

Alumni Bulletin

SCHOOL OF  
DENTISTRY

Fall Issue 1985

Indiana University

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# Indiana University School of Dentistry ALUMNI BULLETIN CONTENTS

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## A Greeting. . .

On July 1, 1985, a new era began at the Indiana University School of Dentistry with the arrival in the dean's office of its newly appointed occupant, Dr. H. William Gilmore. For Dr. Gilmore, assuming his new position in fact represented a homecoming, since he is not only an IUSD alumnus (DDS, 1958 - MSD, 1961) but also a former chairman of Operative Dentistry at our school.

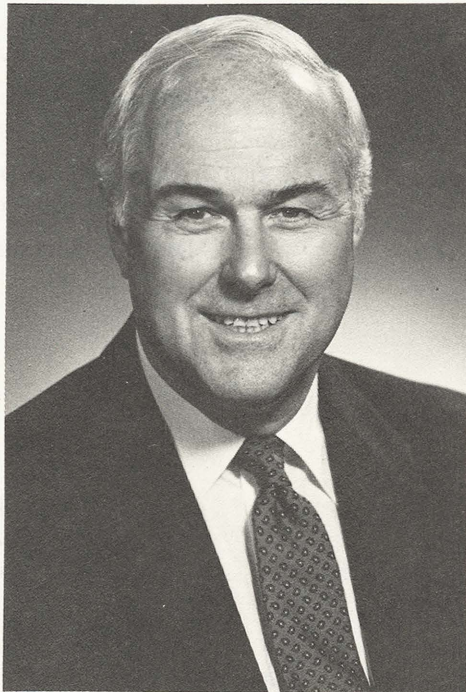
Dean Gilmore brings impressive credentials to his new assignment. After graduation he taught operative dentistry here for several years and headed the department from 1964 to 1970. He then conducted a full-time general practice for 15 years. Dr. Gilmore's textbook, *Operative Dentistry*, is in its fourth edition and he has contributed many articles to the scientific literature. He has lectured extensively in this country and overseas.

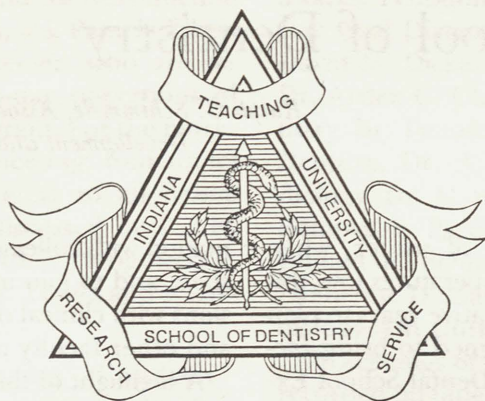
Long recognized as a leader in orga-

nized dentistry and dental journalism, Dr. Gilmore is a trustee of the American Dental Association for the Seventh District (Indiana and Ohio) and a former trustee of the Indiana Dental Association. He is a past president of the Academy of Operative Dentistry and the Dental Alumni Association. Since 1974 he has been editor of the Journal of the Indiana Dental Association and in 1980 he served as president of the American Association of Dental Editors.

Our new leader indeed comes well prepared for the challenges and opportunities that lie ahead in the 1980s and beyond. From the staff of the Alumni Bulletin and the faculty of the School of Dentistry, the greeting to Dean Gilmore is clear:

"Welcome aboard, and  
welcome back!"





## . . . And An Invitation

One of Dr. Gilmore's first official activities in his new role as dean was his participation in the biennial one-day meeting of faculty-practitioners in the Extramural Program on July 10 in Indianapolis. Dean Gilmore's address at the luncheon session was a highlight of the day, and you are invited to read his remarks herein. They offer excellent insight into the Dean's views on several key questions affecting dental education and the dental profession in general.

You are also invited to read accounts of other portions of the July meeting. This edition could almost be considered a "theme issue" on the subject of today's dentistry. It contains an essentially verbatim report of outstanding presentations by IUSD department chairmen and

other faculty members, along with lively question-and-answer exchanges between the speakers and the faculty-practitioners in the audience.

Other items of interest in this issue include additional information on Dr. Howard R. Raper, material on our school's international involvements, and a hard-hitting interview on cigarette smoking.

We are indebted to Dr. Ralph G. Schimmele, associate dean for Program Development and Extramural Programs, and his staff for their cooperation in preparing the seminar report. Gratitude is also extended to Dr. Jack E. Schaaf, associate professor of Oral Diagnosis/Oral Medicine and Radiology, for reviewing much of this material.

*The Editors*



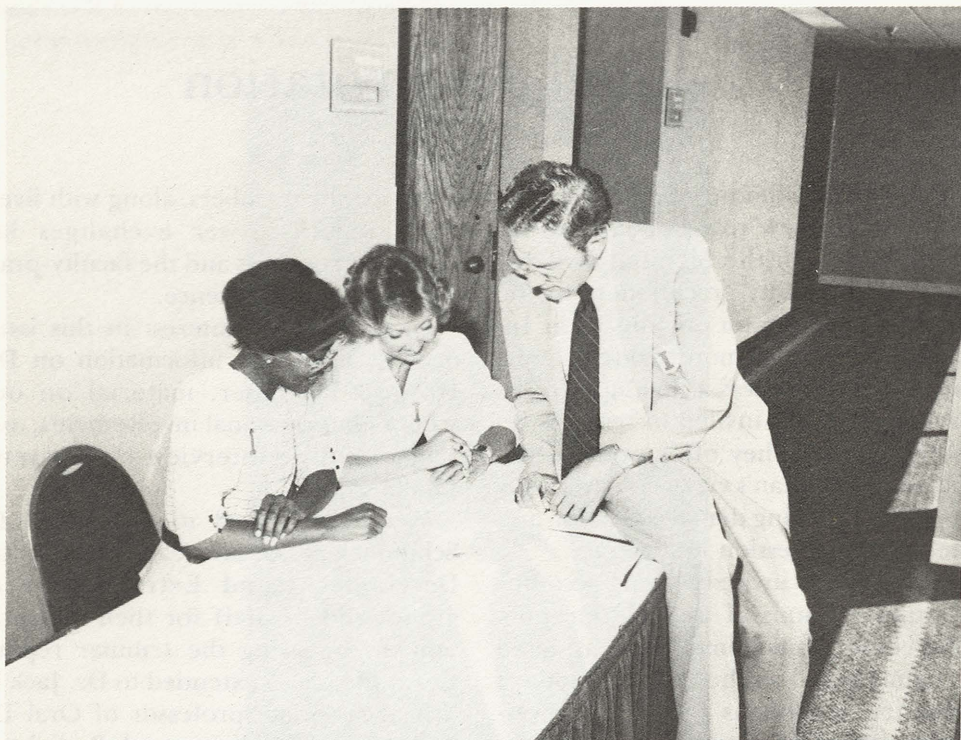
## Third Biennial Seminar For Extramural Faculty Offers Update by Experts At IU School of Dentistry

*Ralph G. Schimmele, Associate Dean for Program Development and Extramural Programs*

During the middle of winter, when days are short and temperatures low, this office begins on alternative years to plan a summer event designed to bring faculty members of the Dental School Extramural Program together for a one-day seminar in Indianapolis. Its purpose is to enable faculty-practitioners of the extramural program to learn more about the program, including changes since the previous meeting; to exchange infor-

mation with colleagues from around the state; and to join in small-group discussions with clinical department chairmen and other faculty members.

A highlight of this year's meeting, held on July 10, 1985, was the participation of Dean H. William Gilmore. His attendance at the luncheon, just ten days after assuming the responsibilities of the dean's office, was welcomed by the group and we were privileged to hear his com-



Dr. Ralph G. Schimmele reviews seminar agenda with staff members Ms. Pamela Elliott and Mrs. Diana Kuebler.



ments (printed as part of this report) on the extramural program and the future of the School of Dentistry.

The day's activities in this third biennial session began with a "welcome" by Dr. Schimmele and an introduction of the staff members, Ms. Pamela Elliott and Mrs. Diana Kuebler, who are responsible for day-to-day operations of the Extramural Program. For the morning portion of the meeting, four topics of concern and interest to all dental practitioners were discussed by faculty members who are widely recognized as experts in their fields. Topics and speakers were:

Identifying Missing Children Through the Dental Office - Dr. S. Miles Standish

AIDS, Herpes, and Hepatitis: Effects on Dental Practice - Dr. Chris Miller

Physical Characteristics of Current Bonding Materials - Dr. Michael Cochran

Bonding and Etching Techniques: Current Clinical Applications - Dr. David Avery

The afternoon program consisted of workshop-type sessions which included ample opportunity for participants to ask questions of the department chairmen and others who led the discussions. Sub-

ject areas and discussion leaders were: Periodontics, Dr. Timothy J. O'Leary; Oral and Maxillofacial Surgery, Dr. Charles E. Hutton and Dr. James H. Dirlam; Dental Materials, Prof. Marjorie L. Swartz; Pedodontics, Dr. David R. Avery; Oral Diagnosis/Oral Medicine, Dr. David M. Dickey; Preventive Dentistry, Dr. Arden G. Christen; Operative Dentistry, Dr. Timothy J. Carlson; Complete Denture, Dr. A. George Wagner; Radiology, Dr. Myron J. Kasle; Fixed and Removable Partial Prosthodontics, Dr. Donald R. Schmitt; Orthodontics, Dr. LaForrest D. Garner; and Oral Microbiology, Dr. Chris H. Miller.

Proceedings of the day's program were recorded on tape and then skillfully and painstakingly transcribed by Ms. Elliott and Mrs. Kuebler. The next step was a review and editorial processing by the speakers and discussion leaders and the Alumni Bulletin staff.

What follows is a detailed report of the day-long program. We are hopeful that its scope, covering a broad range of topics in modern dentistry, and the frankness of the give-and-take in the seminar sessions will make this report a readable, useful resource for all readers of the Alumni Bulletin.

And so, with an expression of deep appreciation for all those who took part in this biennial program, let us go on to the first presentation.

## Identifying Missing Children Through the Dental Office

*Dr. S. Miles Standish*

Nearly everyone is aware of the problem of missing children because you can hardly pick up a newspaper without seeing pictures of children who have run away or have been abducted. Pictures of these children are on milk cartons and

grocery bags, bus posters, even on tickets to sporting events. This whole matter is getting a great deal of media attention and I feel that we as dentists are obligated to do our part in the identification of missing children.



The role of dentists and of dental records in identification of the dead and missing is well known. You may have seen dental charts reproduced in the JADA in hope that a dentist somewhere will recognize certain individuals from the dental records. Dental charts for William and Emily Harris were published when they were on the lam as suspects in the Patricia Hearst kidnapping. The hope was that somebody would recognize them if they were seen as patients. Patricia Hearst herself, while she was at large, was thought to be a person who would seek regular dental treatment and as a patient would be recognized by a dental practitioner. This did not happen. In fact, this method of locating someone or identifying someone is not very effective.

We now have better opportunities than previously to identify the living as well as the dead. I am sure that many of you are getting calls from patients asking specifically about identification discs which can be attached to the tooth, containing all kinds of information, and we will speak about that.

It has been estimated that there are up to two million children missing annually in the United States. I don't know how they get these figures, but they certainly are remarkable. One breakdown goes like this: 1,850,000, runaways (averaging 12 to 13 years of age); about 10,000, parental abductions (that is, abduction by a parent who does not have legal custody of the child); about 3,000 killed by strangers; about 2,000 killed but not identified; and an estimated 8,000 children missing as a result of foul play (this number has not been definitely established). The FBI and the National Center for Missing and Exploited Children serve as clearing houses and are supportive of all missing children groups.

There is a Missing Children's Network with a toll free number. This network publishes information concerning the missing children with TV spot an-

nouncements and the pictures that you see on milk cartons, etc. There are also toll free numbers that the child can call to leave a message for the parents, particularly if they are runaways. A brochure called "A Parent Guide" is distributed by the network with facts about child safety education and a checklist for parents to collect information about the child: fingerprints, footprints, dental records, photographs, eye glass prescriptions, x-rays, physicians they may have had, hospitalizations, blood types, birth marks, scars, all of the things that might be useful in identification. The brochure tells parents what to do if the child is a victim of stranger abduction. It tells them whom to call and what steps to take. A dental chart is included which they may request their dentist to complete if they wish.

### **Advice for Children**

The brochure gives parents advice to pass along to children. They are told to inform the child that if someone says, "Your parents are dead and you are to come with me," the child should not believe them. The child should go to some relative and find out for sure. This is a common ploy for a stranger who might abduct a child. Advice is also provided on what to do if your child is a victim of parental abduction when the parent does not have custody, but takes the child away.

We had a Child Safety Weekend of the kind promoted by some of these groups in Indianapolis last May, and 1,700 children participated. Their parents brought them in, photographs were taken, dental charts were prepared, fingerprints were taken, and other vital statistics that might be important to the identification of that child were assembled and given to the parent.

Some special methods of identification involving dentistry are being widely discussed. For example, the ADA News



reported that a dentist at Tufts University developed a plastic laminate product which is used to record the position and anatomy of the occlusal surfaces of teeth. This is simply a laminated wax wafer that the child bites into and the parents retain as a record. I can see problems with it, because little children will have deciduous teeth coming in or out and there will be frequent change.

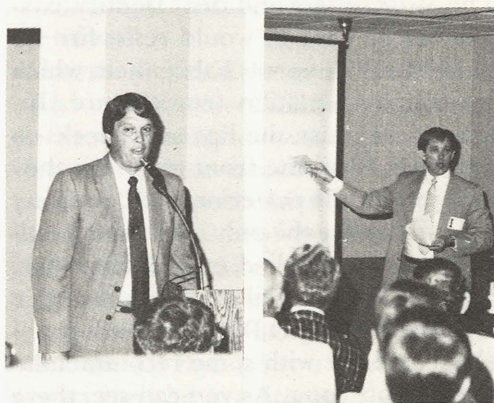
However, most current activity centers on the use of little identification dots or plastic wafers that are bonded to a tooth. You may receive calls about these. A lot of sophisticated advertising and promotion is going on in this area. One such identification device is known as the "ID Dot," which is about 1/8-inch in diameter. The company inscribes the Social Security number of the individual on the dot, which can be purchased for \$15 each. You then will bond the dot to the tooth. At the same time you submit the patient's Social Security number, you give the company other information about the child: name, address, phone number, name of the dentist, and name of the physician. This information is placed in a computer and an 800 telephone number is supplied so that you may call and receive all other information. The information is retained in the

computer for two years, after which the parent must pay another \$5 to reinstitute the listing in the computer for two more years. This method has the advantage of the Social Security number enabling you to determine who the individual is without going through the computer.

The "Micro I/D" wafer also has a brochure that you can place in your dental office reception room. This disc carries all kinds of data including name, address, phone number, allergies, medical alerts, and organ donor status as well as other information. The chip is about 3/32 of an inch in its greatest dimension and you will need a hand lens to read it whereas the "ID Dot" can be read grossly. Again, this dot costs about \$15. Most companies selling this service send information to emergency rooms and law enforcement agencies informing them that an individual child might have a dot bonded to a tooth.

### Other Products

Another product, called "Exactident," is a stainless steel wafer with a 10 digit code, again requiring computer access to get data about the individual. This is being test marketed in California and



IUSD faculty members Drs. Michael A. Cochran, S. Miles Standish, David R. Avery and Chris H. Miller address dental practitioners during morning session.



Arizona and should be available in this area soon. It is considerably cheaper than some others: you can get 25 discs for \$100, \$4 a piece. An 800 number is available for obtaining data about the individual. Another type is 'Codent,' a stainless steel disc about  $2\frac{1}{2} \times 4$  millimeters in size and costing about \$15. It contains a lot of information you have to read with a magnifying lens.

Among the other approaches is the Swiss Identification System which was first described in '78 or '79. This consists of a gold-encoded information chip which is placed in a small preparation on the buccal aspect of the tooth. A micro-processor engraves the Social Security number on it. The company recommends using a red-colored composite to call attention to it, but you would need to remove the composite to read the chip. Also, several years ago in Canada, the "Dentify" system recommended putting ceramic discs in amalgams with a notched identifying pin. At death, x-rays would be required to see this notched pin and the filling removed to find out who the individual was. Not very practical. This technique has the advantage of being highly resistant to fire. But you would have to know it was there or be able to recognize it in the first place, and that seems to me to be the problem. The Swiss system and this "Dentify" system out of Canada would resist fire up to 1300/1400 degrees Fahrenheit, which is beyond cremation temperature. Intense fires cause the lips and cheeks to pull back from the front teeth but they may protect the posterior teeth. So many times those are the only remaining teeth if the individual died in an intense fire.

The ADA Council on Dental Practice is studying the "ID Discs" and will probably come out with some recommendations before long. As you can see, there are several products of merit and the Council will have to decide which might be most desirable for routine use. The American Board of Forensic Odontol-

ogy has suggested that the present recommendations for use are a bit premature. They suggested that tissue compatibility might be a problem, but I doubt it. Durability should be of major concern; since most of these are plastic and are bonded to the tooth with plastic, they could be destroyed by fire. Those that are made of stainless steel would be fire-resistant, but they are bonded to the tooth with plastic. Most of the advertisements report expected durability to be about 5-6 years. How they know that I don't know, because they have not been in use that long.

Based on what I have seen, I would summarize the situation thus: at least five different types of identification discs are being publicly offered for use. Three of the discs that I have described are plastic and two are stainless steel. I mentioned the resistance to fire of the stainless steel discs but again the plastic bonding would be a serious weak point. The discs use different information. One uses the Social Security number, which seems the most practical; two use special number codes of one kind or another requiring a toll free number for access to the computer; and two of them contain all kinds of vital information: name, address, phone number, and the like which you have to read with a magnifying glass. The ADA and most of these companies probably will recommend placing discs on a buccal aspect of an upper molar tooth for the reason I mentioned: in case of fire, that part of the tooth is protected by the cheek. Also you can get to it and see it even if the body is in rigor. Finally, I would ask those of you choosing to deal with a computer code number as the only way to get the information, what will you do if the company goes out of business?

### Denture ID

Of course, the denture identification law that Indiana established last year requires you, when delivering a denture,



to offer the patient the option of putting the Social Security number, name or some other identifying mark on the denture. I believe that nine states now have that law and it may be useful. The ADA has encouraged it through "Operation Ident."

The National Crime Information Center keeps files on unidentified dead and missing persons and makes computer comparisons of descriptive data that are entered. Dental information is now included and you might be called upon to fill out a dental chart. Other information put into the computer includes physical characteristics, age, race, height, sex, weight, fingerprint classification, anthropologic and x-ray findings, optical prescriptions, surgical devices that may be in the body (e.g., pacemakers), surgical procedures (e.g., appendectomies), serology such as blood type, jewelry, clothes, recent pictures and so on, and now dental information. About 190,000 entries are made annually, and 96 percent are cleared because most are runaways or parental abductions. About 7,000 cases a year remain unidentified.

A law that I think would be advantageous to us has been passed by several other states, most recently New York. It requires coroners and medical examiners to furnish the investigative agencies with copies of fingerprints and other data including dental examinations of unidentified dead. Also, if someone is reported missing more than 30 days, the law requires that data from that missing person be put into the computer. In California, where the system has been in use for approximately three years, more than 60 identifications have been made because of that law.

*What happened to the push by law enforcement agencies for parents to have their small children fingerprinted? Other than the Child's Safety Day that you mentioned. I haven't heard much about this lately.*

The Child Safety Day has been most effective because they are doing more than just getting fingerprints. They are also taking photographs. At such a day in Washington a while back, they did those things plus take a lock of hair. If a child died and the body is decomposed, the fingerprints may be gone. Other records, such as recent photographs and dental records, are very important. The teeth will resist fire that facial features, physical characteristics, or fingerprints will not.

*Do you think the disc business is a little fadism - pushing this to the public - in two or three years will it all be over?*

It is certainly an optional thing with parents. I have had several calls from groups and parents asking where they can get this done. It is only one of many things that can be useful in identification. I question the profit motive as you do. There is the initial \$15 per disc and then another fee every few years to keep it in the computer. Of course, the dentist is going to have to charge to put it on. It is just one other method of identification if you have good ante-mortem and post-mortem dental records, particularly radiographs.

*Have legal implications been discussed or considered?*

I can only speak from my experience with identification of the dead. Until that person is identified, you may be called upon to take out teeth or jaws of a dead person. That procedure is performed under the direction of the coroner/medical examiner and he may determine this to be necessary to make positive identification. There should be no problem. With the ID dot, all you have to do is retract the cheek a little to see it, read the Social Security number, and you are home free. Of course, when it is placed on the tooth it is with the permission of the parent. Adults could have the dots



put on too. But I can't think of any legal problem with it.

*Is this any better than keeping good dental records?*

I had a case where there were no dental records. Even if there had been, there

were no fillings or cavities. The dentition was perfect. In some cases this system might be better than dental records. But if you have decent x-rays, even if there are no fillings or cavities, you can still make the identification from the teeth. If you have some distinctive features of the teeth, that is great.

## AIDS, Herpes, and Hepatitis: Effects on Dental Practice

*Dr. Chris Miller*

The topic that I want to look at very briefly is infectious disease hazards in dentistry. The quick way to update you on an infectious disease is to simply list basic facts about the disease. This is what I will attempt to do in the case of hepatitis, AIDS, and herpes infections. Much of this information will be common knowledge to you, but a review may be helpful.

### **Hepatitis B**

Hepatitis B is clearly an occupational disease in dentistry. The infection rate for the general population is about 3.5 percent; for general dentists about 14 percent; for oral surgeons about 30 percent. The fatality rate in the United States is 1 percent. Only one out of five people who have hepatitis has symptoms, but all five of them may shed the virus. This is the insidious aspect of the disease. The four individuals who have the disease but are asymptomatic have had no particular reason to have serology tests, so they probably don't know that they are infected.

About five percent of adults who have Hepatitis B become carriers for life, with a 25 percent mortality rate in about the next 20 years, particularly due to hepatic carcinoma and cirrhosis. There is an association between the development of a Hepatitis B virus infection and devel-

opment later in life of hepatic carcinoma. A carrier may shed the virus through body tissues, fluids and secretions.

An estimated 3,000 dentists in the U.S. are carriers of Hepatitis B virus. Again this is a difficult number to actually pin down, but that is the current estimation. Published reports have described situations in which seven different dentists have transmitted Hepatitis B to 169 patients. This includes the one most of us are familiar with here in Indiana. That type of transmission is pretty rare, however. By far the greatest threat is transmission of Hepatitis B virus from patients to dental personnel. Patients with Hepatitis B have the virus in their blood and body secretions several weeks before the onset of symptoms (if they are among the 20 percent who develop symptoms). The current estimate is that one in every 200 dental patients is a Hepatitis B carrier. So you can quickly run through your mind how many patients you see on a daily basis and then realize, when you reach 200, that one of those was probably a hepatitis carrier.

The chief route of Hepatitis B transmission in dentistry is by direct contact with infected blood and/or saliva through small cuts on fingers. As little as 1/2000 of a drop of infected blood can transmit the disease. Since viruses are extremely



small, a small volume of blood can contain many viruses. Transmission by indirect routes such as contaminated surfaces and aerosols generated by high speed equipment, is also important. In addition, we suspect that Hepatitis B virus can be transmitted through direct inoculation of the eye. There are no data from human studies on this, but it has been shown to occur in the chimpanzee.

This virus can survive on environmental surfaces and instruments for weeks. So even outside the body it remains infectious. Unlike many other viruses, however, Hepatitis B can be prevented in over 94 percent of those who receive the Heptavax B vaccine. Further, most of the available high level disinfectants kill the virus, as far as we know. The problem is that we have not yet learned how to grow the Hepatitis B virus. Thus, we cannot treat the virus with an agent to see if that stops it from growing—because we don't know how to grow it yet. What we *can* do is take the virus that we know is infectious, treat it with an agent and then inject it into a chimpanzee to see if we have inhibited its ability to cause disease. Since the cost of a single chimpanzee is several thousand dollars, only four types of disinfectants have been tested in this manner. Since only one animal was used per disinfectant, there is not a lot of information to hang your hat on. Glutaraldehydes worked; an iodophore worked; bleach worked; and even alcohol worked.

### AIDS

AIDS is such a rapidly changing situation that whenever you make a comment about it, you feel that you should give the date and the time of day because maybe by afternoon the information might change. Nevertheless, I will attempt to pass along some information. The AIDS virus has been identified, and is called Human T Cell Leukemia virus Type III (HTLV III). This virus infects

certain lymphocytes of the body which results in a decreased immunity and renders the person highly susceptible to any disease, basically, but in particular to very unusual opportunistic infections that do not normally occur in a person who has a healthy immune system. These opportunistic infections involve mainly fungi, protozoa, and viruses. Individuals with AIDS die from these severe infections, not directly from initial infection by the virus that destroyed the immune system.

About 10,000 cases have thus far been reported in the U.S. By April of 1986 this is expected to climb to about 19,000. Seventy-three percent of reported cases have occurred in homosexuals, 17 percent in drug users, 1 percent in hemophiliacs, and the remainder in heterosexuals, children, and Haitian refugees. Almost half of all AIDS cases reported to date have resulted in death (about 5,000). AIDS is considered to be a fatal disease sooner or later, depending upon the kind of opportunistic infection or particular malignancy that develops in these individuals.

One of the most prominent manifestations in an individual with AIDS is Kaposi's sarcoma, which indeed can occur in the mouth. We have slides showing early lesions of this on the palate and also on the jaw of an AIDS patient. The lesions can also occur on the gingival tissue as well. This is usually in a person who has already been diagnosed as having AIDS; it is not one of the initial signs.

One of the most typical, relatively early infections is oral candidiasis. So this, as well as oral herpes infections, may indeed bring some of these individuals in the earlier stages of AIDS into the dental office for care. These infections, along with possible involvement of the individual patient in a high risk group for AIDS, would indicate a need for special aseptic care.

A recent indication of another relationship between oral conditions and



AIDS has been reported in California. Investigators have identified a condition that they call Oral Hairy Leukoplakia, which was very prevalent in a group of 77 individuals who had pre-AIDS or AIDS. Further analysis of the lesions in this group of primarily homosexuals from the San Francisco area, indicated that they are most likely caused by a herpes virus, probably the Epstein Barr virus, which is the same one that causes infectious mononucleosis and Burkitt's Lymphoma. This new condition has been recognized as one of these opportunistic infections that might bring a patient to the dental office to seek care. A more generalized form of the same condition covers the entire tongue. While there is no specific oral lesion that would suggest a possible AIDS problem, various lesions may develop in the category of opportunistic infections.

About 40 patients in Indiana have had AIDS, although that doesn't mean they acquired the disease here.

We don't know all that we need to know about transmission of the AIDS virus. We know it is transmitted through blood and blood products, as well as through semen, but we don't know about transmission through other body fluids, for example saliva. As of a few weeks ago, there had been no documented cases of dentists or dental personnel contracting AIDS from an AIDS patient as a result of performing dentistry on that patient. It may be possible, but it is yet to be documented.

Procedures to prepare the Heptavax B vaccine have been shown to inactivate the AIDS virus. This has been a problem with acceptance of the Heptavax B vaccine because most of us know that this vaccine is prepared from the blood of homosexuals who are high risk for both Hepatitis B and AIDS. So the unfounded fear is that there may be AIDS virus in the vaccine. Now that we can test for the AIDS virus and now that we know what it is, the procedures used to

prepare the Heptavax B vaccine have been shown to kill the AIDS virus as well as all other viruses including the Hepatitis B virus.

Another important point is that an antibody test is available for AIDS. You can detect whether a person has made antibody to this AIDS virus. Four thousand individuals who have received the Heptavax B vaccine have now been tested for antibody to the AIDS virus. If you give them a vaccine, and they make antibody to the Hepatitis B virus, they ought to be able to make antibody to any other virus in there. Of the 4,000 individuals who have been tested, none have developed antibody to the AIDS virus, which indicates that the AIDS virus is not in the vaccine.

With the rapidly increasing number of diagnosed AIDS patients, you will have to decide whether to treat the person or not. In my opinion, there are adequate methods of protection for such treatment, which we will briefly review in just a moment.

### **Herpes Simplex Virus**

Herpes virus infections in general are not as severe as Hepatitis B and AIDS; nevertheless, they can cause down time in practice. There is a large class of herpes viruses, but I'll discuss just Herpes Simplex Virus. We know that it causes herpetic gingivostomatitis, eye infections, nasal infections, skin infections and disseminated infections, in addition to the rapidly increasing number of genital and anal infections. The important thing to remember, of course, is that herpes infections are recurrent. If they occur in the eye, they can recur in that eye and cause further damage. Also, if you have a herpes infection at one site of the body, it does not necessarily give you immunity to herpes infection at another site. If you have recurring fever blisters you are still susceptible to herpes infections on your fingers. It is a very localized infection in most cases.



Herpetic Whitlow, herpes infection of the finger, is now considered an occupational disease in the dental profession. A recent case report told of a hygienist who had a skin irritation on her hands. She treated a patient with a fever blister. One week later she began to feel a little tired but she still went to work. She had no particular problems on her hands outside of her regular skin irritation. In the next four days she saw 40 patients. On the following day she really started to feel bad, so she took a couple of days off. In two days vesicles appeared on her hands. She had contracted herpes from the original patient about a week and a half previously. Within one more week, 26 of the 40 patients she had seen on those four days developed oral herpes. This demonstrates the insidious nature of some infectious diseases, since she contracted the virus and passed it on to her patients before developing symptoms.

All of that could have been prevented by wearing gloves. Transmission is through direct contact with the lesions, contaminated body fluids, salivary aerosols in the eye and through mucous membranes or small cuts in the skin. The herpes virus is a very unstable virus which does not survive long in the environment, probably less than an hour.

Concerning the actual process of acquiring an infectious disease, we need to look at three basic steps. *Contamination* simply means that a body site is exposed to microorganisms. We are being exposed constantly right now. We are being contaminated from microorganisms in the air. This is a fact of life. *Infection* results from survival and growth of the organisms on or in the body. This is the next step after contamination. *Disease* results if this growth and survival cause damage. That does not always occur, so really disease is simply a by-product of the natural growth of microorganisms. Another important aspect is that acquiring an infectious disease is not an all

or nothing situation. As a matter of fact, as we look at this relationship again with the three steps involved, it appears that we always have two chances. If we are contaminated, we may then be infected or we may not be infected, two chances. If we are infected, we could get a disease or not get a disease, two chances. If we get the disease, we could die or we could survive. We have two chances. And if we die, most say that we still have two chances!

Whether or not we will actually get a disease depends upon three factors: 1) *the dose of the organisms*, how much, how many cells we are contaminated with, how fast they grow and multiply to increase that dose; 2) *times the virulence*, which is simply the inherent ability of an organism to produce a disease or the disease-producing properties that it has; 3) *divided by the resistance*, natural body resistance. A combination of these factors then equals disease or no disease depending upon their interaction.

The same three factors must be taken into account in our efforts to prevent a disease. We cannot do anything about virulence of an organism (its inherent disease-producing ability). We can't change virulence in a natural situation. We can change it in the laboratory but that doesn't help. We have to accept our chances in whatever type of organism that infects us. We *can* do something about resistance. Maintaining general body resistance by sleeping now and then, eating relatively balanced meals, and so forth will help. We can also get specific resistance through vaccination, against Hepatitis B, for example. I recommend that you receive it. So do the AMA and the ADA. Outside of these things, we can't do much about resistance. Where we can really do the job is affecting dose. We can reduce the dose of microorganisms being transmitted from a source (patient) to dental personnel, or from dental personnel to source or wherever.



One of the first approaches to prevention is *Barrier Protection*: gloves, eye glasses, masks, and clinic attire. This is not new information, but it should be reemphasized. Barrier protection reduces direct contact with infectious fluids, which is important in reducing the transmission of Hepatitis B virus, Herpes Simplex virus and probably the AIDS virus. With regard to clinic attire, it isn't what you wear but what you do with it at the end of the day that is important. Throwing it in the laundry with the rest of the family's clothes would not be appropriate. *Instrument Sterilization* is absolutely essential in the practice of dentistry today. *Surface Disinfection*, wiping surfaces, is also important. I get a dozen calls a month asking what kind of disinfectant to use. I recommend two similar products: Wescodyne and Biocide. They are iodophors: iodine bound to organic molecules, so you don't have a staining problem. They are excellent for wiping surfaces and wiping handpieces that you can't run through a sterilizer, because these agents or these two examples of this agent, are in the high level disinfection group. They give you good kill: much better than alcohol or the quaternary ammonium compounds. Another reason why I recommend these products is that they are cheap: \$65 to buy a gallon and you can dilute it with water 213 times.

*Do you have to wear gloves to use these agents?*

Yes, you should. I recommend gloves any time you use a disinfecting chemical.

*Do you have to wipe off the handpiece then?*

Yes, I recommend that you wipe off the handpiece afterward with plain alcohol or water using a gauze. If a disinfected item will again come in direct contact with the patient, you should remove the disinfecting agent.

*What do you have to say about Zovirax?*

This relatively new drug manufactured by Burrough-Wellcome is ap-

proved by the FDA for treatment of herpes infections in immune-suppressed individuals. It may also be useful on other kinds of herpes patients. Zovirax does not cure herpes infections; it simply limits replication of the virus. During the latent periods in recurrent herpes, the virus goes back into the nerve tissues and since it is not replicating there, the drug does not work. The drug helps only when the virus is replicating at a particular disease site during vesicle formation. There is even some indication that it can be used prophylactically for individuals who have severe recurring episodes of herpes. This has not been approved by the FDA but there are scientific data to suggest that.

*Prophylactically, orally or topically, or parenterally?*

Orally, because it can reach fantastic blood levels. It has a very, very low toxicity—so they can give high doses. The time to take the drug is when the tingling sensation is first noticed. If the lesions have developed and are already encrusted, the drug won't work. It has to be taken very early. So there may be a pretty good future for oral herpes drugs in reducing the severity of these recurring episodes.

*How long can AIDS lie dormant, two years maybe?*

They don't know for sure. They really only started studying AIDS patients in 1981. The virus was identified less than a year ago. They have now been able to detect antibodies to the virus in people who have no symptoms of AIDS, but they don't know what this means yet. Is the virus going to lie dormant for a while and then cause a problem later? We have not had enough time to get that information.

*What worries me is that you are talking about already diagnosed AIDS patients coming to us. How are we going to recognize a patient who has AIDS and who has not been diagnosed?*



It will be difficult, just as with other infectious diseases. You won't recognize that disease unless they can give a history or have a symptom. It is the same problem with hepatitis. There is an early stage of AIDS that is characterized by a general lymphadenopathy, fever, and malaise but these are nonspecific.

