DENTISTRY ALUMNI ASSOCIATION, and mail to Dr. Robert H. Derry, Director of Continuing Education, School of Dentistry, 1121 West Michigan St., Indianapolis, Indiana, 46202



Paul Starkey

CURRICULUM COMMITTEE ACTIVE

Early in 1970 the Faculty of the School of Dentistry adopted a Constitution and Bylaws. Shortly thereafter, in accordance with the Bylaws, the Dean appointed a Chairman of the Curriculum Committee and six additional members were elected by the Faculty. Since that time the Committee has met weekly.

For many sessions they studied our present curriculum as well as those of other dental schools. A subcommittee was appointed to draw up a document to reflect the philosophies of the committee. After its submission and amendments, the committee unanimously adopted the document and reported it to the Faculty for their information.

The document should be of interest to you and therefore it is being reproduced in this column.

Graduates of the Indiana University School of Dentistry have achieved recognition and acclaim through their skills in the art of dental practice. The training which has led to this performance, specifically the restorative techniques, appears to be at least adequate for the performance demanded of today's new graduate. In drawing this profile, however, two points may be raised:

1. Does the present system accomplish this training in the most effective way possible? There is some evidence to indicate that graduates find it difficult to apply "text-book" procedures to real-life situations, indicating a need to review both *what* we are teaching and *how* we are teaching it.
2. Does the present system reflect the demands and needs for dental care in the future? Probably the demands for dental services will be greater than those now existing. If this proves to be true, our present system of meeting these demands and needs will be inadequate. The increasing employment of auxiliaries in a variety of dental office procedures is forcing an evaluation of potential

curriculum changes for both the dentist and the dental auxiliaries in order to maximize the effectiveness of this team.

Inherent in the student's training in the skills of dentistry should be the accumulation of the experience necessary to build sound judgment. The present system of rote learning and mechanical performance discourages development of judgment and decision-making skills. Even in a group practice, which some have suggested as the mode of dentistry in the future, the individual dentist must make his own decisions regarding treatment and treatment plans. Deficiency in this area is most clearly one of how we teach rather than what.

Experience has shown that total treatment of the patient's dental needs provides the best long-range service for the patient, the optimal income/work ratio for the dentist, and most important, greatest personal satisfaction for both dentist and patient. It therefore remains an enigma why any dental teaching system that does not follow total treatment concepts could persist. The "requirement system" is ubiquitously presented to American dental students as the hurdle to overcome in order to practice and yet it has little or no relationship to the realities of dental practice. Furthermore, this system encourages the student to think of what *he* needs and to ignore the patient's needs, a situation incompatible with successful dental practice. With his thoughts concentrated on patient needs, the dental practitioner can come up with a treatment plan satisfactory to the patient's interests and budget but still employing the essentials of good dentistry.

Another conceptual problem for today's graduate is his confusion regarding the priorities of disease repair versus disease prevention. There is a growing feeling among dental educators that the public image of today's dentist is incompatible with the extent of his professional training. It seems likely that the public will continue to view the dentist as one who "treats toothaches" until the emphasis of dental practice clearly shifts to prevention. There appears to be at least two major reasons why this shift in emphasis has not significantly occurred:

1. The major emphasis in our teaching is upon repair not prevention.
2. The prevention that is presently taught emphasized the *why*, which is good, but does

little with the *how*. This latter point emphasizes a major deficit in today's graduate—the art of communicating with people. To practice prevention, the dentist must teach it to his patients and only in a total treatment environment; only then can the student evaluate and appreciate the rewards of a preventive program.

The definition of doctor is one who teaches. This above all appears to be the greatest weakness of today's graduate. The reason is simple; he is not trained in this fashion. Participation in school and community dental health programs is minimal at present which reflects a reluctance on the part of the dentist that may be due to one or more of these factors:

1. Inadequate background in the disease processes, which makes it difficult for him to teach others about them.
2. A general lack of social awareness—how his practice relates to the community.
3. The demands of a successful practice which relegate time-consuming and less remunerative activities to the background.

The first point reflects the failure to use basic sciences as the *modus operandi* for clinical four years. Furthermore, the new advances in

sciences. Genuine understanding of the disease processes is difficult enough for the student when the necessary basic science-clinical science correlations are well presented but it is almost impossible when these correlations are not made at all. Small wonder that the practicing dentist seldom calls on his knowledge in this area to explain the patient's problem. The other two points suggest that the dentist may be out of step with his own culture. To demonstrate social awareness, he must participate through organized dentistry at the local, state and national levels in the development, operation, and delivery of service in both government and nongovernment programs that involve community dental health. Only by such awareness and participation can he plan, control, and implement the dental programs as they are demanded.

Finally, the third point reflects a failure on the part of our existing curriculum to instill in the student his moral responsibility as a professional man to the public he serves.

The practicing dentist, at least of recent vintage, seems aware of the value of continuing education, but he does not always appear to recognize that everything cannot be taught in his profession may outdate him and decrease



Figure 1

Curriculum Committee Chairman Dr. Paul Starkey introducing Dr. Richard Jennings (seated at his left) to the Curriculum Committee and the Subcommittee on the Topic Teaching of Restorative Dentistry. The meeting was held at the Indianapolis Airport Hilton on March 10, 1971. Dr. Jennings reviewed the Curriculum of the University of Texas, Dental Branch in Houston which utilizes the topic approach to teaching. Dr. Jennings, a former member of our faculty, is the Chairman of the Department of Preventive Dentistry at Texas.

the value of his services. Only by continuing his professional education will he be assured of maintaining competence and proficiency. This is a most important attitude to build into the dental curriculum.

In summary, our graduate of today is well trained in the repair of dental disease but needs more training in total treatment concepts and the prevention of dental disease. A better orientation and correlation of basic and clinical science would not only improve patient treatment but would provide him with better tools to teach prevention, an essential part of his personal involvement with the oral health of his patients and his community.

It should be noted that this document was not offered to the Faculty for adoption, but rather for their information. Using this document as a basis for consideration of proposed changes in the curriculum to improve the learning experience for our students, the committee has been hard at work. It has several subcommittees working on proposals which when completed will be submitted to the Faculty for their consideration.

One subcommittee is in the process of

proposing changes which will permit far more clinical experience for the freshman student. These changes would be reflected in an appreciation of the relevance of basic science courses to clinical dentistry. They would also provide the opportunity for the freshman to feel a "part of the profession" at the onset of his learning experience.

Another subcommittee is developing a proposal for a topic approach to the teaching of restorative dentistry. Instead of letting restorative dentistry in all of its ramifications be taught by a variety of departments, with frequent repetition and overlapping, and often with a clash of philosophies, the subject would be taught under the supervision of a restorative dentistry committee with representatives from all departments concerned with the teaching of the subject. The Curriculum Committee is now considering assigning to additional subcommittees the task of proposing a curriculum for the teaching of other such topics.



Figure 2

Dr. Jennings explains the "Topic Approach" to obviously interested members of the Committees.

Dental Hygiene

Joan L. Catherman, Director

INDIANAPOLIS CAMPUS

It has been a busy and exciting year for the faculty and students. Thirty-four students are enrolled in the first year of the program, thirty-three in the second year, and five are working toward their Bachelor of Science in Public Health Dental Hygiene degree.

Two of our second year dental hygiene students received scholarships from the American Dental Hygienists' Association. Le Ann Kilgore and Linda Packard Cole received an American Fund for Dental Education Scholarship award. We are extremely proud of these girls.

During the fall two continuing education courses were offered concerning root planing and gingival curettage. It is important that graduates continue to update their techniques for preventive periodontal treatments. Dr. Marjorie Houston, Assistant Professor of Periodontics at the University of Illinois, School of Dentistry, was the instructor. Graduates of dental hygiene programs at Indiana University at Indianapolis and Fort Wayne, West Liberty State College, Northwestern University and Lakeland Junior College attended the program. Alumni from the Indianapolis campus attending this course were:

Karen McCoskey Beard, Class of 1962
Nancy Porter Blackburn, Class of 1959
Marlene Bleeke Christmas, Class of 1954
Joann Cross, Class of 1967
Sara L. Draves, Class of 1964
Karen Gable, Class of 1969
Margaret Gossweiler, Class of 1969
Janet Wulff Hale, Class of 1968
Linda Olson Monroe, Class of 1964
Ellen Jones Morell, Class of 1963
I. Kay Raag, Class of 1963
Janice Wittgen, Class of 1956

We look forward to more alumni attending future continuing education courses.

Mrs. Anita Weaver, who received her Certificate in Dental Hygiene in 1965 and her Bachelor of Science in Public Health Dental Hygiene degree in 1970, joined our faculty on February 1 on a part-time basis. Anita is a welcome addition to our faculty.

Miss Lorna Bonnet, Class of 1962, has been appointed Chairman of the Committee on Dental Hygiene Education of the American Dental Hygienists' Association. Congratulations, Lorna!

The dental hygiene capping ceremony was held Sunday, January 31, 1971, at the Union Building. Speakers for the ceremony were the two class presidents, Connie Swackhamer (Class of 1972) and Sheila Berger (Class of 1971).

They did an outstanding job.

The big event of the year was the District V Junior American Dental Hygienists' Association Workshop which was held on March 6-7, 1971 at the Poplars Hotel in Bloomington, Indiana, for students and faculty from dental hygiene schools in Indiana, Ohio, Kentucky and Michigan. The Junior American Dental Hygienists' Association members of Indiana University at Indianapolis, Fort Wayne and South Bend were the hostesses. Approximately 300 students and faculty attended a very informative week-end.

Schools represented at this workshop were: University of Kentucky, University of Louisville, Western Kentucky University, Ferris State College (Big Rapids, Michigan), Genesee Community College (Flint, Michigan), Lansing (Michigan) Community College, University of Detroit, Cuyahoga Community College (Cleveland, Ohio), Ohio State University, University of Cincinnati, Indiana University at Fort Wayne, Indiana University at Indianapolis, and Indiana University at South Bend.

We were privileged to have Mrs. Kay Gandy, President of the American Dental Hygienists' Association and Miss Barbara J. Schnurr, District V Trustee of the American Dental Hygienists' Association with us. Dr. Paul O. Walker, graduate pedodontic student at Indiana University School of Dentistry, discussed dentistry and dental hygiene in Switzerland. Dr. Victor Mercer, Assistant Director of the Division of Dental Health of the Indiana State Board of Health, discussed community dental hygiene. The students divided into groups and discussed the following topics:

1. How much chairside assisting should a dental hygienist be familiar with for her practice?



District V JADHA Workshop (left to right) first row: Jean Harris, JADHA President, IU at South Bend; Susan Pyle, JADHA Vice President, University of Detroit; Barbara Schnurr, ADHA District V Trustee; Kay Gandy, ADHA President; Sally Oyur, JADHA President, University of Cincinnati; Nancy Adams, JADHA Program Chairman, Cuyahoga Community College; Louise Sietsema, JADHA President, Ferris State College; second row: Mary Brown, JADHA President, University of Kentucky; Sandy Bradley, JADHA President, Genesee Community College; Sue Metzger, JADHA President, Western Kentucky University; Lyn Hays, JADHA Representative, Ohio State University; Pam Fryer, JADHA President, IU at Indianapolis; Shanon Richey, JADHA President, IU at Fort Wayne.

2. What techniques and visual aids are helpful for patient education in clinic and practice?
3. What are some factors governing continuing education of the dental hygienist and should it be mandatory to renew your license?
4. In what ways would you like to expand the duties of the dental hygienist?
5. What types of graduate programs should be available for dental hygienists?
6. In what ways can the dental hygienist participate in community dental hygiene and also make the public more aware of her?
7. What types of positions are available for the dental hygienist in your state and what laws are governing her?
8. What type of fringe benefits, if any, should a dental hygienist receive in practice?
9. How can military personnel who have been trained as dental hygienists in the service be utilized in civilian life?
10. What are your reasons for being a member of the American Dental Hygienists' Association?

The students presented some stimulating thoughts for discussion. There were many leaders of tomorrow in these groups. A fashion show in which uniforms were modeled from the 1800's to the 1970's was presented Saturday evening after dinner. Each school presented a table clinic. It was an informative week-end for both the students and faculty who exchanged many ideas and thoughts. The workshop will be hosted by Ferris State College in Big Rapids, Michigan next year.