*But those can be symptoms of any disease.*

That is right. So you have to determine if such patients possibly belong to a high risk group or have associations that may put them in a high risk group.

*I read a scary thing: this may be transmitted by mosquitoes.*

I had not heard that. A lot of viruses are transmitted by insects. That is an interesting question.

*I heard that after having Heptavax B not everybody is immune. If this is the case, shouldn't we be tested after we have had the series of shots to make sure?*

It's true that some of those who receive it just don't develop an immune response. The current recommendation is that after you have had the series of three inoculations, you should set up

routine checks for antibody six months later, and annually thereafter. There are two reasons for doing this: (1) to see if you did respond and (2) to see how long your immunity lasts.

*Everybody says homosexual populations are increasing and that is why we now hear about AIDS. But can it be that this has been around like some of the other diseases and we never knew what it was?*

I really don't know. I can give examples of relatively "new diseases." We all thought Legionnaires' Disease in Pennsylvania, 1976, was a brand new organism, but after it was identified and characterized, they began to test some old serum samples that had been stored for 40 to 50 years from patients with undiagnosed diseases. Some of those old blood samples had that same organism in it but we just did not recognize it. There is evidence that the legionnaire's bacterium has been around for a time but some change in lifestyle or some set of unusual circumstances made this disease appear all of a sudden. This may be the case with AIDS: an unusual set of circumstances and relaxing of certain kinds of morals and so forth.

## Physical Characteristics Of Current Bonding Materials

*Dr. Michael Cochran*

When we talk about bonding, and specifically resin bonding, there are many new applications in dentistry today. It is a very hot topic, like some of the other things that we have discussed this morning. It's being touted as a practice builder. With the reduction in caries, we are getting more and more interested in the esthetic aspects of dentistry. Recently, dental product manufacturers have been trying to get us to use their products by going directly to the patient with their advertising. In other words, they're at-

tempting to create a demand that will entice us to use their materials. When we talk about bonding, we have to consider some of the problems inherent in attaching materials to tooth structure. There are two ways of going about it: (1) mechanical bonding, which is typified by the acid etch technique that we are all familiar with; and (2) true adhesive bonding to tooth structure—this is relatively new and in many ways still in its infancy in terms of specific data on longevity, durability, etc.



Since most of the esthetic bonding applications in use today involve mechanical attachment (etching), I would like to talk a bit about this technique. Acid etching allows us to mechanically attach resin to the enamel of the tooth. When we etch the tooth, we do a number of things: we increase its wetability, we provide mechanical porosities and we increase the surface area. With this kind of technique we can accomplish many types of resin restorations with much more confidence in their success and longevity. For a long time we have used resin to repair angles in defects in teeth. But over the last few years we have started to use these materials for many more things; for example, to repair fractures, to change the color of teeth, and (in a case illustrated by slides - Ed.) to veneer a resin over the surface of a tooth that was discolored because of a sclerosed canal that could not be treated endodontically and had not responded well to bleaching. By putting a resin veneer over the labial surface we can change the appearance of the tooth for the patient without preparing it for a crown.

We can treat many situations that used to be problematic such as reshaping peg laterals. Primarily resin bonding is a reversible procedure and we are not really doing anything to the tooth structure except etching the surface. So changing peg laterals to a more natural form is now relatively easy. We can also close diastemas in any number of ways with resin bonding. Even mandibular anteriors that have a lot of developmental defects can be made to look acceptable. Resin bonding is also used to attach other materials to teeth, whether they be laminate veneers or porcelain veneers. Finally, the Maryland bridge utilizes resin luting agents, and all these procedures involve acid etching to enamel.

### **A Brief Overview**

Since we often become complacent with procedures we do every day, let's

get a quick overview of etching and some of the things we can control in this procedure that will increase our ability to tie resin materials to teeth. We know that when we etch a tooth we remove some of the enamel surface and produce porous zones that resin can flow into. We have all seen SEMs of an etched surface. However, when we look at the etch procedure itself, what we do will affect the bond and the success of the restoration. Obviously the concentration of the etching solution is not within our control unless we are going to make our own. Most commercial etchants are 35-37 percent phosphoric acid. However, we do control the etching time, the washing time, and the drying time. Recent studies have shown that these items which are under our control really have a great effect on the longevity of the restoration.

First let's look at the application of the etching solution. If you try to rub the enamel surface at all when placing the etchant (rather than lightly flowing or dabbing the solution to place) you destroy probably one-quarter to one-half of your etched surface and prevent good penetration of the resin. Second, we recommend a 60-second etch, in most situations. With normal teeth, if you over-etch, you start destroying the etch pattern you want for attachment by building up such a layer of debris that good bonding is impossible. Clinically, you are looking for a frosted look to the enamel rather than a chalky white appearance. So unless you are working with a patient with an extremely high enamel fluoride content, or with primary teeth, the 60-second etch is really all you need.

Next is washing time. This is the thing that I formerly failed to do properly simply because I didn't know any better and usually followed the normal routine of rinsing quickly with an air-water spray and then drying. Studies have shown that by changing the rinsing time from 15 seconds to 60, you almost double the bond strength. Now rinsing for 60 sec-



onds seems to take forever, but if you can manage it for 40 seconds, you are doing a much better job of preparing the surface for maximum bonding. It really does make a big difference in the bond strength. Although most patients are very amenable to a longevity of anywhere from 3 to 7 years, they would certainly prefer 7 years to 3.

Finally, drying is also important in that you must use clean dry air, with no water or oil contamination. If you want a simple clinical way to check, just direct your air spray on your mouth mirror and if you see any kind of film or water droplets, you have a problem. You are not drying properly and you are contaminating your etch. I realize these are all basics, things we don't even think about because we do them so quickly during the day, but they do make a big difference in the final success of the restoration.

Another point that is really important to etching procedures, and more so when we start talking about true adhesive bonding to teeth, is control of moisture—the isolation of the operating field. With the resin systems today isolation is essential. If an enamel surface which has been etched is contaminated for more than a second with saliva, it can be rinsed and thoroughly dried again and yet you have lost all of your etched pattern. If you get contamination at all, you have to re-etch for about 15 seconds, then rinse and dry again or you don't have a bondable surface.

### **Altered Procedures**

Changes in technique that have occurred because of the acid etching technique include the beveling of every cavosurface margin on resin preparations. This is because you want to be able to attack the enamel surface with the etchant at the ends of the enamel rods. If you are using etching only for sealing cavity margins, a small  $\frac{1}{2}$  millimeter bevel will suffice. However, if you are trying

to etch for increased retention, a longer bevel is necessary. The rationale behind this is that if you etch the surface of the enamel at the end of the rods, you are creating a good porous surface for bonding. If, however, you try to etch on a cavosurface margin that is a butt joint, you are really etching the sides of the enamel rods. If your etch is shallow, you don't have any penetration to form resin tags. If you etch very deeply, you etch completely around the rod and the polymerization shrinkage of the resin will fracture the unsupported rods and you have no more bond. By placing a bevel at the cavosurface, you are achieving the proper pattern. A number of studies have examined margin configuration of resin preparations, and all have reached the same conclusion . . . A bevel gives us our best margin for bonding and finishing.

We still advocate the use of bonding agents over etched enamel. Studies done on the lab bench have shown that by just placing resin on an etched surface, you get good tag formation. However, in the mouth when you are trying to apply a resin that is fairly viscous over an etched surface, you tend to trap a lot of air underneath and therefore don't get the full resin tag length or strength. So we, and the manufacturers of these products, recommend using a fairly fluid resin bonding agent over the etched surface before you place your composite. In that way you create the type of tags that you want.

Now, all of this is fine for the mechanical attachments that we have talked about for years. However, dental materials people like Ralph Phillips and Marjorie Swartz have been working to come up with something that is truly adhesive to tooth structure. When we talk about chemical adhesion to tooth structure, there are things that we need to consider. If we want to create some kind of actual adhesive film that will bond to both enamel and dentin, we have many



problems to overcome, such as differences in the type of structure of these materials, differences in the amount of moisture in them, and differences in their chemical makeup. The true adhesive bonding systems that are being worked on today are the dentin bonding agents, the glass ionomers cements, and obviously the polycarboxylate cements which have been around the longest.

Chemical adhesion has certain requirements whether we are talking about dentin bonding agents or Krazy Glue. Primarily, you must have a smooth, clean, dry surface. If you don't, there is no way you are going to get adhesion. What that means clinically is rubber dam isolation, removal of all debris and film and removal of the smear layer that is created when we cut cavity preps. Now you will get an argument about this from some manufacturers of dentin bonding agents who will say, "Don't remove that smear layer." The reason they say that is that the dentin bonding agents for the most part are based on phosphate bonding to calcium and there is more calcium in the smear layer than in the dentin itself. Thus, you *can* get fairly good bonding to a smear layer, but unfortunately the smear layer is not attached that well to the tooth. So you are bonding to a film that may not stay attached to the tooth surface. Therefore, we recommend removal of the smear layer. The basic cleaning procedure involves scrubbing first with 3 percent hydrogen peroxide followed by a 15-second scrub with polyacrylic acid (that is the liquid that comes with Durelon cement). You then rinse thoroughly and dry, and you have removed the smear layer without really opening up the dentinal tubules, and you have a much better surface for bonding resin.

### Products Cited

When you look at dentin bonding, there are many products on the market today. One that you will hear about if

you have not already is Clearfil. It was developed by Dr. Fusayama and is used extensively in Japan. The difference between it and all the other bonding agents you see is that the use of this material involves acid etching of the dentin with phosphoric acid. This etching will destroy some of the tissue in the dentinal tubules, and the resin forms tags that fill the open tubules. According to Dr. Fusayama's work, this resin is not irritating to the pulp. It plugs the tubules and they say creates no sensitivity or pulpal problems. This goes along with Branstrom's theory that it is not the material that causes pulpal irritation but the microorganisms that are left behind in cavity preparations or that enter through leaking margins. Most experts in this country do not agree and the current stand of the American Dental Association, based on world-wide research, is that etching of the dentin is not a good thing to do and is detrimental to the health of the tooth. At this time we do not recommend this procedure.

The other dentin bonding materials are, for the most part, phosphorous or phosphate esters of Bis-GMA resin that rely on inorganic (calcium) bonding. Of the ones that are available, at least in laboratory tests, Scotch Bond has come out looking very well. However, I am going to qualify that because again we are talking only about laboratory testing.

Let me give you an example. Parallel studies were done by two of our graduate students in which they made simulated class 5 eroded lesions in extracted teeth and restored these areas with various resins with and without bonding agents. They used glass ionomer cement as a control. The only difference between the two studies was that in one no mechanical preparation was done, and in the other a cervical retentive groove was placed. One point became clear; no matter what was done or what material was used, you had better bonding and less leakage if you had that cervical re-



tentive groove. Even the bonding agents that performed well gave better results if a cervical retentive groove was placed. We are recommending at this point that some type of simple cervical retentive groove be placed in class 5 lesions which have a cervical margin that is not enamel.

I said I had to qualify Scotch Bond a little bit. Several clinical reports are coming in (not only with Scotch Bond but with other dentin bonding agents) that indicate they are not performing clinically the way we hoped. One possible cause is that if you compare the maximum bond strength achieved by dentin bonding agents and the force generated by polymerization shrinkage, those figures are almost identical. The feeling is that some failures may result simply because the bond isn't strong enough to counteract polymerization shrinkage. So clinically, right now, things are not looking as good over the long term for dentin bonding agents. There are some results out of Switzerland that also say they are having a lot of patient sensitivity and other problems with the dentin bonding agents.

### Materials Compared

Another one of our graduate students, Dr. Bruce Matis, was doing a glass ionomer study and had a few patients remaining, each of whom had about 8 to 10 eroded lesions in their mouths that had to be restored. As a pilot study, he put in each patient's mouth one restoration each of Cervident, the Dent Mat material with Spectrabond (which is a precursor to Creation), Silux with Scotch Bond, Concise with Scotch Bond, and two or three different types of glass ionomer cement. At the two-year evaluation, none of the glass ionomers had been lost but increasing percentages of the various types of resin materials with dentin bonding agents had failed. Eight of the 10 Spectrabond have been lost, Cervident is running a close second and

even the Silux with Scotch Bond and Concise with Scotch Bond have lost 4 or 5 restorations out of the 10. That is only a pilot study and very limited in scope, but at least each mouth had all types of materials, so they were all under the same conditions. At this point, for class 5 lesions, glass ionomers appear to be holding up better than the resins are with the dentin bonding agents.

Finally, if you are going to use a dentin bonding agent for primary retention, particularly in eroded areas with no enamel cervically, my suggestions would be as follows: 1) Good isolation; 2) placement of cervical retentive groove; 3) thorough cleaning of the surface with the polyacrylic acid scrub for 15 seconds and then a thorough rinsing and drying; 4) if you have any extremely deep areas where you think you are awfully close to the pulp, then protect only that area with calcium hydroxide; 5) etching of any enamel available; 6) thorough rinsing and drying; 7) application of bonding agent and resin. In this case, the Scotch Bond (which is used as both a dentin and enamel bond agent) is applied in two coats. It is available in both light activated and chemical activated forms.

One problem again with the dentin bonding agent is that there is no guarantee about the kind of bond you can get. If you are doing class 2 resins, I would advise you to try to keep your cervical margins in enamel if you can because they still pose a high risk of leakage and that is the one thing we don't want underneath any restoration.

*How can you justify the necessity of protecting dentinal floors and walls with a calcium hydroxide in a posterior composite and not in a cervical lesion?*

That is a good point. The difference is in the type of lesions that we are talking about. In a cervical erosion area we usually do not have decay and essentially do no preparation. So you are working with uncut dentin that is so sclerosed



and polished that your penetration potential is low.

*Did I understand you to say there are two applications of bonding agents and if so, why?*

For the Scotch Bond itself the manufacturer recommends that one coat be applied, that it be dried, and then that a second coat be applied. That is just for that particular bonding agent. I would go with the manufacturer's instructions. Some of them are only one coat.

Very briefly, glass ionomer cements are the other type of adhesive material we are looking at right now. Some nice things have been happening with glass ionomer cements. For a lot of years the problems with glass ionomer have been twofold. They were not particularly esthetic (they are tooth colored but lack translucency) and they were very sensitive to manipulation and placement conditions. Also they could not be finished for at least 24 hours, which is inconvenient for both patient and dentist.

Current research indicates that Ketac-fil from Espe/Premier can be finished within 20 minutes after placement if it is handled properly. In terms of the esthetics, a technique we are using now involves placing a glass ionomer in a class 5 lesion (using Ketac-fil) and once it has set, removing a layer of the upper part of that glass ionomer that has margins in enamel. We then etch the surface of the glass ionomer and the enamel and veneer a resin over the glass ionomer to improve the translucency. With this technique, we still have the benefit of the glass ionomer margin down at the cemental area and as a base for the entire preparation with its chemical bond to the dentin. Anyway, this is another solution to the esthetic problem with glass ionomer cement.

*Don't you double your time—paying an arm and a leg for that kind of service by placing two restorations?*

Definitely you increase your time, but

doesn't it depend on what the patient wants? How many patients are coming to you very concerned about esthetics? This technique can certainly be offered as an option. As dentists, most of us feel that function is most important, but patients often concentrate solely on esthetics. With this option you can improve on both features.

Finally, some manufacturers have come out with glass ionomer lining cements that are supposed to be used as dentin bonding agents underneath resin. They are painted in just like a liner. Since it is a glass ionomer, you get chemical bonding by placing the glass ionomer liner, allowing it to set, etching, and applying the resin over it. How well these are going to perform we don't know, because they are new and there has not been a lot of clinical work done on them yet.

*Do you have to be careful with the glass ionomer lining cements, particularly about the margins?*

It is not a problem in terms of approaching the margin. You want the margin in cemental areas to be glass ionomer. In other areas, glass ionomer will bond to enamel. However, for maximum esthetics when veneering with a resin, you probably want to stay a little shy of enamel margins and beveling your enamel before etching it. The placement of the liner could be done easily when the prep is finished, then you would go back and bevel your enamel and that would remove any glass ionomer at the surface.

*Did I understand you to say that you etch the glass ionomer before you apply the resin?*

Once the glass ionomer is placed and set—yes, you then etch the surface of that along with the enamel available and the resin will bond to both. And you would follow the traditional pattern of putting a bonding agent and then resin on it.



*You want the glass ionomer to stay on the dentin but you can take it off the enamel?*

Yes. You have to realize that this technique is relatively new. I don't know how long they will last either, but you have to start somewhere when looking at ways to handle this type of situation.

*Going back to the dentin bonding, you said to clean the surface with a liquid?*

Yes. Currently we are using polyacrylic acid. I would specifically suggest the Durelon cement liquid. The reason is that different manufacturers put the polyacrylic acid in different parts. Sometimes it is placed in the powder as a dry agent and so it is not really available in the liquid. The Durelon liquid itself is a polyacrylic acid. Den Mat cleanser—at least if they have not changed the for-

mulation in the last few days—is also polyacrylic acid. A 15-second scrub with this liquid should remove the smear layer. It is a good idea to scrub cavity preps anyway. If you ever try to wash the dust off your car with a hose, you've discovered it does not come off without wiping. The same thing is true for any cleaning of the cavity prep. You need to get in there with a cotton pledget and scrub to dislodge the debris.

*Did I hear you say you advise some preparation where there is erosion, like in a class 5?*

Yes. A cervical retentive groove. At least the studies we have done have shown this improves retention and decreases leakage.

## Bonding and Etching Techniques: Current Clinical Applications

*Dr. David Avery*

I will begin my discussion of clinical applications by saying that I don't have a favorite resin material. Any resin from a reputable manufacturer will give satisfactory results. I don't have a favorite etchant, either. My only requirement is that it be a phosphoric acid-based etchant.

Adequate rinsing time is important. I think a 30-minute rinse time allows good bond strengths for most of the things we do.

We etch enamel only. I use dentin bonding agents on dentin only. If I have a restoration I want to bond to a tooth and there is exposed dentin, I confine my dentin bonding agents to the ex-

posed dentin and then apply resin bonding agents to the etched enamel. That is an extra step which takes a little extra time. But I am not yet confident about dentin bonding agents holding up as well as the resin bonding agents on external margins. I am comfortable in putting them on dentin, but I would rather wait until more information is available before I routinely use the dentin bonding agents and skip the resin bonding agent on etched enamel surfaces.

Bonding has been around for 15 years or more, but I think it truly revolutionized our practice of restorative dentistry and some aspects of preventive dentistry. I rank it in the same category as the

development of a high-speed turbine hand piece.

Bonding techniques are interesting because they cross all specialty areas. It is obvious that general practitioners would use them every day, but I can think of situations where practically any specialist could use bonding techniques to advantage. They have been very valuable in my practice for pit and fissure sealants. There is also a relatively new technique that we call "sealed composite resin restoration" which some are referring to as the preventive resin restoration.

Another exciting new area is the bonding of fractured crown fragments back to the original tooth surface. Of course, the conventional resin buildup of a fractured crown, if you don't have the fragment, is an important use for these techniques. Another is the splinting of teeth that have been displaced or avulsed, or are being splinted for periodontal reasons. Bonding techniques are also employed for orthodontic appliances, in a preventive and/or interceptive or tooth movement situation, as well as for orthodontic retention. Veneering is still an important area. Whether we are veneering teeth with direct resin and simply building them up at the chair or whether we are using a pre-formed laminate, which may be plastic or porcelain, the bonding procedures have been invaluable. Resin-bonded bridges are particularly applicable for teenagers and young adults who need a replacement prosthesis and the fixed type of appliance may be used. They are applicable at other ages, too, but I have found them especially valuable in teenagers. Nearly every time I place a conventional resin restoration the enamel margin is etched to improve marginal seal. Bonding techniques are also used with the new identification systems that are now becoming available.

## Sealants

Some of you may have attended a pit and fissure sealant continuing education course which was offered through our department by Dr. Hala Henderson and included product information that we thought might be of interest. Eight sealant materials have been accepted by ADA Council on Dental Materials, Instruments, and Equipment. Two others have received provisional acceptance and I have little doubt that they will eventually obtain full acceptance. Those with full acceptance are: Concise White, a 3M product which is chemically cured and white in color; Delton, from Johnson & Johnson, which is chemically cured and clear; Delton tinted, another J & J chemically cured product, which is red and ugly; Oralin, from SS White, which is chemically cured and comes both clear and red (the red is ugly); Nuva Seal, from LD Caulk, which is a UV light activated clear product (probably not too many people are using UV lights anymore, but Nuva Seal still appears on the accepted list—it happens to be the oldest, too); Nuva Cote, also an LD Caulk product, which is UV light activated and white in color (it was the first composite sealant material and is still accepted); Prisma Shield, another LD Caulk product that is a visible light cured material (basically, this is Nuva Cote in the visible light-activated category, with the color changed a little bit to be closer to tooth color); and Visio-seal, by Espe, which is visible light cured and clear. The two provisionally accepted materials are Helio seal by Vivident, which is visible light-cured and white; and Delton light, from J & J, which is light-cured and also clear, like their chemically cured product.

As far as I know, most insurance companies still are not offering this as a covered procedure, but some are doing it. The Medicaid program has accepted



sealant application as a reimbursable procedure. Patients who are eligible for Crippled Children's funding are also entitled to receive sealants. Crippled Children's benefits will pay on both primary and permanent teeth, as opposed to Medicaid paying only for permanent teeth.

Sealant procedures, we believe, are a fine addition to your preventive armamentarium. Sealants alone are not preventive dentistry, fluorides alone are not preventive dentistry, good nutrition alone is not preventive dentistry, plaque control alone is not preventive dentistry. A multifactorial approach is needed. Sealants simply represent an adjunct to a sound preventive dentistry program. Every single posterior tooth does not need to be sealed. I have seen a lot of occlusal surfaces that won't develop carious lesions if the patient lives to be 150. On the other hand, there are thousands of occlusal surfaces that look susceptible. Those are the ones that benefit from this procedure. Isolation of course is important. Anytime you can use the rubber dam conveniently, you should, but I would not eliminate the use of a sealant just because you can't get good rubber dam isolation. We frequently use cotton rolls. A technique which works very well uses the Garmer cotton roll holders. Place the cotton roll holder in the usual manner and go through the procedure of etching, rinsing, and drying, but at the time you dry the tooth with air and evacuate the rinse water with the high-speed evacuator, also use the evacuator to re-dry the cotton roll. You will not have a completely dry cotton roll, but the evacuator will remove most of the moisture and it will serve again as a dry cotton roll long enough for you to get the sealant into place. You do not have to have a rubber dam to place good sealants but you do have to have good isolation of some sort.

We occasionally use sealants on primary molars: for example, when several teeth in a quadrant require restorative dentistry and one tooth in the area may be a candidate for a sealant. Even if it is a primary tooth, we would seal it during the time that the tooth is isolated.

### **Preventive Resin Restorations**

Another name for the preventive resin restoration is the sealed composite resin restoration. We don't recommend putting sealants on teeth in the conventional manner if you know there is some dental caries in the tooth. We may seal such teeth inadvertently sometimes because we can't make an adequate diagnosis. Even if we do, I think we still have done far more of a service to that patient than we have done harm. I am not saying that we have committed a terrible sin if we seal a little bit of decay in; I am simply saying we don't deliberately do that. If we can diagnose caries, then we should do something else first. A typical situation would be one in which a tooth presents a sound occlusal surface except for one or two small defects that have demonstrable caries. Then we would take a small bur, open the defective groove or pit and excavate the caries in that area. If we expose dentin, we protect it with calcium hydroxide before etching the surface. We would place a little composite resin material in the preparation(s) and then continue with the sealant procedure and cover the entire tooth.

### **Fragment Restoration**

Fragment restoration is another exciting area. One of our patients fell on the sidewalk on an icy day and fractured teeth Nos. 8 and 9 (slides were projected here—Ed.). Tooth No. 8 had a frank pulp exposure completely across the breadth of the pulp and so we had to do a pulpotomy before restoring the tooth. We still had the fragment, which was



essentially the entire clinical crown. A bur was used to prepare a post hole in the coronal portion where the roof of the pulp chamber had been in the crown. We already had a post hole in the root canal portion of the tooth because of the pulpotomy. The fragment was a very nice precision fit on what was left of the tooth. We simply bonded the fragment to the tooth using the pulp chamber as an internal post, combining that with bonding techniques. The young man is doing quite nicely six months later. I don't expect that restoration to last forever but if it holds until he gets more growth and eruption, then we can manage something else, if necessary. I think that we have done a pretty good service and that the pulp is protected as well as it possibly could be.

Regarding tooth No. 9, we had to use a fair amount of composite resin, and you may wonder why we would bother to re-lute the fragment if we had to use a lot of composite anyway. With this tooth the question was whether or not we could reconstruct the entire incisal edge in enamel by using the fragment; that was the key. We were able to do that and at the same time used composite resin to fill the voids on the lingual and labial. It is the incisal edge that wears away, so if you can reconstruct the incisal edge in enamel, I think it is worth reluting the fragment even if you have to fill in some voids with composite material.

*Whenever you bond those fragments back on there, do you use chemical setting bond or do you use light activated materials?*

I have done both. I prefer light-activated anytime I can. Some of my first cases I even did with the UV. I think we are getting better bonding with the visible light cured materials. The advantage of course is that you have more working time in getting the fragment back to place as precisely as you can.

*Does the light penetrate all the way into the anterior part?*

I don't know for sure. All I know is that the bonding that we seem to be getting (and some of these are five years old) is good enough. In the previous case where we used an internal resin post, that was done with a layering technique. We didn't put all of that together at one time and try to cure the whole thing. That post was cured in layers from bottom to top before actually putting the fragment on.

### **Splinting**

Splints can be used with bonding techniques to replace avulsed or displaced teeth. You can use them in situations where you elect to simply bond a wire to the enamel surface or you can bond brackets and then bend the wire to fit the brackets. Either way is successful. The latter approach is better for post-injury followup, but it is a more difficult technique and I don't use it very much (my wire-bending skills are not as good as Woody Garner's).

### **Porcelain Veneers**

Porcelain veneers are the newest thing in the veneering area and exciting in their own way. This approach was used in the case of a young man who had had bleaching and was not pleased with the results. He also had some enamel defects and a diastema that bothered him. He wanted a better cosmetic result for the upper anteriors and we gave him that with porcelain laminated veneers. We closed the diastema, eliminated the defects, and he has nice well-fitting, well-margined restorations that are only slightly over-contoured. His brother also had a midline diastema that bothered him. That was his only complaint; he did not have tooth discoloration. We closed the diastema with porcelain laminates of sorts. All we did was have the lab make shoes for the mesial surfaces of the teeth

*(continued on page 103)*



## Message from the Dean

*Dr. H. William Gilmore*

Just as this is a new experience for those of you who are just becoming members of the Extramural Faculty, it is also new for me since I have been in my present position for a little over one week. I am very happy to be your dean, and I am extremely grateful to be working for such a wonderful University.

You have my pledge of total effort in helping the faculty to do its job. That is what an administrator is for. I look forward to sitting in on lectures and attending clinics this fall because I really need to know the concerns of the faculty and students. I will try to find ways to take away the extra paper work and the problems that interfere with contact time between faculty members and students. One of my missions as dean of the Dental School is to help everyone take down learning barriers and improve communications.

One part of our curriculum that the students especially enjoy is the Extramural Program. I want to thank Ralph Schimmele for all of the effort he has expended, and continues to expend, in developing and coordinating this program. As you know, we now have a companion to the extramural activity in the form of the new Associateship Program which is co-sponsored by the School of Dentistry and the Indiana Dental Association.

Last year there were 53 offices looking for an associate, and 19 students who opted to select from those offices a place to practice in the state. This arrangement is good for both the student and the practitioner.

As I indicated, the Associateship Program can be viewed as an extension of the Extramural Program. Surprisingly,

two years ago a national survey was conducted which showed that 60 percent of the graduating dental students were interested in an associateship arrangement before accepting responsibility for a solo private practice. I don't know whether they felt that they lacked adequate training or whether it was financial. Perhaps they just wanted additional experience of the kind they get with you. In any event, this survey was made after the students had participated in their extramural experience, and the connection seems obvious.

The Extramural Program is advantageous to the students in a very special way. Being able to participate in your offices and clinics is in itself a unique opportunity. There simply cannot be any two dentists in the world who work in the same way or have the same opinions. All of you are quality practitioners, and you do things differently. You may mix and use the same materials that Marjorie Swartz told you to, but you add features of your own. It is certainly beneficial for our students to get first-hand experience working with you.

It takes a lot of courage for any dentist to let another dentist observe his work. Dental care requires refined procedures, and you open yourself to possible criticism by allowing another dentist to observe your work. I admire you and compliment you for letting our students come into your office, and the reports received about you, the practitioners, are all good. We are told that the Faculty Practitioners in the Extramural Program are providing quality care, working to the best of their ability and treating patients fairly. That is what students need to see. It is hard to teach all those things



in a university setting. All of us involved in this program are in the same business—dental education.

I hope to have some input into the curriculum this year. In my one-week experience as dean, much of my time has been spent with university lawyers. I hurry home at night and read legal journals and such to learn the terms and understand what is being said about our rights and privileges in operating a dental school and implementing our policies. So I feel that more about legal terminology and other aspects of the law as it affects us should be covered in the curriculum, thus enabling us to deal more knowledgeably and confidently with situations we may encounter in dental practice as well as in dental education.

This is a rapidly changing time for society. We are challenged by the computer era, and information is moving so fast that people are having a hard time keeping pace so that it can be made to serve mankind in the best fashion. We need to maintain a fine product: our students. They need to know the extremely fine skills of today's dentistry, and they need to know how to relate to people. That is why your contribution is so important.

We are looking for ways to bring you closer to the Dental School. I am sure that you will be hearing from Dr. Maynard K. Hine, chancellor emeritus of IUPUI and former dean of our school, who is now serving as development officer for the school. We want to increase your ties with the school as well as to nurture your postgraduate education and create other advantages for you in your association with the school.

So you really are our faculty: an extension of the "in-house" faculty, but doing your teaching out in the real world of dentistry. We are grateful to all of you for participating in this program. We hope that the number will increase, not

only at these meetings but in continuing cooperation with the school as teachers.

Thank you for coming.

*Editor's Note: The following portion of this report consists of edited versions of the afternoon workshop sessions, which were tape recorded.*

## Periodontics

*Dr. Timothy J. O'Leary*

Participants: Dr. J. Douglas Badell - Plymouth; Dr. George L. Carrico - Indianapolis; Dr. Hugh S. Deale - Franklin; Dr. David S. Dennis - Kentland; Dr. Thomas E. Dunn - Portland; Dr. Harold T. Ervin - Pendleton; Dr. Charles A. Hollar - Warsaw; Dr. Harrison Lawyer - Columbus; Dr. Martin A. Linderman - Carmel; Dr. D. Matthew Thoman - Indianapolis

### *What's new in the field of periodontics?*

As you see in papers, magazines, and on TV, a number of new antiplaque agents and a new calculus preventive toothpaste are available. Unfortunately, none of the antiplaque agents are very effective. One product, an oral rinse of chlorhexidine, that has never been approved for use in this country, is effective in preventing supragingival plaque formation. It is not effective for treating periodontitis as it does not reach the subgingival plaque. Two problems are associated with its use: (1) after a week or two of use a brown stain appears at the gingival margin of the teeth in most individuals; and (2) in some people, it causes a loss in taste sensation for a short time. If these side effects could be eliminated, it would be an excellent plaque-preventive agent.

We are studying another use for chlorhexidine; as a cleaning agent to re-



move microscopic surface debris after root planing. The root may look clean clinically, but if you look at it under a microscope, you find a lot of surface debris. The same is found after cutting cavity preparation. We have used chlorhexidine in experimental animals and in *in vitro* studies of human teeth. It is an effective agent for removing microscopic debris. However, it has not been shown to result in better healing.

*Is that the regular Hibiclens that I use to wash my hands?*

This is 0.2% (two-tenths of a percent) used as a liquid preparation. Cotton pellets soaked in chlorhexidine are rubbed over the root surface. Hibiclens contains 4% chlorhexidine and we dilute it to 0.2%.

*Is Hibiclens' active ingredient chlorhexidine?*

Yes. Incidentally, an attempt is being

made to have chlorhexidine approved for use in this country. A request for approval is now at the Federal Drug Administration.

*I was wondering, are we all general dentists? I'll tell you why I'm here. I've been in practice 39 years; a lot of my patients are getting older. I don't want to be a referral center. I do my own cleanings and so forth. I use a lot of local anesthesia. I use a lot of Cavitron. The reason I'm here is I want to be as current as I possibly can and get whatever advice I can from you because you're academic. How do I keep my patients healthy?*

I think the most important services you can provide your patients with are periodic, thorough scalings and root planings and helping them to improve their oral hygiene. As patients get older, they may have arthritis or other physical problems and their hygiene effectiveness decreases. In these situations pa-



Workshop discussion with Dr. Timothy J. O'Leary



tients require more frequent scalings and root planings. An agent such as chlorhexidine would be a help to these patients. Incidentally, in regard to scaling and root planing, recent research has shown that once pockets get more than three to four millimeters deep, you cannot predictably remove all the bacteria and calculus with a closed approach. It is even questionable if you can remove it completely with an open flap approach. As a result, there is a great deal of interest in finding some agent to remove those final vestiges of calculus and bacteria that escaped the instrumentation. The Cavitron is almost as effective as hand instruments for calculus removal, but it tends to leave a rough surface and some people experience considerable sensitivity after its use. Under the microscope you can easily recognize teeth which have been treated with an ultrasonic instrument because the root surfaces are rougher.

*Do you use any tetracycline preparations along with localized treatment like that?*

I do in select cases. When you root plane an area, you expect to secure a reduction in bleeding, with a return to a more normal color and better adaptation of the tissue to the teeth. On occasion you just don't get that result. You may see little or no change. If I am convinced that the lack of response is not due to poor oral hygiene or other local or systemic factors, I may prescribe a course of antibiotic therapy, usually tetracycline. While the patient is on antibiotics, the mouth is root planed again.

*Is tetracycline your primary antibiotic?*

Yes, it's empirical, but there is no inexpensive way of culturing the pocket contents and determining the antibiotic which will be most effective against the pathogens. Further, the bacteria may vary from one site to another; there may be numerous types of pathogens in the mouth.

*Not to change the subject, but what would you like to see the student do in our offices that would be of greatest benefit to them or would be something they couldn't do at school? I usually let the students decide what they want to do.*

When students finish dental school, they are familiar with a number of techniques but could benefit from additional experience in diagnosing and treatment-planning complicated cases. Take some difficult cases, and explain your treatment plan, why you're going to try to retain this tooth, why this one has to be extracted, why you're going to make this type of replacement. This would be helpful to them. Recent graduates frequently come to us with X-rays, casts, and periodontal charting of difficult cases asking for advice.

*Are you using panographs at all for period diagnosis or only periapicals and bitewings?*

We don't use panographs. It has been our experience that panographs overestimate bone loss. We use vertical instead of horizontal bitewings as they allow us to visualize the bone level even when there is extensive loss. In most instances seven vertical bitewings will show you the bone levels throughout the mouth. Of course they are not adequate if you are looking for periapical problems. For patients on maintenance who have few or no restorations we take seven vertical bitewings every second or third year. For patients with extensive restorative work, we take periapical films.

*Ten years ago I didn't have a Panorex, so I took PAs on everybody and used those for reference. But I've gotten away from that, and I just wondered if students use it diagnostically.*

I don't know. I do know that panographs often overestimate the amount of bone loss.

*I agree with that. It kind of makes me feel good if I overestimate the patient's problem*



*and am maybe a little bit more concerned about them. Maybe that's why I didn't think that much about it.*

If you're satisfied and they work in your practice, I see no reason not to use them.

*I was thinking primarily of the student, though. I have one coming next week and I wanted to do something particularly good for him.*

Show the student a number of patients who were first treated several years ago and what has had to be done since. Everything looks good when it is first completed, but not everything works out well for 10 or 15 years. Show them cases where things have worked out well and other cases where they haven't. The point I'm trying to make is that dental practice is continuous; people don't always live happily ever after. They have recurrent caries around margins, a tooth will abscess, or a pocket will recur. Patients need continuing monitoring and sometimes retreatment. It is important to put practice into its proper perspective for the student.

*What do you think of the Keyes Technique?*

I know Paul Keyes. He is quite controversial. His technique is based on a series of case reports, and is not based on scientifically acceptable data. Studies of the Keyes technique by other investigators have not shown it to be more effective than the commonly employed techniques. One objective of periodontal treatment is to debride the pockets and prevent their repopulation by pathogenic bacteria. After inflammation has been eliminated and probing depths have been reduced to physiologic levels, routine, effective brushing and flossing will remove most of the bacteria. Periodontal maintenance care every three months is designed to eliminate bacteria that have repopulated the subgingival area. Studies have shown that if you disrupt the bacterial microcosm in the subgingival

area it usually takes three months for it to regain its pathologic potential. Incidentally there is some preliminary evidence that periodontal disease is episodic in nature. A patient may have no problems for years and then within a few short months, lose considerable bone and connective tissue attachment. The acute episode burns itself out and the patient may stabilize for several years with no problems. At present there isn't sufficient evidence to accept this concept. But it is intriguing: isolated periods in a patient's life when he is more susceptible to loss of attachment.

*That almost might be microbial and might figure into their immune system.*

Because of the complexity of the problem, immunologists are somewhat reluctant to speculate on how important an individual's immune system is in combating periodontal disease.

*There are those things like AIDS that suppress the immune system; maybe that's not the only thing.*

Stress has an effect on the immune system. Many AIDS patients do have severe oral lesions.

*Are you using composite splinting much?*

Fifteen to 20 years ago, I frequently splinted teeth. Over a period of time I found that splinting made it harder for the patient to clean around and between the teeth. At this time I am not overly concerned about mobility of teeth unless the patient has subjective symptoms, or if the teeth are going to be used as abutments for fixed or removable appliances. We may use castings to splint two contiguous teeth together if they are to be used as abutments. Allow a longer healing time after periodontal treatment before you think about splinting teeth together. Surgical procedures disrupt the soft tissue support of the teeth and until it repairs at the cellular level the teeth will display increased mobility. If I were



to show you the charting and X-rays of some patients that I treated over 20 years ago, you would probably say that splinting would be the only way the teeth could be retained. Current X-rays still show the bone loss and some of the teeth are still mobile. But the patients have the teeth, there is no inflammation, and they function comfortably.

*How do you feel about swing-locks?*

I haven't used enough swing-locks to know. I tend to use a different type of guide plane than most people. The entire lingual or palatal surface is prepared for guide planes and a casting is made to fit over the surface. Multiple clasps and multiple rests are used on the teeth, so in essence we are making a series of removable three-quarter crowns; in this way the teeth are splinted but with a removable appliance so patients can readily clean the interdental areas. A major problem with all fixed appliances is getting patients to routinely floss under the solder joints. When you make a fixed three-unit appliance on a patient, for example a 35-year-old, you instruct him in flossing under it and advise him to do it twice a day. The patient's life expectancy is 75. Now how many of us here, if we were told to do something twice a day for the next 40 years, would actually do it? This is a real problem with fixed appliances, especially when you get into extensive fixed splinting.

*I use a lot of wire, then you can take it off and put it back on in just a short time. And the patient can push it around to clean it. I use a lot of Stimudents, too.*

If it works for you, fine.

*How do you feel about some of the synthetic materials for vertical rebuilding or augmentation?*

I use them for augmentation of ridges. I haven't used them much for filling osseous defects. We have done only three or four synthetic implants on patients. I don't like to put something in that I might have to take out in a few years. We have

also had several patients referred to us with synthetic implants that have failed.

*Are you talking synthetic bone or implants?*

Hydroxylapatite. Incidentally, one of the people from the insurance industry at a meeting in Chicago yesterday said his company was not paying for synthetic implants. They question their value.

*I have heard that hydroxylapatite will not stand up for full arch augmentation, but it's fine for vertical undercut and that type of thing.*

Well, it seems to work out for ridge augmentation when a fixed appliance is placed that does not place any stress on the tissue.

*I have six or eight patients that I have been monitoring and it's pretty much in my mind that vertical rebuilding is a last ditch effort. I took some courses with the hope that maybe this would do something for them and I was kind of discouraged when I walked away with what I'd heard. Subsequently, I didn't do it. I just wondered if there have been any more encouraging results with it.*

No. We recently looked at some of my own data consisting of 104 grafted defects and 104 control defects that had only been thoroughly debrided. The defects had been treated from two to sixteen years previously. The mean gain in bone grafts was 3.29 mm. and in the controls it was 3.18 mm. My own feeling is that a graft is primarily of value as a scaffold in a deep, wide defect to keep the flap from collapsing into the defect.

*I have been in practice for 20 years and have what I feel to be a preventive practice. I have been maintaining patients with three or four millimeter pockets pretty routinely. At what point, when there are no clinical symptoms of tissue inflammation, bleeding on probing, etc., is a referral to a periodontist necessary legally? Where is the line? Five millimeters, six?*

I don't think you can use any specific probing depth. If you have X-rays of diagnostic quality that show no progres-



sive loss of bone, it indicates the bone levels are stable. A pocket depth of three or four millimeters doesn't alarm me. I examine the consistency of the tissue: Is it firm and tightly adapted around the teeth? Is there ready bleeding on probing, signifying an active inflammation? If there are areas that bleed every time you probe the patient, or the X-rays showed progressive loss of bone, the patient should receive more intensive treatment in your office or be referred.

*I have patients that have been with me 18 to 20 years. Having a complete set of films on them when I started and another in the last year or so, radiographically you can't tell that much change. That makes me feel good, but I have sent a couple of cases to a periodontist and he said surgery was necessary. What's to say that another 10 years down the road another full-mouth series will still not show that much bone loss?*

Only God can give you a 100% correct answer to that question. If you don't have pockets or ready bleeding on probing and the bone levels are stabilized, I would not be concerned. Don't rely on X-rays alone. You frequently find severe pocketing in areas where the X-ray does not detect the bone loss. The prime reason for doing periodontal surgery is to secure access and visibility for root instrumentation. As I mentioned previously, studies show that with closed scaling and root planing, if you are more than 3-4 mm. subgingivally, you can't completely debride the root surface.

*Do you feel that the hygienists in the last five years or so are any better trained to do a sterile scaling and root planing than they were 15 or 20 years ago?*

I can't answer that, as they are in a separate department and I don't see them.

*Do you feel that a thorough scaling and root planing should be done with an anesthetic to do a good job?*

No. We use an anesthetic in less than 5% of the patients. There are three rules

for scaling and root planing: (1) use a definite finger rest on the tooth you're working on or the tooth next to it; (2) use a sharp instrument; and (3) use a short, well-controlled stroke. Discomfort is usually due to the fact that the tip of the curet blade gouges the soft tissue. Keep it against the tooth and use a short stroke. We first try instrumentation without an anesthetic. If the patient has discomfort we anesthetize. My assistant tells me that 95% of the patients don't require it.

*Where in the treatment sequence should we do something about the occlusion?*

There is no good evidence showing that the occlusion contributes to inflammatory periodontal disease. Inflammation affects the tissue coronal to the bone margin while the lesion from occlusal trauma affects the periodontal ligament space. If a patient has teeth which are mobile and complains that one or more teeth are sore when he/she bites, then I adjust the occlusion. But if there are no complaints when the teeth are in function, I treat the inflammation first because the teeth will shift position after the inflammation is resolved. On completion of therapy, I am not as interested in whether a tooth displays some static mobility as in determining if the tooth is being moved in function.

*Are you most concerned with centric type pressures or excursion pressures? How do you treat the occlusion?*

If I am going to adjust the occlusion I first do what I call preliminary grinding. That consists of reducing facets, equalizing marginal ridges, and having a badly extruded tooth or teeth extracted. That removes most of the prematurities. To determine centric I use Dawson's technique. In determining centric you will frequently see posterior teeth, especially maxillary teeth, being intruded on closure in centric. That intrusion must be eliminated. I'm not concerned with correcting a slight forward



slide in centric if teeth are not being moved. If there is a lateral component in the slide from initial contact to final closure, the interference should be removed. In adjusting excursive movements, my main concern is again whether teeth are being moved in function.

*Have you had any experience with the Roto-dent, the brushes?*

No, I have not.

## Oral and Maxillofacial Surgery

*Drs. James Dirlam and Charles Hutton*

Participants: Dr. Wade Anshutz - Terre Haute; Dr. J. Douglas Badell - Plymouth; Dr. J. Gary Bischoff - Brownsburg; Dr. David Dennis - Kentland; Dr. Harold Ervin - Pendleton; Dr. William Finley - Logansport; Dr. Michael Garry - Terre Haute; Dr. Jess Holler - Terre Haute; Dr. Patricia Santare - East Chicago; Dr. M. Gene Stevens - Columbus; Dr. D. Matthew Thoman - Indianapolis

Dr. Hutton noted that he and Dr. Dirlam had been given a list of questions that Dr. Schimmele had received from registrants and said he was surprised to find that all of the questions were about implantology. Dr. Hutton then suggested starting with that topic and going on from there.

*What type of implants are you using successfully?*

Dr. Hutton: We are using two basic types of implants at the Medical Center: the endosteal implants (primarily blades), and a few Omni implants. The Omni is a titanium odontoid-type implant with horizontal fins. The approach is osteo-integrated, with the main difference between this implant and some others being that it has a system of placing that does not require bone removal. In theory it's a pretty neat thing; in practice some-

times it does not work out too well. It's a different concept and after limited experience with it, I'm fairly enthusiastic. The problem with the Omni implant is the same problem we have with all other odontoid-type implants. It requires more bone than we usually have. That is why we continue to go back to the blades because you can put them in areas that will accept nothing else. The other type of implant that we're using for the edentulous mandible is the mandibular staple bone plane. We have done a fair number of these over the last 13 years since they first came out; we were one of the first groups to start using them. We are really enthusiastic about them for the edentulous mandible that has considerable vertical bone loss. I'm convinced that this is the best thing we have to offer at this time. If the implant is properly placed and the denture is well made, it is a fantastic service. The big problem with the mandibular staple is the cost. There does not seem to be any way to cut the cost, and of course many of the people who are candidates for this are retired people on fixed incomes of one kind or another—maybe their insurance has run out, and they cannot afford it. So if we could find some way of making this affordable and we had the operating time, I suspect we could do one a day.

*Isn't this more a result of cost after you're done, though: the cost of the superstructure as opposed to the cost of placing the unit?*

Dr. Hutton: Yes, the prosthetic part is probably more than the surgical part, but placement of this implant requires hospitalization. Any time you walk in the front door of a hospital, your wallet requires a mortgage. We have done several things to cut the cost a little bit. If the patient is in good health, for example, we can cut one day off the hospitalization, admit him in the morning and send him home the next day. So we've taken off \$300. And they are using non-precious metals, and perhaps changing the



types of precision attachments, so that takes off another \$300-\$400. But it still does not affect the bottom line; we need to move the decimal point over one place; that's the problem.

We're looking for alternative ways to manage these atrophic mandibles. A couple of months ago, we started doing some other things; I don't know how it's going to work out, but I am sure not nearly as well as a mandibular staple. We're putting in some different types of implants in the clinic with local anesthetic and we can reduce the cost by nearly \$3,000. It's not going to affect the prosthetic cost, but that's somebody else's problem. I think they should be able to do something somewhere along the line, but when we take the general anesthetic cost and the hospitalization cost and the operating room cost out of it, there's \$2,500-\$3,000 off.

*Are these the core type that you're talking about?*

Dr. Hutton: No. We've done two of them, two different ones. We used a double post symphysis blade, and then the other one was a pair of the Omni implants. I've never done a Core-vent, so I can't comment one way or another on it. The Omni under these circumstances makes better sense to me. Whatever works best in your hands.

*I'm surprised you didn't mention hydroxyapatite.*

Dr. Hutton: I don't consider that an implant. The other types of implant that are being used in some parts of the country are the sub-periosteal implants and the ramus frames. We are not doing any of those, partly because of me, I guess. The sub-periosteal implant is a very hazardous appliance, I think. If you're using these on a mandible that has good alveolar bone, fine; but I don't see any point in doing them if the patient has good alveolar bone. If you're down to basal bone, you put in the sub-periosteal

and you lose the patient to follow up; this migrates down (and they tend to do this in time) and you are in big trouble. You may get a pathologic fracture of the mandible and it is almost irreparable. The risk is greater than the benefits of using it, in my view. Also, there is a high incidence of lip and chin paresthesia.

The same problem exists with the ramus frame. When they're properly done, they are a fantastic appliance; you put a fixed or removable denture on them. They really work. But the people who are doing many of these and are honest about their statistics (and I think many people reporting their results aren't always honest) report as high as a 40% incidence of bilateral lip and chin paresthesia from the ramus frame. Well, that's trading one problem for another. Again, I think the risk outweighs the benefit. It's hard for me to project myself into the position of an edentulous patient who can't wear dentures, but I think I would rather have an unstable lower denture that I might even have to put in my pocket than have my soup run down on my tie every time I sat down at a meal. You're going to get your nutrients either way, but you have the social problems and everything else that goes along with lip and chin paresthesia. I don't feel it's worth the risk. Now obviously there are a lot of people who feel differently because there are a lot of them being done and they work.

*I know the vitreous carbon was one of the first.*

Dr. Hutton: Dr. Cunningham and I did some of the original work; that's really how we got started in this. Vitreous carbon is no longer on the market. Stockholders put several million dollars into the research and development of this implant and when it got on the market, they wanted their money back in a couple of years. I doubt that there is an implant in the world that's going to give



stockholders their money back with large profits. Anyway, we did this vitreous carbon work in an attempt to preserve the alveolar integrity. Unfortunately, in the longer-term cases where we put a denture over the implants, it began to load the ridge, especially in the maxilla, and we saw alveolar bone loss and the implants migrated. They didn't maintain the integrity. One patient had four posterior vitreous carbons that over a three-year period all ended up in the sinus. They were completely covered so they didn't really migrate, they were just pushed.

*Would you consider it a better implant than a blade?*

Dr. Hutton: No, it is just a different kind of implant. The problem they had was the same as with many odontoids: the strength of the material was such that by the time you got an implant of the size that could handle the stress, there were no patients who had that much bone. You have to have a wide ridge. This Omni I was telling you about is similar in design to a vitreous carbon, except instead of having little grooves, it has big fins and it is metal so it has the strength. Another advantage: it has detachable posts. But the thing that's innovative about it that nobody else does is that you make a small preparation with a bur through the alveolar cortical plate, but from there on, you don't remove any bone. You have a series of three wedges that act as bone expanders and are driven into the bone. With the bone expanded, you drive the implant in and theoretically it just kind of collapses around the fins. It's fairly easy, unless you are in cortical bone, but it is not a very difficult procedure. In theory it's good. Then you can put the implant in with the flanges of the implant right at the gingival margin, cover them over like we did with the vitreous carbon, and let them go for four months. Then you uncover them, the little caps screw off again similar to vitreous carbon, and by then

if you have a good take, the implant is really solid. Screw the threaded post on and away you go. But you have to have more bone than most people have.

*Do you have many periodontal problems with those?*

Dr. Hutton: Same as you do with teeth.

*One of the drawbacks I've always heard with implants is that the oral hygiene has to be immaculate to maintain them over a period of time.*

Dr. Hutton: I'm sure the hygiene has something to do with it, but there are other factors, too, because you see some complete neglectors who seem to get along fine and others who have immaculate hygiene and they have problems. I think some of that can be applied to natural teeth, too. So I don't know. One of the problems with all the materials we use is that we don't get a good epithelial attachment. Theoretically we are going to get a better relationship between soft tissues and the foreign body with pure titanium and things like vitreous carbon that we do with stainless steel. If an invagination of the oral epithelium occurs, then we have trouble.

*Is there a grace period after which if you don't get that invagination you are pretty much home free?*

Dr. Hutton: We have some blades that have been in for 15 years or more.

*What is your success rate with blades?*

Dr. Hutton: Very, very good. I would say in excess of 90% over the long term. But the reason is probably because we are very selective about where we put them. If we have a good candidate and the implant is properly placed and the prosthetics well-done and the patient does what he's supposed to, it all works.

*What about a sub-periosteal full ridge implant?*

Dr. Hutton: I am not in favor of sub-periosteal implants because they will migrate over a period of time. If the patient has further alveolar bone loss under the



implant, you have irreversible trouble, so there is a terrible risk. There is also a high incidence of bilateral lip and chin paresthesia with these. These risks outweigh the benefits. With the same patient problem, you put in a mandibular staple and you have none of those risks. Now one reason a lot of people are still using these is that the same person can do the whole procedure: you can take the impression, send it off to the lab, they design the implant, cast and polish it so it's ready to put in, send it back, you put it in, make the superstructure, and then the denture. All a one-person operation except for the lab. The mandibular staple requires an oral surgeon because of the hospital procedure and prosthodontics. The total cost is probably a little less with the sub-periosteals because you eliminated the hospitalization and the anesthesiologist. But in my view, the risks with the staple are much less and the long-term prognosis is much better.

*I'd like to get off implants and find out what your feelings are on molar extractions. I've been in practice 20 years and for the first 15 years we routinely referred to oral surgeons for impacted or unerupted third molars for various reasons. Pretty much asymptomatic-type situations. In the last two or three years there has been a lot of publicity about leaving third molars alone if there isn't positive indication for removal. During those years, I have never had the oral surgeon return the patient to me or say he refuses to take this out, or there are no symptoms, whatever. Now I'm not referring like that because of the publicity and also the fact of legal repercussions. What's your view on that and where is it headed—are oral surgeons going to be out of jobs or what?*

Dr. Hutton: No, I don't think so. I think we both ought to comment about this. I have some very definite feelings about third molars because we see the troubles. We don't see all those millions of people who are wandering around

out there without symptoms; we see the ones who are in trouble. And you don't have to see very many of those without being convinced that sometimes waiting until it gives you trouble is more than you bargained for. But the techniques have changed so much. When I was a resident, I learned to take out lower third molars with a mallet and a chisel—that's a terrible thing to do to a patient. They have to be in deep trouble before you resort to that kind of thing. I can understand why, from an operator's point of view, you want to leave them alone until they need to come out. That is not true today. Any oral surgeon worth his salt ought to be able to take out the most technically difficult impacted third molar under local anesthesia with absolutely no discomfort to the patient. Chances of some type of seriously to moderately inconveniencing post-operative morbidity are much less than 10%, for a ballpark figure. If you're getting more, if you're doing a lot of third molars and getting more postoperative problems than that, then there's something wrong. So it's not as big a job for the operator or the patient, either one.

When you see all these people who are in real trouble, when they get to be past middle age and then have to have them out, it changes a few things. It's more difficult then. You have time loss from work because the patient comes in with recurrent pericoronitis and postoperative problems, and all these things. So I'm in favor of taking out impacted third molars at an optimum time when the patient has an otherwise good mouth and it's obvious they are not going to erupt and become functional teeth. An optimum time would be somewhere between 50-60% root development and before you get all of those whoop-dee-dooos on the root ends. Now somebody comes in and they are 30 years old or over and their periodontal situation is okay and you're not endangering the second molar, they are completely asymptomatic;



I would not worry about that unless they've just lost the first molar and you're going to put a bridge in there. From there on, it's a judgment call.

Dr. Dirlam: I completely agree with Dr. Hutton, particularly when you're talking about the root development stage. At that time the potential for problems such as nerve paresthesia is slim, almost nil. I recommend removal if it is obvious that they are going to be impacted. But you can never say always. By the same token, I agree that when the patient is 30 years old or older, the third molars are complete bony impactions, and the follicle is reduced around the crown of the tooth, and the patient is asymptomatic, leave them in.

*That sort of puts the general practitioner in the middle because if he fails to diagnose an impaction that causes problems, he's liable; and if he sends someone to an oral surgeon for routine asymptomatic third molars at a stage before they even erupt and the patient gets hold of some literature or an attorney that says now it's not the trend to take them out, he's right in the middle.*

Dr. Hutton: I don't think that's a trend, though, because the American Association of Oral and Maxillofacial Surgeons has a pretty good public information service. Do you remember that a few years ago it went around that you shouldn't have your teeth X-rayed but once every 50 years or some ridiculous thing and then if you overlooked some pathology, they came and sued you? Another thing that has changed the philosophy of the third molar is that 20-25 years ago, we saw many patients who had lost their first molars by age 6 or 7. This was just common. Now we don't even see this over at Wishard because even those who don't take care of themselves and the kids that nobody even cares about get fluoride-treated water. When people lost their first molars, maybe those third molars weren't func-

tional teeth, but at least they weren't the potential problems that they are now. You just don't see kids any more that have lost their first molars.

*How successful is ridge augmentation with the calcitite?*

Dr. Hutton: I'm afraid I am very opinionated about the use of synthetic materials. There are three or four of them on the market and they are all essentially the same except for particle size. They all are supposed to do the same thing. There have been some really disastrous results, mainly because of migration of the material after it's put in. This is the problem. They do have a place, but it's very limited. They work satisfactorily for recontouring small defects and filling in undercuts; they work well there. But if you take an atrophic mandibular ridge and try to fill it up with this material to make it significantly better to build a denture on, it's not going to work. This material migrates right off the alveolar crest and goes everywhere except where you want it. It may fill in the mucobuccal folds, it gets down in the floor of the mouth, and between the submandibular spaces. There is no way to contain it. I think there are two problems with it: (1) you don't have any place to put it, so you have to release the tissue beyond the attached mucosa and then you've opened up a potential space; and (2) the delivery system is terrible. Even if you have a good space, you can't get it in. When we use it, we end up throwing the syringes away because they are so big. We have heated an amalgam plugger to straighten it out and tamp it in. But you put a vertical load on this, with or without a splint, and it goes everywhere.

*It's not even a fibrous attachment of any kind? I know there's no bony attachment.*

Dr. Hutton: You see, you frequently cannot contain it. If you could keep it where you want it for a couple of weeks,



you would be all right, but the material may flow. Now you end up with a worse problem to deal with prosthetically than you started with. And there's very little you can do to correct it.

*But if it is held in place long enough with no vertical load, there may be some attachment?*

Dr. Hutton: Yes, it gets fibrous connective tissue in growth and once that happens it will probably stay put. It might be a little movable, but it will probably stay put.

*What about the surgeons who are doing the procedure of reaming out the old denture or making a new stent and wiring that stent to the mandible? Is that working?*

Dr. Hutton: Yes, that is one of the more acceptable ways of doing it, but you still don't know if you have contained it there until it's too late. If it works, fine, but if it doesn't you may have trouble. Again, what we're seeing at the Medical Center are the problems—not as a result of the material but the procedure of putting it in.

*Why don't you consider that an implant?*

Dr. Hutton: I suppose it is in a way, but it's a synthetic bone graft. I guess you could call it an implant. But that's why we keep coming back to the mandibular staple.

*What is the technique for the staple? How do you insert it?*

Dr. Hutton: You make a small skin incision under the chin, exposing the bone extra-orally. There are five or seven holes that have to be drilled exactly right and parallel, making a jig necessary. Part of this jig goes on the inferior border and part of it goes intra-orally on the alveolar process. Then two holes go trans-oseous and three or five go intra-oseous. Take the jig off and set the implant in. With some experience it is not a difficult procedure. The first one or

two may be a little tough, but technically it is a very easy operation.

*From the standpoint of prosthetic replacements, can you put an anterior load on this?*

Dr. Hutton: You can't put a vertical load on this at all. All this implant does is resist the anterior and superior displacement of the denture. The whole load of the denture has to be on the posterior alveolar ridge. Of course, you have to load it a little bit anteriorly or it won't resist its displacement. But if you load it vertically, it may displace the implant.

*The post area is where, about the cuspid area?*

Dr. Hutton: Yes, roughly. There's an osteo-integration technique that has come out of Sweden. I have been to a couple of these courses and am really enthusiastic about it. It's a good technique and it has some tremendous potential, but patients cannot afford it. We would have to invest nearly \$12,000 in little pieces of equipment and tools to put in their first osteo-integrated implant and then there would be \$3,000-\$5,000 worth of superstructure built on that.

*What about the cones that can be placed into the extraction site? Do those work?*

Dr. Dirlam: They are made of a material similar to hydroxyapatite. They are designed on the theory that a tooth will maintain the alveolar process. They are very compatible with tissues. Exactly how much bone they will preserve, I can't really say. I helped one of our students do a project on monkeys where he proved that they are very compatible but did not prove that the ridge lasted longer than if it wasn't done. I see nothing wrong with it and maybe it will help.

*Someone told me that you must be sure to get it below the surface of the bone on either side.*



Dr. Dirlam: That is correct. The same is true when teeth are endo-treated, cut off and covered up. You should be at least below the level of the bone because there is going to be some resorption of the bone. Ideally you like to see bone fill in right over that tooth, but you don't get that very often.

*Dr. Hutton, do you use intravenous sedation?*

Dr. Hutton: Our residents use it regularly; I don't.

*What are they using?*

Dr. Hutton: They use a variety of things and I wouldn't even make a suggestion. I don't find a need for it myself. If I have a really apprehensive patient, I give him 10-12 mg. Valium orally and then whisper in his ear and everything comes out fine. I think sedation is much preferable to out-patient general anesthesia. Even then I think it's over-used.

Dr. Dirlam: For oral sedation, I use the 10 mg of Valium and maybe 80-100 mg Nembutal on a very apprehensive patient about 45 minutes to an hour before the procedure. I usually use an elixir of Nembutal and the Valium comes in pill form. That will take care of most patients. I like the combination because the Nembutal sedates, but sometimes if they feel any pain, they come out of it. The Valium changes their mood, and their attitude is: "So it hurts, I don't care."

*What about students? Are you still giving them nitrous oxide experience?*

Dr. Dirlam: They can use it if they wish; it's available. And some of the patients who have had the Nembutal and the Valium are treated with the nitrous oxide also.

*What would you like to see the students do in terms of oral surgery when they come into our offices?*

Dr. Dirlam: A third-year student, by the end of the fall semester, should be able to perform any routine extraction, with supervision, of course. Some will do

well now because of their summer experience. Remember there will be a difference in competency for a beginning third year student and the same student next May. No third-year student will have had experience with a surgical extraction at this point in time.

*Dr. Hutton, do you wear gloves when you operate?*

Dr. Hutton: It depends. I recommend you wear gloves at all times. If I was doing general dentistry with high speed rotary cutting instruments, I would also wear a mask at all times.

## Oral Diagnosis/Oral Medicine

*Dr. David M. Dickey*

Participants: Dr. David Amos - Indianapolis; Dr. John Brannan - Indianapolis; Dr. William Dudley - Indianapolis; Dr. William Finley - Logansport; Dr. Gerald French - Lebanon; Dr. Ted Fullhart - Muncie; Dr. Michael Garry - Terre Haute; Dr. Larry Hodge - Lafayette; Dr. George Lanning - Indianapolis; Dr. Raymond Meyer - South Bend; Dr. Don Scroggins - New Whiteland

One of the forms I have brought along that we use with the students is a medical history form. After the general questions and dental history, the remaining questions are arranged according to systems of the body. This gives the student suggestions on questions to ask about the various systems. There is also a place for them to update the history, which we encourage at each appointment. All of the data base material that is gathered is summarized on the front page of the patient's chart so that when we check over the examination and treatment plan we can see that they have covered all the information and recorded the necessary findings.



During the first year, students have two visits to the OD Clinic, serving more or less as assistants. They do not actually conduct examinations. During the second year the students are assigned to the OD Clinic four times, and at some of those times they may be doing the examination themselves or they may be assisting a third year student. For the first time this year, students are assigned to our clinic seven times during the summer after the second year. They also begin having emergency room experience. During the third year they get their lecture course in addition to being assigned approximately 28 half-days in the OD Clinic (it may be examination and treatment planning or examination and emergency treatment, depending on how the schedule develops). They serve on a rotation basis, so everybody gets an equal opportunity. During the fourth year they are not assigned because that is their elective year. However, we do have intramural programs enabling them to sign up or volunteer.

*Then the main thrust of OD is in their junior year?*

They get by far the greatest amount of experience during that year.

*Several years ago I had heard there was a decrease in the number of patients at the School and I have not heard a lot about that in the past year or two. Has the patient load picked up?*

Yes. We no longer feel any crisis about the availability of patients. A big part of that had to do with the economic recession of a few years ago. During that time people also may have begun to realize that the coverage they actually had on some insurance policies was not as extensive as they thought.

*What is the typical waiting time for someone to come into the clinic, be examined, and start their treatment?*

It takes two or three weeks to get an appointment in Radiology and then an-

other week or two for their second appointment, which would be for their examination and treatment plan. After that they are assigned to a student who initiates treatment appointments.

*In your department do you separate a private patient to be seen for a specific problem from the usual clinic patient or do they go through the same procedures and examinations?*

Generally speaking, they all go through the same examination process. For example, if you were to refer somebody to Graduate Crown and Bridge, they would first come through OD/OM for a standard work up but then would be referred to the Graduate Department for definitive treatment planning and assignment.

*How does the School handle insurance?*

The Office of Clinical Affairs handles all insurance forms—for instance, Medicaid. If a prior approval form is needed for some procedure, we write up the treatment plan according to what Medicaid will and will not cover. We do not perform treatment for a patient unless they agree in writing to pay for what is not going to be covered by Medicaid. Then the Office of Clinical Affairs will send the prior approval forms in and take care of the paper work involved.

*So the School does handle the forms and collection, rather than having the patients handle it themselves. Are you teaching the students to do this?*

We in OD don't teach them about insurance and its requirements but they are getting that information.

*What about the new prophylactic antibiotic doses? Have we had any reactions?*

Not to our knowledge. As you know we are using 2 grams initially for the penicillin and then 1 gram 6 hours later. In case of penicillin allergy, erythromycin is the drug of choice—one gram initially and then 500 milligrams 6 hours



later. This is the latest recommendation and it has been put into practice at our school.

*What do you suggest if the physician is still operating under the old format? Do we just go ahead with that?*

I would call and ask him if he has any objections to using the new recommended procedure by the ADA.

*How many documented cases have there been on bacterial endocarditis from the Dental School?*

I can't tell you that, but a recent publication stated that a high percentage of bacterial endocarditis was caused by dental procedures.

*(Registrant's comment: We are not doing the patient any damage by giving him the pre-medication and if we prevent one bacterial endocarditis, it would be worth it.)*

*Regarding prosthetic heart valve patients where you use the injection procedure, since I work in a hospital I can send them down for injections. Are the private practitioners complaining because they have to deal with this type of thing?*

No, I have not heard anything, but that is a problem for someone in private practice because a private practitioner normally would have to refer the patient to an oral surgeon or hospital. The American Heart Association does not address the problem of prosthetic joints, because this does not involve cardiac problems. But if you talk with orthopedic surgeons, they want you to use it. Kidney transplant patients present another problem that they do not address. They also need antibiotic protection.

*Are you seeing any increase in the number of diseases like anorexia?*

Some increase but not a big one.

I did want to mention the medical consultation form that we use. We teach students to use this form and they do use it a lot. They are familiar with the im-

portance of consulting with the physicians on any potential problem we might have in treating patients. There is also a signature line for the patient's permission to release information. Most physicians are very cooperative and appreciative. With the increased awareness of all these medical problems, this form is really helpful in protecting us.

*Do they teach fractured cusp syndrome now to the students?*

Yes.

*(Registrant's comment: We never had that in school—where a patient comes in with pain and there is nothing apparently wrong, you don't see a thing. Sometimes even when you know about it, it is still a hard thing to pin down—pretty hard to diagnose.)*

*(Another comment: The students I have had in my office in the last few years that are there because of this program, have been well educated in Oral Diagnosis/Oral Medicine. They have impressed me.)*

*(Additional comment: You are to be complimented. You provide a good service to those of us in private practice. All patients that I have sent to Oral Diagnosis/Oral Medicine have received the best treatment available.)*

I'm glad to hear that. It is nice to have a referral service like that.

*Is the patient always seen by someone like yourself?*

If a person is referred to Oral Medicine, they might be seen by a faculty member, but they might also be seen by an Oral Medicine graduate student.

## Dental Materials

*Prof. Majorie Swartz*

Participants: Dr. Hugh Deale - Franklin; Dr. William Dudley - Indianapolis; Dr. Damon Goode - Indianapolis; Dr. Charles Hollar - Warsaw; Dr. C. Port Laderer - South Bend; Dr. Martin Linderman - Carmel; Dr. Raymond Meyer - South Bend; Dr. Donald Musselman -



Denver; Dr. Richard Smith - Indianapolis; Dr. Mark Stetzel - Fort Wayne; Dr. Paul Ueber - Fort Wayne; Mr. Robert Ueber - Junior Dental Student

*What type of restoration do you believe lends itself to a successful gold-porcelain restoration and what type of cement do you recommend?*

We continue to use zinc phosphate cements at school. They are easy for the students to handle, and Crown & Bridge is more comfortable with it, working time being a factor. The other cements do not have such an established track record, as yet. Some fixed restorations placed 20 and 30 years ago with zinc phosphate cement are still seen. They are still serviceable and functional and that is pretty hard to beat. Glass ionomers are being used to a limited degree at school. They are being used much more in private practice. Solubility tests in the oral cavity indicate their resistance to disintegration in the mouth to be superior to zinc phosphate.