The second year students are looking forward to their National Board Dental Hygiene Examinations, State Boards and entering into the practice of dental hygiene. These girls are intelligent, alert and will be great assets to our profession. Congratulations and best wishes for happiness and success to the Class of 1971!

Dental Auxiliary Program

Ralph G. Schimmele, Director

Before the snows have melted and the birds have returned from their winter haven in the South, our thoughts are already being projected into the fall semester of the 1971-72 academic year.

This year we shall have a total of seven auxiliary programs being offered at four different locations—four dental hygiene programs and three dental assisting programs.

As announced in late January by Dean Ralph E. McDonald, the School of Dentistry will cooperate with Indiana State University to offer an Associate Degree in Dental Hygiene and a Certificate in Dental Assisting at its Evansville Campus. A fifteen-chair hygiene clinic and a teaching lab-lecture room for the assisting program are currently in the planning stage. We anticipate ten students in each program next September at Evansville. The 1971-72 academic year will begin with approximately 100 hygiene students in their first year of training and 70 assisting students enrolled.

It is interesting that as more educational opportunities become available in the hygiene program, more applicants apply. Technically, there are ninety plus seats available at the four locations for the 1971-72 year. For these ninety seats, a total of 179 completely processed and qualified applications have been received. This number steadily increases each year. To demonstrate this, the most rapid growth has been at the South Bend Campus where, although the program is just entering its third year, thirty-six applications were processed for a maximum enrollment of twenty first-year students.

The year 1970-71 has been somewhat of a banner year for the South Bend Campus programs. The singular happening of a site visit for accreditation by the American Dental Association is in itself reason for hours of toil and the burning of "midnight oil." The administration,

faculty, and staff did their usual magnificent job, which resulted in a successful visit and full accreditation for both programs.

Other happenings worthy of praise in this article were two major financial contributions given by the dentists of the St. Joe County Dental Society and North Central District Dental Society. On February 3, 1971, twenty-four dentists of the South Bend area and school administrators met at a dinner in South Bend to honor "special" contributors to the Dental Auxiliary Programs at South Bend. To commemorate the event and the individual donors, a plaque was presented by Dr. M. Gilbert Eberhart, representing the North Central District Dental Society, to Dean Ralph E. McDonald, who in turn presented the plaque to Dr. Lester M. Wolfson, Chancellor, Indiana University at South Bend. At the same function, Dr. Ed Molenda, President of the St. Joe County Dental Society, presented a check



Dean Ralph E. McDonald, left, presented a special recognition plaque to Chancellor Lester M. Wolfson, of Indiana University at South Bend. Each of 26 members of the North Central Dental Society contributed \$200 or more to the Dental Auxiliary Programs at IUSB. The names of the donors were included on the plaque that was presented to Chancellor Wolfson. Dr. Gilbert Eberhart served as Fund Drive Chairman.

for \$2,000.00 to Dean McDonald to be used for dental auxiliary student scholarships at South Bend.

A two-day meeting of Auxiliary Education personnel was held at Fort Wayne in January and at South Bend in June. The group decided that more meetings of this type are essential if the programs are to be close duplicates of each other in terms of course offering and curriculum. Also by rotating the meetings to the various campuses, everyone become more familiar with the physical facilities that each program has, plus perhaps gaining a better understanding of each other's philosophies and reasons for them.

We continue to search for methods that contribute toward uniformity in course content at the various campuses throughout the State. Our methods have included personal meetings between instructors, group meetings, such as the Fall Teaching Conference, which offers us an opportunity to see our counterparts and discuss our problems at dinner or at the "Measuring Cup," and last, but certainly not least, the use of television. This past year we expanded our course offerings to include Dental Anatomy by Dr. Boyd, while maintaining our course offering by Dr. Starkey. We hope that this method of education can be expanded and used fully to the benefit of dental education.



A \$2000 check for dental auxiliary scholarships at South Bend is presented to Dean McDonald by Dr. Ed Molenda, President, St. Joe Dental Society. Left to Right: Dr. Harris, Chancellor Wolfson, Dean McDonald and Dr. Molenda.

DENTAL AUXILIARY PROGRAMS AT FORT WAYNE

Dr. Phillip E. O'Shaughnessy
Assistant Director

On January 24, 1971, twenty-one first year dental hygiene students were capped. The speaker was Dr. Roger Manges, Dean and Director of Purdue University at Fort Wayne.

At this time the second year dental hygiene students are busy preparing for National Boards, while the dental assisting students are looking toward certification.

Two dental hygienists (both graduates of our Fort Wayne program) have completed student teaching and will receive the B.S. Degree in Education with a Major in Dental Hygiene.

Both the dental assisting and dental hygiene students participated in Children's Dental Health Week. The students, along with graduate dental hygienists and dental assistants, went into the Fort Wayne public and parochial schools to discuss dental health.

On March 6-7, 1971, the Junior American Dental Hygiene Association Workshop was held in Bloomington, with Indiana University acting as host for the dental hygiene schools from the District V area. One hundred per cent of each class participated in the program.

On May 14, 1971, both dental hygiene and dental assisting students will be bussed to Kalamazoo and given a tour through the Upjohn Drug Company.

So far this year our nineteen second year dental hygiene students have seen 1,376 patients in the clinic and 248 on outside assignments for a total of 1,624 patients, or over 85 patients per student.

Our dental assisting students participated in the Penny Carnival at the Fort Wayne Campus and walked away with a trophy for the most enthusiastic booth.

(Continued on page 69)

DENTISTRY — CLASS OF 1971

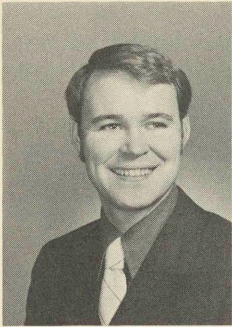
Looking backward over the past four years of dental school recalls the many vivid and varied impressions forever established in our minds. The letter of acceptance to dental school, the welcome we received during our first registration, the impressions of our basic science courses—all remain very clear to us.

We remember the first technic courses; the plaster teeth, wax teeth, gold teeth, porcelain teeth, and denture teeth; we recall preparing teeth, restoring teeth, breaking teeth, and the carving of alloys beneath our desk with ever watchful eye upon the instructors. We recall the crowns and bridges that did not fit, the solder that wouldn't flow, the frameworks that did not fit, the plaster that set too rapidly, the dentures that clicked, and the pulps that bled. Yet with all the difficulties and disappointments, we somehow managed to complete the requirements and sighed with relief at their completion.

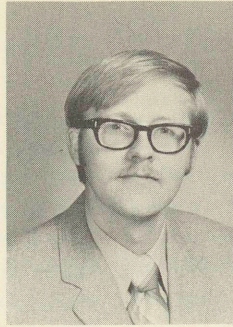
Four years passed very rapidly, with graduation upon us before we realized it, and state board examinations were over. Many entered private practice, several entered military service, and some are continuing their education in dentistry in various specialized fields. Whatever our personal pursuit, we have these memories to recall when we sit down after a trying day and mentally play "Nostalgia."