*I would like to know more about glass ionomers.*

Glass ionomers are actually a hybrid material and the powder is very similar to the old silicate powders. They are glass made with a fluoride flux similar to silicate cement powder. It's an acid based reaction when setting, which uses a polyacrylic liquid instead of the old phosphoric acid. The liquid is similar to the polycarboxylate liquid. Film thickness is similar to zinc phosphate. They will squeeze out to a very thin film. The flash is relatively easy to remove. It will snap off when hardened. Initial setting time is also similar to zinc phosphates, but the working time is somewhat shorter.

*Is liquid-powder ratio still considered critical in zinc phosphate cementation?*

It affects the strength a lot and the work done long ago on solubility is still true: less powder—higher solubility. Polycarboxylate liquid/powder ratio is not as critical as with zinc phosphate on the

basis of strength. Less powder reduces strength but it does not have the dramatic effect that it has with zinc phosphate cement. But recently we have found that the solubility in the mouth is rather dramatically increased by reduced powder content, so high powder-liquid ratio is also important with polycarboxylate cement.

*What do you think of the new Corning product?*

We did some of the initial work on that. I think it holds promise. We looked at formulation, color, etc. Crown & Bridge is now doing work on the fit of castings on teeth, specifically the fit of crowns on teeth. The work looks promising in that the fit appears to be in the realm of metal castings.

*Do you know the requirements of tooth preparation for this type of preparation?*

I have been told at this meeting that 3 mm of tooth reduction is necessary. It has been said that the reduction is about the same as for a porcelain bonded to metal restoration.

*We are experiencing some sensitivity to glass ionomers. Do you know if this is common?*

We hear this periodically and it is something that no one seems able to pinpoint, to document the problem. However, the rule of thumb is that when the cavity is deep, use Dycal or some other calcium hydroxide. There is one possible explanation. If the mix is too thin, the pH of the mix is quite low. Thus, if the cavity is deep, this could be a source of sensitivity.

*Can you use cavity varnish with glass ionomers?*

I think you defeat the whole purpose of attempting to get a chemical bond to the tooth structure.

*How do you feel about a porcelain posterior restoration?*

This would bother me mainly because Crown & Bridge has strongly supported metal occlusal surfaces on posterior res-



tortations. I would have to rely on their judgment. Occlusal adjustments in the mouth may be somewhat more difficult with porcelain.

*Do you recommend polishing high copper-content alloys?*

Although this is somewhat controversial, we still support polishing high copper alloys. We pretty much leave this up to the discretion of the operative people and rely on their judgment and experience. They support polishing.

*Do you think the mercury scare will offset the use of amalgam?*

I can't see that happening but we should use intelligence and good technique with its use. In the past I think we have given mercury hygiene too little attention.

*On finishing the new bonding materials; is it best to wait 5 or 10 minutes before finishing composites?*

Our rule of thumb for finishing composites has been a time lapse of about 15 minutes from the start of curing. Manufacturers have cut the cure time for light cured resins too much, in my opinion. I would never use less than 40 seconds exposure to the light. The darker the shade, the more curing time is necessary.

*Does alloy have a shelf life?*

There seemed to be a little trouble with Dispersalloy for a while. It is difficult to attach a time to alloy shelf life. We always have recommended limiting your purchases of high copper alloy to an amount that will be used within a year.

*The reason I asked is that I bought a large amount some time ago and lately it does not seem to have the same working qualities.*

The first alloys with high copper content seemed to have a limited shelf life. We uncovered this fact quite by accident during some comparison studies. Additional work needs to be done in this area to determine if single composition

alloys and newer alloys have this problem.

*Which alloy would you buy?*

There are a bunch of good ones on the market. Today's alloys are very sensitive to manipulation and need to be handled properly. I would buy an alloy that I liked to work with and one with less than 1% creep.

*How about amalgamators?*

Same answer. One problem we have noticed with all of them is that they pick up speed as they warm up (continuous usage). I like variable speed amalgamators that are adaptable for use with pre-proportioned cements, resins, etc. I would look for convenience and utility.

*I use a lot of Concise in my practice. I had a student in my office for his two-week experience and one day while I was using the material the student said that it was possible to wipe the instrument with alcohol and shape the restoration. Is that an effective way to shape the restoration?*

I would think so. I don't know that any work has been done specifically in this area.

*Well, I've been doing this and it sure makes it easier to place the restoration. It's just like putting grease on the instrument. Really works fine. You can shape the restoration so much more easily.*

## Preventive Dentistry

*Dr. Arden G. Christen*

Participants: Dr. Larry L. Beachy - Goshen; Dr. Michael Beachy - Goshen; Dr. Joseph H. Cortese - Indianapolis; Dr. Thomas D. Drakos - Merrillville; Mr. Thomas D. Drakos, Jr. - Third Year Dental Student; Dr. Ted L. Fullhart - Muncie; Dr. Donald P. Glassley - Fort Wayne; Dr. Raymond E. Halle - Crawfordsville; Dr. Robert L. Mattern - Wabash; Dr. M. Gene Stevens - Columbus.



Back in the 60's, nearly everyone was excited about preventive dentistry. We hoped to get everybody brushing and flossing. We attempted to change everybody's preventive dentistry behavior. Many practitioners were buying phase/contrast microscopes. Prevention now has a much broader concept and is applicable to *all* facets of dentistry; it is not a separate specialty.

Besides responding to your questions, I want to mention a few topics of current interest, including the continuing education courses in preventive dentistry for you and your auxiliaries, the role of sealants in prevention, our research in the quit-smoking area (using a prescription, nicotine-containing chewing gum as an adjunct), and some comments on topical fluoride therapy.

Now in their third year, our C.E. courses include a program on "The Nuts and Bolts of Primary Preventive Dentistry" which is given in conjunction with the University of Texas, San Antonio. There is also a one-day symposium which is offered in late April each year and is continually being updated. Various options are available in these C.E. presentations, including a correspondence course which can be taken in one or two parts. Details on our C.E. offerings are available from the IUSD Office of Continuing Education.

Now let's talk a bit about sealants. Currently, sealants are being taught at IUSD in the Department of Pedodontics. However, last year one of our graduate students, Dr. Bruce Matis (who is now Preventive Dentistry Officer for the Air Force), studied the use of sealants in adults. He recommends use of a visible light cure sealant rather than the ultraviolet cure or chemically activated (autopolymerizing) types of sealants.

*What is the difference between the ultraviolet light and the visible light? Don't they cure the same?*

Any system has a chemical catalyst

which is built into the monomer at the time of manufacture. It is activated by either ultraviolet light, visible light, or some chemical. The visible light cure is plain light which will not damage your eyes as ultraviolet might. There are light guns with just plain light. Many of us who have been studying environmental office protection are cautious about recommending routine use of UV lights. Improperly used, they could damage your eyesight. As for color, Dr. Matis recommends plain white sealants because you want to know if the sealant is there or not. If it is clear, you may not recognize it. We want the sealant to get into the groove and be able to see it feather part of the way up the occlusal slope.

*What about using a yellow or red sealant?*

That is fine, but be sure to use something visible. A colored product permits a more precise placement of the sealant. Why not use a tooth color if we have the choice? There is enough white in the sealants to show contrast with the tooth. There are two new products that Dr. Matis recommends: Delton and 3M visible light cures. We do not have the long-term testing on these that we do for, say, Concise. Concise has had about five years of studies and most of them up to now have been cured chemically or with ultraviolet light. However, there are some good reasons to use Delton or 3M visible light cures: They give you more working time; there are fewer bubbles, making the consistency such that it readily flows into the deeper grooves and the areas you want; and then of course, the visible light cure will keep you from having to worry about UV damage to your eyesight.

*Would you still use a shield for visible light? Some of that visible light is pretty intense.*

That's right. I think that for anyone not to wear protective glasses, a face mask and gloves . . . well, I wouldn't touch



anyone without gloves any more. Some dentists say wearing gloves ruins their tactile acuity. However, brain and vascular surgeons wear gloves for hours on end and do pretty delicate work, so I do not think you can say you completely lose your touch. We have to protect ourselves.

*Comment: I do not know what experience the other fellows have had with visible cure, but my experience has been that I have **too much** working time. I have to keep that thing dry.*

Well, double check the instructions the manufacturers give, because these products are technique-specific. You cannot vary from what they say.

*Are the recommendations you are giving from Dr. Matis mainly for adults?*

No, for adults **and** children. I emphasize that Delton and 3M visible light cures are relatively new; they do not have the five-year studies, but there is no reason to believe that they are not going to produce the same results. Most of the long-term results are based on how careful your technique is. I know of places where many practitioners are doing sealants and after etching the surface, burnish off the enamel tags with an instrument—you cannot do that. When you do that, you are wiping yourself out. You lose the retentive ability of the sealant.

*Other than doing it just for research purposes, what would be the benefit of placing sealants on adult teeth? Let's say those teeth that have been there for 10 or 15 years without decay.*

That is a good point. Just because a pit or groove is present does not mean we should use a sealant on everyone. It is up to your judgment as a clinician. I will tell you what could be a good instance to use sealants on adults. Raw recruits enter the military from the ages of 17 to 21. Typically, one out of four of them has never been to a dentist. Because of training requirements and mov-

ing about, they are going to change their diet, eat a lot of junk food, drink a lot of Cokes. It just might be worthwhile to put sealants on these teeth, knowing that dentists are probably not going to get these young people to provide definitive treatment for a year or two.

Basically, sealants are not designed for the permanent teeth of adults. They are designed for the permanent teeth of children. Dr. Matis did it in this group because he wanted to see what would happen with a group of adults. He was not stating that he advocated it.

### Quit-Smoking Programs

Let's talk about another area in which dentists can be totally involved. Why should dentists be involved in quit-smoking programs? First of all, we see a lot of dental effects (periodontal disease, stained teeth, leukoplakia, oral cancer, etc.), which are tobacco-related. The ADA encourages all of us to help with quit-smoking programs. We don't have to badger people to quit. There is an intelligent, low-key way to go about it.

Remember, as dentists, we have quit smoking in larger numbers than perhaps any other group, except chest physicians. The current cigarette smoking rate for dentists in the United States is only about 5%! Also, as dentists, we see our patients regularly, and now can give them definite help in their effort to quit. That help involves a nicotine-containing chewing gum called "Nicorette." During the past few years we have done a lot of research on this concept. Our initial findings were reported in the April 1984 ADA Journal and in Oral Surgery in January 1985. We found few, if any, oral problems relating to the use of this gum. So far, our results look favorable, but we will be able to prove it when we get all our data together. The gum has been used elsewhere in the world for about 15 years, especially in England, Scandinavia, and Canada. It has been avail-



able on the American market only since mid-March, 1984.

*Is this the only one on the market?*

Yes. Nicorette is made in Sweden and Denmark. Each piece has two milligrams of nicotine which has been extracted from tobacco plants. For the past three years, we have had about 400 smokers in our research studies at IU using this product. We share a \$2+ million grant from the National Institutes of Health with the Medical School for the research. Fifty dentists here in Indianapolis are working with us in this five-year study to determine how dentists and physicians can best incorporate this gum into an overall office quit-smoking program. The active gum is proving to be three times more effective than a placebo gum. Of course, those who use the product must really want to quit smoking. You can put a sign in your office: "Want to quit smoking? Ask us for help." If the person responds, you can prescribe this product. An educational pamphlet comes directly from the company with a trial piece of gum.

When you chew the gum, this is what happens. In five minutes, after the nicotine in the gum is absorbed buccally, it hits the brain. The brain, getting its nicotine "hit," thinks you are smoking, and this takes away the strong physical desire or urge for nicotine. You don't suffer severe nicotine withdrawal pangs while you are using the gum. This 2 mg. gum is a special slow-release resin formula. It gives you a little less nicotine than a cigarette but enough to keep your brain satisfied. You chew it slowly for half an hour.

*You have all the nicotine of a cigarette in half an hour?*

That's right, but what happens in this process is very interesting. When you smoke a cigarette you get an instant blood peak in seven seconds, e.g. it hits your brain in seven seconds. With the gum, you get a slow build-up of nicotine in the

blood rather than the instant peak. When you smoke, you get that instant peak followed by a low trough. The constant between the low and the high tends to make you want to smoke again. With the gum, you get a slow, steady build-up that often takes away the urge to smoke for about two or three hours.

*This is fairly expensive stuff?*

Normally a 96-piece box retails for \$20, about 20¢ a piece. If you shop around you can get it for about \$15 a box, which brings down the cost to about 15¢ a piece. Most pharmacies have it and some insurance companies will cover the cost of it.

*How much gum will "average" smokers use in trying to quit smoking?*

Eight to ten pieces a day. It is about the cost of smoking two packs of cigarettes a day on the average. I like to have a patient on the gum for about three months. The quit-smoking process is frequently a lengthy one involving a lot of re-adjustment. The ex-smoker often goes into a period of mourning; it is sort of like losing a love object. The quit rate is often improved if the patient will attend a quit clinic.

*This is not like methadone, is it?*

Only 1-3% of the people get hooked on the gum. Remember that smoking has about 4,000 different chemicals and gases; there is only nicotine in the gum. So you do not inhale carbon monoxide, tars, or a multitude of other spooky chemicals or gases. You don't inhale stuff in your lungs, but you are still feeding your brain the nicotine it wants. I do not know of any physician who would not want their patient on the gum as opposed to smoking cigarettes.

*Comment: I have prescribed this to three patients and it does work.*

Smoking is a complex behavior consisting of a simultaneous psychological and physical aspect. The only way I will



write a prescription for the gum is if the patient agrees to go to a quit-smoking clinic. Several organizations offer free or low-cost programs: The American Cancer Society (Fresh Start Program); Seventh Day Adventists (Five-Day Plan); and the American Lung Association (Freedom From Smoking Plan). The Lung Association has a low-cost manual that can be completed at home.

Program participation is important because in the long run, cigarette smoking is mainly a psychological thing. I quit smoking 17 years ago, but I still occasionally dream about smoking. You never get over it. Once you are a smoker you are like an alcoholic.

*Is it the physical or psychological part of smoking that you miss the most?*

The answer is both! Anyway, this gum represents the first breakthrough in smoking cessation in a long time. It gives the brain the amount of nicotine it wants while the person can concentrate on licking the psychological aspects of smoking.

The gum must be chewed correctly. I tell patients to chew it until they first have a bitter taste: that is the nicotine. Then they stop chewing, and that is when the oral mucosa starts absorbing nicotine. They won't feel the effect of the nicotine for five minutes. Meanwhile they chew and stop, chew and stop,—stopping every time they can taste the bitter taste. After half an hour of chewing, they can get rid of the gum. If they chew it too fast, the mouth or throat may become sore or the patient may get the hiccups.

### **IUSD Fluoride 'Advisories'**

About three years ago, we found that students were leaving IU without knowing how to use fluorides properly. To eliminate this confusion, we put together step-by-step fluoride instruction

sheets, or "advisories," one for adults and one for children. In private practice, dentists often have their hygienists use fluoride but the dentist ought to know how to properly use these agents, too. They are legally responsible to do so. We revise this advisory every January. If you contact us at the beginning of the year, we will be happy to send you a copy.

For anyone below school age, the latest edition of the ADA's Accepted Dental Therapeutics will give you recommendations for fluoride use. In the adult advisory, we cover topical fluoride use in sections, including indications for fluoride therapy, a review of fluoride-containing prophylactic pastes, and recommendations of toothpastes and mouthrinses by brand name. At present, we also recommend three commercially available APF prophylactic pastes of the 80 or so on the market. They are Luride, Preventodontic, and Nupro. There is sometimes confusion as to why we come up with specific recommendations. For example, consider these APF products. The APF has a shelf life; acidulated phosphate fluoride must have a low pH. These products will hold up on the shelf with a pH of 3.5, which is very low. Dr. George Stookey, Director of Oral Health Research Institute, makes sure that these recommendations are sound.

Incidentally, stannous fluoride is making a real comeback. There is a case to be made for something that tastes bad, if it is used correctly. APF is rather expensive, perhaps 50¢ to \$1.00 for one application, while stannous is only 3 or 4¢ per application if you buy the chemicals and mix it yourself (and we give you the instructions to do it). Now you can use stannous fluoride on most patients, if your hygienist carefully keeps it off the tongue. The most convincing clinical evidence we have is with the stannous fluoride; we have 45 years of experience with this material. It does not taste good, but it is powerful medicine. Also, APF



gel has to be used in a tray and the technique takes four minutes; our technique for stannous application can take as little as one minute. Another problem with APF gel is that it etches dental porcelain. You have to protect the porcelain facings and crowns with petroleum jelly or cocoa butter. APF is not the answer for everything. I believe that the dentist should be able to use both APF and SnF.

One other item. Last year we told patients that they did not have to wait 30 minutes after a topical fluoride before they could eat or rinse their mouths. This year, we changed back. For the first time we now have hard evidence that the patient should not eat, drink, or rinse for at least 30 minutes after a topical. We have evidence from some enamel chip studies on fifteen patients that is too strong to ignore.

*Would this be because it would deactivate the fluoride?*

Yes. The fluoride will soak into the enamel for half an hour or so after it is applied.

*This is not about fluoride, but before we leave, I wanted to ask if you favor the new calculus-retarding toothpaste, the new Tar-tar-Control Crest?*

Yes. The Oral Health Research Institute did the research on the new Crest and the product is effective. When you have a nidus of calculus being formed, a 3.3% soluble pyrophosphate has been found to break up the center of nucleation. It will not affect calculus already encrusted on teeth. Patients should be placed on the product after completion of a prophylaxis. You will notice that in those patients who normally experience a heavy build-up of calculus, there will be about a 30% reduction if they are using the product once or twice a day.

## Endodontics

*Dr. Carl W. Newton*

Participants: Dr. Larry Beachy -

Goshen; Dr. Thomas Boardman - Lafayette; Dr. George Carrico - Indianapolis; Dr. Gerry Kaufman - Fort Wayne; Dr. Douglas Peet - Indianapolis; Dr. George Robinson - Crawfordsville; Dr. Leo W. Rumbaugh - Fort Wayne; Dr. Thomas Stokes - Michigan City; Dr. Michel Sturm - Fort Wayne; Dr. Darlene Vaughan - Indianapolis.

Perhaps an appropriate way to open this discussion will be to let you members of the Extramural Faculty know what we teach in the Department of Endodontics, our objectives and some of the techniques we use. I will also comment on the current status of endodontics.

Our students will come to you prepared to learn as much as possible about the techniques you are using and balance that with what they should already know. The biggest problems we have in school is providing them with enough opportunities to use techniques that they learn in textbooks and the classroom. They have a relatively small requirement and yet it is all we can do to give them adequate exposure to techniques using one type of procedure. So we choose the technique best suited for teaching purposes and the one we think they can perform most predictably; but that is not to preclude other techniques.

One very special benefit that our students derive from their experience in your offices is exposure to sound clinical judgment and patient management. This is more important to them than learning how to do things. They need to know more about indications and how to predict success and failure in endodontics. They could also use experience in third party payment procedures.

We are preserving more teeth through endodontic treatment than we ever dreamed possible through the combination of periodontics, crown and bridge, and operative procedures and I think we



take for granted things we are currently doing that were not thought of 40 or 50 years ago.

An ADA report indicated that from 1950 to 1979 the number of endodontic procedures rose from three million to 17 million and that the number will double by the year 2000. This increase is largely related to an increase in the experience of practitioners and the availability of the techniques. Also, patients know they are available. We know that all endodontic treatment does not require a specialist. Well-trained general practitioners can do much of it and do it with a high degree of success. Practitioners are taking every opportunity to improve on the limited experience they may have had in dental school.

There was a time when we could relate endodontic advancements to very recognizable accomplishments like improvements in anesthetics and antibiotics. Today's advancements are largely related to efficiency in practice. That makes it very difficult to keep up with the literature, even for those of us in the school setting. Clearly, the thrust of research in endodontics is to make root canal procedures more efficient, quicker, and easier. Unfortunately, that thrust has resulted in a flood of commercially inspired gimmicks and gadgets. By the time you could evaluate some techniques or materials (a study often takes a year or two) the instrument may not be on the market any more. Investigators are also working on improved diagnostic tools.

Another noteworthy development is a shift in research emphasis from laboratory to clinic. There has been significant improvement in instruments, instrument design, metallurgy and ultrasonic endodontics. There has been little improvement in interappointment dressings and we will look forever for an ideal root canal filling. Gutta-percha remains the most time-tested.

We have defined our objective primarily as teaching undergraduate endodontics and secondarily providing service to our community through these treatments. Given signs or symptoms of pathosis, the students should be able to differentiate between pulp disease and disease of other origins; and when it has been identified, be able to diagnose its cause, determine its severity, and select the proper treatment regimen. By graduation time, they should appreciate the varying factors involved in managing these patients and should be able to assess their ability relative to those factors. They should be able to deal expeditiously with problems consistent with their training, and to evaluate completed clinical cases. All of this we try to do with the clinical requirements of a minimum of six teeth. They don't have an opportunity to develop much clinical judgment, especially since many cases are assigned after initial therapy has already been performed on an emergency basis. We like to think that when our students graduate they are capable of predictably treating 75% of the endodontic problems encountered in their office, and of passing the endodontics sections on their state or national boards.

If you are not in dental education you may be interested in the criteria by which our department is evaluated. A document published by the Council on Dental Accreditation provides guidelines for undergraduate training in endodontics. It states everything that is required to be taught to students and the level at which the experience should be provided. We are bound by this document to provide a wide range of experience. If you are interested, I would be glad to provide you with a copy. There is a document for every area of dentistry. When the Council on Accreditation comes in, we must demonstrate that we are providing the student with the proper num-



ber and level of exposures.

Another document defines the standards we are held to. The standards for endodontics state:

The graduate must be competent in the prevention, diagnosis, and management of pulp disease. Graduates must be proficient (the word being defined as 'repeatedly performing at a high level') in performing endodontic therapy on uncomplicated single-rooted permanent teeth. Graduates should be competent in performing endodontic therapy on uncomplicated permanent multi-rooted teeth. Graduates must be familiar with problems encountered during endodontic therapy on complicated single and multi-rooted permanent teeth. Graduates should be exposed to the prevention and management of pulp disorders and the performance of indirect and direct pulp capping and pulpotomy procedures. Graduates should be familiar (this familiarization to be provided through the lecture course) with bleaching of teeth, surgical endodontics and the management of pulpal disorders of traumatic origin.

So when the CODA comes in to examine our program, we have to show that our requirements are providing enough experience to minimally meet these guidelines.

The students have a syllabus, which describes everything they do in our clinic. When the students comes to your office, you might ask them to bring it along because it has references that could be of interest to you. It is updated every year and copyrighted. The syllabus covers every requirement and objective in the lecture, laboratory, and clinical courses. It describes materials, instruments, charting procedures, how they recall patients, how they handle emer-

gencies, and additional references. A section on clinical orientation describes how to talk to patients and how to do a consultation. All procedures are illustrated with black and white prints.

One experience that I hope the students can get in your office would be help in making the initial diagnosis. They need to develop background in clinical judgment, making contact with patients, recognizing indications for endodontic procedures.

Their requirement in the clinic is that they treat five cases, one of which must be a molar. After treating those five they are given a practical examination on a molar tooth. So the minimum number of endodontic cases that they treat is six, although some treat as many as 24 or 30. Our patient pool would not allow us to increase the requirement much. However, our Curriculum Committee is re-evaluating all requirements in the lecture and lab, and I expect to find a little more emphasis on endodontics. Statistics show that a graduating dentist today can expect 10% of his practice to be endodontics.

A separate chart used in the endodontic clinic explains the whole diagnostic procedure to the students, from listening to the complaint, taking the history, observing the symptoms, conducting the examination, running the pulp tests, and making the diagnosis. This goes into the patient's permanent record. There is a consultation sheet that reminds students of their legal obligation to explain procedures, risks, and alternatives to patients. For each patient a sheet is included which has two outlined teeth that the students can make drawings on and retain as part of the consultation record.

Students receive a handout listing intramural courses that they can take during their fourth year to gain additional experience in surgical endodontics, mo-



lar endodontics, bleaching and case presentations. They take these courses in groups of four or five students if they qualify. A few students receive an exposure to surgical endodontics, although it is not a requirement, nor do we have an obligation to provide surgical endodontic experience.

The syllabus also lists the audiovisual tapes in our library. If you wish, you can come to the library on your day off and check out any subject on endodontics, from diagnosis and bleaching to flap design and surgical procedures. We probably have 50 tapes on endodontics alone.

*Can you get a list of the available tapes from the library?*

Yes, for a nominal fee.

*Can you take tapes out?*

They are on closed reserve, for use in the library only.

### **A Note on Terminology**

A survey by the Examiners for the National Board Examination found no consistency in terminology used for pulp and periapical disease. In describing endodontic procedures we use clinically applicable terms; we do not use terms that imply histologic description. Our students receive a list of terms commonly used in endodontics. They are the terms used in textbooks by Cohen, Ingle, Grossman and Weine. To avoid confusion, you might keep this in mind in using your terms with our students.

*How do you define a reversible pulpitis?*

A reversible pulpitis will respond to palliative therapy and not require a root canal treatment.

*How would you decide whether it is reversible or irreversible?*

In a way, the patients are the ones who make that decision. What I try to do is provide them with the information necessary to decide, including prognosis and costs based on their signs, symptoms, tests

and radiographs. If there is a spontaneous or long-lasting pain after the removal of thermal irritants and there is a well-placed restoration, the only way to take the symptom away is to take the pulp out. If there is a leaky restoration or decay or a recently placed restoration, the response may be a normal one for a tooth that has had its pulp irritated—provided the pain is of short duration and is relieved when the cold is removed. A key point is that the source of irritation can be removed and the pulp allowed to recover.

Reversible pulpitis is associated with peripheral nerve responses. A peripheral nerve response elicits a sharp pain of short duration. The peripheral fibers are those that are related to reversible nerve responses. Deep nerve responses are slower and of longer duration. One thing is certain, regardless of the diagnosis: If the pulp is removed the pain will be gone. Case selection factors as well as the patient's "dental IQ" and desires will determine when treatment is indicated. To answer your question completely would almost require a lecture. I don't want to risk oversimplifying this important clinical determination in the short time we have available.

I recommend a well illustrated and documented book entitled *Pathways to the Pulp* by Stephen Cohen and Richard C. Burns. It will answer any question you could ask me about endodontics.

*Is the book available at the bookstore or library?*

It is in the library on closed reserve. The bookstore does not stock it, but an order can be placed. One advantage of the book is that one of the authors, Dr. Burns, not only is an endodontist and teacher, but an illustrator as well. Dr. Cohen is a 1965 graduate of Indiana University School of Dentistry. Dr. Franklin S. Weine's excellent textbook *Endodontic Therapy* is the one we use for their introductory course. Dr. Weine



completed his graduate program here in 1966. Another recommended reference is the *Journal of Endodontics*, official publication of the American Association of Endodontists.

### Graduate Endodontics

In our graduate clinic we have six graduate students. This clinic performs approximately 30% of the endodontics done in the school, partly because the graduate students can perform the treatment so much more quickly and partly because of the limited capabilities of the undergraduates performing endodontics.

### An Interesting Statistic

A computer analysis of 2500 cases showed that our undergraduate students have a success rate of 88%. Remember that this is the success rate of these individuals on the very first teeth they are treating. This indicates that what we are teaching is appropriate and that we are giving them good exposure.

It has also been shown that the 88% success rate was raised to 94% with surgical treatment. So the kind of problems they were having are really related to their ability to perform; with added clinical experience they should be able to raise their non-surgical rate above 90%. They are doing a good job and I hope that they will continue with the principles that they have learned and build on them when they get out into practice.

*Comment: Because I am located in the Indianapolis area, I get a lot of students in my office and it is a relief to hear that the Endo Department is such a positive reinforcement clinic.*

*Comment (from another participant): I can say that endodontic procedures were certainly not the easiest, but it was a compassionate clinic and I am really happy to hear that it still is.*

Thank you for the compliments. Like everyone else, we feel that we could use more time in the curriculum and more faculty members, but the National Board scores in endodontics indicate that our program is effective and compares well nationally.

*Do you have undergrads doing apicos-retros, etc.?*

They have the opportunity but they are not doing as much as they once did, since indications do not provide a lot of cases.

We work completely from the tray setup I have demonstrated. Each tray has a mirror, endodontic explorer, periodontal probe, cotton pliers, long shank excavator and a ruler. This is all autoclaved in Central Sterilization. We continue to use test files. They are very effective for anterior teeth because you can lock them into place for measurement control. They are not very effective in the shorter posterior teeth. In posterior teeth we use plastic handle K-type instruments with rubber stops. I am not recommending any one instrument over another because they are all operator-dependent. Students also have for each patient a tray for their rubber dam, plastic instrument, spatula, an assortment of clamps, and a napkin chain.

I also want to mention the Analytical Technology pulp tester. This is the state-of-the-art in pulp testing and it has some advantages over other pulp testers. It is a remote instrument: The main body of the instrument and digital display need not come into contact with the patient and the patient can't see it. You do not have to zap somebody to determine pulp vitality. The light does not come on until the current is passing into the tooth, which is very helpful. Other pulp testers only show when current is passing into the electrode.

*Does it work most of the time?*

It is an excellent instrument, very reliable.



*What is the cost of something like this?*

About \$300. Another nice thing about this instrument is that there is a sleeve which fits on the end of it that is less than a millimeter in diameter. I use it in some areas where you would normally be unable to pulp test. A tooth that has a crown sometimes has a 2 or 3 millimeter gingival pocket where tooth structure may be exposed. I can reflect the gingiva and put it up against the tooth structure under the crown. Rarely, you may even have to drill a hole through the crown and pulp test through the hole. The drilling alone without anesthesia is a very reliable test. If you get one reading for a tooth, when you move to another tooth it will automatically reset.

*Which model do you use or are they all about the same?*

This one has additional circuitry that makes it by far the most effective.

Pulp testers are not very reliable instruments because they only determine vitality, not degrees of vitality. You can't diagnose pulpitis with a pulp tester.

*Are the batteries constantly slipping in them?*

No, and whenever the batteries start to get low, the numbers flash.

Something else I wanted to mention is the ligament syringe, which represents a significant advancement in anesthesia and patient management. It is an exceptional instrument, but cannot be recommended unequivocally as a primary source of anesthesia or for use in operative procedures. The anesthetic does go into the pulp and it is the vasoconstrictor that is a most significant part of the anesthesia. The compromised blood supply to the dental pulp during operative procedures contraindicates the ligament injection, as this reduces the pulp's ability to respond to the procedures. The anesthetic solution also has to be under pressure and is distributed to adjacent teeth. Patients who don't tolerate vasoconstrictor are certainly not candidates for it.

This represents purely supplemental anesthesia. It dispenses .2 milliliter. Patients have four types of reactions to anesthetic: (1) they faint because they dislike the sight of needles (the most common reaction); (2) they experience epinephrine reactions; (3) they can (rarely) have an allergic reaction; and (4) they can have toxic reactions due to too much anesthetic (the most serious). I have not had to use more than two carpules of anesthetic on any one patient in a year for routine endodontics.

As we end this session, let me share this observation with you. I have a great deal of respect for your participation on our extramural faculty. On the occasions when I have the opportunity to talk with you practitioners it is refreshing to hear about the things the students are doing and learning in your offices. I want to thank you on behalf of our students and the school for recognizing this opportunity to be of service to these young men and women. I am sure that their personal and professional growth will reflect their appreciation for your effort.

## Orthodontics

*Dr. LaForrest D. Garner*

Participants: Dr. George Bruner - Marion; Dr. Karl Gossweiler - Indianapolis; Dr. John Hayes - Albion; Dr. Henry Heimansohn - Plainfield; Dr. Jess Holler - Terre Haute; Dr. Robert Judah - Fairland; Dr. Joseph Laskowski - South Bend; Dr. Douglas Peet - Indianapolis; Dr. James Shupe - Fort Wayne; Dr. William Slemmons - Richmond; Dr. Bruce Smith - Michigan City; Dr. Frank Weber - Indianapolis

When I went through dental school, typically the student would have perhaps one lecture on orthodontics, or possibly two or three. These lectures dealt primarily with nomenclature. That was all you were taught. After I grad-



uated from dental school, finished pedo and then ortho, I found that little was being done about teaching more ortho. This was in the 60s. Since then we have upgraded the orthodontics that is taught, to the point that there are now 28 hours of lecture in the second year (that's growth and development, recognition, diagnosis and treatment planning) and 14 hours of lecture in the third year, allowing 2 hours for examinations. These lectures deal with the whole gamut of treatment: minor treatment, removable appliances, fixed appliances, and orthognathic surgery.

There are also 16 hours of lab in which the students are divided into three sections. One group is involved in taking head plates on each other and doing cephalometric analyses on their own head plates. They are required to come up with a diagnosis of their particular skeletal and dental abnormalities. They also take study models on each other. They place a separator between the mandibular second bicuspid and first molar and wear this for a week so they can get an idea of what it's like to have sore teeth. In that one section they also do clinical examinations and are required to write up a case report on themselves.

The second lab section deals with making a Hawley retainer, not because we feel they are going to go out and do this a lot, but because they need to know how to bend wire when they do some kind of tooth movement. Now, like a lot of things, once you learn how to do this, if you don't continually do it, you are going to forget how.

The last lab section, which is probably one of the most interesting that the students have, is the tooth-moving session. Everyone gets a typodont, the same kind of typodont that the graduate students have. They are required to set all the teeth ideally first. And this is the first time at the third year level that any of them have seen what good occlusion

looks like. With dentures, you do not set teeth in excellent Class I occlusion, you set them all Class II. When you set the teeth for orthodontics, you set everything in cusp-to-embasure relationship and allow the molars to fit as best they can, usually Class III. This takes time. So the students set the teeth with ideal occlusion. Next, they extract a mandibular right first molar and tip the second molar forward as if the first molar had been lost prematurely. The maxillary first permanent molars are then placed in crossbite and rotated. The crossbite is corrected with a lingual arch while archwires are used to upright the mandibular molar.

The students are required to take pre-formed bands, adapt them to the maxillary first molars, weld lingual sheaths on them, and take a pre-formed lingual arch (which they have been given but you can buy), and adjust it to first make it passive. Each student makes the bends and the faculty check them. The student then puts the typodont under the heat lamp and watches the teeth move. If the problem has not been corrected, they take the wire out, re-bend it, then re-do it until they get the teeth where they want them, with a critique from the faculty.