Russ Blair

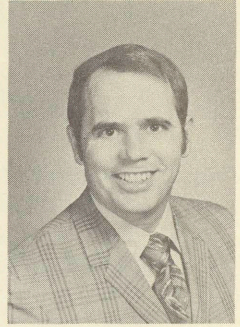
President, Class of 1971



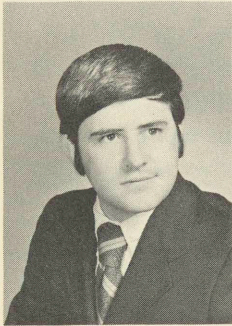
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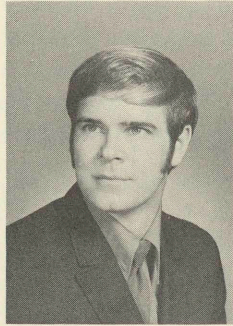
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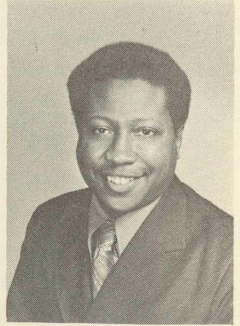
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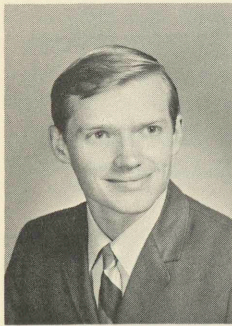
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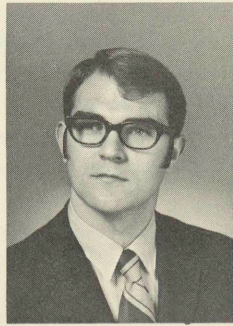
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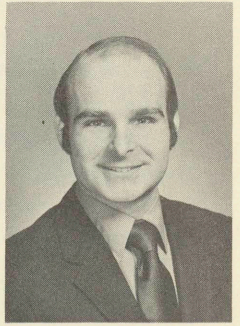
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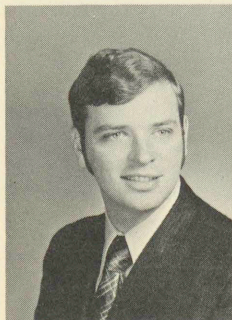
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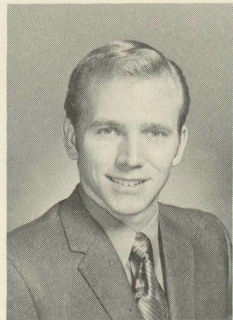
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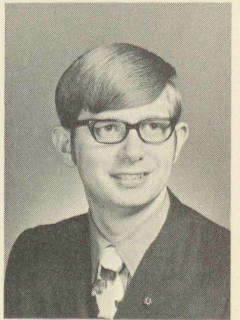
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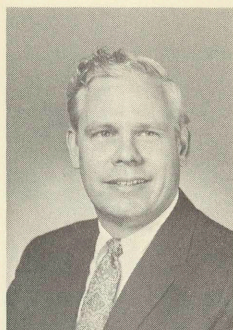
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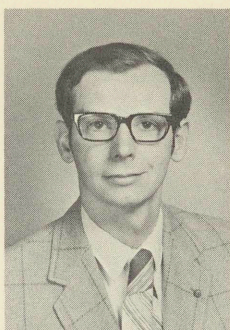
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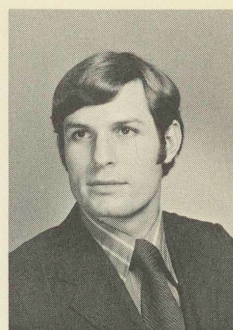
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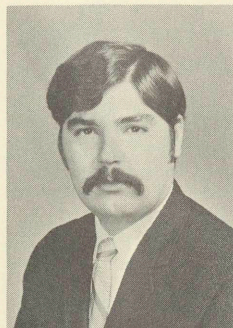
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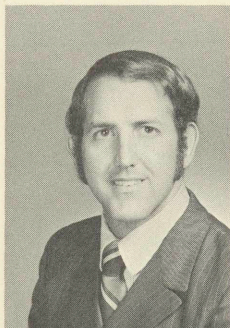
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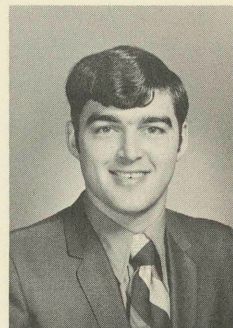
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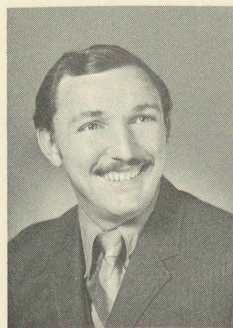
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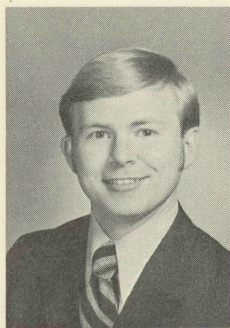
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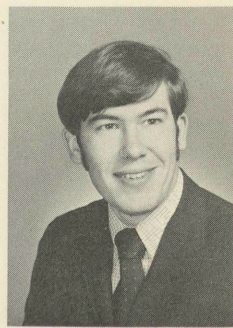
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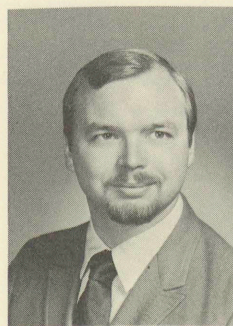
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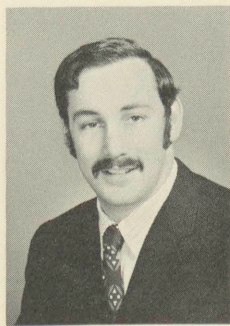
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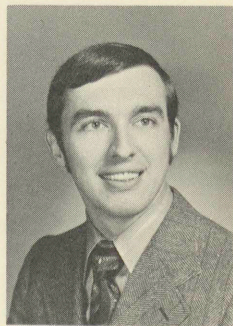
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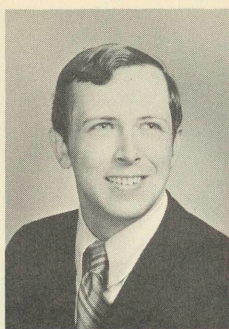
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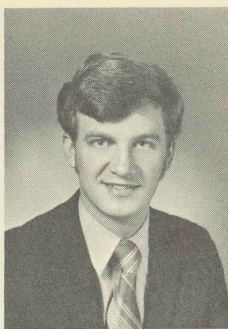
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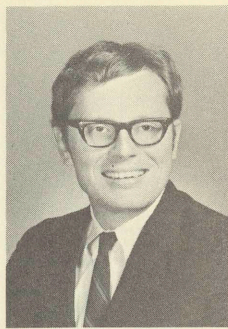
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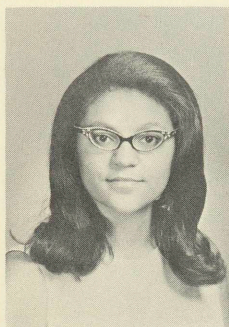
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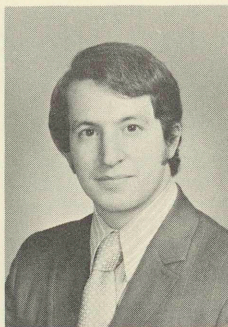
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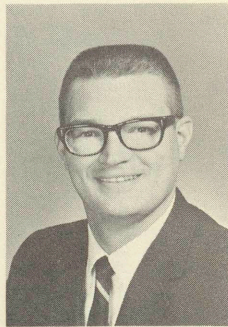
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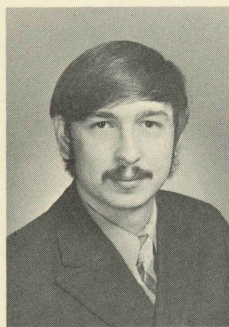
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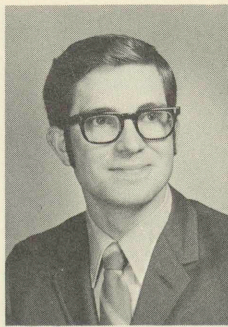
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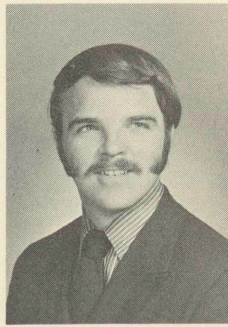
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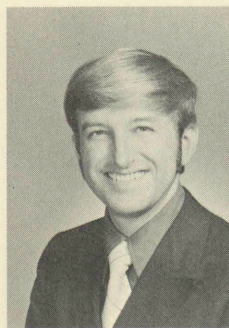
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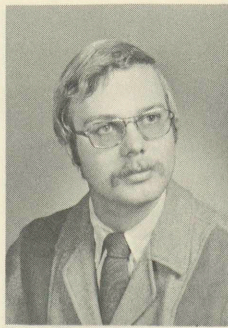
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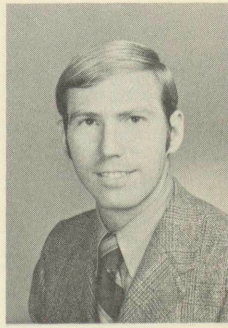
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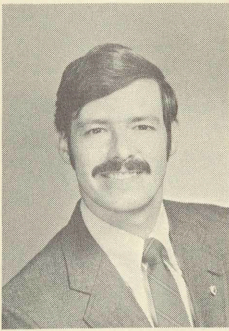
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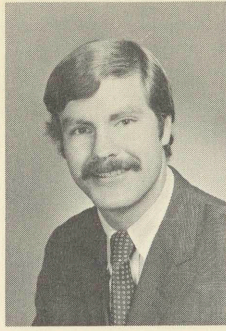
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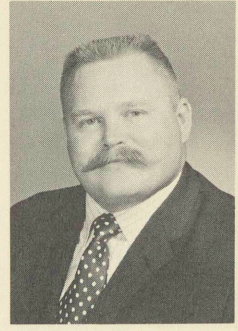
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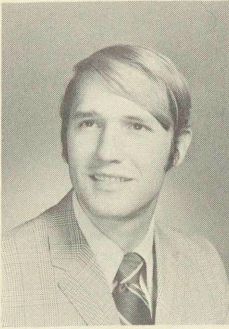
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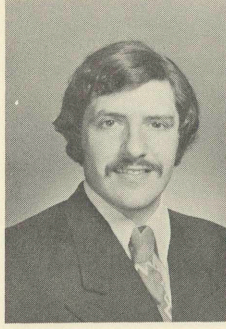
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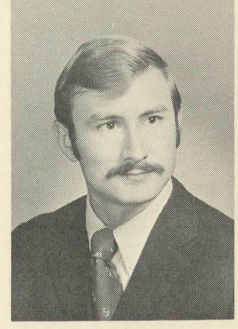
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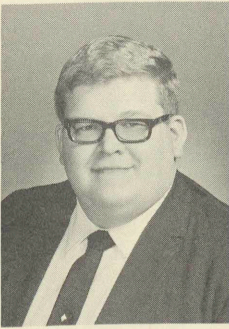
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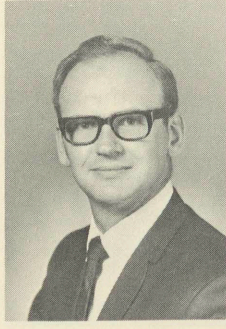
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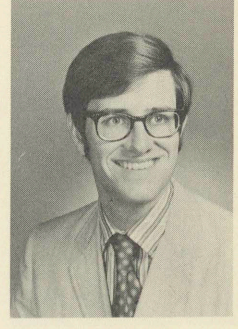
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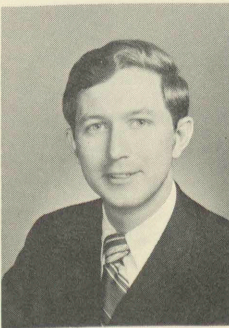
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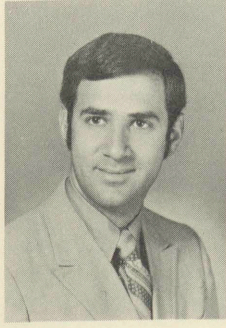
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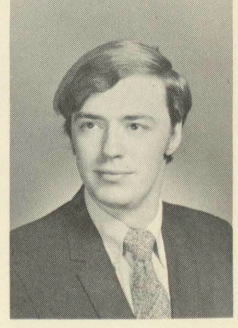
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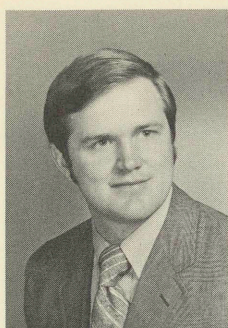
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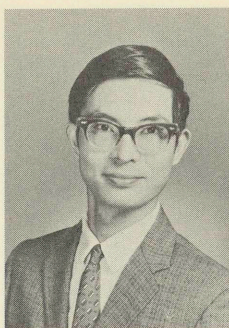
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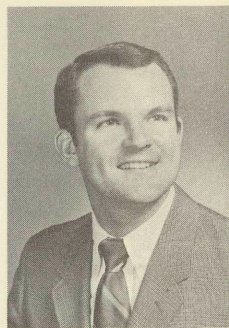
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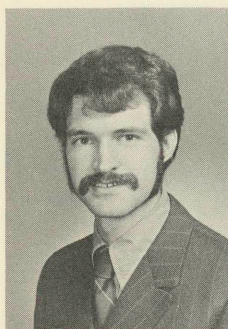
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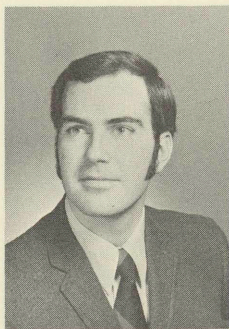
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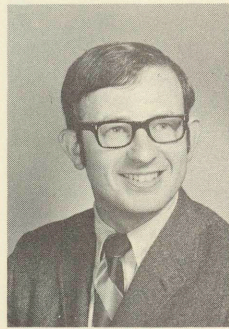
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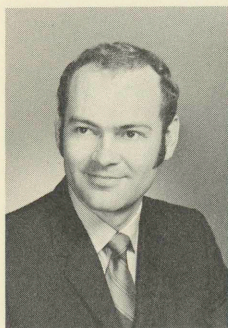
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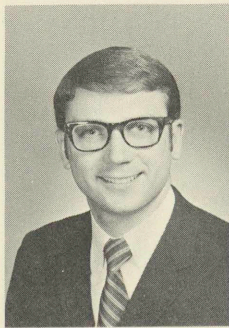
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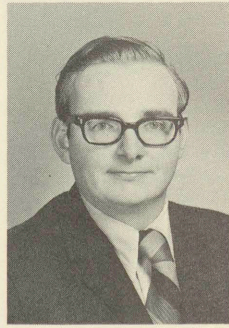
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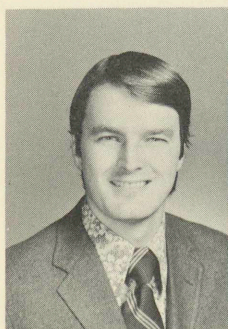
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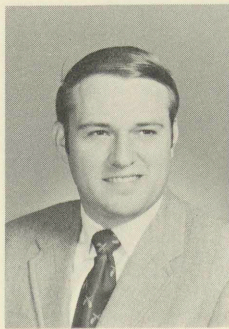
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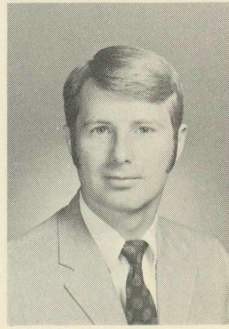
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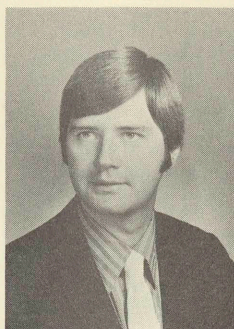
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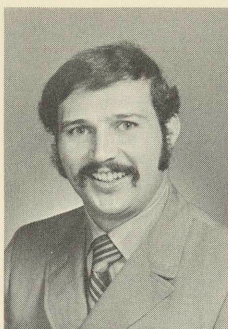
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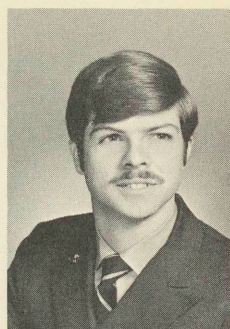
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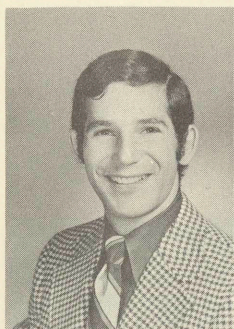
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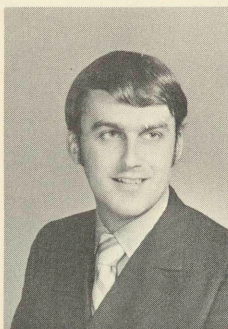
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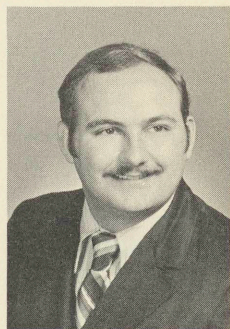
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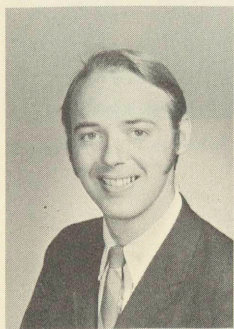
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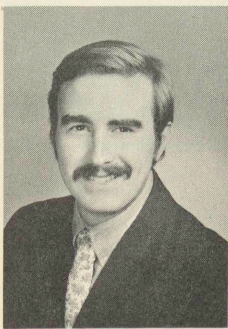
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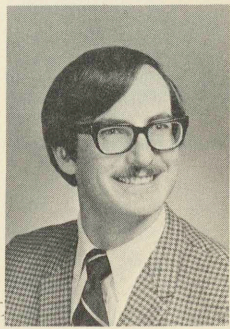
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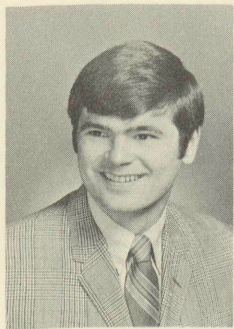
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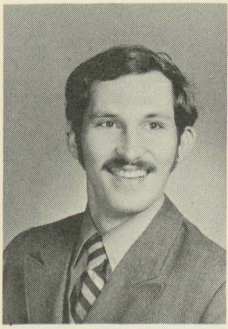
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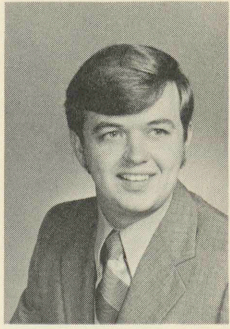
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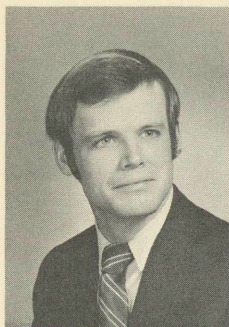
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Michael Scheidt