In the mandibular arch, students are required to band the second molar, the two bicuspid and the cuspid. Then they put brackets on the bicuspids and the cuspid ideally so they can put a straight wire in and put a tube on the buccal of the second molar. They weld the brackets on the bands, cement the bands on the teeth, and then insert a .017x.025 wire passively. Those three teeth, which constitute the anchor unit, are tied together with that arch wire. Next, the students make an uprighting spring. We show them how to calculate the force for the eruption. They put the activation in the spring and place the typodont under the lamp and watch the teeth move. What



all of them will discover is that they have opened the bite. This is what we are trying to get across to them; you cannot do any kind of tooth movement without getting a side effect.

Each of the three lab sessions is five weeks long. Any fourth year student who sees a patient in pedo or perio or crown & bridge that requires some type of minor tooth movement will be allowed to perform the procedure in the clinic, providing they are cleared for family practice. It can be a removable or a fixed appliance. They cannot treat a case that will require a full strap-up. We feel that the change-over from one student starting and someone else trying to finish will not benefit anyone. You need to be able to see the case from start to finish in order to appreciate what is going on in moving teeth.

*What is the philosophy of removables? It hasn't been that long since I graduated and the thrust of our lectures was that removables just did not have that much merit.*

I think any kind of appliance used in the proper situation will work. The usual approach to 'minor' or 'interceptive' treatment is to say that any case you can treat with a removable appliance is all right. Well, what the orthodontist is actually saying is that you can do just so much damage with the removable appliance because you only have so much control. But there are a number of cases in which you don't need much control. Example: A patient has good posterior occlusion, but maybe one central incisor is flared. There is adequate space and the tooth needs to be tipped; you want the crown to go one direction and the root another. You want to do uncontrolled tipping. It does not matter what you use for that kind of case. With a removable appliance, less chair time is involved and you only have a one-point contact if the wire is just going to touch the labial surface. Of course, brackets and wires can be used. If the tooth were



**Dr. LaForrest D. Garner moderating session with extramural faculty members**



in crossbite, you could use a tongue blade. Some removable appliances are ideal for interceptive or minor treatment because you cannot get into too much trouble. But there are other cases which obviously will require a fixed appliance. We teach the students which appliance should be used for each problem.

*What about a 7- or 8-year-old with a bilateral crossbite? What direction should I, as a general dentist, take; should it be referred? Is that interceptive?*

I was trying not to use the term interceptive because our definition leaves much to be desired. No one knows what it means. Think of interception in terms of basketball or football. When you intercept a pass, what do you do? You get between the person who is throwing it and the person who is supposed to catch it. Can we intercept a Class II malocclusion? No, we cannot. It is already there when you see it. Can we intercept a Class III? Same thing. If you have a tooth mass problem, and you have a lot of crowding, do you intercept that malocclusion? You already have it. You can intercept space flaws when you have tooth surface flaws, either by caries or premature extraction.

Habits? You can intercept a major malocclusion from happening by correcting the habit. What we have probably intended but not said is that maybe interception is a misnomer. We should talk about early treatment in the hope of having to do no treatment of the permanent dentition (which would be ideal) or having to do a minimal amount of treatment in the permanent dentition (which is more likely). The posterior crossbite should be corrected if it's causing abnormal wear of teeth or muscle contractions, but it isn't going to help to "round-trip" the teeth if other problems also exist. You were thinking of a Class II, Division II, right? Okay. It does no good to flare incisors and turn it into a Division I, because you still have the

problem with Division I. When the rest of the teeth come in, you may have to push everything back. In the final treatment plan you may not have wanted to do that. So yes, correct the crossbite but wait in terms of resolving the Division II problem until you have permanent teeth.

The same thing applies with attempting to regain space. We see a lot of patients at Riley who have missing second deciduous molars, ectopic eruption of first permanent molars, and crowding. The first thing to think about is pushing the first molar back so we can get it in the mouth. Occasionally, there is a second bicuspid that is congenitally absent. The ideal is not to shove it back but take out the second deciduous molar and let it come forward. We sort of miss the forest for the trees. We think about changing tooth position without thinking about the entire problem.

*What about selective extraction?*

Yes, we do teach that. We do not teach serial extractions as much any more because we do not see adequate numbers of patients that require this treatment any more. We teach students how to do them in theory, and treat if we have patients who fit those criteria.

*What about the blocked out central or lateral, like on a lower, and the patient does not want orthodontia; do you teach the student to do an extraction?*

Well, we do not teach it that way. I think you have to be realistic in your practice: Should I do it or not? It almost has to be answered on a case-to-case basis. I have to weigh in my mind what the patient's parents are telling me. Are they rejecting orthodontia because they honestly cannot afford it or don't want it done? Will they go someplace else if I don't do the extraction? If I do not feel it is right, I do not mind if they go someplace else. I have to live with my conscience. There are obviously cases where



we cannot get an ideal result. If a patient is on Medicaid, it will not pay for orthodontia. If that patient really needs to have something done and you cannot defray all the costs yourself, I would probably consider something less than ideal as long as I felt I was not going to do any damage.

*What about removable appliances in that situation?*

All functional appliances are designed to correct skeletal problems, Class II or Class III, but not individual tooth movements. No one has shown, to my knowledge, that functional appliances will grow a mandible more than it normally would grow. If we can at least allow the mandible to grow to its own potential, it may help solve the problem of Class II malocclusion. And in these cases, it works beautifully. The hardest problem is deciding which cases it will help and which it will not. Some orthodontists give a functional appliance to every patient who walks in the door. Some of these are going to end up looking beautiful because they would have looked beautiful anyway. So in relation to our Class II case, if most of our factors are working for us and the problem is in the mandible and we have the growth potential, yes, a functional appliance should be used. Our graduate students are typically handling one or two cases with functional appliances; however, we don't see that many patients who we think should be using them.

*I have seen a lot of orthognathic surgery and cases of anterior open bite in which the patient is just hitting on one or two posterior teeth. I have been taught that all teeth will continue to erupt unless they are in occlusion or ankylosed, or in occlusion with a habit. If this patient is 30 years old, getting into TMJ pain, and has an open bite, and there has been no supereruption of the upper anterior teeth at all, why aren't they erupting? Will this habit go away? Will cutting the maxilla help make it stable?*

I don't know what is happening. But to answer your question, no, they do not always stay once they are cut. Some will open right back up again. That is frustrating. I was taught the same as you: a tooth will continue to erupt unless something gets in its way. But there are some cases where you cannot identify a habit. Sometimes you have contacts so tight that you have to flare the incisors to allow the bicuspid to erupt. The few cases that I have seen hold are the ones with a lot of equilibration after the closure and eventually the habit changes or something so they stay together. But you cannot always predict the growth and they will open right back up.

We are not teaching TMJ that much, except recognition of the problem. But exactly how to handle it, we honestly do not know. There's too much to understand. The best answer to the TMJ problem that I have ever heard was by Will Thompson several years ago: "If a patient comes in with a TMJ that is the worst looking thing you ever saw but it's not hurting them, leave them alone." That's pretty much what we're trying to teach the student. They are getting the information on all types of appliances and what they will do (how to locate a condyle, a disc; problems associated with TMJ) but not how to treat these problems. Dean McDonald put together a committee to determine what kind of personnel we would need to actually teach TMJ; they are studying the situation, but have not acted upon it yet.

*Is there a relationship between TMJ problems and bicuspid extraction?*

According to the studies I am aware of, there is no correlation between bicuspid or incisor extraction and TMJ problems. There seems to be a multitude of problems and nobody knows what causes most of them. They do know that most TMJ patients are female, most likely between the ages of 20 and 40 and usually single.



*Do you think headgear helps create TMJ problems?*

I think it can if improperly used. If you jam teeth back where there is no space, you are going to cause problems no matter what you do it with. You can do the same thing with a bite block or put in a Hawley retainer with an occlusal stop. That will do the same thing. Improperly designed appliances which open the vertical and are worn conscientiously by the patient will produce problems.

*With 90% of Class IIs being retruded lower jaws rather than forward position maxillas, are you teaching them Frankel therapy?*

Not necessarily that particular appliance. We do not like the Frankel per se because if it gets bent, you have to remake it. Bionator or Activator or Schwartz appliances are a lot more stable and basically do the same thing. These are positioning appliances; they position the mandible forward. Each student handles at least one and sometimes two patients who have functional problems. We design these to be used in patients who have typically mandibular retrognathism, not maxillary prognathism, because that is not the indication for the functional appliance. Now these do not work in the adult patient because they change jaw position. These are made to enhance growth.

## Radiology

*Dr. Myron J. Kasle*

Participants: Dr. John Brannan, Indianapolis; Dr. Thomas Drakos, Merrillville; Mr. Thomas Drakos, Third Year Dental Student; Dr. John Driver, Plainfield; Dr. Richard Ernsting, Indianapolis; Dr. Bernida Iqbal, Plainfield; Dr. Robert Judah, Fairland; Dr. Thomas Kaminski, Winamac; Dr. David Lehman, Elk-

hart; Dr. William Slemons, Richmond

Let me share with you some information about the Radiology Department to help you in communicating with the student you have in your office.

Upon completion of the first year, the student has taken radiographs here at school and is capable of performing this service in the office. Students first learn to take radiographs on a manikin. They can take as many films as required and they do so until they are proficient. Then they move ahead to clinic patients. By the end of the second year, the student has, at a minimum, served 14 patients. At the end of the third year, this number has increased to 18 or 20. Many students volunteer for extra service in the Radiology Department and will see as many as 35 to 40 patients.

I also wish to report that five years ago, we went to the paralleling technique—replacing the bisecting angle technique—with a 12-inch cone and we get a superior image. We use the Rinn technique and their plastic armamentarium.

*Can you use the paralleling technique with the short cone?*

Yes. A special kit is sold for this purpose. I also have some material on panoramic X-rays and techniques that I would like to distribute to you. In addition, I have a sample of the new type of X-ray mounts that we now use. We no longer use cardboard, for many reasons: too thick, poor for viewing, etc. The new mount permits examination of the entire film, including the edges. With a black background you get good contrast with this mount. On the view box, it does a good job. You may wish to consider this mount.

*What about the new "E" speed film?*

"E" speed film is intended to replace "D." Its advantage is less radiation to the patient. But your technique needs to be



almost flawless. Also, the image and contrast are slightly less than "D." All things considered, I would recommend using "D" film. The poor contrast with "E" may increase the retake rate, thereby raising the patient's level of radiation. We have continued with "D" speed because it gives a much better contrasting film.

*Comment—Of course everyone is concerned about radiation.*

In that regard, let me say that we use lead aprons for everyone, regardless of age. With youngsters, we use the collar to protect the thyroid. The collar reduces radiation to the thyroid some 20%. We use 90 K.V.P. and 15 MA at a range of 6/60-12/60 of a second exposure.

*Using the paralleling technique requires using a mouthpiece; my question concerns sterilization. Are these mouthpieces autoclavable?*

Some are. If you use plastic or some of the older type biteblocks, they cannot be autoclaved. New ones are made to withstand heat, pressure, and moisture. When contacting the manufacturer, be sure you check with them.

*I have a question concerning the determination of "hairline" fractures, particularly in the maxillary area.*

This is largely a diagnostic problem, requiring knowledge of the anatomy of the area. For example, sinus grooves can be mistaken for fractures. Suture lines, particularly when seen from an angle, can also present problems. In addition to anatomy, having an understanding of the situation leading up to the trauma and of the trauma itself is important. Mobility is another clue. Sometimes a hairline fracture defies detection, but a good knowledge of bony anatomy will surely help.

*Some have suggested using the Panorex-type of examination for detecting carious lesions. Do you agree with this?*

Not for caries detection per se. We are selective in the use of panoramics. At the time of the patient's initial exam in OD/OM at the School, the determination is made as to what type of X-ray examination the patient requires. In the Department of Radiology, we determine how best to satisfy the patient's needs with a minimum of radiation exposure. We do not routinely take the Panorex-type film. We attempt to keep the patient's exposure to radiation at a minimum; this is uppermost in our minds. Panoramics have advantages in selected situations, but for caries detection the intraoral film is the best.

*What are your feelings about automatic developers?*

We still have our dark room and use the wet processing method. Our goal is to have a well-controlled developing process. Basically automatics are fine and we have several throughout the School.

*Have you had mechanical problems with the automatics, for example, film not falling properly?*

I have never been told of this. Remember, you cannot process bent film in the automatic. My suggestion is to delegate the responsibility of maintenance and use of the machine to one person. In our area we have not had a problem with our automatic processor.

*Are the hygiene students learning the paralleling technique?*

Yes. Also bisecting technique.

*What is your opinion of X-ray usage and pregnancy?*

We try to avoid taking all pictures in the first trimester. If it is imperative that you have a picture, be sure to take every precaution and take the minimal number necessary to fulfill your needs. We do not routinely take a full mouth or Panorex type of film on a pregnant patient.



*What is your answer to the patient who says he gets a rash or burn each time he has to have an X-ray taken?*

I have had that situation twice and have found no correlation with the taking of radiographs.

*What is the latest figure or figures on radiation absorption relative to dental X-rays?*

The latest figure using good equipment and fast film is in the range of 2 rads compared to the 5-6 rads of a few years ago for a full mouth examination.

*What is your opinion of having our equipment calibrated by the State Board of Health?*

When you think of consumer protection and possible abuses, it is probably the only way to do the job.

*What X-ray is most effective for studying the TMJ?*

We use the transcranial view. Most panoramic units enable you to take a good film. A complete study is best achieved using the tomograph.

*Do all students learn to develop X-rays with the "dip and swish" method you refer to?*

Yes, we feel that it is necessary to learn the basics—good temperature-controlled developing techniques. Most new graduates will not initially purchase automatic equipment.

## Pedodontics

*Dr. David R. Avery*

Participants: Dr. David T. Amos - Indianapolis; Dr. George Bruner - Marion; Dr. Cardinal Casey - Indianapolis; Dr. Gerald French - Lebanon; Dr. Damon Goode - Indianapolis; Dr. Raymond Halle - Crawfordsville; Dr. John Hayes - Albion; Dr. James Hernly - Richmond; Dr. Robert Mattern - Wabash; Dr. Glenn Smith - Montpelier; Dr. Michel Sturm - Fort Wayne

*My question concerns recurrent abscess problems with endodontic procedures on primary teeth. I have a high ratio of problems, especially with pulpotomy treated teeth.*

As long as we do pulp therapy on primary teeth we are all going to experience failures. The success rate is just not as good as for permanent teeth. Interestingly, I seem to have more failures on anterior teeth, which should be easier to do than primary molars.

*But don't you consider a failure rate of 30% to 35% above the norm?*

I honestly don't know what an average failure rate might be. Thirty to 35% seems a little high. I would consider 15 to 20% not out of range.

There is a range of what is considered acceptable pulp therapy in primary teeth. If you graduated from the University of Illinois, for example, you would have been taught to do pulpotomies on non-vital primary teeth that are abscessed. For some time we have taught our students that any primary tooth with an irreversible pulpal status is not a candidate for pulpotomy. We would limit pulpotomies to cases where, in our judgment, the pulp tissue in the canal is still vital enough to remain healthy. This eliminates a lot of teeth. Perhaps then if someone's failure rate is higher or lower than yours, it is only because that person is more or less prone to do a radical procedure. This is a controversial issue, and teachers disagree.

*What about the case where you clinically have an abscessed tooth but no symptoms, an asymptomatic case that has been pulpotomy-treated and is now abscessed clinically?*

The problem will vary from case to case and so will the damage the abscess may create. Across the board we just do not advocate leaving a focus of infection in the mouth. We want to eliminate it either by removing the tooth or retreatting the tooth. One thing we advocate



very strongly is that all pulpotomized teeth have a full coverage restoration.

*I am experiencing some retention difficulty with pit and fissure sealants. How do you prepare the teeth for sealants?*

Tooth isolation is the key. I use a sharp explorer and clean each pit and fissure as best I can. I stay away from pumice because I felt as if I was packing pumice into the pits and fissures. Be sure not to use any prophyl paste that contains oils.

*Has there been any research on how soon or how late to do sealants after a fluoride treatment?*

About four weeks after a fluoride treatment seems to be the accepted time.

*Concerning sealants in general, what happens to enamel maturation and what about fluoride chemistry? Are we gaining anything that we would not have gained by treating the tooth with another method?*

Let's discuss fluoride first. It is pretty well documented that sealants are far more effective than fluoride therapy on occlusal surfaces. Therefore, if you apply a sealant a month after fluoride treatment, you have lost some benefit of the fluoride on the surface of the sealant application. You have not hurt the other surfaces. The tradeoff is that the sealant is much superior to the fluoride therapy. Remember, the most fluoride protection is on smooth surfaces, and the sealants are most effective on fissured surfaces.

Now about maturation. If you place the sealant when the tooth is young and has not had the opportunity to mature in the oral fluids, the sealant will prevent that from happening. As long as the sealant is there we have nothing to worry about, but when the sealant wears away two other factors come into play. One is that even when there is no clinical evidence of the sealant, the sealant is still embedded there in the outer layer, and is still sealing that immature enamel. If the patient ever wears through the seal-

ant back to raw enamel, you are in the same situation you would have been in if the tooth had never been sealed but eventually had worn to that same area. The maturation process comes back into play at that point. You are dealing with fresh enamel and freshly exposed enamel surfaces that will be receptive to further maturation. What you have done is postpone the maturation.

The little "hooker" in there is that some teeth have very poor enamel coalescence and there may be exposed dentin; the enamel does not bridge the gap at all. Then it is conceivable that at some point the tooth will again become susceptible to fissure caries that we basically have no control over without the presence of the sealant.

*Which sealant is preferable?*

All of those that are ADA-approved are fine. We probably use more Delton than anything else. But that is largely because we started with it.

*Do you use a diamond or some other material or instrument to follow the grooves of the occlusals before placing a sealant to ensure that the sealant gets to the depth of a groove?*

I hear that this is becoming more popular but I have seen scanning electron microscope pictures which show what tremendously small crevices the material gets into and this has given me more faith in the material. To mechanically clean the fissures of the tooth, I use the sharpest explorer I can find and follow the grooves and fissures with it. If I come upon a suspicious area, I will open it up somewhat with a very small bur. If I have any questions about a raw enamel surface after using the bur, I will use pumice. But, again, pumice frustrates me. I feel as if I am packing more material into those grooves than I'm getting out. So I do the mechanical cleaning with the explorer in most cases.



*Do you permit auxiliaries to place sealants in your office?*

I have no problem with either the hygienist or assistant placing the sealant. About a year ago the Indiana State Board of Dental Examiners accepted the sealant procedure as one that is acceptable for competently trained auxiliaries to perform. It really lies now with the dentist's view of the competency of his auxiliaries. The dentist is responsible.

*What is your view of the use of the rubber dam?*

What we are doing more and more (and I never thought I would say this) is using the rubber dam less and less. However, I still use the rubber dam frequently. We have worked extensively in our office on good isolation without a rubber dam because I could not find a practical way to use the rubber dam with laminates.

*What do you do when you see a patient in a developmental stage, prior to the eruption of his permanent molar, who has bilateral crossbite and a narrowed maxilla? Would you recommend the palate be expanded?*

Many of those patients have a gross A-P discrepancy between the maxilla and the mandible. If you are dealing with a horrendous Class II or III in addition to the crossbite, you know it by the age of four or five. It isn't always necessary to do a comprehensive orthodontic workup, if at that point and that age the only discrepancy is the posterior crossbite. But you must decide what appliance to use to correct the crossbite. For that decision, I sometimes need models. I do not necessarily require a headplate but I will want models to observe the inclination of the molars. If the maxillary molars are set in the arch in a very vertical position, as opposed to having a more natural buccal inclination, then I may conclude that the problem is primarily dental and not skeletal. If it is a

dental problem, I want to correct the crossbite by tipping the teeth buccally rather than opening the suture. If it is a skeletal problem, I want to correct it by opening the suture.

I do not get excited about posterior crossbites in 4- and 5-year olds unless I can identify an associated problem. I would correct a crossbite in any cooperative child of that age if I was convinced that the treatment would help the child with the remaining developmental occlusion. It is easier to assess the problem when there are permanent teeth in the arch.

*Do you still see tetracycline staining in early dentition?*

I do, and it disturbs me. Perhaps one reason I am seeing so much is that in my practice these patients would largely be referrals for cosmetic problems. It may be uncommon in the general practice. We need to educate some physicians in the use of tetracycline. There are techniques for bleaching tetracycline stain, but they use very caustic acids.

## Complete Denture

*Dr. A. George Wagner*

Participants: Dr. Donald Derrow - Auburn; Dr. Thomas Kaminski - Winamac; Dr. George Lanning - Indianapolis; Dr. Robert Mattern - Wabash; Dr. F. John Mohr - Marion; Dr. George Robinson - Crawfordsville; Dr. Paul Ueber - Fort Wayne; Mr. Robert Ueber - Third Year Dental Student; Dr. Keith Yoder - Fort Wayne

Dr. Wagner presented a table clinic demonstrating a technique for making duplicate dentures for use as final impression trays. Discussion followed.

*What technique do you recommend for adjusting a soft liner?*



A scalpel, stones, a diamond-impregnated silicone wheel, and a hot iron (similar to a hobbyist's soldering iron) to sear the edges have all been used.

*What type of material do you prefer for a final impression for complete dentures?*

At IUSD we use light-bodied rubber base (currently Kerr Permlastic) to make a pressureless impression. We border mold with regular-bodied Permlastic. The difficulty we find in using rubber base materials is seeing pressure spots. Checking your impression with an explorer for adequate material depth is a good way to measure the thickness of the impression material. Border molding is important, and I use stick compound for that purpose. Students have a difficult time visualizing the borders of the final impression as being the borders they actually want in the denture. The final impression borders should be exactly that which you expect in the denture.

Now let me direct a question to the group. Do you strive to get the finished denture back from the lab with borders the same thickness as your impression?

*(Answer from a participant): It depends on what you expect from the lab tech. If you don't get the border you expected, you will lose the effectiveness of a good border mold.*

With regard to those students who come to you in your office, we teach them to evaluate the borders of the impression as if they were the borders of the finished denture.

*What teeth are you currently using at the School?*

We are using many IPN anatoline and monoline posterior teeth. They are reportedly 30% more wear-resistant.

*Why use plastic teeth?*

Current thinking is that plastic is kinder to the underlying tissue and will preserve the ridges longer.

*What is your opinion of the metal bars; the occlusion cutters?*

I use them a lot. They are often referred to as metal occlusals. I use the cutters on the lower posterior teeth and a flat plane porcelain tooth on the posterior of the uppers. I don't use bars in both the upper and lower. They improve masticating ability enormously; especially good for salads, lettuce, celery.

*Cutters would not be indicated when opposed to plastic teeth?*

That is correct. Use metal-to-metal, or metal-to-porcelain, but never metal-to-plastic.

*Do you still use green stick compound border mold?*

Students use regular-bodied Permlastic rubber base. Stick compound, however, is excellent material for border molding.

*How soon after making a rubber base impression do you pour it up?*

I believe one should pour the impression as soon as possible but any time within an hour or two is acceptable. I don't believe the rubber will change significantly. But the acrylic resin tray must be dimensionally stable and the impression must be handled carefully.

*What is the current requirement for the Complete Denture Department?*

A student must make 13 dentures, which must include one immediate denture and one single denture. Two relines are also required.

*What procedures is the student responsible for in denture construction?*

Everything except packing and processing the acrylic resin.

*What is the best way to handle a lower denture on a severely resorbed ridge?*

Put the teeth where the original teeth were, develop good denture borders, cover as much area as possible, and try to put the teeth and the base in that neutral zone between the tongue, the cheeks and the lips. Pay extra attention to set-



ting the teeth in their original location. When the ridge is resorbed, only the tongue, lips, and cheeks will retain the denture. Shape the base so that the tongue will stabilize the lower denture.

*Is a good soft liner currently available?*

Yes, it is called Molloplast B. This material has been proven in wide use over many years. It is a permanent, heat-cured liner.

*What is the best temporary soft liner?*

We use Coe Comfort. Hydrocast and Caulk Lynol are also excellent.

*Do liners tend to weaken the denture?*

The liner will not weaken the acrylic resin. But the denture base must be thick enough to be strong by itself. A permanent liner on a mandibular denture often results in a fracture at the midline because the acrylic resin denture base was not bulky enough.

## Fixed & Removable Partial Prosthodontics

*Dr. Donald Schmitt*

Participants: Dr. Gary Bischoff - Brownsburg; Dr. Joseph Cortese - Indianapolis; Dr. Gerry Kaufman - Fort Wayne; Dr. Walker Kemper - Indianapolis; Dr. Thomas Lucas - Indianapolis; Dr. Clyde Parker - Evansville; Dr. Thomas Stokes - Michigan City; Dr. Don Scroggins - New Whiteland; Dr. Keith Yoder - Fort Wayne

Our curriculum is basically what has been presented for the past few years. However, the curriculum committee is studying the School's entire curriculum and, as the Dean said at lunch, we look forward to some innovative changes. A major change that our department will soon need to address relates to the use of sanitary pontics. They are no longer being manufactured and this will neces-

sitate some changes for us.

I teach second-year students. This is a basic informational course on tooth preparation and some lab work, which we are trying to reduce now that we have a lab at school for students to use. As compensation for the reduced lab time, we will be doing more tooth preparations and having more practicals in which to test those preparations.

*May I interject something here? I have had laboratory technicians in my office almost all the time I have practiced. My experience has been that I am more satisfied with my work than when I send the work out. Over the years I have probably trained 20 to 25 technicians. I keep hearing from Indiana University and other universities that they are considering reducing the amount of laboratory procedures the students need to perform. In my opinion, this is not a good idea. The dentist should know how to do the lab work and do it well. It is also as lucrative to do lab work as it is to remain at the chair. I can pay a salary to a technician and keep that person in my office where I can supervise step by step and make that a profitable venture also.*

We are not really taking that much time from the student. I merely wanted to give you the idea that if there are changes in the offing, they are likely to be in this area. Right now Indiana still requires as much laboratory work from the second-year student (as well as clinical work from the upper classmen) as any other school in the country, if not more. The main things we are taking out are those that are very difficult for the students to learn: metal ceramics, for example, the assembly of the metal ceramic prosthesis. This is a very difficult procedure. We are given a certain amount of time by the curriculum committee and what we are trying to do is make the best use of it to benefit the students' education. We must also set priorities and maintain a level of quality. We expect the student to do the work. We want the



student to understand and be proficient in the basics.

*How far through their education do students perform all of their own laboratory procedures?*

Where we stand now, the lab is in full swing, so the student does the first 3-7 units and then the lab will do the rest of the work after that. If you know and can do the lab work, you can communicate with the lab person and that is very important.

*My contention is that the students are not getting enough practical experience doing lab work while they are in school. I know you have trouble finding time in the curriculum but you spoke of priorities and the first priority is to make a good preparation and take a good impression. If practitioners cannot communicate to the laboratory what they need and their standard of quality, a lot of things will come back that are unusable. New dentists are probably not going to go to the lab and say they want the case remade and point out the errors. Sometimes they are not equipped to point out problems because they are not sure themselves. They just lack experience.*

*(Comment from another participant): That can also go the other way. I graduated just a year ago and I did every bit of my lab work in school. However, the new dentist may also lack experience in dealing with laboratory personnel. I believe it would be helpful to have contact and to work with laboratory personnel while in school.*

This past year I have noticed that as a result of working with laboratory personnel in the school, the student is more sympathetic to their problems also. The student begins to realize the absolute necessity of accurate impressions, etc. An advantage of having students work with a technician is that they share the responsibility of the finished product and they are somewhat more critical of the work. So there is good and bad, I guess. It goes both ways.

*Are you or any other departments teaching the Maryland bridge?*

We have done a few this past year. There are of course some indications for it. We have been cautious because we feel the Maryland bridge to be experimental. Although they have been used for some time now, it is only recently that we have begun to appreciate those instances where there are indications and contraindications for their use. The organization of a real study to look at these bridges is still in its infancy and as yet we don't know what to expect. One of the major problems is proper diagnosis—where to use it and when to use it. We use it mainly for young people as a temporary prosthesis.

*In conjunction with the use of the Maryland bridge and its deviation from the accepted norm, what is the School's position on metals? Are you still using gold?*

We still use gold. We use type 4 alloy for crowns and bridges, and Jelenko O for metal-ceramic crowns. Students are getting more and more involved with semi-precision attachments on their partial dentures. So we may add another metal-ceramic alloy such as Olympia.

*Have the basic requirements in the Crown & Bridge Department changed?*

No, they are basically the same as they have been for some time. Having the lab available to the students is a big help.

*Is there any way that the students can do the lab work themselves but have access to a technician?*

The students can do their own work. They are not prohibited from doing laboratory procedures. In fact, they have access to the lab only if they have accomplished certain things. We began with the understanding that only those students who have done everything have access to the lab for extra things.



Determining the amount of lab work a student must do while still maintaining the quality of preparations and the ability to adequately design and manage cases is a never-ending problem. There is just so much time and someone must make the judgment as to where that time is best spent.

*As far as surface tension is concerned, to enable us to pour a good cast, I use Vac-U-Film to paint the inside of the impression when I have wetting problems. Will that adversely affect the impression or the cast?*

I do not think it would affect silicones, but it might affect gypsums.

*Have you had any trouble with the consistency of the polysulfides?*

We had a real problem last year when someone switched from Permlastic to Coeflex. They are different materials. Both have advantages and disadvantages and it caused a real problem initially.

*When I was a student we occasionally had problems with Permlastic setting time. Finally we were told to leave the material in the mouth 10 minutes. Is that what you recommend?*

When using Permlastic, I always leave the impression in the mouth a full eight minutes. With silicones I use a time factor of four minutes in the mouth.

*Have you been using the adhesive on your custom trays?*

That is another problem you need to consider very carefully. Since silicone is so inert, you need an adhesive that is going to work. The only adhesive I am aware of that is even worth considering is the Mirror 3. That is what I use in my office, although I am contemplating trying President.

*When preparing teeth for a Maryland bridge, do you use grooves or what?*

You should place a groove, like in a pin ledge, in the marginal ridge on the outside and then a guideplane with a little bit of a groove, all in the enamel

and not too deep. There are several things to remember when you cement the bridge. Be sure you orient the bridge properly. Without the grooves, you would not have direction and might end up cementing the bridge on cock-eyed. If properly done, the bridge will be quite retentive without cement. With proper guideplanes, grooves, and rests prepared on the teeth—all in enamel, do not penetrate to the dentin—you have something quite retentive.

*What do you consider to be the best resin cement?*

I am not sure which is best. We have been using Unitec's Dura lingual bonding composite. Perhaps it would be better to check with Dental Materials. I have not done a Maryland bridge myself and do not feel that well-versed in the technique.

## Operative Dentistry

*Dr. Timothy Carlson*

Participants: Dr. Thomas Boardman - Lafayette; Dr. Glenn Brinker - Fort Wayne; Dr. Donald Derrow - Auburn; Dr. Thomas Dunn - Portland; Dr. Larry Hodge - Lafayette; Dr. C. Port Laderer - South Bend; Dr. Thomas Lucas - Indianapolis; Dr. F. John Mohr - Marion; Dr. Donald Musselman - Denver; Dr. Leo Rumbaugh - Fort Wayne; Dr. Glenn Smith - Montpelier; Dr. Darlene Vaughan - Indianapolis

When people talk about what is the best this, that, and everything else, it is well to realize that there really are no "bests." It's what works best in your hands. We are lucky that in this country we have manufacturers who spend the time to develop good products for what is relatively a small purchasing group. Most of the products on the market today are very good.



*Do you bend those pins any after you put them in?*

Only in terms of straightening them up so they are parallel to occlusal forces, or moving them so they can be covered well with amalgam. Bending them to lock them down usually creates more stress than strength.

*When I was in school, we were told that the amount of the pin exposed had to be 1 or 2 mm in amalgam, especially the two-in-one pins, and then you had to take that off with a bur. Do you still do that? Do you have a certain length you try to achieve?*

Pretty much. It depends on where you are working. You would like to have 2 mm of self-threading pin actually in the tooth. Now that is the regular pin. With the "Minikin" or "Minuta" it is only 1½ mm. Most of the twist drills are self-limiting, with little shoulders on them. You just put them in until they stop.

*How do you stand on posterior resins? I noticed they mentioned the one used in the case of the preventive composite restoration on the posterior tooth, but I was thinking more in terms of a Class II.*

We do a lot of research with those materials. I still do not see anything I would consider an amalgam substitute. But if you have a situation where esthetics is the overriding concern, as long as the patient knows he is trading longevity for better looks, I think resins are a legitimate treatment. It will not last as long. But remember, handling resin is different from handling amalgam and the tooth should be prepared properly. It must be completely isolated from moisture and debris during the etch and restoration.

*But you would not say that some of the specifically-designed posterior resin materials (such as Herculite) are any better than Concise?*

Oh no. Some of the new materials are better than the old ones. The newest ones

out, which of course should be the best, are so new that we have only been looking at them for a year or two. We have only had a little time to study them before they hit the market. Herculite looks good so far, but I feel two years just is not enough time to prove these things. We are really looking for a tooth-colored material but it is hard to come up with something that withstands all the abuse like amalgam. The research is ongoing and there have been improvements, but there still is not a product available that does everything we want.

Remind the patient that there is a shorter life span with a posterior resin, the major areas of weakness being leakage and occlusal loading. And it also takes about 30% longer to perform the restorative procedure with resin than it does with amalgam and therefore will cost more. I always get informed consent from patients so I know that they understand they are trading esthetics for life span. That is what resins are all about—esthetics.

*Are you teaching the posterior composite technique?*

We talk about it in lecture, but do not teach the technique yet. A student can sign up to work under the supervision of a graduate student if the student comes across a patient in the clinic that could use the posterior composite. Remember that the general rule for using plastics is, the smaller and more anterior the prep, the better the plastic will hold up. The larger and more posterior, the more problems you will have. So we do not generally allow the students to do posterior composites.

*I have had a so-called dental consultant tell me that I should lean toward gold restorations and if that was not economically feasible, go to composites because of the increase in mercury toxicity with amalgam. What's your thinking on that?*



There is an hour and a half lecture on mercury toxicity alone. Really, the ADA and most dental materials experts feel that with our techniques for detection becoming finer and finer, we can discover that all kinds of things are leaching out of materials we use. But when you look at the track record of amalgam, there is not a problem with toxicity.

*Didn't I hear something about multiple sclerosis?*

The Multiple Sclerosis Society even came out and said there was no connection between mercury and MS.

*How do you use a light cure on a small lingual composite when the matrix is around the tooth and your finger is so large that you cannot pull it around to the side to get the light on it? Sometimes the strip will pull out just a little before I get it set and then it is rough. There is no way I can put the light on it and hold it.*

We are still teaching the students both light cure and chemical cure for that reason. We instruct them to use the chemical cure, especially on small lingual approaches, because they can get it in there, put the strip on and it is finished. Another thing I have done is wrap the strip around and hold it against the lingual surface of the tooth with an instrument so I can get my hand out of the way. Of course, that does leave a little dimple.

*I am having a little problem with PMS Sealant that I wonder if anyone else is experiencing. I have used Delton Chemical Cure, Delton Light Cure, and even Helioseal. With both of the light cures, inevitably I get an air bubble someplace on the surface.*

One thing that might help would be to let the etched area, which is somewhat porous, draw the material. I start with the mesial margin ridge and let it flow. It also helps to draw an explorer through the grooves before the sealant sets, to dislodge bubbles.

Now for your questions.

*At the School do you use the mini screw pins at all?*

If an amalgam restoration had missing cusps, we would put in pins, usually one pin per cusp. And we mostly use, with good success, the TMS-style self-tapping pins. We have used the mini pins with resins in the past, but it is getting to the point that with the bonding techniques available, good etching procedures, and a good rinsing to rid the surface of debris, you will get a good bond with just the resin itself. Of course, you must have enough enamel to etch to. So we are not using pins at all with resins, with one exception. If you are building up a vital anterior tooth with extensive caries and you know you are going to crown it later, you can place pins for retention and place a complete composite restoration over that, with the anticipation of cutting it down later. When you cut the enamel, you have lost your bond.

*Do you like the Whaledent the best?*

I do and studies show the Whaledent system coming out slightly better than the rest in the area of how well they seat, their placement, matching up with the twist drills, etc. That is not to say there are not some other good ones out there. The retention you get from any self-threading pin is adequate. The cemented pins are strong enough and the self-threading type give you so much more retention in terms of force that maybe it is over-kill.

*Are you using the glass ionomers much at the School?*

Quite a bit in terms of eroded lesions.

*I have heard recently that there are instances of increased sensitivity from the glass ionomer cement.*



I have heard the same thing, but I do not know what it is based on—mishandling, or what. Glass ionomer cement is a lot trickier to handle, both in luting and filling capacity, than any of the other cements, unless you have worked with silicates, which are similar. If it is not mixed properly, it is a failure from the beginning. I have a feeling that may be part of it. Also, the tooth surface must be clean and isolated from any contaminants to get good adhesion and prevent leakage.

*I'm told that part of it may be the hydraulics, pushing on the dentin. The consistency of the cement seems a little thicker than what I would normally use for zinc phosphate, so maybe I would use a little less powder so it was a little more fluid. I would have to really press down to get it to seal.*

That has been one of the problems with the glass ionomers: getting a good luting thickness. Polycarboxylate cement is not the same powder; it is thixotropic, meaning it looks thick, but it will flow out under pressure. Glass ionomer cement does not do that. With using less powder, you are sacrificing physical properties.

Of the ones available, we have been particularly happy with the Ketac-fil. The pre-capsulated is really convenient, although you have to adapt your amalgamator or the capsule because in some, the tube is too long and it will strike the sides of the amalgamator.

*What length of time are you talking about? Ten seconds?*

Yes, and on a very high speed; you really have to beat it to death. And very fast. Then you have to get it in quickly.

*On the cervical, around the gingiva, wouldn't you want to use a composite over the glass ionomer so you can polish it smooth?*

Not necessarily, because the glass ionomers are showing pretty decent tissue response, the same way silicates used to,

but not quite as smooth. There have been a number of studies regarding smoothness in terms of tissue response, and they indicate that as long as it has proper contour and the patient keeps it clean, there is no increase in crevicular fluid. We have done some work with laminating resin over glass ionomer, but the resin shouldn't extend onto the root surface because it won't bond to it.

*What material would you use for an ideal crown build-up for a non-vital posterior tooth?*

If it is a molar that is badly broken down, I would probably use a cast post and core of some sort. If you have at least two walls or a couple of cusps of dentin, I would recommend putting in a cemented steel post and amalgam, or just filling it with amalgam. We have been avoiding the use of resin as a core material because it does not seal by corrosion as amalgam does, if any leakage occurs. If there is some leakage under a resin, it will decay much faster. And, of course, resins are not quite as strong.

*If a tooth is broken off at the gingiva, how much material would you need to support a full cast crown? That is, if you have healthy dentin above the gum but nothing else.*

Everyone around the table probably has a personal preference on this, but as for me, any time I can, I will build up to ideal form just as if you were prepping a normal tooth.

*Are you doing anything with cast glass crowns like Di-Core?*

We are doing a little bit. We have not been able to test them clinically, but in the lab the single units seem pretty good. Their bridges are having some problems, though. The other new thing coming out now is the Renaissance. It is basically something that looks like a little foil cupcake tin; you adapt it to a die and then use that as a metal coping for a porcelain build-up. It is quite thin and you get nice color. Tests here at School



indicate that the strength of these is at the same level or a little less than an aluminous porcelain jacket.

*Do you find a visible metal margin with those?*

No, the porcelain comes right down to the edge.

*Can you laminate over an old restoration after cleaning it and applying a bonding material?*

Unfortunately, you cannot get bonding after a resin has been in the oral environment for a period of time. You would think you could, since you can add to it while it is isolated, but in time resins do take in some of the oral fluids. Now with the unfilled resins we used in the past, you could take a layer off the surface and get chemical bonding. The trouble with the composites is that there is not enough matrix available to attach to. You probably have to take out the old and start all over again. But if you have a restoration that is tremendously large and you hate to go back in and redo everything, it is possible to do a reduction of the restoration (not hurting the enamel), bevel out to fresh enamel and then veneer the entire surface. Then it is almost like putting a crown over a core since you have fresh enamel on all sides.

It is a problem getting a bond between the two layers. You might want to leave a relatively rough surface (use a coarse diamond to cut it off so you have physical interlocking); etch the old resin as well as the new enamel to clean out any organic debris that soaked into the surface; then put on a thin layer of bonding agent and your resin. That is your best hope, although it is not going to withstand a lot of stress.

*Is there anything else you can use besides calcium hydroxide to protect the pulp when you use the acid etch technique on enamel?*

Right now that is what we recommend the most. A couple of resin-type varnishes are being touted as good protection agents, but it is difficult to control them. You do not necessarily have to use "Dycal"; if you want a really thin coat, you can use "Hydroxylite" which literally paints on and leaves a calcium hydroxide powder behind.

*Any words of wisdom for etching the cervical seat of Class II resins without irritating the dentin?*

First of all, are you sure that you even have any enamel down there to etch? If you are going to do something like that, the ideal lesion is a new one because you can prepare your box by just barely breaking contact. If you have any remaining decay, go down inside the enamel to clean it out. Then you have good enamel to etch and it becomes part of the restoration. If you have cervical leakage, the bonding agent is not going to do any good. You have to have perfect isolation and complete cleaning or else you will not get your bond.

*What is the technique for cleaning with polycarboxylic acid?*

Dip a cotton pellet in the liquid and scrub the inside of the prep for 15 seconds; rinse it and dry thoroughly. I usually pumice it first if it is a surface that is easily accessible, but not if the prep will tend to collect the pumice. Or I might use a hydrogen peroxide scrub to clean it as a normal cavity prep followed by a polyacrylic acid.

*I read a newspaper column, written by a California M.D., which recommended putting sealants over decay. What about that?*

There is a lot of controversy about this, but I still feel that decay should be removed. I remove it much more conservatively than I used to, but I still like to remove any bit of decay, put on a little composite, etch and then seal the whole



thing. Some people think a sealant will inactivate decay, but I don't know about that. It is still debatable.

## Microbiology

*Dr. Chris H. Miller*

Participants: Dr. Wade Anshutz - Terre Haute; Dr. Cardinal Casey - Indianapolis; Dr. John Driver - Greencastle; Dr. Richard Ernsting - Indianapolis; Dr. Donald Glassley - Fort Wayne; Dr. Karl Gossweiler - Indianapolis; Dr. Henry Heiman-son - Plainfield; Dr. Russell Heyde - Warsaw; Dr. Bernida Iqbal - Plainfield

*I have a hypothetical question: if someone is a carrier of hepatitis, will the vaccine help at all?*

No, it does not do anything in the carrier state. It is strictly for prevention, so it has to be taken *before* the carrier state develops.

If you simply think about the ways that hepatitis can be transmitted, you come to the conclusion that the most likely route for a dentist to transmit to a patient is by actually bleeding into the patient's mouth from an unnoticeable cut. If you have a small cut, you might not be able to see it or it may be scabbed over, but once it becomes moist with saliva, you transmit serum. It does not take much.

*Cleaning the hands—what do you recommend?*

I recommend using a very mild soap. Of course I am referring to the performance of routine dentistry, not surgery. Use a mild soap that will not irritate the skin. Once your hands get irritated, it is very difficult to clean into the crevices of the skin. If you can routinely use Hibiclen or some type of bactericidal soap without irritation, that is great, but

not many people can. The most important thing in hand washing is the mechanical, physical removal of bacteria and the rinsing. If you lather and rinse three times, it will be just as effective as using any bactericidal soap. Of course, the seven-minute surgical scrub will do a better job, but it still does not "sterilize" the skin.

*I have a patient who has AIDS and I want to know if wearing gloves would be sufficient or should I use double gloves, a mask, surgical caps, etc.? How much protection do we need and what are some of the clinical symptoms of early AIDS?*

Information that we have to go on now is slight. The ADA and the Communicable Disease Center have recommended using the same protection that you use for hepatitis patients: gloves, masks, eyeglasses, and sterilization of instruments. That is the standard procedure. And in reality, that is what dentists should be using for every patient they see because you cannot pick out who is a potential carrier of AIDS or Hepatitis B.

Actually, I would wear gloves, a mask, and eyeglasses as well as a surgical gown that is immediately disposable. I would also drape the patient. I would immediately sterilize all instruments used before cleaning and then resterilize them, and also cover all nearby surfaces of the operatory with drapes if I was going to use a high speed handpiece or something that would create an aerosol effect. That may seem excessive, but you have to be protected.

A lot of dentists are using this concern for protection as a kind of marketing technique: a practice builder. Using gloves and masks and such tells a patient that the dentist is conscientious; he is protecting the patient as well as himself.

*Can you give me some ideas of early signs?*



Early signs of AIDS are very, very non-specific. Some of the earliest symptoms are a general swelling of the lymph glands, fever, a general tired feeling, possibly a sore throat, loss of appetite; nothing really specific.

*What about blood count or anything like that?*

There is no true blood serology that is diagnostic for AIDS. You can have an antibody test done, but it does not tell whether a person is in a pre-AIDS state. It is really a difficult situation.

*Can you distinguish between a carrier of hepatitis and somebody who actively has the disease and tell us what these differences are?*

We do not know why 5 or 10% of those who get the disease remain as carriers. It is probably due to some inherent problem they have with their immune system: they cannot completely rid the body of the virus. One who has developed a carrier state will produce antibodies as the disease progresses and in time, these antibodies will take care of the disease to a certain extent. A small level of the virus remains in the body. Such patients are not having symptoms at this point; they convalesce and are basically asymptomatic. The person who does not remain a carrier eliminates that low residual level of the virus. We do not know why, but if we did, we could eliminate the carrier state by instituting some therapeutic mechanisms to get rid of the final bits of virus. This is the whole theory of antibiotic administration: we do not give antibiotics to people to totally rid the body of the organisms, we only reduce their level so that the natural body defense mechanism can take care of the rest. It has been documented that people can remain carriers for six months, three years, or even 25 years; we do not know why.

*If someone has a history of hepatitis, how do we know if that person is a carrier or not?*

You do not know unless you can see the results of blood tests.

*What blood tests do they need?*

To determine whether one might be a carrier, you need an HBs antigen test. This antigen is actually a protein substance that is present on the surface of the virus. A person who tests positive for this is referred to as a carrier, but it does not mean they will be infectious. So you can have carriers who are really not infectious. There is another antibody that is called the HBe antibody. If you have both the s and the e antibody, you are considered to be more infectious. It really becomes somewhat complex to determine the specific stage of the carrier state. Now if you have the antibody to the virus, you are protected. The HBs antibody means that you either have been vaccinated, or that you had the disease in the past and are immune to it.

*I have been practicing for quite a while and I am finding that there is a tendency to have more and more problems with patient diseases. What can I do as an individual to develop more resistance to colds, flu, or whatever? Do you feel nutrition is important?*

Everyone says you need the right amount of sleep and balanced meals, but there is nothing to document that. I am not saying it is going to be bad for you either; I cannot give you any specifics. There are no vaccines for the problem you refer to. We do not have cold vaccines. We do have flu vaccines, although sometimes they do not work, or they make you sick and you wish you had the disease instead of the vaccine. Again, you come to the realization that the only thing you can do is try to reduce your contamination as much as possible. If you are having respiratory problems, try using a mask for a while. A mask may cause problems of communication between dentist and patient, but I feel it is important to interrupt transmission of disease agents.



This brings me back to the importance of gloves and eyeglasses. Diseased material can hit the eye and cause direct infection there or be transmitted to other parts of the body. Infection can enter cuts in the hands, invisible cuts you do not even know you have. You may have to learn to use the gloves.

*If you use gloves more than once, do you use a surgical soap to scrub?*

You can use any soap that you would normally use because gloves have a smoother surface than the skin and will not trap bacteria as easily. But I recommend one pair of gloves per patient. Some feel this is not economically feasible, but if you unknowingly get a tear in a glove, water trapped inside after scrubbing between patients can cause even more problems.

*Do the students wear gloves all the time?*

They wear gloves routinely in the TEAM Clinic, Radiology, Dental Hygiene, Oral Surgery, Periodontal surgery, and very soon they will be required throughout the school. (Gloves, masks and eyeglasses are required at the school as of September, 1985.—Ed.)

*If you come in contact with the blood of someone who has had hepatitis, say you pricked your finger with a needle, how long should you wait before seeing if you have been exposed?*

If you have not had the vaccine or a past history of hepatitis and come into contact like this, you should (1) have the patient tested to determine if he/she is positive and (2) be tested yourself to determine your serology. If you test negative and the patient is positive, you need to get a gamma globulin shot within seven days.

*Is the gamma globulin shot as effective as the hepatitis vaccine?*

Absolutely not. It gives only very short-term protection. The gamma globulin

contains antibodies that give you a rapid attack of the virus. The vaccine injects small parts of the purified virus so you make your own antibodies. That gives you the long-term protection.

*What sterilization technique do you recommend—dry heat, autoclave, or Chemoclave, the old Harvey sterilizer?*

All of them will sterilize your instruments, if used properly. I can recommend all three. The advantage of the steam autoclave is the quickness, however, it causes the most damage to the instruments. The dry heat oven does not cause rusting of your instruments because there is no water, but it takes an hour and a half. The Harvey or Chemoclave sterilizer works very well and does not damage the instruments, but the solutions you must use have a bad odor.

If you cannot sterilize using any of those three methods, then use one of the best liquid chemicals—a glutaraldehyde. Any of those on the market are good.

*How long can you use those glutaraldehyde solutions?*

We are doing some studies now to determine how long the "in use" solution stays effective. We think about two weeks, depending on how and how often you use it. If you do not dry your instruments you will be diluting the solution; if you leave the top off, you will have air-borne contamination of the solution. The manufacturers have now come out with a type of "dip stick" to test the concentration of the solution. If it gets below 1%, it is no longer sporicidal. That is what we are testing now.

*One of the big problems in dentistry is handpieces. Do you recommend using the hot oil treatment?*

Hot oil was one of the earliest methods used and works fine if there is an even heating of the oil.

*(continued on page 133)*



# Dr. H.R. Raper: Dental Pioneer and Remarkable Human Being

*Jack D. Carr, Professor  
of Radiology*

Most readers of our Alumni Bulletin already know that the late Dr. Howard R. Raper, a 1906 graduate of Indiana Dental College and a former faculty member, achieved worldwide fame as an investigator and innovator in dental science, especially dental radiology. Earlier articles in this series have recalled that Dr. Raper taught the first course in dental radiology, wrote the first text, campaigned successfully for the adoption of radiology as a required course in all dental schools, and worked with the Eastman Kodak Company to develop the bitewing film packet. He also wrote the book "Man Against Pain," a landmark work on the history of anesthesia, along with many scientific articles and the widely read "As I See It" columns in Dental Survey. Particularly in his later years, Dr. Raper concentrated chiefly on what he viewed as an uphill battle to establish operative dentistry in its rightful place as an essential element in preventive dentistry.

Despite extensive coverage of Dr. Raper's career in previous issues, some aspects of his life are relatively little known. These include his early education, his unfulfilled hope of establishing a network of branch offices for the practice of dental radiology and diagnosis, his involvement in Indiana Dental College politics, his views on professional responsibility, his playful spirit and sense of humor, and his great capacity for friendship and love.

One of Dr. Raper's qualities that comes through clearly in any review of his per-

sonal papers or published material is his extraordinary ability as a writer. The present article is designed not only to fill some of the gaps in the record, but also to give some idea of Dr. Raper's eloquence, his incisive wit, and his mastery of the language. Much of the information is derived from correspondence and other material in Dr. Raper's voluminous files, now located in the Howard R. Raper Room at the School of Dentistry. For assistance with this series we are also indebted to Mrs. Glenn Pell, widow of the widely respected professor of oral surgery who taught at Indiana Dental College and the Indiana University



**Dr. Howard R. Raper in the early 1900s**



School of Dentistry for 30 years. Mrs. Pell remembers that Dr. Raper was a frequent visitor in their home before he and his wife, Fanny, moved to Albuquerque for reasons of health (she was to die there at a young age).

An interview with Dr. I. Lester Furnas several months before his death on August 17, 1985, added a bit of information on Howard's intellectual development before he enrolled as a dental student. As the son of a newspaper editor in Chillicothe, Ohio, he grew up in a household where facility with language was taken for granted. Details of his schooling are murky, but one story has it that he came to Indianapolis with his mother after his father's death around the turn of the century to complete his preparation for dental school. However, a plan to have him admitted to Shortridge High School fell through when Howard flatly refused to take a course in English composition that was prescribed for him, on the logical premise that he didn't need it. Even without the Shortridge credits, Howard was accepted by IDC. Despite the flap over English, he did benefit from his unconventional contact with the famous Indianapolis high school. Dr. Furnas noted that Howard used the Shortridge library extensively and was encouraged in many ways by George Buck, who became principal of the school, and William Otto, who later headed the English Department. Both of these men were instrumental in building the national reputation of Shortridge High School and certainly helped the young Howard Raper in his self-education.

### **Unfulfilled Dream**

Notwithstanding his well earned status as a pioneer in dental radiology, Dr. Raper never fulfilled his dream of establishing radiology offices in various areas outside Indiana. By way of background, it should be recognized that this

unrealized goal grew out of his conviction that radiographs were essential to accurate diagnosis. Dr. Raper had been successful in winning acceptance of radiology as a required course in dentistry, but he was realistic enough to understand that full-scale acceptance by practicing dentists would undoubtedly be slow.

Probably around the year 1911, Dr. Raper opened the first office specializing in dental X-ray in the Hume-Mansur Building in Indianapolis and offered to make radiographs for other dentists. (He was still fairly new on the IDC faculty, having returned to his alma mater from an internship which he held at the Fort Wayne State Hospital for several months after his graduation in 1906.)

Dr. Raper's private practice of radiology and diagnosis was successful primarily because many outstanding dentists of the time recognized the value of radiographs but didn't want to be bothered with learning the technique. Drs. Frank Hamilton, Gale Wolf, Kamp Westfall, and other leading dentists relied on Dr. Raper's office for X-rays. Dr. Lewis Spear took over the office after Dr. Raper moved to Albuquerque in 1917 for reasons of health.

An interesting sidelight of the developing story of dental radiology is the fact that Indiana Dental College would make radiographs for dentists. Through his own ingenuity and determination, Dr. Raper had obtained X-ray equipment for the instructional program, and in the 1915-25 period it was not uncommon for a dentist to request a single-view film of a suspected problem. Charge: 50 cents. Full-mouth examinations were rare before 1925.

With the advent of the shock-proof X-ray machine around 1925, many dentists began making their own radiographs, a trend supported by Dr. Raper. Also in the year 1925, Dr. Raper introduced the interproximal bite-wing X-ray exami-



nation, which became an immediate and essential mainstay in the diagnosis of dental disease.

Clearly, dental radiology was evolving at a fast clip—at a pace, in fact, which would probably have made the Raper plan of satellite offices for X-ray diagnosis obsolete in a very short time, even if he had succeeded in getting it off the ground. Correspondence from the years 1918-20 makes it evident that Howard was hopeful of establishing such offices in Cleveland, in one or more California cities, and elsewhere. He tried to enlist the support of his good friend, Glenn Pell, the oral surgeon, for the projected office in Cleveland, and Glenn showed mild interest in his correspondence with Howard, but the project fell through. Dr. Raper's correspondence of the time also reveals the concern that he felt about having to take the examination for a California license long after his dental student days. This was related to the idea of setting up a California office for X-ray diagnosis but, again, the plan never materialized. How many state dental licenses Dr. Raper obtained is not known, and it seems likely that with the collapse of the satellite idea he lost interest in gaining additional licenses.

### IDC Power Struggle

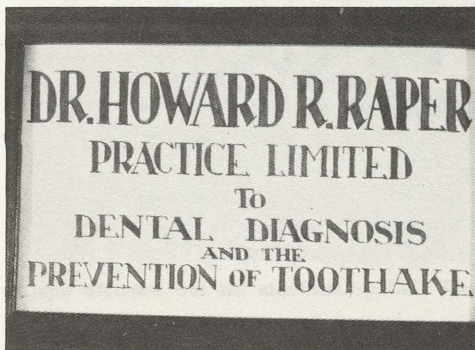
Another topic that has been reported only sketchily is Dr. Raper's involvement in school politics at Indiana Dental College. One reason is that records of the

time are fragmentary, and another is that much of the power struggle at the College was waged behind the scenes. However, it is known that upon the death of Dean George E. Hunt in 1914, Dr. Raper supported the candidacy of Dr. Frederic R. Henshaw for the position of dean. In due course the two men had a falling-out, and Dr. Raper was later quoted as saying that supporting Dr. Henshaw for the deanship was "the greatest mistake of my life."

Dr. Raper's unhappiness with the College administration, even after his departure for New Mexico, is evident in his correspondence during that period with Dr. David A. House, an IDC faculty member who was named Acting Dean while Dr. Henshaw was in military service during World War I, and with his old friend, Dr. Glenn Pell. On August 15, 1918, Dr. House wrote to Howard with an invitation to return to the faculty and assist him in running the College. In his reply by return mail, Dr. Raper made it clear that he felt he should have been offered the Acting Deanship ahead of Dr. House. And on the issue of accepting a subordinate position on the faculty, he said: "I wouldn't do it for the College, building and all, under the circumstances." Yet he assured Dr. House that he felt no animosity toward him personally; in Howard's view Dr. Henshaw was the one chiefly responsible for the slight to him.

A day or two later, on August 19, 1918, Dr. Raper wrote Dr. Pell in reply to a request for advice on whether to accept an invitation to present the Operative Dentistry lectures at the College in the coming year. As if aware of his own bias in such matters involving the College administration, Howard offered this disclaimer at the beginning of his letter: "Take everything I say about this now with a grain of salt; test it with your common sense." Then he went on:

A few years ago, had such an offer been made to me I would have





grabbed the lectures and done the work, and tried to do it a little bit better than it had ever been done before. It was great sport for me to rush to the rescue, like a moving picture hero, whenever the College administration got into trouble and get it out of the trouble. Then go about subconsciously patting myself on the back and telling myself the College should appreciate me.

..... In the light of my own experience, I would advise you NOT to accept the lectures.

### High Standards Set

Dr. Raper was, in fact, a perfectionist who drove himself hard and expected other people, especially fellow professionals, to adhere to standards of performance and conduct as exacting as his own. Many years after the previously cited exchange of letters regarding administrative problems at Indiana Dental College, he outlined in a letter to Dr.

Philip Blackerby his views on the responsibilities of dentists and physicians as citizens. His comments came in a letter dated April 27, 1962, reacting to Dr. Blackerby's proposal that a new kind of dental school department be established which would focus on the involvement of dental professionals in the total community. Dr. Blackerby, who was then Director of the Division of Dentistry, W.K. Kellogg Foundation, had tentatively given the proposed educational unit the name "Department of Social Dentistry," and Dr. Raper gave unqualified approval to the idea, if not the name.\* He wrote to Dr. Blackerby, in part:

\*Other names proposed and then discarded included "Department of Administration and Citizenship," "Department of Public Relations and Administration," and "Department of Public and Professional Affairs." Dr. Raper later viewed the term "Community Dentistry" with approval. During the 1970s he had a faculty appointment at Indiana University as Consultant in Community Dentistry.

What you aspire to do, if I under-



Inspired by Dr. Raper's campaign, Indiana Dental College students hit the warpath against toothache.



stand you, is to try to make good citizens of dental students, as well as good dentists. The need to attempt this Herculean task is, I repeat, desperate both for dentists and physicians. The public image of medical men has deteriorated frightfully in recent years; and the reason for it seems to me to be because the substance of the image has deteriorated. Both physicians and dentists seem prone to forget that they are members of the human race. Day in, day out, year in, year out, they associate with their inferiors in *medical knowledge*, and in consequence they come to look upon themselves as belonging to a superior breed, so superior that they need not subscribe to the ordinary decencies and obligations of common folk.

Effective communication between individual dentist and patient and between the dental profession and the public was a top priority of Dr. Raper throughout his career. Ever mindful of his origin in a newspaper family, Howard often referred to himself as a "publicist" for dentistry. He sometimes found himself at odds with the American Dental Association over this insistence on the value of "advertising" (his term for the dissemination of educational publicity through the commercial media). Also, although he became a Fellow of the American College of Dentists and seemed quite proud of that affiliation, he resigned when the College decreed that Fellows should not publish articles in proprietary journals. The ADA-sponsored advertising campaigns of recent years and the growing acceptance of writing for proprietary journals can be seen as vindicating Dr. Raper's position on the importance of maintaining wide-open channels of communication to the public, as well as

to fellow professionals.

One of dentistry's messages to the public that Howard thought was not being told in the right way concerned the doctrine of prevention. In his opinion, the concept of "preventive dentistry" was being interpreted in too restricted a manner. He argued that virtually all of the emphasis was being placed on the currently unattainable goal of preventing all dental caries ("Look, Mom, no cavities!"), while the attainable goal of preventing toothache by the treatment of caries with fillings during regular dental visits was being shunted aside. He felt that organized dentistry had the responsibility (which he felt was not being fulfilled) of conducting an aggressive public relations campaign to enlighten the populace about the prevention of toothache and the importance of good operative dentistry. He deplored the use of such terms as "drill'em and fill'em dentistry" on the ground that they grossly downgraded the contribution of an essential form of dental treatment.

(Dr. Raper's chief ideas on these subjects are ably presented in the booklet entitled "What Do We Mean When We Say Preventive Dentistry," which was published a short time after his death on January 15, 1978, and is available upon request from the I.U. School of Dentistry Library, 1121 W. Michigan Street, Indianapolis, IN 46202.)

### Man of Many Talents

Of course there were many aspects of this remarkable man beyond his scientific and professional interests. In addition to being a writer and lecturer of rare talent, he was an accomplished conversationalist and story teller, a humorist, a philosopher, a man of deep emotions.



Examples of Dr. Raper's light-hearted side are plentiful. In a Dental Survey column he once outlined an unusual approach to the sequencing of items in a meal. After noting that people having dinner often remark that they must "leave room for dessert," Howard stated that a more logical approach would be to have the dessert *first*, thus removing any risk of miscalculating. He added that oral hygiene would also be improved, since much of the sugary residue from dessert would be disposed of during the consumption of other components of the meal. That bit of whimsy was reported in a short piece in Time magazine, and Howard's friends at the I.U. School of Dentistry recall with a smile occasions at his Albuquerque home when lemon meringue pie, for example, would be served before the pot roast.

Likewise on the subject of nutrition, Howard enjoyed a sportive exchange of correspondence in 1958 with Dr. Emory W. Morris, President of the W.K. Kellogg Foundation. It began when he sent a mystery cereal to Dr. Morris with instructions to guess what it was before looking at the "answer" in an enclosed, sealed envelope. Howard's letter to the head of the Kellogg Foundation opened thus:

Dear Dr. Morris:

I doubt that I have miscalculated in assuming that you are interested in breakfast foods. Of course, old-fashioned breakfast foods that have to be cooked aren't nearly as interesting as the ready-to-serve kind, but, because they are breakfast foods, they may be worth a passing glance—or taste. So why not have a taste of the sample of the New Mexico Bluebird Breakfast Food which I am sending herewith. (The name is of my own coining.)

This food is so old-fashioned that it takes about an hour to cook it, but,

if you have never tasted it before, its subtle flavor may turn out to be something of a taste experience. . . .

Dr. Morris reported that they cooked the cereal (which they liked), guessed it to be buckwheat, and opened the sealed envelope to find out that it was authentic Indian corn meal. Dr. Morris sent Howard a gallon of Michigan maple syrup in thanks. Presumably everyone involved enjoyed the game and the food!

Dr. Raper was a masterful letter writer throughout his adult life, and he wrote particularly eloquent, often touching letters to old friends. The point is illustrated by a letter of September 3, 1973, to Dr. Furnas, his former student and faculty colleague at Indiana Dental College. The letter makes clear Howard's sense of loss and loneliness following the death not long before of his beloved wife of 35 years, Thelma. It also shows his gratitude for Dr. Furnas's friendship. He wrote:

Dear Lester:

I apologize, I'm sorry, I'm ashamed—and I ought to be, for not answering your letter of August 9 sooner. The reason I haven't at least acknowledged the letter sooner is that I do not do anything I ought to do. This kind of behavior is not new for me, but it is worse, much worse. I'm not sick, but lordee, am I old, and incompetent, and "frail" I believe is the word. Also I'm lonely clear through and through, inside and out.

I am learning, the hard way, how much work women do. I am at last learning that what Thelma did for me was to protect me against all the unpleasant realities of life, so that all I needed to do was just to be comfortable, even contented. I wish I had been more appreciative, but I was too dumb. And, speaking of appreciation, try to believe that, in



spite of my failure to answer your letter, I did and do appreciate it more than you can fully realize. That's a simple statement, but HOW I MEAN IT. Angela, who being a woman, will be practical about such things, will wonder how I manage to get along. Well, a maid comes in to help me half days three times a week. The balance of the time, I burn my own toast. Thanks Lester, big thanks, for your friendship. Your letter was full of it.

Luck and love. As ever.  
Howard

The penalties of old age, particularly the toll it took of his energy, were a recurring theme in Dr. Raper's correspondence during the 1970s. An excerpt from a letter to Dr. Furnas on October 4, 1973, strikes a typical note:

Dear Lester:

I had wanted to and intended to answer your letter immediately. It rated that kind of treatment and now see what has happened. You wrote the letter on September 9. Soooo, it has taken me nearly a month to do what I should have done in a day or two. I get pretty dam disgusted with myself. . . .

Read an article in TIME magazine for October 1 recently about punch drunk prize fighters. Their symptoms and mine are so much alike. The TIME article starts with a quotation from Hemingway reading as follows: "He took so many beatings . . . that it just made him sort of simple." Well, life can administer beatings as damaging as boxing gloves. Here are some of the symptoms and signs, mentioned in TIME, that I share with punch drunk boxers." *Foggy Memory. Tremors. Drooling. Mind Muddled. Uncoordinated Movements. Unsteady on Feet.*

*Shuffling Gait. Punchy.* Yea baby, you don't have to be hit with a boxing glove to become punchy. Just living and taking what comes can do the trick. . . .

But Howard's lively spirit and sense of humor could not be suppressed for long. A couple of years later, in a letter to Dr. Furnas dated March 25, 1976, he again lamented the burden of age, but did so with wit and verve (including a funny and wildly logical household tip for the elderly person). He wrote:

Dear Lester:

What a delightfully frisky letter was that one of yours of 2/24/76. You must have had the pacemaker set on "high" that day. Wore me out just to read such a manifestation of energy.

So many of my friends have taken trips (earthly one, I mean) in recent years, and I have never been envious before. But the trip on the DELTA QUEEN!!! That one I admit does arouse envy. How I wish I could join you. If only I was seventy years younger. . . .

Sir, you dare tell me I "know damned well how hard it is to stoop over and pick up something off the floor." Yessir, I do, and I have a technique for meeting such emergencies. Suppose I've dropped a pencil on the kitchen floor. I go get the yardstick and, flip by flip, coax said pencil from the hard kitchen floor to the much softer carpeted floor of the dining room. Then, but not until then, I fall down *deliberately* near the pencil, pick it up, twist a dining room chair around so I can place my forearms on it, and with great effort manage to get myself more or less vertical again. This technique is not patented. You are free to use it as need may arise.



I'm corked. Love to you kids.  
As ever (or thereabouts),  
Howard

Notwithstanding Dr. Raper's feeling that he was seriously depleted in energy, his friends and associates at the Indiana University School of Dentistry can attest that he was still active and productive to the end of his life. From his workroom in the unpretentious one-story house that was his long-time home in Albuquerque, he churned out a series of memos, letters, strategy notes, and reminders for his "Prevention of Toothache" campaign. As part of this effort to develop what he considered realistic and effective educational publicity about dental health, he took a personal hand in designing and editing the booklet "What Do We Mean When We Say Preventive Dentistry." For example, to attract the attention of potential readers who might catch a glimpse of the booklet's back cover, he placed there one of his favorite quotations from the Roman naturalist, Pliny the Elder ("If one wishes to be free from toothache, one should eat a whole mouse twice a month") and included an artist's drawing of a patient preparing to follow the prescription.

In keeping with his role as "publicist," Howard was always alert to the makeup and the interests, as well as the needs, of the vast audience that dental health messages are trying to reach. His insight into the composition of that audience is illustrated in this excerpt from a letter he sent to Dr. Philip Blackerby of the Kellogg Foundation on April 26, 1961:

If *now* we are to educate, or *motivate*, the public, it might be well for us to consider some of the characteristics of our prospective pupil, in order that our efforts at education may be governed accordingly. The public,

as I see him, is a big lazy duffer, unwilling to make much of an effort to learn anything. To teach him we must amuse him, arouse his curiosity, scare him, or make the lesson so easy it can be learned without effort. It should be borne in mind, also, that the public has a thousand other teachers besides dentists annoying him. The socialist wishes to educate him to save him from capitalism; the capitalist wishes to educate him to save him from socialism; the minister wishes to educate him in right conduct to save his soul; the sex hygienist wishes to educate him to save him from syphilis and gonorrhea; and American Cancer Society wishes to educate him to save him from cancer; the American Tuberculosis Association wishes to educate him to save him from TB—and so on and on, endlessly. No wonder he is lazy and indifferent. He has to be in self-defense. . . .