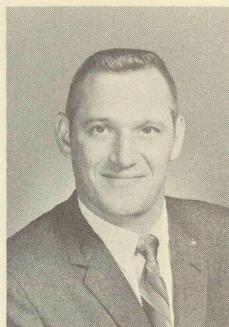
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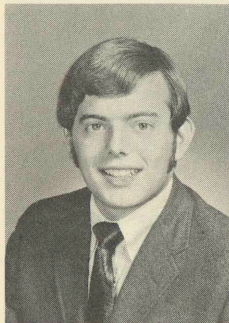
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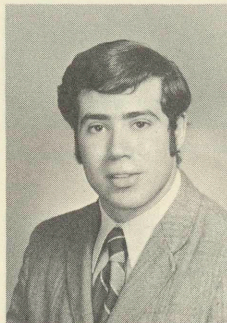
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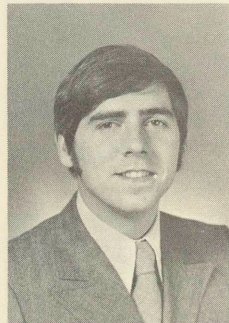
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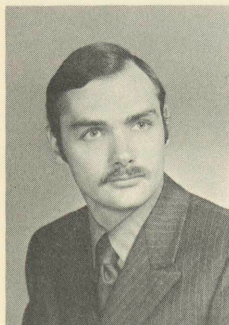
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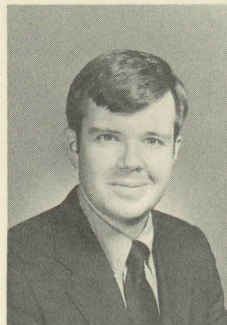
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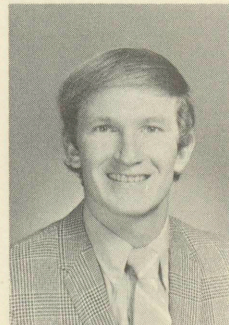
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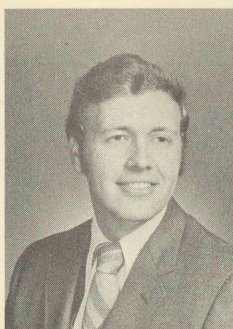
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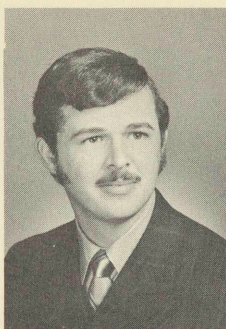
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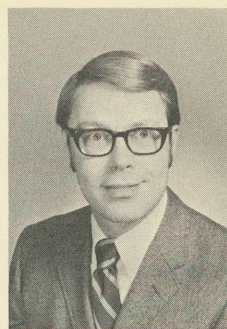
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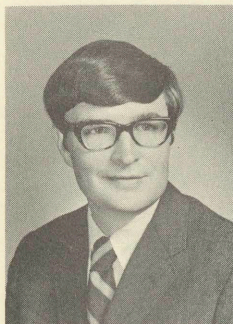
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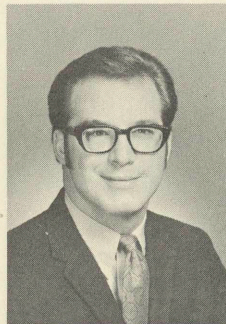
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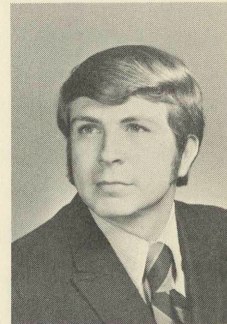
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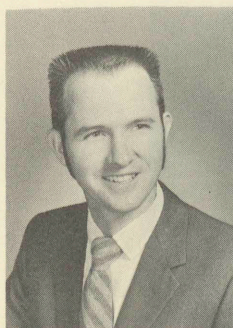
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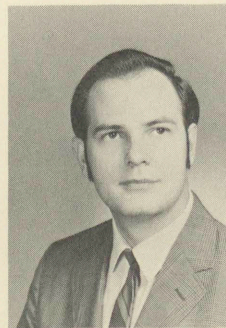
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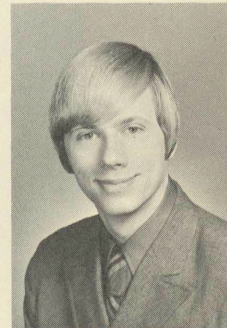
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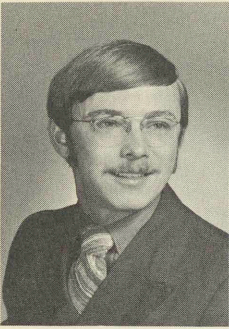
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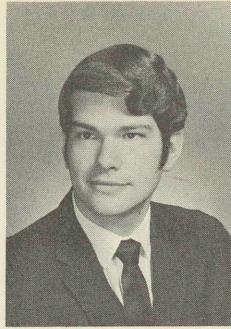
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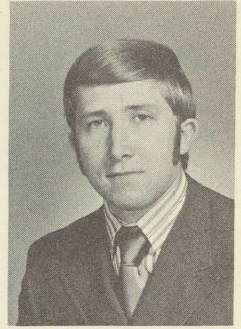
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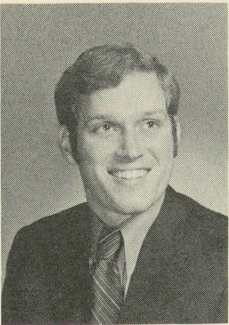
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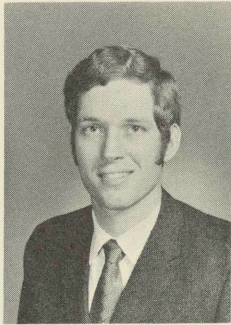
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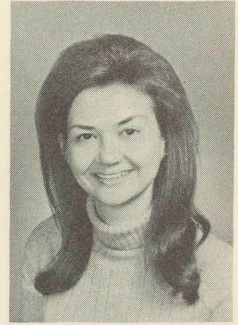
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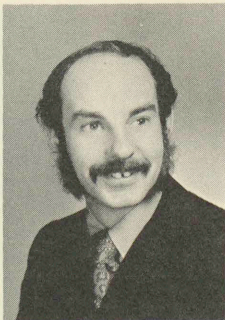
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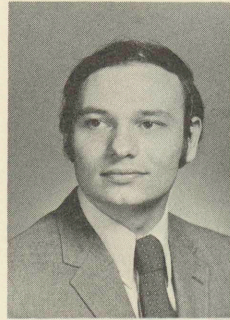
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Oksana Withey



Thomas Wolfe



David Wright

DENTAL HYGIENE—CLASS OF 1971

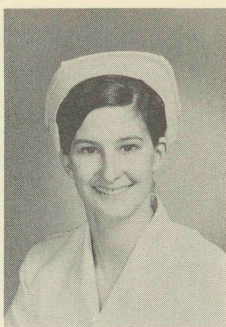
Now that we have completed the most essential part of our education in Dental Hygiene, by studying the subjects associated with our field and learning the proper clinical techniques, we are ready to take this knowledge and apply it outside the dental school. It is our turn to show Indiana University the appreciation it deserves for preparing us in the practice of Dental Hygiene. Those unorganized, tense first days of Dental Hygiene, the exciting day of capping, the dismayed beginning of clinic, the apprehensive days of Boards, and the gratifying day of graduation have passed but will remain with us always.

Our thanks go, first of all, to our parents for their patience, to our faculty, especially those associated with Dental Hygiene, for sharing their knowledge with us, to the Administration for their help and understanding, and finally to Indiana University for its name.

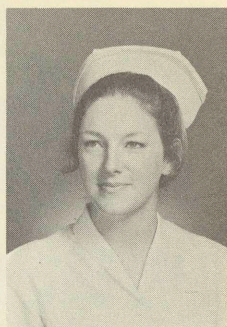
Sheila Berger
President of the 1971
Dental Hygiene Class



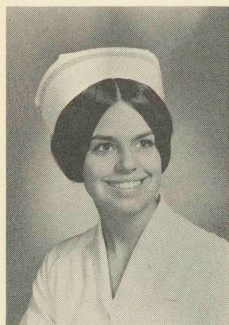
Sheila Berger



Elizabeth Brasher



Elizabeth Brinker



Patti Brown



Karen Burton



Claudia Byers



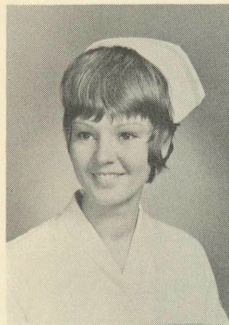
Linda Cole



Susan Dearborn



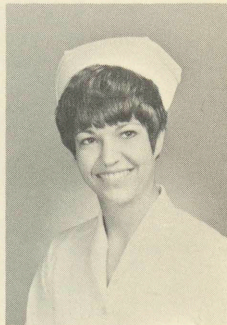
Debra Downhour



Mary Jo Falvey



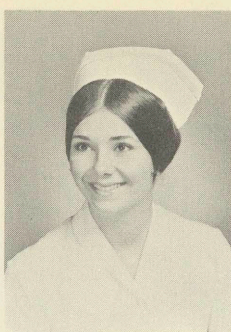
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Jan Fredericks



Pam Fryer



Gretchen Hamilton



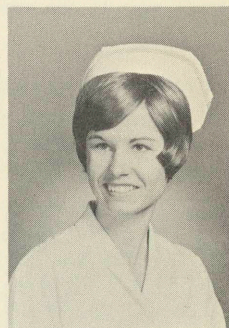
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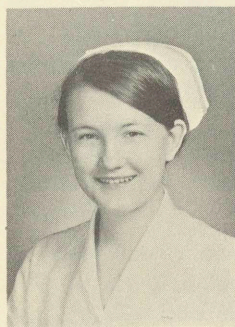
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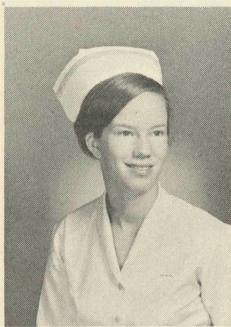
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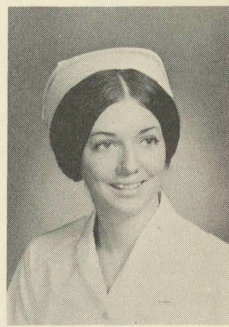
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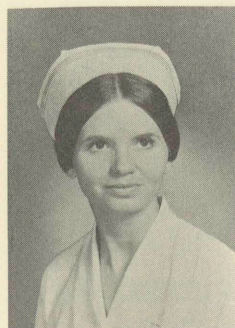
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Susan Kirn



Mary Jane Mesmer



Roxie Morell



Barbara Mueller



Barbara Oakley



Barbara Peabody



Sue Pearson



Carol Rakestraw



Jayne Roupp



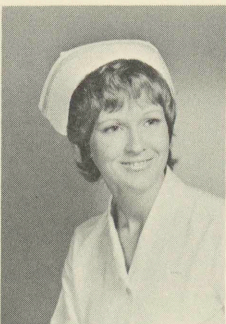
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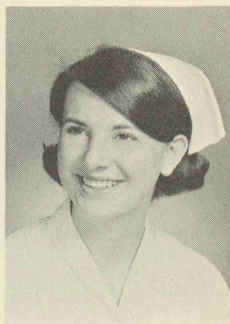
Lynda Sherland



Jane Steele



Janice White



Connie Wolfcale

Notes from the Recorder's Desk

Mrs. Cleona Harvey, Recorder



Yes, this is how I look now sitting at my desk with my silver covered phone in hand. Dr. House gave me the silver cover several years ago when I had completed 25 years with Indiana University. I just hope I don't forget to take it home with me when I retire June 30, 1971. Believe it or not, I acutally have told Dean McDonald that I wished to be relieved of my duties as of that date. I will have been with Indiana University 30 years and with the Dental School 26 years and 9 months at that time. And during that time my desk has been at the exact same location—not many can equal that record!

This was to have been my "swan song" but before I could get it sung Dr. Phillips talked me into continuing this column even if I am not going to be here except on special occasions when I shall return in some capacity such as consultant to help out in interviewing and counseling preidental students.

I have worked for 37 years and just decided I deserved a rest for a while. I have lots of things I wish to do after I get rested, among them maybe the book I have long threatened to write which I shall title "Dental Daze"! Wouldn't you like to add a chapter? Send me the "copy" and I'll do my best to get it in. Then I want to do some reading on tape for the blind and volunteer work in hos-

pitals and nursing homes. Of course I always have my church work and Bible Classes to teach. I told Dean Hine (Chancellor Hine now) years ago that my religion was my vocation and my work with the dental school my avocation. Then just to prove that I intend to be real lazy, I must remind you there are always soap operas to watch!?!

I shall always be interested in what is happening in "ye jolly dental school" so please now that I am continuing this column don't forget to write. Your letters and cards will mean even more to me when I am retired, so keep 'em coming. God bless you all and don't forget I am counting on you to write more and longer letters. And now for the news about all of you.

Class of 1900

We have just learned that Dr. Numa Neal Williams died March 16, 1971, at the age of 93. From 1900 to 1957 he practiced in Mt. Vernon, Indiana.

Class of 1904

We regret to report that Dr. Stanley B. Roth of Coupeville, Washington died August 6, 1970, and Dr. Noble G. Wills of Connersville, Indiana died September 6, 1970 on his 89th birthday. Over the years Dr. Wills had developed a number of dental techniques and instruments and for many years had manufactured them himself. He was to have been honored with a permanent display of his methods and instruments in the new Dental School addition now under construction.

Class of 1908

We are sorry to report that Dr. Jesse M. Jordan of Plymouth, Indiana passed away May 20, 1970.

Class of 1913

We are sorry to announce the death of Dr. James C. Black of Chicago, Illinois who died October 27, 1970, and the death of Dr. Robert W. Blake of Indianapolis who died July 28, 1970.

Class of 1914

We regret to announce the death of Dr. William N. Kelly of Clincon, Indiana who passed away August 6, 1970.

Class of 1915

We are sorry to announce the death of Dr. Olin F. Bailey of Topeka, Indiana who died October 20, 1970.

Class of 1917

A Christmas card from Dr. and Mrs. Carl Frech (1204 Pebble Beach Blvd., Sun City Center, Florida, 33570) carried the message, *"So nice to have seen all of the staff during the May meeting. Why not take time off and come down to God's country and see what 'real living' is like?"* The idea sounds wonderful, but how we would miss the snow and ice!

Class of 1919

We are sorry to announce the death of Dr. Carl E. Niemann of Vincennes, Indiana, May 11, 1970, and Dr. Dale M. Roth of Lafayette, Indiana, August 3, 1969.

We regret to report that Dr. Leonard O. Lovold of Waseca, Minnesota passed away May 6, 1970.

Class of 1926

Four deaths in the 1926 Class to report are: Dr. Kenneth D. Schuyler of Attica, Indiana, December 10, 1970; Dr. William T. Smith of Munster, July 18, 1970; Dr. James Tilton of Columbus, Indiana, June 6, 1970; Dr. William E. Wells, Newburgh, Indiana, June 19, 1970.

Class of 1929

We were happy to receive Christmas Greetings from Dr. and Mrs. James Sakurai of 2715 Tantalus Drive, Hono-

lulu, Hawaii, 96813. We still remember with great clarity our visit with them in their lovely home so many years ago.

Class of 1934

We regret to report the death of Dr. John V. Siegel of Cincinnati, Ohio, December 25, 1970.

Class of 1935

Dr. and Mrs. M. J. Bean of 5 Pangborn Place, Hackensack, New Jersey, remembered us at Christmas and we always appreciate their thoughtfulness.

Class of 1936

Dr. John L. Heidenreich of Bicknell, Indiana passed away August 31, 1970, and Dr. David T. Pash of Morristown, New Jersey died December 31, 1970.

Class of 1947

Dr. and Mrs. Marvin A. Tuckman, 599 Broadway, Paterson, New Jersey thought of us at Christmas and sent us greetings.

We regret to report the death of Dr. Robert J. Alber of Ligonier, Indiana, July 31, 1970.

Class of 1949

It wouldn't be Christmas without a greeting from Dr. and Mrs. Ernst Rosenthal of 1266 Oliver Avenue, Indianapolis, Indiana.

Class of 1953

Dr. Robert W. Wagner reports his address is 5655 Harrison Street, Merrillville, Indiana 46410. We really do appreciate this sort of information as we try so hard to keep our files up to date.

Class of 1954

We received a very welcome Christmas Greetings from "the 6 of us"—Dr. Robert Johns and family with this message, *"Happy Holidays! Greetings again from Japan. Everyone is well in the family and we are travelling all over Japan and to Hong Kong, etc. We have put in for a one*

year extension but don't know whether it will be accepted or not. So we will return to the States either in June 1971 or June 72. Japan is a wonderful country, particularly when we're only 25 miles from Tokyo. Please say hello to everyone that is still at the school that I might know and wish them the happiest of holidays. Am including a picture of the family this time for you." I wish we could let you see the picture. They have 3 boys and 1 girl and they look like one very happy family. I almost forgot to give you their address—it is, U.S.A.G. Hospital Tachikawa, Box 7006, APO San Francisco, 96323.

Class of 1955

Drs. Ursula and Werner Bleifuss wished us a happy Christmas Season and their address is still 18786 San Quentin, Lathrup Village, Michigan.

Class of 1957

The Dr. Waldo Scales family came through as usual with their happy Christmas letter and this time they included a color picture of the entire family, two boys and one girl. I must say they look hale and hearty and also very happy. Their letter reads, "Greetings Yo'all: Well the year of 1970 which seemed as though it started yesterday is about to draw to an end. As we sit back and reminisce over the year it seems as though the year passed too fast and we accomplished too little.

"We have all enjoyed good health up till the last month of this year during which Waldo was put to bed with gout which was not much to his liking. I am having to go into the hospital during the Christmas week due to pains in my back. You had better believe me, Waldo is pulling his hair out wondering how he is going to take care of three very active children.

"James Raymond is 7½ years old and is enjoying second grade. He is a healthy, happy (stubborn), but lovable child. Jane Michele who is now 3 years old is still the 'apple' of her father's eye. This child is into everything. There is nothing safe nor

sacred when she is on the prowl. But with her Daddy's remark, 'Oh, she is too sweet to whip' what else can you expect.

"The Scales did not get around to taking a vacation this past year but we are making plans to get out of "Rebel Country" somewhere next year.

"The highlight of our summer was getting 'Daddy Waldo' into more water than there is in the bath tub. We both learned to swim this summer at the YMCA. Now we all enjoy going to the pool.

"Once again we wish to extend to all our readers a very Merry Christmas and the Happiest New Year. We hope you will drop us a line soon. God Bless you all." Their address is 160 Marine Street, St. Augustine, Florida.

Dr. and Mrs. Colon of Box 1222, Caguas, Puerto Rico, 00625 honored us with their usual friendly Christmas wish. We do appreciate hearing from all of you but particularly those from far away places.

Class of 1958

Dr. Alegria Zita visited us in 1970 and with her Christmas Greeting she wrote, "It was so nice to visit you all at the Dental School after being away for thirteen years. I am amazed at the changes especially the extensive expansion and modernization of the school. I was happy to renew old acquaintances and to meet new friends. My sincere greetings and best wishes to all." Dr. Zita's address is 1357 Felina, Paco, Manila, Philippines. Dr. Zita, it was good to see you and don't wait so long to come back. No telling what new changes will be waiting for you to see!

Class of 1960

Dr. Dilia Rieser of 3719 South East, Indianapolis, remembered us with greetings at Christmas and we were happy to see her and talk with her a few minutes one day not so long ago when she came out to the dental school. She is as pretty as ever and just as friendly.

Class of 1961

Dr. Ronald J. Schoeps and Staff of 457 James, Spencer, Indiana, 47460, sent us best wishes at Christmas.

Dr. and Mrs. Merlin Wuebbenhorst and their three children, Wendy, Hope and David, joined a host of friends in wishing us Peace, Hope and Love at Christmas. We have since had a letter from Dr. Wuebbenhorst and he is a very busy dentist but is also busy in the Lord's work and the personal message he sent me in this letter made me very happy. I pray that the Lord will continue to bless him as he witnesses for Him.

Class of 1962

Dr. Nelson Wolfe and family of Box 1003, Alamosa, Colorado, 81101, sent us greetings and reported on a terrible tragedy which had befallen some very close friends of theirs. They were so saddened by it they couldn't write their usual cheery note. We miss more news from them but perhaps later on they will write and tell more about their plans which I understand may just include a trip back to Indiana.

Class of 1963

Change of address for Dr. Cecil E. Alumbaugh, Jr., is 132-134 Myrtle Avenue, No. B, Ft. Lee, New Jersey 07024.

Class of 1965

The September 1970 issue of the Newsletter of the Alumni Association of the Student Clinicians—American Dental Association had an article regarding Dr. Carl J. Andres who has been "serving and teaching in the USAF School of Aerospace Medicine, Dental Sciences Division, at Brooks AFB, Texas. He has done research work on the effectiveness of SnF² solutions in reducing solubility of cavity preparations when used as a topically applied agent for prevention of recurrent caries around restorations and the effect of SnF² solutions on the dental pulp when applied topically to cavity preparations. His present research activities include microbial assays of dental plaque, bac-

teriological aspects of dental caries and periodontal disease, and various aspects of caries control agents. His article entitled, 'Effects of 30% Stable Stannous Fluoride Solution on the Dental Pulp in Dogs when Applied to Freshly Cut Enamel and Dentin,' was published in the Journal of Oral Therapeutic Pharmacology in 1967. He has presented clinics on 'Pin Retained Restorations' in Indianapolis in 1965 and 'Preparations and Insertion of Powdered Gold in Cap', Guam Dental Society in 1967."