There were so many sides to this unique individual, so many talents, that it is difficult to sum up in a brief space his fundamental qualities and his contributions. An earlier article about Dr. Raper in this publication (Spring, 1971), ended with the citation that was read by President Herman B Wells in 1957 when Howard received the Distinguished Alumni Service Award. We will use it here again as a fitting tribute to an outstanding alumnus of Indiana University.

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

(continued on page 133)



# Bleeding Problems: A Dentist's Perspective

*Douglas G. Hammond\**

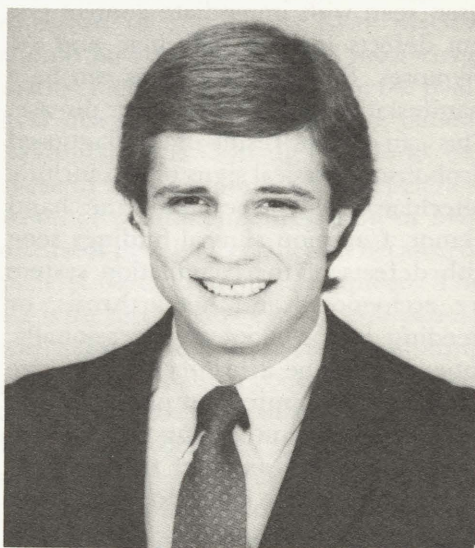
Surgical dental procedures, usually performed with little risk to the patient, may be life-threatening to individuals with undiagnosed bleeding problems. It is imperative that the dentist identify patients at risk prior to treatment. Initial evaluation of any patient should include screening for potential bleeding problems. Bleeding problems can be identified by three basic methods: patient history, physical examination and laboratory tests.<sup>1</sup>

## **Patient History**

A thorough medical and family history is invaluable in detection of possible bleeding disorders.<sup>2</sup> These problems may range from a subjective observation by the patient of prolonged bleeding following tooth extraction or a minor cut, to a family history of a genetically transmitted clotting disorder. When a patient's history is suggestive of a possible bleeding problem, an attempt should be made to determine if there is a defect in the immediate control system or in coagulation factors. Bleeding disorders caused by immediate control or vessel defects are manifested by mucous membrane bleeding including gingival hemorrhage. Coagulation or clotting problems, however, usually result in massive bleeding following trauma or surgery.<sup>1</sup> A detailed family history can be helpful in determining if the suspected bleeding or coagulation problem is familial in origin, and its possible mode of inheritance.

Another important aspect of a thorough history is a record of all medications past and present. This can often reveal the cause of a bleeding problem and also prevent possible drug interferences with evaluation tests. A patient with a history of bruising but no previous surgery or familial bleeding problems presents a difficult diagnostic problem. Direct questioning concerning problems involving extraction of a permanent tooth can provide a clue to the severity of the problem.

Patients with a history of chronic aspirin use should be questioned about the reason for the aspirin therapy. One particular concern is the number of middle-



**Dr. Douglas G. Hammond**

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\*Dr. Hammond is a graduate student in the Department of Periodontics.



aged health professionals who have placed themselves on aspirin therapy because of its anticoagulant effects, hoping to decrease the risk of thrombosis or myocardial infarction. Not all patients taking aspirin will have a bleeding problem, but if chronic aspirin use is discovered in the history, a bleeding time should be ordered to evaluate platelet function.<sup>1</sup> If this test is abnormal, a physician should be consulted prior to any surgical procedure.

An often overlooked but strongly indicative sign of a bleeding problem is the patient's observation of spontaneous bleeding.<sup>1</sup> The most common sources of such bleeding are vaginal, gingival, nasal, urinary, rectal, gastrointestinal and oral. If this problem is uncovered the patient should be questioned about amount of blood lost, source of bleeding, and measures taken to control it. This should be followed by a complete history and physical examination.

### Physical Examination

A brief physical examination along with a concise history is often helpful in determining if a bleeding problem exists and its possible origin. Physical signs most often seen with immediate control system defects include petechiae and ecchymoses. Bleeding problems can be a manifestation of untreated liver disease. This can be the result of undiagnosed alcoholism. Physical signs of this include petechiae, ecchymoses and fine hand tremor. Common clinical findings seen with defects of the coagulation system are ecchymoses and hemarthrosis, or bleeding into the joints. Occasionally, patients describe a history of excessive bleeding but manifest no physical signs indicative of an underlying problem. In this case, identification of the problem by the appropriate laboratory test is indicated.

### Laboratory Tests

Five laboratory tests are available to screen patients for bleeding or clotting disorders. The dentist may order these tests from a commercial laboratory or refer the patient to a physician for that purpose. The tests include platelet count, Ivy bleeding time, tourniquet test, partial thromboplastin time (PTT), and prothrombin time (PT).

A platelet count is not essential to screen a patient with bleeding problems, because disorders with the number and quality of platelets will be reflected by abnormal bleeding times. However, a platelet count can give insight as to the nature of the problem causing prolonged bleeding.<sup>1</sup> Thrombocytopenia, or a decreased number of platelets, becomes clinically significant when there are fewer than 150,000/mm<sup>3</sup>.<sup>3</sup> This is usually drug-induced but primary bone disorders, infections and immunologic and inherited disorders have also been responsible.<sup>3</sup>

Platelet function is best measured by the Ivy bleeding time.<sup>1</sup> In this test, a blood pressure cuff is placed on the arm and pumped to a pressure of 40mm Hg.<sup>4</sup> A stab wound is made on the arm and bleeding time is checked.<sup>2</sup> Normal bleeding time by this method is 1-9 minutes.<sup>4</sup>

The vascular phase of hemostasis is best assessed by the tourniquet test, in which a blood pressure cuff inflated to 80 mm Hg, is placed on the arm for five minutes. After this tourniquet is removed, the arm is checked for petechiae. Although the test may be positive in patients with decreased numbers of platelets, increased numbers of petechiae will be seen on the arm of a patient with significant vascular wall defects.<sup>1</sup>

One test to monitor coagulation defects is the Partial Thromboplastin time, which tests the function of the intrinsic and common pathways. This test reflects the ability of the blood still within the



vessel at the site of injury to coagulate. Deficiencies of Factors I, II, V, VIII, IX, X, XI and XII may produce abnormally high PTT values.<sup>4</sup> Only Factor VII of the coagulation system is not measured by this test.

A deficiency of Factor VII is best detected by Prothrombin time.<sup>1</sup> An increased PT is also observed if fibrinogen is lacking or if there is an excess of antithrombin or heparin.<sup>1</sup> In any case, a prolonged PT warrants referral to a physician for diagnosis and treatment.

When a patient presents initially with no subjective or objective findings suggesting a bleeding or clotting problem, the first sign may be diffuse bleeding following a surgical dental procedure. In these cases first the bleeding is controlled by means ranging from local injection of vasoconstrictor or pressure pack, to referral to a physician or emergency room. An attempt should then be made to determine the cause of the bleeding problem. The patient should first be questioned regarding any medications that have not been mentioned before, particularly aspirin therapy. The dentist may then wish to order any or all of the five previously mentioned hematologic screening tests. If this provides no relevant information, the dentist may wish to consult a hematologist before proceeding with any further treatment.

### Special Considerations

Certain situations deserve special consideration when screening a patient for a bleeding or clotting problem. The medical history should include specific questions regarding coumadin or warfarin therapy. This is an anticoagulant of long half-life and delayed effect that targets factors II, VII, IX and X of the coagulation cascade. This drug is prescribed for a variety of conditions, such as phlebitis, postmyocardial infarction,

and cerebral ischemic disease. Because coumadin interferes with the final steps in the synthesis of the previously mentioned coagulation factors,<sup>3</sup> the patient with a history of taking this medication should be questioned as to the reason for the therapy, length of therapy, and when therapy was stopped. If any questions remain regarding the safety of the proposed treatment, the patient's physician should be consulted. If the patient is taking coumadin at the time of dental treatment, the possibility of substituting another medication or discontinuing the therapy should be considered, to allow the dental procedure to be performed safely. The PT is the classical test to monitor coumadin therapy. However, the dentist should realize that the level of anticoagulation should be decreased until the PT is only 1<sup>1</sup>/<sub>2</sub>-2 times the normal before surgical procedures are attempted.<sup>1</sup> It should be remembered that it take 2-3 days for the effect of reduced dosage of coumadin to be reflected in decreased PT. A PT should be obtained on the day of surgery to be certain that the PT is within the prescribed limit.

Another special consideration is the patient with a history of heavy alcohol use or jaundice. With this finding, the question of significant liver disease should be addressed. Since most coagulation factors are produced in the liver, liver disease could result in the patient having serious clotting problems because of a coagulation factor deficiency. Another possible manifestation of liver disease is platelet dysfunction because of platelet destruction by the spleen. The PT is the test of choice to screen a patient with a history of liver disease for clotting problems. It is also a good idea to obtain a bleeding time to be sure that the platelets have not been decreased in number as a result of this disease.<sup>1</sup>

Another patient to screen carefully prior to a surgical procedure is the renal



dialysis patient. This is because they are frequently given heparin, an anticoagulant, during hemodialysis.<sup>1</sup> Heparin, however, does not have the long-lasting effects of coumadin, as its half-life is only four hours. But, if a patient reports for dental care the same day as hemodialysis, treatment should be postponed until the next day.<sup>5</sup> Future appointments should be scheduled for days when the patient does not receive heparin. If a question remains regarding safety of treatment, the PTT is the test of choice to monitor heparin therapy.

Another type of patient deserving special consideration is the individual who is prone to Vitamin K deficiencies. This vitamin is necessary for the synthesis of Factors II, VII, IX and X.<sup>3</sup> Patients on long-term antibiotic therapy may have reduced levels because the intestinal bacteria responsible for the synthesis may be destroyed by the medication. Also, patients with fat malabsorption syndrome will frequently be unable to absorb sufficient quantities of this fat-soluble vitamin. The prothrombin time is the test to screen for possible clotting problems in these patients.

It should be apparent that the dentist's main function in the treatment of a patient with a bleeding or clotting disorder is to first identify that a problem exists. Once this has been established, the next concern should be to determine how great a risk the anticipated surgical procedure will pose for the patient. This may be accomplished by the aforementioned methods, consultation with a physician, or both. The responsibility for diagnosis and treatment of a bleeding or clotting disorder ultimately lies with the physician, and he should be consulted if any questions arise. However, it is the prudent dentist who uncovers a previously undiagnosed bleeding or clotting problem prior to any complications, by a careful history and physical examination. With proper care and management

by the dentist, patients with bleeding and clotting problems may be treated without undue risk.

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## Oops!

*Please accept our apology!*

The list of the Dental School's Century Club members which was published in the last issue of the Alumni Bulletin unfortunately was incomplete. At least three names were omitted: **Drs. Hala Z. Henderson, Gorman F. McKean and Carl W. Newton.** Every attempt to have a complete list is being made, and it will be included in the next issue.

MKH



# Views on Cigarette Smoking And Efforts to Quit

Arden G. Christen, Professor and  
Chairman of Preventive Dentistry

Dr. Christen, a former smoker, has been involved since 1969 with quit-smoking campaigns and research programs. In the present article he responds to questions from the Alumni Bulletin. Elsewhere in this issue, Dr. Christen says more on the subject in the Preventive Dentistry portion of the extensive report on last summer's series of seminars for extramural faculty.

*In your opinion, why do most people smoke?*

There is no innate need for tobacco. Smoking is almost entirely a learned behavior, primarily in response to direct and indirect social pressures. Typically, people start smoking during adolescence as a result of peer pressure. This helps teenagers counteract feelings of inferiority and gain acceptance by the "in" crowd. However, the reasons for starting to smoke and then for continuing are not always related. After one has become habituated, a new set of learned psychological and social needs is activated. A "Smoker's Self-Test" developed by the federal government helps identify six psychological factors which promote continued smoking: stimulation, handling, pleasurable relaxation, crutch/tension reduction, craving and habit. (I have copies of this test and its interpretation which I will supply upon request.)

*What reason do smokers most frequently give to explain their inability to quit?*

Many smokers say they feel totally dependent upon their cigarettes, using them to help cope with everyday problems and reduce tension. It is well known

that nicotine has sedative or tranquilizer-like effects. Most health care professionals that I deal with now consider cigarette smoking to be a true addiction, and so do most smokers. In fact, as measured by one's inability to abstain, smoking is considered six times more addictive than alcohol.

*Are some brands of cigarettes more harmful than others? What about filters?*

This is a controversial subject. It is generally believed that cigarette smoking is nicotine-seeking behavior, e.g., most smokers require the nicotine effect characteristic of smoking. The level of nicotine in the brain is crucial for heavy and highly dependent smokers, and they will unconsciously modify their puff rate or depth of inhalation until that nicotine level has been reached. Dependent smokers need a brain level boost of nicotine about every 20-30 minutes throughout their waking hours. Although it is generally believed that smoking filtered cigarettes is better for one's health (because some of the cancer-producing tars are filtered out), recent evidence indicates that they may actually be *more* harmful. Why? Because smokers must unconsciously smoke more cigarettes to get the nicotine that they "need," they may inhale deeper, or take more puffs, thereby getting more harmful gases and particulate (solid) matter.

*Which methods of quitting smoking have flopped?*

Actually, all methods have helped people quit smoking. However, some techniques seem to be more effective than others. For example, although hyp-



nosis has been spectacularly effective for some persons, it has a relatively poor track record. Also, certain quit-smoking tablets such as those containing lobeline sulfate are not all that effective long-term. Smokers frequently want a "magic bullet" or pill to help them quit. Such approaches often fail because they do not consider two things: psychological aspects of smoking and nicotine addiction. Scare-type programs generally don't work and should be avoided. We have found that a nicotine-containing chewing gum (with 2 mg. of nicotine per piece) is a helpful adjunct, along with a group therapy quit-smoking program.

*How much does the habit cost the average smoker?*

The average smoker needs to consume 1 to 1½ packs a day to keep the brain "happy." However, there are numerous 2-3 pack a day smokers among the 55 million Americans who smoke cigarettes. It is not uncommon to hear smokers say they spend \$500-\$1,000+ a year on cigarettes.

I prefer to look at the "cost" of smoking a bit differently. For example, a pack-a-day smoker (20 cigarettes), typically takes 10 puffs on each cigarette. That amounts to 200 puffs a day or 73,000 puffs (inhalations) a year. It is practically impossible to smoke without inhaling; in fact, the "reward" for smoking is inhaling. Since there are over 4,000 different chemicals and gases in cigarette smoke, inhaling is an extremely dangerous practice. The lungs absorb and retain many chemicals from the aerosol which is called tobacco "smoke."

The true "cost" of smoking is the many ill-effects on health produced over time by inhalation. Smokers actually pay for cigarettes twice: initially when they purchase them, and later with their health.

*Is the quantity of smoking significant? If a three-pack-a-day smoker gives up trying to*

*quit but cuts down to one pack a day, will that reduce the health risks?*

Yes. The severity of smoking-related diseases (chronic bronchitis, emphysema, chronic obstructive lung disease, lung cancer, heart disease, etc.) is directly related to the amount one smokes. Although few people actually can cut down on their smoking for a long period, it would be highly beneficial for people to smoke less—if they could. Studies show that the human brain can get all the nicotine it truly "needs" with about 10 cigarettes a day. If one *must* smoke, I recommend smoking no more than 10 cigarettes a day. For die-hards who refuse to quit, five simple steps probably will lessen the hazards: (1) smoke fewer cigarettes each day; (2) take fewer puffs on each cigarette; (3) reduce the depth of inhalation; (4) smoke less of each cigarette; and (5) choose a brand low in tar, carbon monoxide and nicotine. Every few years, the Federal Trade Commission determines the level of each of these components of tobacco smoke and publishes a report available to consumers. However, there is no "safe" level of smoking—even one cigarette a day paralyzes the protective hair-like cilia which line the breathing passages. The ultimate goal should be for smokers to quit.

*What about the person who smokes heavily for many years and then quits? Can the damage be repaired?*

Yes!! Much of the damage from long-term smoking can be reversed, even in those who have smoked 30 or more years. But let's be realistic. Individuals who have emphysema or advanced lung disease will never be as good as new. However, they will pick up a great deal of lung function, which will definitely enhance the quality of their lives. I have personally observed many emphysema victims who, while they were smoking, could barely climb a flight of stairs. Within a week or two of





## A DATE WITH DANGER



quitting, these individuals could walk up the same stairs with much greater ease. Even those paralyzed cilia come back in a few days after quitting smoking. An internist friend of mine showed me a series of chest X-rays taken on ex-smokers over an 18-month period. One could clearly discern a progressive, radiographic clearing of the lungs during this time.

*What are the dimensions of the health problem for smokers?*

The 1979 Surgeon General's Report on Smoking and Health is a massive, comprehensive review of the ill-effects of smoking on health. It is nearly three inches thick! According to the Surgeon General, the 350,000+ excess deaths in any given year attributable to cigarette smoking constitute more than all other drug and alcohol abuse deaths combined, seven times more than all automobile fatalities per year, and more than all American military fatalities in World War II and Vietnam put together! As health professionals, we shouldn't remain complacent about this problem. Although Americans are buying (and smoking) fewer cigarettes each year, cigarettes remain an \$18 billion annual industry in this country. Americans still consume 584.4 billion cigarettes a year (the peak consumption rate was 1981, when 640 billion cigarettes were purchased).

*What is the average age of the beginning smoker? Are there advertising campaigns aimed directly at this group of potential users?*

Most Americans start to smoke in early adolescence. The average age of experimentation with cigarettes and tobacco is 12-13, but many individuals start earlier. In fact, few people start smoking after age 21. The two major influences for predicting early smoking behavior are smoking of one or more parents and peer pressure. I believe that advertising

campaigns are blatantly aimed at these impressionable youth. Ads portray smokers as active, attractive and sophisticated. For the teenage, these ads are highly effective. Adolescents feel more grown-up when smoking and use it to defiantly claim adult status and gain stature with peers.

*How many Americans are smokers in the '80s compared to 25 years ago?*

Across the board, about 28% of Americans currently smoke (about 42% of all adults smoked in 1966). This is the lowest level of smoking since early in this century. However, statistics can be misleading. Certain segments of the population are still smoking in record numbers, e.g., military enlisted, blacks, Hispanics, nurses. Among women in their early 20's, smoking is increasing. Blue collar women are not only still smoking, but also smoking more.

*There is a lot of advertising directed at women in today's market. Has that been effective?*

If I were in the tobacco industry, I would target young girls and women smokers. Why? First, a number of studies show that it is harder for women to quit smoking than men. There is some evidence that women may build cigarettes into their lives at a deeper emotional level than men. Of course, there are exceptions, but men tend to smoke more for pleasure and women smoke to reduce tension. Secondly, there is now more cigarette smoking among adolescent girls than boys. In the 17-19 year group, there are almost 5 female smokers for every 4 males. Although teenagers generally don't smoke a lot each day, and thus don't have a big effect on tobacco company revenues, they are nevertheless considered critical future consumers. Many of the women's magazines advertise cigarettes heavily, e.g., *Cosmopolitan*.



In recent years, we have learned the bitter lesson that women who smoke in patterns similar to men develop the same health problems as men. Women have lagged one-quarter century behind men in their widespread use of cigarettes, but they are quickly catching up in terms of disease. In addition, not only do women lack immunity to the damaging effects of smoking, but this habit is also a major threat to the outcome of pregnancy and the well-being of the newborn baby. Numerous toxic substances in cigarette smoke, such as nicotine and hydrogen cyanide, are known to cross the placenta and to affect the fetus directly. Likewise, carbon monoxide is transported into the fetal blood and deprives the growing baby of oxygen. This process can lead to fetal growth retardation, reduced fetal weight and size, more spontaneous abortions and a greater incidence of bleeding during pregnancy and birth complications.

*There seems to be an increasing amount of advertising for smokeless tobacco, with ads appearing on television and radio, as well as in the written media. Is this a less harmful habit?*

When a smoker switches from a smoked form of tobacco to smokeless tobacco (snuff, chewing tobacco, brick, or twist forms), one problem is simply traded for another. Although smoked and inhaled forms of tobacco are considered to be systemically more harmful than smokeless tobacco, one should not be deceived. Smokeless tobacco has been shown to produce many long-term dental effects such as abrasion (tooth wear), gingival recession, periodontal bone destruction which leads to tooth loss, leukoplakia and oral cancer.

*What are some of the most successful methods of quitting smoking?*

When dentists and physicians and other health care workers systematically, consistently, but in a non-guilt produc-

ing fashion, place a continuing high priority on smoking cessation for their patients, the results can be surprisingly potent. First and foremost, the individuals themselves must strongly want to quit smoking. For many people, "cold turkey" is the preferable way to stop. I believe that a truly hard-core smoker will have the best shot at quitting if he or she combines the use of a nicotine-containing gum with attendance at an intensive group support quit-smoking clinic.

*Can you tell us something about your current research program to aid smokers?*

For the past three years, our group at the Oral Health Research Institute has been studying the use of a nicotine-containing chewing gum in helping patients quit smoking. We are also learning more about the various by-products of combustible and non-combustible (smokeless) tobacco, including carbon monoxide, nicotine, salivary cotinine and thiocyanate, and their role in the addiction/withdrawal process. Last fall we started a five-year research project funded by the National Institutes of Health, related to physician/dentist intervention for smoking cessation. We are co-sponsoring this research with the IU School of Medicine.

*What do you see in the future with regard to smoking? With increasing education, is it possible that the habit may virtually disappear or do you see an endless campaign with only limited success?*

Surgeon General C. Everett Koop has called for a Smoke-Free Society by the year 2000. If this is to happen, some drastic changes will be required in American society. For example, at least \$1.5 billion is spent every year through advertising and promoting of tobacco products. I believe that counter-advertising strategies must be developed which will emphasize that smoking is *not* an attractive, pleasant or healthful habit. All health care providers, dentists included,



will become increasingly involved in helping their patients quit smoking. Strategies will be developed and perfected which will help promote non-smoking through the workplace. I foresee a time when the marketing of forms of tobacco through the media will be eliminated or drastically reduced. Although public smoking may drastically decrease due to increasing public and social pressure, the practice will probably continue in one form or another. The smoking of cigarettes will increasingly become a lower-class habit with abstinence being linked to higher education

levels and occupational success.

Hopefully, federal taxing of cigarettes will increase. Taxing is crucial because there is evidence that it affects consumption. When the federal tax was doubled to 16 cents a pack in 1983, volume of sales fell nearly 8%. . . . National public education efforts designed to improve our awareness about the number one preventable cause of death—cigarette smoking—will intensify and become more sophisticated. I happen to believe that the quit-smoking movement will continue to pick up steam during the next few years. I hope I'm right!

## Graduate Student From Shanghai Tells of Dentistry in China

*Dr. Yiming Li*

Reprinted from the IUSD Newsletter, this is the text of a talk Dr. Li presented last May at the Pierre Fauchard Academy luncheon in Indianapolis. Dr. Li received his dental degree from Shanghai Second Medical College in 1977. A second year Ph.D. student in Preventive Dentistry, he received an M.S.D. in Dental Materials in 1984.

Dentistry in China is one part of medicine and it is quite different in many aspects from that in the United States. China has a population of more than one billion but it has fewer than 10,000 dental professionals at present. Obviously, the number of dental professionals is not meeting the requirements of the society. However, much has been done to improve this situation and a rapid development of dentistry, particularly during the last several years, is occurring in China. This discussion briefly introduces the dental educational system and dental care delivery in China.

### **Dental Education in China**

The first dental school in China was established in 1916 at West China Union University in Chengdu, Sichuan Province. In the 1940s there were four dental schools and this number was maintained



**Dr. Yiming Li**



for more than 20 years. In the late 1970s the Ministry of Education and Ministry of Health noticed the increasing needs for dentists and thus decided that each of the 29 provinces should have at least one dental school. At present, approximately 20 dental faculties have been established and all of them are associated with medical colleges.

Dental students begin their studies directly after high school. To be accepted, the student must pass a series of national examinations and the competition is very intensive. Students are required to live on campus, and the room and tuition are free. Many students also receive a certain amount of money from the school which is usually enough to support the basic living expenses. In China, to pass the national examinations and become a university student is a big event in the family and it often results in a celebration.

Most dental faculties in China have a 5-year curriculum, but at least three programs require the students to study six years to be a dentist. In general, dental students spend two to three years studying basic sciences, which are usually offered by the medical college with emphasis on the contents related to dentistry. After successfully completing the basic science courses, students begin dental studies in the Faculty of Dentistry, which is often associated with a hospital. The organization of a dental faculty in China is somewhat different from here. It has fewer but larger departments, each of which contains several fields. In most dental faculties, there are departments of basic sciences, oral medicine, oral surgery, and prosthodontics. However, some early established schools, such as my school in Shanghai, have more departments. Fields such as oral pathology, dental materials, and orthodontics are also independent departments. Dental students study in these departments through lectures, lab exercises, and clinical practice for another three years.

### **Experience in Medicine**

Usually dental students are also exposed to various areas of medicine. They spend at least six months for lectures and clinical practice in the hospital departments such as internal medicine, general surgery, pediatrics, gynecology, radiology, Chinese traditional medicine, etc. For example, I did nine appendectomies and served as a midwife several times. The purpose for this arrangement is to prepare the student for the possibility of saving a life when he or she is alone on duty in an emergency room after graduation. To fulfill the requirements for graduation the student has to be an intern in dentistry for a minimum of nine months, and then must pass a comprehensive written and clinical examination. Usually about five percent of the graduating students will be selected to work in the same dental school as faculty members. All students are practically guaranteed a job in the hospitals or medical universities.

Many dental faculties have also established graduate programs in various fields. For basic science programs, the student can apply right after his graduation from dental school. For clinical fields, however, most programs require the applicant to have at least two years of experience in clinical practices. All applicants must pass specified examinations. The accepted graduate students usually study for three years for the master's degree. Some dental faculties also offer Ph.D. programs.

### **Dental Care System**

China has a so-called "free medical care" policy. All expenses for treatments of illness are paid by the government. This is not completely true for dental care. Patients needing dental prosthetic and orthodontic treatments usually have to pay themselves because such treatments are generally considered for esthetic purposes. In Shanghai, a set of full



dentures costs about \$8 so that most people are still able to afford this treatment. Other dental care expenses are paid by the government.

The dental care system in the city is a little bit different from that in the countryside. In the cities, although almost all factory and street areas have a health station or clinic, dental care is usually provided by district hospitals and municipal hospitals. Using Shanghai as an example, there are approximately 12 million people living in this city and it is composed of 10 districts and 10 counties. Each district has at least one district hospital providing dental care. These district hospitals usually have two to 10 dentists. In addition, Shanghai has more than 10 municipal hospitals. Most of them have more dental facilities and dentists to provide more comprehensive dental care. In some cities, including Shanghai, there is another dental care network called Dental Health Care Center, which has many divisions in districts and provides general dental care and treatment, particularly restorations, prosthetics and extractions.

Because of the high density of population in the city and relatively limited dental facilities and dentists, the dental department is often one of the most crowded places in many hospitals.

In the countryside, the commune (Xiang), which has a population of 15,000 to 50,000, is usually the lowest level of dental care. A commune often has a clinic, which may have a dentist. Many of these dentists, however, are not trained by dental schools. Instead, they learned from the older generation, similar to an apprentice system. The commune clinic usually provides only simple dental care, such as extractions and amalgam fillings. The patient needing more treatment is then referred to a county hospital, which is often capable of providing dental care similar to the quality of care available at the district

hospital in the city. However, for people living in the countryside, especially those in mountain areas, dental care is much less easy to find compared to the urban people.

In general, dentistry in China, particularly preventive dentistry, has been behind the progress of many other fields. It will take time and much effort to meet the increasing requirements of the society. However, the situation is being improved rapidly and dentistry in China has received more attention and support. China has established its first dental hygiene and dental assistant program, and some dental faculties have, or are going to have departments of preventive dentistry. Another example is an increasing number of dentists who are studying dentistry in the United States and other advanced countries. It is a reasonable assumption that dentistry in China will have a rapid state of development, and people will enjoy better dental care than ever before in the near future.



Mr. Gerald C. Leake, Jr., third-year dental student (center), is shown receiving the 1985 Maesaka Award from Associate Dean Robert L. Bogan as Dr. Ray K. Maesaka looks on. Established to honor Dr. Maesaka's parents, the award recognizes a student with an outstanding record in technical proficiency and professional aptitude during the first two years.



# Dental Auxiliary Education: The Evansville Story

*Gordon E. Kelley, Director of Dental Auxiliary Education  
at University of Southern Indiana\**

Indiana State University Evansville, established by the Board of Trustees of Indiana State University, opened its doors in 1965 with two full-time and 30 part-time faculty members instructing 412 students in a condemned elementary school building. The fledgling university quickly outgrew the old building.

A consortium of community members (Southern Indiana Higher Education, Inc.) was formed to assist not only in the formation of the campus, but also in its development. Through the foresight of this group, a 1400-acre tract was purchased four miles west of the city limits and 300 acres were prepared for immediate development.

Two new buildings were approved and constructed, and the University moved to its present site in September, 1969. The campus continues to expand and now consists of six major buildings housing 108 full-time and 95 part-time faculty members who instruct nearly 4,000 students.

The Indiana General Assembly adopted a resolution in the spring of 1985 granting ISU-Evansville full independence effective July 1, 1985. We are now officially the University of Southern Indiana. Although this represents a significant step in the University's development, it is anticipated that no major changes will occur and the mission will continue as before, with perhaps more emphasis on state-wide programming.

## **"You can't get there. . ."**

Evansville is in the extreme southwest corner of Indiana, nearly 150 miles from any other large metropolitan area in any direction. This "pocket city" does not have a major highway connecting it to Indianapolis, and as a result, the local residents often say, "You can't get there from here." This is almost true, for you must first drive to Vincennes, Terre Haute, or New Albany to find a good highway leading toward the capital city.

Evansville has been forced to develop facilities and features not common in cities of its size (just over 150,000). You will find superior hotel and convention facilities, a sternwheeler riverboat, a renowned philharmonic orchestra, and an excellent zoo. Besides the travel inconvenience, the area routinely observes Central Standard Time for the six cold weather months of the year which puts us one hour behind most of Indiana (except the Gary region).

The metropolitan area is a melting pot of cultures, with a strong German heritage. You can go downtown and buy a



**Aerial view of the University of Southern Indiana**

\*Dr. Kelley is also chairman of the Division of Allied Health.



beer made in the only surviving brewery in Indiana, then step across the Ohio river bridge and feel as if you have been transported 500 miles into the deep south. Catfish (fiddlers) is a favorite food, and outdoor beer gardens blossom all over town during warm weather.

### **Early DAE History**

The dental auxiliary education programs at Evansville were the next-to-last of the branch campus programs to be established in the state. Considerable effort was expended by Dr. Ralph G. Schimmele and Dr. Ralph E. McDonald in organizing these programs nearly 200 land miles away from the School of Dentistry.

The Memorandum of Agreement for the joint degree programs was finalized during late 1970 and 1971 after several months of discussion. This agreement was probably the most difficult to obtain of all the regional programs because, for the first time, a university other than Indiana or Purdue was involved. Diligent work on both sides has made this agreement efficient and a model of cooperation.

Equipment and supplies were ordered, faculty and students were interviewed, and all was made ready for the September, 1971 opening. There was only one problem: The physical facilities for dental auxiliary education did not exist! Blueprints for the renovation of space were completed and in the builder's hands, but not a contractor was to be seen when school began. Only about one-half of the major equipment was on campus, and some had not even been put out for bids yet. The program director used to visit the temporary warehouse weekly just to see if the equipment really did exist.

### **Original Faculty**

The original faculty consisted of Mrs.

Florence McCloskey, supervisor of dental hygiene; Ms. Lois VanMeter, supervisor of dental assisting; and Dr. Gordon Kelley, director of dental auxiliary education. The faculty were scattered around in available office spaces, and classrooms were located all over campus, but could be used only when other campus programs did not need them. There were 18 dental assisting students, 12 dental hygiene students, and three full-time faculty to teach them. Assistance was provided by two local dentists who came out for two hours per week, and the three televised courses provided on IHETS by the School of Dentistry. Even then the three faculty had the same teaching load that five faculty members do now. The biggest problem was getting dedicated space and equipment. Supplies were not always available, and a lot of improvising was done until the needed materials arrived.

Eventually, as you might expect, the renovation began just as the fall semester of 1971 neared its end. The noise and dust were unbelievable as the concrete floor in the former student lounge was broken up and removed to allow for plumbing lines. As the Christmas holidays approached, the first major problem in the renovation was discovered: The X-ray darkroom had been designed without plumbing, and no provision had been made for a vacuum system or waste water disposal from each of the dental hygiene clinic chairs! A hurried addendum to the renovation contract was devised after many long distance telephone calls, and the contractor and University agreed on the change of plans. Day-to-day problems continued to arise as exact locations of nearly every major piece of equipment had to be determined right on the spot.

### **Seeing It Through**

The spring semester began much the same as the fall had, only this time we



were better prepared for problems. As the slow renovation continued, we set up one dental chair in the hallway and began simulated exercises. Basic laboratory procedures and pre-clinical instruction was carried on in a chemistry laboratory amid the steam distillation units and assorted other paraphernalia, including bottles of ominous-looking chemicals. Our concerns were intensified by the fact that the ADA had rejected the original application for accreditation. However, a re-doubled effort resulted in acceptance of the application and the program began to look like an official one.

After facilities were completed in March, 1972, we were able to begin work at 14 real dental chairs which had lights and air. Because the semester did not end until early June, the students got nearly 10 weeks of solid instruction. The clinic exists today, 13 years later, exactly the same as it looked in 1972 except that the water faucets have been converted to foot pedal operation. Portable lead shields have been purchased to shield the two clinic chairs nearest the three dental X-ray units, and one X-ray machine has been retired and replaced.

The dental assisting laboratory/lecture room was completed at the same time and has not been changed. Twenty-six stations are arranged in circumference around the outer walls, with an open center area facing a demonstration desk and the Executive unit and the 15th dental chair. The model trimmers still routinely stop up and flood the floor.

Plans were completed during 1975 for opening the third DAE program: dental laboratory technology. Using past experiences, we were able to design and equip a modern facility, and Mr. Paul Robinson was appointed the first supervisor. The program began operation in the fall of 1976 with eight first-year students.