Class of 1966

We have a new address for Dr. and Mrs. Alan H. Smih—603-1844 Barclay St., Vancouver 5, B.C.

Class of 1967

Dr. Mark F. Miller asks that we change his address to 1701 Southway Blvd., East, Kokomo, Indiana 36901.

Dr. and Mrs. Jerry Travelstead of 916 E.M. St., Brownsburg, Indiana sent us a cheery greeting at Christmas.

I am now going to share part of a letter we received from Dr. Peter Zaharako who is now at 21 Stratones, Alaka, Athens, Greece. "*After I graduated in 1967, I went to Chicago and practiced there for two years, including working as a dentist in a ghetto elementary school for the Chicago Board of Health for about six months. I also had started my own practice, but I decided to let go of it because I did not want any permanent foundation at that time. As for the problems concerning dentistry in the ghettos, I could say much but find it unnecessary to do so at this time. It was all a very interesting experience, both from the aspect of dentistry and others as well. There is certainly no doubt in my mind, anyway, that as far as the welfare situation is concerned, people on both sides of the fence bear responsibility for the problems that have arisen.*"

"*Well, during the time I was in Chicago, I took the New York State Board and passed. I had intentions of remaining in New York after arriving there from Chicago but felt very strongly towards getting a taste of life in other countries before*

finding a more permanent residence. So, I went to Paris, hoping that I could eventually do something with dentistry there. But it was impossible, for the French want absolutely nothing to do with foreigners trying to get professional work.

"Now, I am in Athens, having been here for about eight months. For three months, now I have been working with this dentist about ten miles outside Athens. The kind of dentistry done in this part of the world certainly is not the same as in the States, but there are a few really good dentists to be found, usually ones who have been to the States to study. The dentists who have studied in Greece and Western Europe have been taught different techniques, and therefore, do quite different dentistry, some of which is quite good, at least functionally. If all goes well, I will spend about one year more in Greece, and from here, I am not certain just where I will go".

Class of 1968

Dr. J. Michael Boyd of 323 North Charles Avenue, Manteca, California 95336, writes "*We are enjoying California very much, and within the year I will be opening my own practice. On Thanksgiving Day, November 26, 1970 we were blessed with a new son, Michael Brent. I've already been teaching him how to hold a mirror and explore. Our best to everyone at Indiana.*"

Dr. William Begeman of 118 S. Green Street, Greentown, Indiana 46936, was in October 28, 1970, having been out of the Army about a week, and said he expected to start his practice the next week.

Dr. Geraldine Chan of Central Nurses Residence, Welfare Island, New York 10017, wrote on her Christmas Card, "*This is a long 'over-due' letter. I really do mean it to be a letter but because of the 'rush' in time it has to be a note. But I do promise to write you as soon as I return from Hong Kong.*"

"*As of now, I'm busy and packing for a month's visit home in Hong Kong. I'll leave tomorrow to return about the 1st of January after a lapse of 10 years. I'm getting quite anxious so bye for now*

and will write more when I get back to the State Side".

Class of 1969

In a recent copy of the Newsletter of the Alumni Association of Student Clinicians—American Dental Association we read that "Dr. Donald E. Gardner completed studies for his Master's Degree in Pedodontics at Indiana University in 1969. A graduate of Northwestern University School of Dentistry, he was a Student Clinician at the 1966 SCADA Session, and 1964 Lavis National Runner-up and Scholarship Winner. Presently, he is an Assistant Professor on the faculty of Medical College of Georgia, School of Dentistry, Department of Pedodontics. Dr. Gardner has published his thesis on 'Treatment of Infected Dental Pulp of Monkeys with Vancomycin and Calcium Hydroxide', and his article on 'Hereditary Hypophosphatemia' appeared in the June 1966 edition of the Journal of Dentistry for Children. He has presented clinics at two Chicago Midwinter meetings. He and his family live in Augusta, Georgia.

We have a change of address for Dr. Rick J. Papineau who is now at 2909 Gulf to Bay Blvd., Clearwater, Florida 33515.

Dr. and Mrs. Ralph Paulin and daughter Debbie of 603 E. 5th, English, Indiana, sent me a very happy note at Christmas and brightened the Holidays for me.

Class of 1970

It is really encouraging when the very recent graduates remember us and sure enough Dr. and Mrs. Nick Shelly came through with a lovely Greeting. They are at 1419 Woodward Avenue, Elkhart, Indiana 46517.

Dr. David A. Blaine is practicing in Michigan; his home address is R.R. No. 1, Box 413, Big Rapids, Michigan 49307, and his business address is Rapids Professional Building, 1014 South State Street, Big Rapids, Michigan 49307.

Dr. Gerald T. David informed us that he is at the G. Pierce Wood Memorial Hospital, P. O. Box 189, Arcadia, Florida 33921.

Dr. Steven F. Guy says his permanent address is now 268 Ivy Drive, Woodbury Heights, New Jersey 08097.

Dr. E. J. Sandmeier is located at 1507 Mountain View Avenue, Longmont, Colorado 80501.

Dr. Gavin P. Aitkens, 227 W. 21st Avenue, Covington, Louisiana 70433 wrote Sandy Manion and she let me have his letter for publication. I hope you don't mind Dr. Aitkens, as I think your classmates would want to know this information: "A short note to let you know my whereabouts. I don't know, but would assume, that records of each class are kept indicating their distribution. I can therefore be recorded as residing in Covington, Louisiana; 1/2 private practitioner and 1/2 instructor at Louisiana State University School of Dentistry—Pedodontics Department.

"We are thoroughly enjoying our new home and particularly the climate (it's so nice to think of freezing temperatures and all that beautiful snow while we languish about in shirt sleeves and bermudas in our 75+ temperatures.)

Greetings and best wishes to all."

Dr. Ernest Sakamoto of 4939 Catharine Street, Philadelphia, Pennsylvania writes: "I hope this letter finds you well, and not working too hard. I recently received a copy of the I.U. Bulletin and felt homesick for I.U. Dental School when I read of so many familiar people.

"As you know I am currently completing my rotating internship here at the University of Pennsylvania. Next year I will be starting an oral surgery residency at Albert Einstein College of Medicine starting July 1. The chief out there in the Bronx, N.Y., is an I.U. alumni Dr. George T. Stratigos.

"I have written to Dr. Stratigos and he has given me permission to take a leave for taking the Hawaii Board in August of this year. Much Aloha!"

Dr. Mary Ann Palmer wrote Dr. McDonald and we are going to quote part of her letter, "Gene is getting a lot of good experience at the naval base here in Meridian. He is fortunate in that he has the opportunity to practice in all phases of dentistry. I have been employed by the

Meridian Public School System as Director of Medical-Dental Services for the approximately 4000 underprivileged children in the Meridian area schools. Our program will include clinical dentistry in addition to our newly established preventive program providing I pass the Mississippi Board in June.

"Gene and I both feel extremely fortunate for having attended Indiana. We are thankful that we had the opportunity to receive such an excellent dental education. Our best wishes to you and everyone at Indiana." The Palmers' address is 2326 32nd Street, Meridian, Mississippi 39301.

Our visitors that we remembered to have sign the Guest Book are as follows: Irving S. Newmark, 1945, Studio City, California; John C. Hoerath, 1965, Colorado Springs, Colorado; Charles Infante, 1955, Fort Lauderdale, Florida; Robert P. Messersmith, 1968, LaPorte, Indiana; Dan A. Olson, 1960, Columbus, Indiana; David A. Paradis, 1924, Canton Ohio; Darwin M. Reed, 1949, Groton, Conn; Rolenzo A. Hanes, 1940, Naples, Florida; Carl J. Andres, 1966, Brooks AFB Texas; E.M. Benjamin, 1952, Worthington, Indiana; John J. Stone, 1950, Indianapolis, Indiana; William D. McGriff, 1952, Agana, Guam.

After June 30th I shall have more time to concentrate on haunting those of you who don't write to me! Bless you all for the wonderful way you have always treated me. These years have been happy ones even if they were sometimes a bit hectic! You may be interested in knowing that Dr. Van Huysen frequently refers to the dental school as 'Mrs. Harvey's School for Boys'. I think rather recently he added the word "wayward", but we shall ignore that! In my book you are all wonderful and I am happy to claim you as my "boys" and also happy to have a few "girls" that I feel a keen interest in. So even though I shall not be much in evidence physically I shall be thinking about you all and hoping you are doing fine. If I do get to do any traveling I am going to try to see some of you and that is a promise.

INDIANA UNIVERSITY SCHOOL OF DENTISTRY

Statement of Fluoridation—Community Water Supplies

The Indiana University School of Dentistry Alumni Association has for many years supported fluoridation of public water supplies. It recognizes that no greater dental decay preventive measure has yet been developed. Therefore, this organization reaffirms its support of fluoridation through the following statement.

Reports regarding the progress of fluoridation in this state are most encouraging. Nearly 88 per cent of all the people in Indiana who live on a community water supply now enjoy the benefits of fluoride at the recommended level. This represents approximately three million Indiana citizens. Several Indiana communities have had natural fluorides much longer. Currently of all communities of 10,000 or over, only two do not enjoy the benefits of fluoridation or have plans to fluoridate in the near future.

Over 25 years of scientific study have produced voluminous documented evidence of safety and effectiveness. Its merits have been studied, discussed, and endorsed by nearly every scientific body in this and other countries. There can remain no question regarding fluoridation other than how soon before 100 per cent of the population on community water supplies has this dental health benefit.

The Indiana University School of Dentistry Alumni Association continues to recognize dental decay as a major health problem. A problem further complicated by growing cost for health services and greater demands on professional manpower to provide such service. Therefore, it is essential that every preventive measure available be utilized to the fullest to eventually effect a solution to the problem.

It is the intent of this statement to strongly urge all Indiana communities not yet fluoridating their public water supplies to start at the earliest possible mo-

ment. It is our opinion that any community which is denying its citizens this dental health benefit is negligent in its duty to the health and welfare of the people they serve.

HEALTH SCIENCES

(Continued from page 9)

Meeting, International Association for Dental Research, New York, N.Y., March 16-19, 1970, p. 49.

3. *Report of the National Advisory Commission on Health Manpower, Vol. 1.* Washington: U.S. Government Printing Office, 1967, p. 21.

4. *The Survey of Dentistry. The Final Report.* Commission on the Survey of Dentistry in the United States, Byron S. Hollinshead, Director. Washington: American Council on Education, 1961, p. 91.

5. P. E. Hammons and H. C. Jamison. Expanded functions for dental auxiliaries. *J. Am. Dental Assoc.* 75:658-672, 1967.

6. P. E. Hammons, H. C. Jamison, and L. L. Wilson. Quality of service provided by dental therapist in an experimental program at the University of Alabama. Personal communication. Manuscript submitted for publication.

7. *Oral Healths Facts, Figures, and Philosophy.* *Harvard Dental Alumni Bulletin.* Special Supplement. November 1968, 57 pp.

8. Sir John Walsh. International patterns of oral health care—The example of New Zealand. *Harvard Dental Alumni Bulletin.* Special Supplement. November 1968, p. 11.

9. Helge Berggren. International patterns of oral health care—The example of Sweden. *Harvard Dental Alumni Bulletin.* Special Supplement. November 1968, pp. 18-21.

10. Harold Hillenbrand. Problems of dental care in the United States. *Harvard Dental Alumni Bulletin.* Special Supplement. November 1968, p. 7.

11. Walter J. Pelton. Student dental health program of the University of Alabama in Birmingham: 1. The influence of dental treatment on DMF rates. *J. Am. Col. Health Assoc.* 17:425-331, 1969.

12. Donald Draek. "Sweden's Services Available to All" (third of five articles). *The Philadelphia Inquirer*, December 16, 1969, p. 24.

13. Joseph F. Volker. "The Numbers Game." *The Lister Hill Lecture Series.* Lecture

on January 24, 1970. Birmingham: University of Alabama in Birmingham, 1971.

14. Arthur Carol and Samuel Parry. The economic rationale of occupational choice. *Industrial and Labor Relations Review* 21(2): 183-196, 1968.

15. *The Writings of Thomas Jefferson*. Andrew A. Lipscomb, ed. Washington: The Thomas Jefferson Memorial Association, 1904, Vol. 16, p. 48.

PRACTICE OF DENTISTRY

(Continued from page 19)

sion, negotiation, angry debate, confrontation, or work stoppages—and we already know what this means. From all this will evolve two types of programs: a national health program, incorporating all types of prepaid plans, and a sophisticated type of private practice based upon the foundation of quality that exists today but surpassing even our most optimistic projections. The national dental program will provide services on a group and mass basis, and no one will be deprived of care because of economic, racial, religious, or geographical circumstance. The private practice program will be directed to a small but important segment of the population and will grow and flourish because of the historic desires of our quality-conscious profession and population.

DENTAL EDUCATION

(Continued from page 21)

services rendered. Continuing Education will provide the base upon which all recertifying programs will be built.

Dental schools will take on the complexion of dental campuses—subcampuses within the health center and the University. Baccalaureate programs for dental assistants and technicians will be common, and many hygienists will seek the Master's degree. Surely a new member of the dental team will replace the hygienist in providing oral prophylaxes to large masses of the population. Trained in no

more than nine months, this "prophnician" will be a well-established member of the allied health professions in the year 2000.

The percentage of dental graduates entering the existing specialties will increase. Additional specialties, such as oral medicine and oral roentgenology, will gain formal recognition. The most important impact, however, will accompany the emergence of the dental family practitioner as a specialty recognized by the profession and the public.

Thirty years from now, every American will be covered by some form of dental health insurance and thus there will be no financial incentive to seek care in a teaching clinic. Dental schools will be without teaching patients unless they build reputations as institutions which provide a superior level of dental care in an attractive and compassionate setting. Clinical teaching programs will become patient-centered and both patients and students will benefit by the demise of clinical requirements.

Orthodontics will receive much greater emphasis in the predoctoral curriculum. By the year 2000, dental researchers will have developed a restorative material which will bond chemically to tooth structure. Less emphasis will be placed on prosthetic dentistry, but more time will be given to oral diagnosis and oral medicine. The future role of the dentist as manager of an oral health team will receive much attention. Many areas of the dental curriculum will be taught with greatly-improved effectiveness through the application of computer-aided instruction.

Relieved of the pretense that dental students must graduate as "finished dentists," relieved of the necessity to provide almost two years of basic science instruction, relieved of clumsy and inefficient teaching methods, the dental curriculum in the year 2000 will be reduced to three years. The experience of an individual student will vary, depending upon his decision to become a family practitioner, enter a more restrictive specialty, or move toward a career of teaching and research.

The Bookshelf

Mrs. Helen W. Campbell, Librarian

Libraries have always cooperated by lending books to each other! No collection of books could ever be complete enough to satisfy *all* requests, and each library has a network of sources from which material is requested as the need arises. Our subject specialty, of course, is Dentistry. Such other materials as can be borrowed within the Indiana University Libraries system are requested either by telephone locally or from Bloomington by way of the IU courier service. Items which are extremely difficult to obtain are channeled through the Midwest Regional Medical Library based at the John Crerar Library in Chicago, Illinois.

All of the interlibrary loan transactions, however, do not involve borrowing books. Our statistics show that from July, 1969 through June, 1970, we lent 196 volumes to other libraries. With the wide use of copying devices, it has become customary to send a photocopy instead of a bound volume when an interlibrary loan request involves an article from a journal, and we mailed 574 pages in this category last year.

A library may have an issue of a journal which is rare, but the theses written at each school are unique. As a requirement for the Master of Science in Dentistry degree, one copy of a thesis must be deposited in this library. Anyone pursuing serious research in a similar field will need to read this document. Since our copy is the only one available to another library, the interlibrary loan request is sent to us. During 1969-70 we received 69 requests to borrow theses. Of these, 47 came from libraries associated with dental schools, and 12 from hospitals within the United States. Nine requests reached us from Canadian dental schools and one from England. In addition, microfilm copies of these were sent to Denmark, France, India and Sweden.

Students in the Master's degree program have submitted 32 theses the past year. Abstracts of 14 follow:

FLEXION OF THE MANDIBLE

Alexander Bowman

The object of this thesis was to investigate the magnitude and direction of flexion of the mandible.

A linear displacement transducer was constructed to measure changes in cross-arch dimension at the second molar level. Forces applied to the mandible were recorded simultaneously with flexion on a strip chart recorder by either a compressive force transducer or a gnathodynamometer.

In 17 subjects from 21 to 38 years of age the combined mean medial flexion of the mandible when fully depressed was 0.290 mm.; when fully protruded, 0.637 mm. On depression, flexion took place after 20 mm. of travel; on protrusion, the flexion was proportional to protrusion. An anterior bite of 9.06 kilograms (on a simulated incisal guide) produced a combined mean lateral flexion of 0.270 mm. A horizontal retruding force of 9.06 kilograms caused the mandible to flex laterally a combined mean of 0.18 mm.; flexion was proportional to the force. An externally applied compressive force across the rami of 13.6 kilograms produced a combined mean medial flexion of 0.31 mm.

On the basis of this study it is recommended that the mandible be depressed no more than 20 mm. and that it never protrude during the making of impressions. If an incisal guide is used while making interocclusal records, the patient should not bite forcefully. Forceful retrusion of the mandible while making an interocclusal record may distort this record.

A STUDY OF AUTOGENOUS, HOMOGENOUS AND HETEROGENOUS BONE TRANSPLANTS USING PROCION BRILLIANT RED H-8BS AS AN ORGANIC MATRIX MARKER

Russell L. Corio

This study was initiated in order to observe the pattern and fate of the intercellular, organic component of bone and autogenous, homeogenous and heterogenous bone grafts. These bone grafts were placed into the skulls of forty

randomly bred albino and varicolored guinea pigs. The property of Procion Brilliant Red H-8BS to label the organic component of bone and its ability to persist after demineralization was utilized. The organic material was observed in the host bone and the various types of bone grafts during the period of "creeping substitution" ranging in time from 1 to 12 weeks. Microscopic examination was made of decalcified paraffin embedded sections stained with hematoxylin and eosin. Comparable unstained sections were viewed with fluorescent light microscopy.

The results obtained demonstrated the differences in the histomorphology and pattern of Procion labeled coarse fibrillar bone filling the control sites and graft sites during the period of "creeping substitution". The fate of labeled organic matrix could not be traced into osteoclasts or adjacent soft and hard tissue except in the Autogenous Group where there appeared to be dye carry over into the adjacent fibrous connective tissue, periosteum and endosteum. The inductive influence of certain grafts was characterized by the quantity and location of labeled new bone. Procion labeling exhibits advantages over tetracycline labeling as an indicator of osteoblastic activity for the measurement of bone volumes and calcium kinetics.

THE APPLICATION OF ANTIBIOTICS AND OTHER DRUGS TO INFECTED DENTAL PULPS OF MONKEYS

David Weiss Epstein

The pulps of 112 permanent teeth of monkeys were surgically exposed and left open to the oral environment for 25 to 27 hours. Then one-third of the exposed, infected pulps were capped with a paste of calcium hydroxide and tap water; one-third were treated with an antibiotic paste composed of erythromycin estolate 10 per cent, streptomycin sulfate 10 per cent, and starch q.s. as the vehicle; and one-third were treated with a paste of zinc oxide powder, one drop of eugenol and one drop of formocresol.

The teeth were extracted after one and two years post-operative intervals and were microscopically evaluated. The calcium hydroxide treated teeth had the highest percentage of satisfactory pulpal responses (91.6 per cent). The antibiotic treated teeth were considered to have had satisfactory pulpal responses in 87.5 per cent and the zinc oxide, eugenol and formocresol treated teeth showed satisfactory pulpal response in only 58.0 per cent of the teeth treated with this paste.

After two years, several of the antibiotic teeth were considered to have had a satisfactory pulp response even though the calcific bridges were incomplete.

The histologic findings were encouraging with calcium hydroxide and the antibiotic paste and warrant clinical investigations.

MUCOEPIDERMOID CARCINOMA: A HISTORICAL AND ULTRA-STRUCTURAL TREATISE

Lewis Roy Eversole

Mucin and enzyme histochemical analyses and ultrastructural features of mucoepidermoid carcinoma were investigated in order to ascertain whether or not differences exist between tumors of this group which cannot be detected using histologic means. Attempts were made to correlate histochemical reactions with either cells of origin or with diagnostic differentiation grading, the latter of which could have prognostic implications. In addition, electron microscopy was considered to be of aid in determining the histogenesis of mucoepidermoid carcinoma. A group of tumors categorized as cystadenoma, mucous retention cyst, and mucous cystadenoma were separated from mucoepidermoid carcinoma on a histologic basis, their distinguishing features being described.

No correlations between mucoepidermoid carcinoma and either cell of origin or grade could be ascertained. All tumors investigated elaborate an apparent sialomucin and some possibly produce a sulfomucin. Histo-enzymologic studies indicate that the mucoepidermoid carcinoma possesses active oxidative enzyme activity equivalent to cells of salivary gland ducts. Electron microscopy also provides evidence for a ductal origin for this group of tumors.

Two cases of a benign variant of mucoepidermoid carcinoma were described and benign cystadenomas were categorized with reactive lesions.

THE INDIRECT TENSILE (DIAMETRAL) STRENGTH OF DENTIN

Daniel J. Gau

The purpose of this study was to identify a strength anisotropy in human dentin, if it exists, and determine the tensile strength of dentin. The indirect tensile (diametral) test was employed.

A significant strength anisotropy was identified and there was indirect evidence of an elastic anisotropy. The tensile strength of dentin is greater in directions perpendicular to the dentin tubules and significantly less parallel to the tubules. Dentin may be described as a transversely isotropic material.

A series of tests, including measurement of the diametral tensile strengths of compact bone, were carried out to check the validity of applying the diametral test to the anisotropic material, dentin. They indicated that the dentin determinations were accurate. The indirect tensile strength of dentin, perpendicular to the tubular direction, is about 9,680 psi and the tensile strength, parallel to the tubular direction, is about 6,880 psi.

Some tests were also run to compare the results of unilateral tensile and diametral tensile

tests on dental materials. The effects of various paddings and loading rates on the observed diametral strengths were also investigated.

A CLINICAL STUDY OF COPPER ALLOY AND ITS RESISTANCE TO MARGINAL BREAKDOWN

Pierre-Paul Giroux

It has been suggested that adding copper to conventional silver amalgam can improve the physical properties. The purpose of this study was to analyze, measure, and clinically compare the incidence of marginal fracture of a high copper content amalgam alloy with that of a conventional amalgam alloy in Class I and Class II restorations on human patients.

The study included a laboratory and clinical phase. In the laboratory part the alloys studied were: a conventional amalgam alloy, a copper amalgam alloy, and three other alloys which were combinations of the two materials. The properties measured were: compressive strength, hardness, mercury content and dimensional change. In the clinical phase 126 restorations were observed for one year. Of these, 59 were conventional amalgam alloy and 67 were a high copper content amalgam alloy. Three independent observers evaluated these restorations for degree of marginal breakdown.

The results of the laboratory study showed that combining a conventional amalgam alloy with a copper amalgam alloy increase the early strength and hardness above that of the conventional alloy.

Statistical analysis of results of the clinical study showed a highly significant difference between conventional amalgam alloy and high copper content amalgam alloy with regard to marginal breakdown, the copper-silver alloy system showing the lesser amount of breakdown. The highly significant time-by-material interaction indicates that the difference between the two materials does not follow the same trend at the four times measured. It was found that the difference between the two materials increased with time. This difference is statistically significant at six months and one year but not at one and three months.

THE EFFECT OF BURNISHING AMALGAM UPON SOME OF THE FACTORS RELATED TO MARGINAL BREAKDOWN

Robert G. Heady

Burnishing the amalgam restoration during finishing has been condemned because of the possibilities of producing a mercury-rich surface. Such a surface is thought to contain the undesirable physical properties of low resistance to tarnish and corrosion and weakened marginal

areas. Quite recently several investigators have shown that burnishing the surface and marginal areas of the amalgam restoration is actually beneficial. It was the object of this study to determine the effect of burnishing upon some of the properties.

The results of this investigation indicate that burnishing does not produce a mercury-rich surface with inferior physical properties. In fact, burnishing the surface before polishing seems to increase the hardness, increase the tarnish resistance, reduce the initial leakage around the restoration and generally give a slightly better surface than a conventionally carved and polished restoration. The properties that were studied are known to be partly involved in the marginal breakdown of amalgam. It seems reasonable that since these properties are not degraded and are in some cases enhanced, the clinical practice of proper surface and marginal burnishing of the restoration should not be condemned but may even be encouraged.

A LABORATORY STUDY OF THE ADHESION OF A RESTORATIVE ACRYLIC RESIN AND A POLYCARBOXYLATE CEMENT ON BOVINE ENAMEL ETCHED WITH FIFTY PER CENT PHOSPHORIC ACID

Brian Dalvin Lee

The purpose of this laboratory study was to determine whether etching of flat bovine enamel surfaces with a 50 per cent aqueous solution of phosphoric acid for 60 seconds increases the bonding of a conventional restorative acrylic resin and a new polycarboxylate cement. The test specimens were subjected to 24 hours, 30 days and six months storage in water and then subjected to temperature stress cycling and intermittent tensile stress cycling. A tensile test was used to measure the bond strength of both materials.

The results of the Newman-Keul's test showed that pretreating the enamel surface with 50 per cent phosphoric acid significantly increased the bonding of the restorative resin, and that the cavity sealer supplied by the manufacturer further improved the resin attachment to enamel surfaces previously etched with phosphoric acid. The bonding of the resin to acid-etched enamel surfaces pre-treated with or without the cavity sealer was unaffected by prolonged storage in water, temperature stress cycling, and intermittent tensile stress cycling. However, a significant reduction in the adhesion of the acrylic resin to polished-enamel surfaces pretreated with or without the cavity sealer was observed when the test specimens were subjected to the same testing conditions.

The data obtained for the polycarboxylate cement test specimens showed that etching of

the enamel surface with phosphoric acid also provided slightly higher adhesive values than the control specimens.

Results obtained revealed that prolonged storage in water, and temperature and mechanical stress cycling did not affect the adhesion of the polycarboxylate cement to acid-etched enamel surfaces. However, thermal and mechanical stress cycling after prolonged storage in water appeared to decrease the adhesion of cement to polished enamel surfaces.

When Ca^{45} was used to assess the marginal seal of resin restorations placed into acid-etched Class V cavity preparations in extracted human teeth, the autoradiographs showed that etching of the cavity preparations with 50 per cent phosphoric acid improved the marginal seal of the restorative resin after one-week storage in water. When both the acid-etched and control restorations were thermal stress cycled 2500 times at a 40° temperature differential, a slight improvement in the marginal seal of the acid-etched restorations was observed.

OPTIMAL TIME AND TEMPERATURE FOR MAXIMUM MOMENT AND SPRINGBACK AND RESIDUAL STRESS RELIEF OF STAINLESS STEEL WIRE

Michael R. Marcotte

Stainless steel wire, Type 304, was tested using three measurements to indicate the best time and temperature for optimal spring properties. The measurements used were springback₂, springback₁, relaxation-springback₁, and maximum-moment values. It appears that the degree of improvement and stress relief obtained is time and temperature sensitive. Low temperature stress relieving appears to be of definite benefit and it certainly complements what is known about sensitization phenomena. There was no uniform increase in springback as the temperature was increased. Springback and stress relief appear to be maximum at relatively low temperatures (650° to 750°F.) for 11 minutes.

This research was done to help define some of the capacities of orthodontic materials. In the future, we must understand failure mechanisms with more accuracy and define mechanical properties, as they affect orthodontic appliances, with more meaningful tests and specifications.

A HISTOLOGIC AND HISTOCHEMICAL STUDY OF CHRONICALLY INFLAMED GINGIVA

Edwin H. Sakurai

Keratinization, glycogen deposition in the epithelium state of the basement membrane, and acid mucopolysaccharide content of the ground

substance of the marginal gingiva and crevicular epithelium were studied histologically and histochemically in 21 specimens. The purpose of this study was to correlate the findings with the degree of inflammation in the area.

Although the majority of cases demonstrating orthokeratosis of the marginal gingiva occurred when inflammation was mild or absent, para- and non-keratinization of the outer and crest epithelium of the marginal gingiva also frequently occurred under similar conditions. Therefore, no valid conclusions could be made regarding the effect of inflammation on the state of keratinization.

Glycogen content in the gingival epithelium was directly related to the state of keratinization and was secondarily controlled by the degree of inflammation.

Severity of the inflammatory process was directly related to the integrity of the basement membrane and even mild inflammation may have detrimental effects on the basement membrane.

There was disaggregation and loss of acid mucopolysaccharides in areas of inflammation with evidence of repair occurring at the periphery as indicated by the increased intensity of the staining reaction for acid mucopolysaccharides.

A HISTOPATHOLOGICAL STUDY OF THE EFFECTS OF TWO EXPERIMENTAL RESINS ON THE HUMAN DENTAL PULP

Norbert J. Schneider

The purpose of this study was to make a histopathologic evaluation of two experimental composite resins. A total of 120 sound human teeth were prepared to an average remaining dentin depth of 0.69 mm. The teeth were randomly divided into either control (ZnOE) or one of three experimental groups, L1-59, L1-60 or L1-60 + Dycal. The specimens were extracted at three postoperative time intervals: 10, 30, and 90 days. They were fixed in 10 per cent formalin and processed according to accepted histological technique.

Histological examination of the specimens revealed that the controls (ZnOE) and L1-60 + Dycal base group had mild reactions 10 days postoperatively and dropped in intensity with increasing time. This evidence indicated that the cavity preparation was of moderate traumatic intensity and that the Dycal blocked the toxic reaction of the L1-60 resin. In the two resin categories quite severe reactions were noted. In the L1-59 group response ranged from 2° - 3° with abscess formation in six specimens. In the L1-60 group, the response was about the same but continued in intensity and still had many active lesions at 90 days with no indication of resolution. The toxic agents were even able

to penetrate irregular dentin in some instances and gave a severe reaction in three specimens. This study points out the necessity of a CaOH base if the resin materials are to be used in routine clinical procedures.

A STUDY OF TOOTH ROTATION IN THE MACAQUE SPECIOSA MONKEY

Harry E. Scott, Jr.

This study was undertaken to observe the effect of light, medium, and heavy couples on multirooted teeth of three young male *Macaque speciosa* monkeys.

Three forces of 82 gm.-mm, 245 gm.-mm, and 2280 gm.-mm. were generated from closed-coil springs for a period of 42 days.

The rate of tooth movement varied among all three forces, with the average rates being similar when comparing the three forces over the 42-day period. All three forces produced an initial, lag, and postlag phase of tooth movement.

AUXILIARY PROGRAMS

(Continued from page 42)

DENTAL AUXILIARY PROGRAMS AT SOUTH BEND

Dr. Alfred Fromm, Assistant Director

The 1970-71 academic year began at South Bend with a total of 22 students in the Dental Hygiene Program: 15 first year students and seven second-year students. The Dental Assisting Program began with 13 students.

The Capping Ceremony for first-year hygiene students was held February 7, 1971. Dean McDonald was our principal speaker. Chancellor Wolfson and Dr. Schimmele were also in attendance.

All of our students teamed up to present Dental Health Education to all local community schools during Children's Dental Health Week. The project was termed successful by school administrators and students alike. Our students seemed to thoroughly enjoy the new exposure. We were also represented on a local television show, and the dental assistants made very

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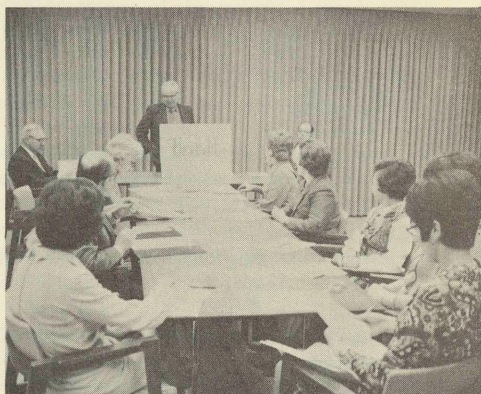
attractive posters to help convey our message.

The hygiene students attended the Jr. A.D.H.A. Workshop in Bloomington. Indiana University was the host institution and each campus, Indianapolis, Fort Wayne, and South Bend, was responsible for a portion of the program.

March 20, 1971, was the beginning of our "field experience" for the second-year hygiene students. The emphasis of this experience is helping migrant workers in the Goshen area to receive some dental health education, as well as preventive treatment. This project has been spearheaded by Mrs. Keith Yoder, who deserves much credit for many hours of extra work and singularly being responsible for the coordination essential to the realization of any program.

Our dental assisting students are presenting three posters and two table clinics

at the Annual Session of the Indiana Dental Association. Their graduation is scheduled for June 9, with Dean McDonald again as principal speaker.



Chancellor Ralph Broyles extends a welcome in a general meeting of Dental Auxiliary personnel at Indiana University, Fort Wayne. Dean McDonald is next to the speaker at the left.

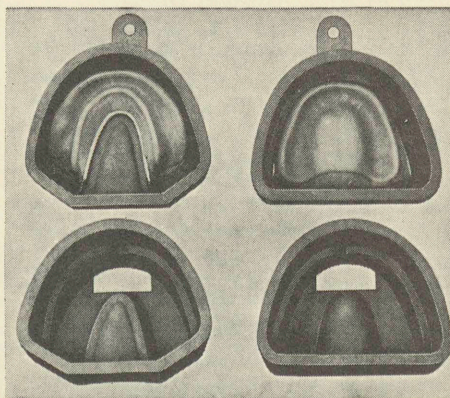
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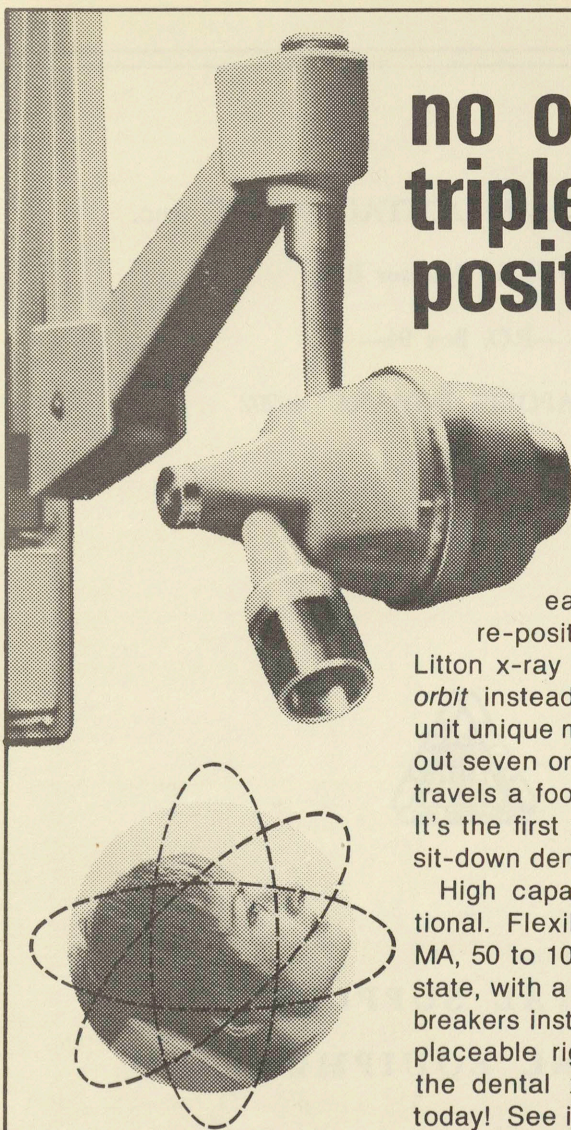
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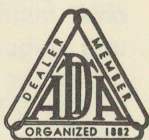
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