The physical facilities today include

the dental hygiene clinic, the dental technology laboratory (housed in the former bookstore area), the dental assisting laboratory/lecture demonstration room, and three lecture rooms dedicated to our use. Each program supervisor has a private office down the hall from the Division office. The program at last is no longer scattered all over the campus.

### Current Status

The DAE programs were soon joined by two allied health programs: respiratory therapy in 1972, and radiologic technology in 1976. As the entire health area grew and faculty members were added, we began to make our presence known on our expanding campus. The university elevated the department to division status in 1977 and we became the administrative equals of the other six academic divisions. The director of DAE became the chairman of the Division of Allied Health and was given equal status with the Ph.D. Division chairmen.

The three DAE programs have equal administrative status with the two allied health programs and are at the same administrative level as, for example, English, chemistry or history. The Division chairman reports directly to the vice president for Academic Affairs and, acting as director of DAE, reports also to the dean of the School of Dentistry and the DAE Executive Council.

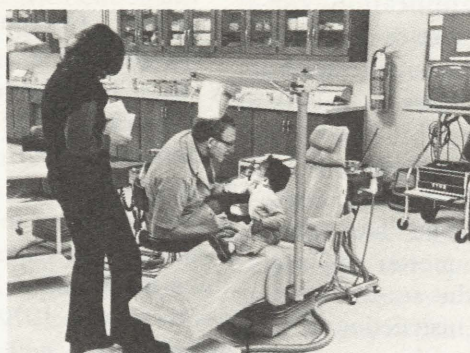
The DAE faculty and staff are experienced people who represent diverse backgrounds. They include: Ms. Suzanne Schnacke, CDA, AS, supervisor of dental assisting; Mrs. Glenda Miller, CDA, AS, instructor in dental assisting; Ms. Deborah Henry, LDH, M.Ed., assistant professor and supervisor of dental hygiene; Mrs. Phyllis Maddox, LDH, M.Ed., assistant professor of dental hygiene; Mr. Paul Robinson, CDT, BS, assistant professor and supervisor of dental



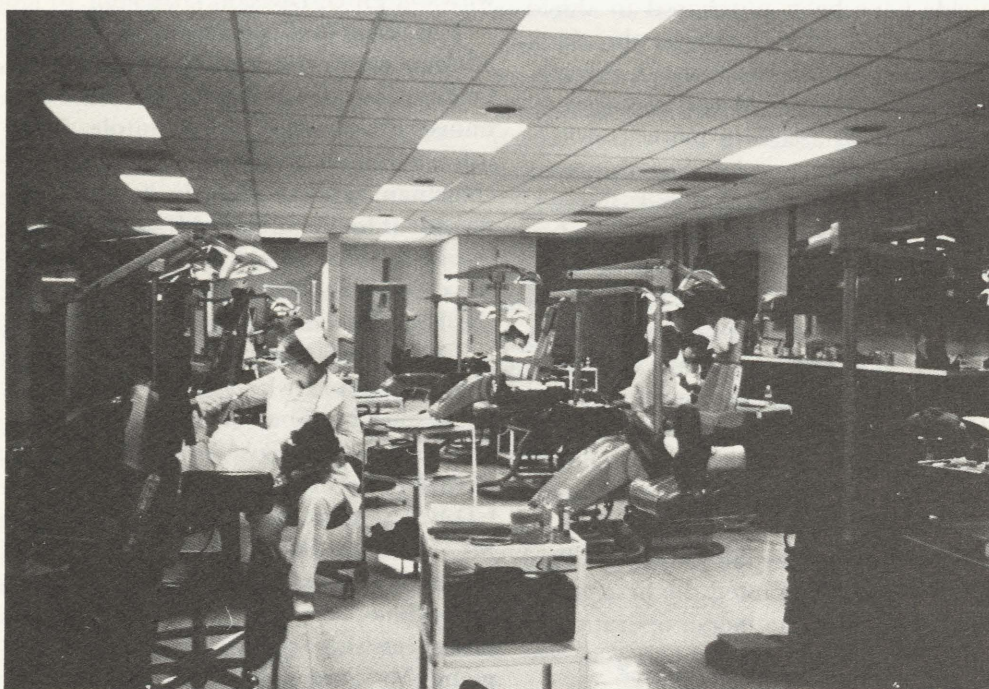
laboratory technology; Mr. David Swope, CDT, BS, instructor in dental laboratory technology; Mrs. Anne Denner, RN, MS, special part-time instructor in allied health; Mrs. Linda Matheson, LDH, BS, part-time instructor in dental hygiene; Mrs. Carol Stokes, secretary; and Gordon Kelley, DDS, MSD, professor and chairman of the Division of Allied Health. Each person is totally dedicated to the University and his or her individ-

ual program, and works hard to ensure that graduates are competent members of the profession who will bring credit to themselves and the University.

The DAE programs at the University of Southern Indiana have come a long way since their inception in 1971. We look forward to many years of continued service to the School of Dentistry, the dental profession, and the state of Indiana.



**Dr. Gordon E. Kelley examines a patient in DAE clinic.**



**Hygiene students with patients in clinic**



# IUSD Influence Spurs Activity In Dental Research in Spain

*Simon Katz, Professor of  
Preventive Dentistry\**

My connection with the world of Spanish dentistry (or stomatology, as they call it) started in 1978, when I was invited to give a course in Preventive Dentistry at the School of Stomatology of the Complutense University of Madrid. A seed was sown during the course. It happened like this. The course was attended by a group of young Sevillian dentists devoted to the goal of promoting preventive dentistry in their country. Upon their kind invitation, I visited the beautiful city of Sevilla and gave a lecture on "Preventive Options for the Province of Sevilla." Based upon my knowledge of the dental health situation in Spain, and the tremendous disharmony between existing dental needs and resources, I proposed fluoridation as the first and by far most effective option. There was a heated debate—why is it that fluoridation always brings heat to debates?—but a few of the dentists in attendance took the idea and pushed for it skillfully and vigorously. As a result, the first fluoridation plant was dedicated in 1980 in the village of El Pedroso. I was honored with a request to deliver a lecture during the dedication ceremonies (you may remember that I spent 1980 in Spain on a sabbatical leave).

This was the first seed to germinate, and the resulting tree has bloomed beautifully. Since 1980 several other Sevillian communities have fluoridated their water supplies, and recently the

Autonomous Government of the Province of Sevilla passed legislation establishing mandatory fluoridation in population nuclei of 50,000 inhabitants or more served by a centralized water supply system. Our school can be justly proud of its contribution to the dental health of Sevillans.

The connection between the IUSD and Sevillian dentists continued through a visit that a group of them paid to our School in 1982, and a trip of mine to Spain during the same year. It continued recently through a kind invitation of the College of Dentists and Stomatologists of the IV Region (Sevilla - roughly the equivalent of our State Dental Society) to a group of our faculty to participate in the XXIV National and IV International Dental Congress, which took place in Sevilla last June.

## **Caries Study Suggested**

During my 1982 visit two Sevillian colleagues expressed their desire to start a research program at their School. In view of their interests and their association with the Department of Microbiology at the Medical School I suggested a study on the evaluation of caries risk in school age children through the counting of salivary bacteria. I prepared a model of a protocol and, with help from Dr. Chris Miller and Professor Charles Palenik, suggested sampling, cultural and counting procedures. This was the second seed that was sown.

To be quite candid, I thought that the project would not be carried out. My skepticism reflected the knowledge that

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\*Previous articles on the contributions of Indiana University faculty members to Spanish dentistry and dental education appeared in the Alumni Bulletin for Spring 1981 and Fall 1982.



as a rule Spanish faculty are horrendously underpaid, and depend for their living on private practice. They have therefore little time and incentive to work in research. The existence of a general deficiency in knowledge of study design, research methodology and statistical analysis also crossed my mind.

Was I wrong! What I had not taken into account was the enthusiasm and dedication of the two young colleagues. Very soon long distance telephone calls to ask details of the protocol, clarify doubts and help solve technical problems convinced me of the seriousness of their objectives.

To make the story short, I had the satisfaction during my recent visit to Sevilla of seeing the preliminary results of the study, which covers the relationships between caries prevalence in primary and permanent teeth of school children as a function of their salivary *Streptococcus mutans* and *Lactobacilli* counts. The evaluation and analysis of the data is not completed yet (it will be done during the forthcoming visit of one of the authors to our school), but from what I have read I am convinced that the two Sevillian dentists have a good start in the difficult road toward becoming good dental researchers. Thus, it would appear that also the second seed is going to germinate beautifully.

### Faculty Exchanges

But that is not all. It so happens that Indiana University and the University of Sevilla have a faculty exchange agreement, which provides for visits of their professors both ways. Under such an agreement one of the two colleagues involved in the project I just referred to, Dr. Pedro Bullon Fernandez, arranged to visit our school during September to (1) complete the evaluation and analysis of their present project and start the

planning of new projects (one of them to explore the possibility of suppressing or decreasing the transmission of *S. mutans* from mothers to their infants; (2) learn some study design and statistical analysis; (3) observe the organization, patient management and surgical techniques of the Department of Periodontics; and (4) begin a study of methods for obtaining and culturing samples of periodontal disease-related bacteria.

The story still does not end. The IU-University of Sevilla agreement and Dr. Bullon's visit have opened the door for new exchanges. Thus, in all likelihood Professor Palenik and I will go to Sevilla in March 1986 to help our colleagues to start the new projects, monitor the continuation of the present project, and lecture and perform demonstrations on subjects of our expertise. I have no doubt that further exchanges will follow. In fact, the analysis of the project conducted by the two pioneering Sevillian colleagues demonstrates that, as in the case with any new researcher, they need to learn several things about the design and conduct of studies, controls, and so on. The only way I visualize for this goal to be accomplished is through additional faculty exchanges, with faculty members of the University of Sevilla visiting our school for further training, and IUSD faculty visiting the University of Sevilla to supervise the projects that are being conducted, initiate new projects, and so on.

At another level, the new dean of the School of Stomatology of the University of Madrid, Dr. Juan Pedro Moreno Gonzalez, is strongly interested in modernizing his school's curriculum and has expressed his desire to talk about such subject with our new dean and other American dental school deans. I hope that such exchanges take place because it is my conviction that dental education in Spain needs to improve a lot. In a



sense, historical circumstances may force the change. The entrance of Spain in the European Economic Community carries with it the obligation of the country to offer the same degrees as the other member countries. This means that programs in dentistry, as we understand the term, will have to be offered (perhaps simultaneously with the present programs in stomatology, which prerequisite a degree in medicine). The new programs, which may comprise five years of instruction vs. the two of stomatology

will require a great deal of planning, an area where the cooperation of the IUSD may be of great value.

It is clear from the preceding that our School has been able to plant several seeds in the fertile land of Spanish dentistry and that such seeds have germinated and the resulting plants are in full bloom. Let us hope that the seeding will continue so that we can help the dental profession of Spain reach a level that can be proudly compared with ours.

*Raced in Indy 500*

## British Dentist (And Student Here) Ran 'High-Speed' Drill in 1924\*

An unusual set of circumstances has recently come to light involving a present and former faculty member at the Indiana University School of Dentistry and a British dentist who not only was the father of a world-famous race driver but was himself a colorful competitor who raced in the Indianapolis 500 more than 60 years ago. (He was at the same time a "student" at Indiana Dental College, which became a part of Indiana University in the following year.)

Let's pick up the story from Dr. James H. Dirlam, professor and chairman of Undergraduate Oral and Maxillofacial Surgery:

A few months ago an English dentist, Dr. Philip Newsome, who is on the faculty at the University of Leeds Dental School, wrote a letter to this school with the request that someone on our faculty might volunteer to be his host for the Indi-

anapolis 500. Since I had two extra tickets, I volunteered. Recently I received a letter from Dr. Newsome stating that he regretted very much not being able to be here for the race due to personal problems that had come up since he made his request. He sent along with the letter a most interesting copy of an article that he had written and published in the British sports magazine *Classic and Sports Cars*. The article related the racing exploits of Dr. Alfred Moss, father of England's famous race driver, Stirling Moss. In 1924 Alfred Moss was a practicing dentist in London with an active, participating interest in automobile racing. He came to America that year, ostensibly to study the latest in American dentistry. Dr. Newsome states that Alfred's father (with whom the young man apparently was quite close) must surely have had some doubts about his son's true

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\*Reprinted from the IUSD Newsletter



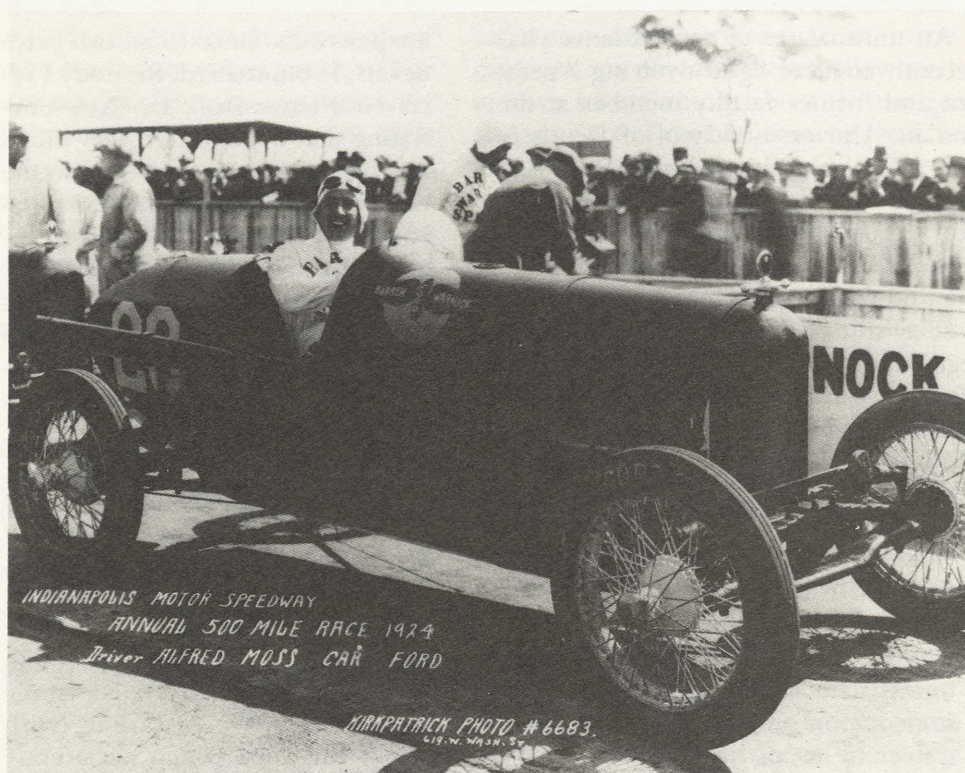
motives when he discovered that Alfred had enrolled at the Indiana Dental College, not much more than a stone's throw from the Indianapolis Speedway. He did finagle a ride in the race and after starting 20th finished 16th, averaging 84 miles an hour and winning \$900 in prize money. I had doubts if he spent much time at the dental school but Dr. Gerald Kiley, a former faculty member who graduated in 1925, remembers that Alfred Moss did participate in some activities at the school. And his presence here certainly did attract attention. One-half inch headlines in an Indianapolis newspaper of March 22, 1924, read: LONDON DENTIST IN AMERICA TO DRIVE SPEEDY CAR IN BIG RACE AT INDIANAPOLIS TRACK MAY 30.

Following that high point in his

career, Alfred continued to race but after his marriage in 1927 and the birth of his son Stirling in 1929, he did less racing and more dentistry. Although his father encouraged him toward a career in dentistry, Stirling was not academically inclined and instead became one of the all-time greats of racing. Alfred Moss died in 1972, but not before he had witnessed his son's rise to the heights of racing fame.

Alfred Moss was almost certainly the only dentist ever to race in the Indianapolis 500.

An excerpt from Dr. Newsome's article about the racing dentist gives some indication of the excitement and variety in Alfred Moss's driving career. The article notes that after the 1924 race, Dr. Moss signed a contract with Louis Chevrolet to drive for his team of dirt-track cars.



Alfred Moss, London dentist (and temporary student at the Indiana Dental College), poses behind the wheel of his Indy race car in 1924.



It goes on:

Although the cars were Fronty-Fords, similar to the type driven at Indianapolis, Alfred found the racing itself to be very different. Although the top speed of the cars was only 50mph, the racing was very spectacular. Experienced drivers were very skilled at handling these machines, and Alfred found that they could tuck a front wheel between his front and rear wheels on one side and accompany him around the bends at top speed. For this reason Louis Chevrolet had warned him not to look across at any car that came alongside him during a race: 'If you do, you'll go off the track with fright!'

This year in Alfred's motor racing career proved to be very enjoyable. He often came up against the champion dirt-track driver and the two would arrange beforehand that Alfred would go as fast as he could while his 'adversary' put on a demonstration of trying to pass, complete with near-crashes and fist shaking! Alfred, a foreign driver, was an ideal accomplice in this set-up.

### Bonding and Etching (continued from page 26)

(the margins are feather-edged on both the labial and lingual surfaces) and we simply bonded those to the mesial surfaces without a lot of extra over-contouring. In this case we did not place laminates over the entire labial surface.

There are many other things that we do with bonding that do not necessarily use laminates as well. But the porcelain laminates are probably one of the most exciting areas that I have worked with in recent years. I have had patients who were psychologic cripples because of tooth discoloration or tooth malformations that they could not cope with. We healed those people simply by "laying on

of hands" and bonding these miraculous things to the surfaces of their teeth. They are healed. I say that seriously: I have seen introverts bounce out of my office with a smile on their face you wouldn't believe, and it happens immediately. It doesn't take 2<sup>1</sup>/<sub>2</sub> years of psychotherapy. It is something that you should keep in mind as a portion of your armamentarium.

*How much are you prepping those teeth on the labial surfaces?*

We may eliminate the line angles at the junction of labial-proximal surfaces. We may bevel those at times to allow us to get the porcelain into embrasure a little farther than we would otherwise be able to because you can't put porcelain in an undercut area, obviously. These things are like egg shells before you put them on the tooth but once they are bonded they are like cast iron.

*Do you cover the incisors?*

Sometimes we cover the incisors for no other reason than to give us a stop, and then we take it off again. This is another disadvantage of the technique, because I don't like the idea of destroying the glaze; however, that is sometimes necessary. With the refined diamonds that we have now and the diamond polishing paste that is available, you can put a nice shine back on the porcelain. I am aware that it can't be as good as a glazed surface, even though it may look as good. On the other hand, we are applying the porcelain in areas where there will not be functional contact anyway, so I don't worry too much about damage to the opposing teeth. I have done a few where we put a small chamfer at the cervical. In situations where you want to minimize over-contouring, we might chamfer the cervical and remove a layer of enamel completely across the labial surface. I don't like to do that with plastic veneers because they are too temporary. With the porcelain, I am comfortable taking more enamel off.



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# Dental Auxiliary Education

## DENTAL AUXILIARY EDUCATION SOUTH BEND

*Shant Markarian*

The State Board of Vocational and Technical Education awarded us a grant of \$9408 for acquisition of a dental unit and microcomputers. Martha Moriconi was awarded Adjunct Faculty Merit Status for her outstanding contributions and meritorious service to the IUSB community.

Barbara Pasioneck appeared on WNDU-TV for an interview on the job market for dental assistants. In another appearance, she, Pam Borden, Jennifer Klein, and Nanci Yokom represented Dental Auxiliary Education for an evening and answered phones during Channel 34's successful membership drive.

IUSB dental auxiliary faculty and students joined area assistants, dentists, and hygienists in promoting Children's Dental Health Month at community malls and distributed more than 270 toothbrushes and 1500 dental health posters.

Jennifer Klein presented a continuing education course for dental auxiliaries on sealants. IUSB assisting and hygiene students were among those receiving table clinic awards at the annual meeting of the Indiana Dental Association.

Seven faculty members have received American Heart Association certification as screeners by completing a day-long Blood Pressure Measurement Training Program: Jacqueline Badics, Pam Borden, Deborah Canfield, Amy Hazlewood, Martha Moriconi, Barbara Pasioneck, and Nanci Yokom. The purpose of the program is to disseminate a

standardized technique for determining blood pressure and to provide information on high blood pressure to clients at screening sites.

We are grateful to Dr. Larry Beachy, Dr. Jack Stenger, and Ms. Roseann Zappia for serving on the IUSB Advisory Committee.

Recognition is also due to faculty-practitioners who took part in our dental assisting externship program: Drs. Rebecca Apple, Douglas Bateman, Larry Beachy, Michael Beachy, Norman Bryan, Ronald Corley, Terry Cunningham, James Douglas, Gary Drury, Gilbert Eberhart, Daniel Fridh, Michael Freid, Michael Gasko, William Gitlin, and George Glass.

Also, Drs. Michael Griffee, Nora Harmsen, David Harris, Stephen Hunt, Kerry Knappe, C. Port Laderer, James Macri, Dennis Miller, Edward Molenda, Larry Pampel, William Paul, David Porter, Michael Rader, Larry Roberts, Charles Rosenbaum, Bryan Snook, Jack Stenger, John Stewart, Gene Stutsman, Thomas Tanner, Harvey Weingarten, Howard Wiesjahn, Daniel White, and Jack Wright.

Seventy-six members of the North Central Dental Society contributed \$4565 to our programs for a central evacuation system and water recycler. Once again, Drs. Larry Beachy and Chuck Hassel as co-chairmen were responsible for a successful fund-raising campaign. Contributors were: Drs. Robert R. Allen, J. Douglas Badell, Harry Bailie, Ronald Bartosiak, Douglas Bateman, Larry Beachy, Robert L. Bonham, Harry E. Bopp, Wilber C. Boren, Stanley Carr, William H. Conger, James R. Davis, James Douglas, and Arnold Dunfee.

Drs. James Eastman, Frank N. Ellis,



Michael B. Gasko, Eugene L. Geyer, G.K. Glass, John F. Harrington, David J. Harris, Charles E. Hassel, Douglas Hazel, Jane L. Heyde, Russell Heyde, Charles Hollar, Roger Huff, Michael Johns, William D. Kimbriel, Eugene Kuzmic, and David G. Lehman.

Drs. John B. Lehman, Jr., Jerry O. Lentz, Daniel F. Lindborg, D.R. Lindborg, W.E. McCloughan, Terrance P. Mahoney, Shant Markarian, Vernon D. Martin, Ronald G. Melser, Dennis M. Miller, Sam J. Miller, William Miller, Edward Molenda, John S. Moss, William S. Mull, and Richard N. Myers.

Drs. Donald Oakes, Edward E. Packard, William E. Paul, Roger Pecina, Frank A. Portolese, Roy M. Pownall, John J. Reuthe, Wayne H. Risinger, Larry D. Roberts, Thomas Rykovich, George V. Schmitt, Brent D. Sonner, Donn H. Spillman, Robert E. Sriver, Paul E. Starkey, and Jeffrey D. Starr.

Also, Drs. John M. Stenger, Richard D. Strait, Gene A. Stutsman, John S. Szakaly, Martin R. Szakaly, Thomas P. Tanner, Lynn Vance, David Varner, C. Eugene Ward, Gregory A. Winteregg, J.M. Wright, Albert C. Yoder, Jr., and James C. Zimmer.

Senior dental hygiene students rotated to the Children's Dental Clinic of Memorial Hospital. Plans are being made for assisting students to take part in this community dental health project.

## **DENTAL HYGIENE AND DENTAL ASSISTING SOUTH BEND**

*Nanci G. Yokom  
Barbara A. Pacionek*

The first half of 1985 has been exciting and challenging for both students and faculty at IUSB, with this time being highlighted by the traditional spring time events.

Historic Tippecanoe Place restaurant was the site for the 1985 Dental Hygiene Alumni Day activities. Sixty people attended, with the Class of 1975 celebrating its 10th reunion and the Class of 1980 its fifth.

Barbara Gorbitz, Class of 1974 and 1985 president of Indiana Dental Hygiene Association, spoke to the alumni on House Bill 439 which was sponsored by IDHA. If made into law, the bill would have allowed dental hygienists to perform preventive dental hygiene services for patients in institutional settings or for the house-bound. Since there was much confusion on the timetable and facts surrounding the bill, it was very helpful to have Barb address the issues. We are proud to count Barb among our alumni and commend her for the contributions she has made to dental hygiene in our state. On the personal side, Barb and her husband are expecting their first child in September.

Another spring tradition is the recognition of academic achievements of the students in the Dental Assisting and Dental Hygiene programs. Hygiene students receiving awards at Honors Day were: Mary Jane Hall - Excellence in Dental Hygiene Award; Stacey Chmeil - Dorothy Fromm Preventive Dentistry Award; Letitia Warnock - A. Rebekah Fisk Award; and Class of 1985 - Clinical Faculty Award.

The annual Elkhart Dental Auxiliary Award of a plaque and savings bond was presented to Wendy Christiansen in recognition of academic excellence. We always look forward to seeing members of the auxiliary at the luncheon and also appreciate their efforts to help our students with their loan program.

Dental Assisting students honored for their achievements were: Debra Hansen - Clinical Excellence Award; Denise Linerello and Dawn Smudde - Instructor's



Awards; Jody Keeton - Student Award; and Laura Hicks - Ralph Schimmele Award.

On May 7th, 17 Dental Hygiene students received the Associate in Science degree at the Century Center and on May 9th, 17 Dental Assisting students received Certificates. We congratulate all of our graduates and wish them well in their careers.

Marti Moriconi, Dental Hygiene clinical instructor, received the "Merit Status" promotion for adjunct faculty. The promotion is based on excellence in teaching and contributions to the university and community. We congratulate her and are proud of her achievements.

Debbie Canfield and Carin and Harvey Weingarten have resigned as clinical instructors in order to spend more time with their growing families. We congratulate them on recent births (two daughters), and wish them well. Also, we thank them for their contributions to our program—they will be missed.

## **DENTAL AUXILIARY EDUCATION NORTHWEST**

*Edward W. Farrell*

Last year's faculty for the most part are returning. In this 11th year of our existence as a dental auxiliary education program, new faculty members include Susan Boyden, a graduate of both our dental assisting and dental hygiene programs. Sue is affiliated with Dr. Norm Novak's office in Chesterton and will be instructing with us on Wednesday afternoons. Dr. Robert Moon, past IDA president, is returning to teach the course Medical/Dental Office Emergencies after a sabbatical that lasted several years. I am pleased to welcome both of them to our faculty and wish them a productive educational year.

In addition to our usual administra-

tive and instructional responsibilities, we are earnestly preparing for an accreditation review in January 1986. At this point we are where we expected to be in our "count-down" preparation schedule. We have always enjoyed a full accreditation status and we are eager to keep this status intact.

Honored guests at the May graduation/capping ceremony included: IU Northwest Chancellor Peggy Elliott; the Reverend Eugene A. Bazuin of the Munster First Christian Reformed Church; Ms. Nancy Erickson, guest speaker and formerly our supervisor of Dental Hygiene; Ms. Catherine Van Natta, guest vocalist and a graduate of our 1981 dental hygiene class; and Mrs. James (Virginia) Vorwald representing the Women's Auxiliary of the Northwest Indiana Dental Society. We thank them for their involvement and for playing a large part in making this year's ceremony a success.

Our thanks once again to the community dentists who support our program so faithfully by serving as instructors at the school or by making their private offices available for extramural assignments. They include: Drs. C. Richard Altenhof, Daniel M. Bade, Reuben E. Blumberg, James Cahillane, Wesley Carroll, Gilbert Carter, Charles Coburn, Billy E. Coppes, Al Corns, Dennis Deeb, Mark Detert, Henry Feinberg, Harry Frank, John Havlick, Jon Herrold, D. Kent Hill, Steven Holm, Richard Jones, Kim Kessler, Dan Kozlowski, Joseph Lovasko, Robert McMahon, Robert Moon, Abraham Ochstein, Scott Polizotto, Neil Richter, Bill Riggs, Tom Surber, S. Peter Tauras, James Vanes, John Walsh, Robert Walsh and Eugene Witkin.

Thanks are likewise extended to the auxiliary and dentists who have contributed to the support of the IU Foundation Fund (DAE Gary): Women's



Auxiliary of the Northwest Indiana Dental Society, Dr. C. Richard Altenhof, Dr. Charles Byer, Dr. and Mrs. James Evans, Dr. Stephen Graham, Dr. Jon Herrold, Dr. Thad Hodus, Dr. Ed Martin, Dr. Don Roberts and Dr. Francis Vander Wal. Our programs are indebted to these individuals for their continued support and participation.

## **DENTAL ASSISTING NORTHWEST**

*Kathleen Hinshaw*

Graduation ceremonies were held at Indiana University School of Dentistry/ Northwest on Saturday evening, May 11, 1985, for 15 dental assisting students. Four graduates received awards for outstanding performance: Leasa Liddle received the Academic Achievement Award (highest G.P.A.); Leanne Peerbolte received the Clinical Achievement Award (presented by the Lake and Porter County Dental Assistants Society); Pamela Bourell received the Professional Award (presented by Porter's Uniforms); and Leasa Liddle received the Women's Dental Auxiliary Award (highest academic/clinical performance and community service).

Members of the graduating class were: Jennifer Ballas, Pamela Bourell, Melissa Bridegroom, Julie Byers, Rosa Castillo, Mary Champ, Janet Davis, Jennifer Fleming, Deanna Gonzalez, Jenifer Kallio, Leasa Liddle, Leanne Peerbolte, Kimberly Trueblood, Robin Wade and Pamela Wielogorski.

Eleven students were enrolled in the Expanded Functions course during summer session and received their E.F.D.A. certificates. Graduates of the E.F.D.A. program were: Jennifer Ballas, Pamela Bourell, Melissa Bridegroom, Rosa Castillo, Janet Davis, Jennifer Fleming, Jenifer Kallio, Leasa Liddle, Leanne Peerbolte, Kimberly Trueblood and Pamela Wielogorski.

Most of the graduates are now gain-

fully employed throughout Northwest Indiana.

The 1985-86 academic year began August 20, 1985, with 16 dental assisting students. We look forward to a productive and enjoyable year.

## **DENTAL HYGIENE NORTHWEST**

*Sharon Kantor*

Children's Dental Health Month was observed a bit differently this past February. Our dental hygiene students participated in a "Child Keypers" program held at the Hammond Civic Center in conjunction with the Northwest Indiana Dental Society, Northwest Indiana Hygienists' Association and Lake and Porter County Dental Assistants Association. They provided assistance in recording the weight, height, and medical and dental histories of the children in our community. The community was very appreciative of our services.

S.A.D.H.A. fund-raising activities allowed the students to attend Chicago Dental Society's Midwinter Meeting in Chicago and to send a trustee to the Indiana State Dental Meeting in Indianapolis.

Fourteen students graduated from IUSD/NW in May. The following students received awards at the capping and pinning ceremony: A. Rebekah Fisk Award - Jaqueline Pulver; Oral Health Education Award - Myra Benjamin; Professionalism Award - Jan Smok Patrick; and the Hu-Friedy Golden Scaler Award - Brenda Binkley. Catherine Hillenbrand, class of 1986, received a scholarship from the Women's Auxiliary of the Northwest Indiana Dental Society. Jan Smok Patrick and Myra Benjamin graduated with honors and were elected into the Sigma Phi Alpha Honor Society.

We began the fall semester with 14 second year students and 13 first year dental hygiene students. We are all looking forward to an exciting school year.



## DENTAL HYGIENE FORT WAYNE

*Gloria Huxoll*

We came back to greet 20 second year and 18 first year students. First year students are from Louisville (KY), Angola, Indianapolis, Sidney, Huntington, Decatur, Columbia City, Ligonier, Hartford City, Grabill, Kendallville, Pierceton and six from Fort Wayne.

Most of the 1985 graduates have settled into their careers with much enthusiasm and exciting challenges. Wedding bells rang out for Karen Best Eckelbarger and Alexis Gutwein Nold. Cheryl Brazel will be married November 9. Gayle Day Gilliom has moved to Arizona, Lynn Lieurance is employed in the Muncie area, Cheryl Brazel drives to Churubusco and Theresa Farrer travels to Angola. Karen Best Eckelbarger, Julie Fritz and Sue Yoder have located in Fort Wayne.

Hearty congratulations to another alumna, Joyce Rockwell ('73), who received her D.D.S. from Indiana University School of Dentistry in May! She has established her private dental practice north of Angola - not far from her Lake James home. Dr. Rockwell also was the winner of the senior table clinic contest. Her clinic was entitled "Anterior Crossbite Correction Using a Removable Appliance."

Our Alumni Day was a great success on April 27, 1985. Honor classes were 1970, 1975, and 1980. The class of '70 enjoyed a slumber party at Susie Piepenbrink Beard's home and then came to our Alumni Day. According to rumor, it was 3:00 a.m. when the last voice faded away. Ten of the 18 classmates were at Susie's, reminiscing about dental hygiene days and also their personal lives. After 15 years they are as an exciting a class as ever. I again thank you all for the lovely basket of flowers you surprised me with.

From the class of 1975 came news that Sheila Reed Austin works for her D.D.S. husband John two days a week and has three children. Notes came from Susan Parker Baxter, Alice Sowder, Beth Fultz Wilson (Kettering, OH), Sandy Howell Necomer (Greenwood), and Sally Gray, who is still working for D.D.S. husband four days per week. Janet Seiwert Bell is attorney-advisor to the head of the Military Department of Indiana. Jamie Carpenter was returning to Costa Rica and Panama for two weeks to work again with Mayan Indian villagers. Marilyn Laux and many others sent pictures of their lovely families.

The class of 1980 came shining through again, having the largest percentage of their class present and also the largest number in attendance. The IPFW alumni plaque will carry an engraved name plate for them again. Other news of the class of 1980 was a visit from the 'girl' stork to the Leann Byanski Keefer home.

Other stork visits were to Teresa Arnold ('82) in Denver, CO, a boy; a girl to Debbie Bell Elkins ('74) - number four, and still working two days per week in Bluffton; to Susan Krug Newman ('81) and to classmate Jeanne Maudlin (a boy). Cheryl Renn Elzer ('74) also had a boy.

Those on the move and taking state boards again are Cheryl Metzger ('78) from California to Illinois where she will become "Mrs." in October. Ginny Cleveland ('76) took the Kansas boards and also stopped in for a few minutes before they left the state. Another '76, Lea Powers Gebhard, is still in Louisville, KY, serving as art director for Power Graphics. They produced three-dimensional original graphics for the Kentucky Derby. Returning to Indiana and taking the board this fall is Janet McCauley ('77) from Florida and Cynthia Dennison Stuart ('81) from Michigan. Deb Holden ('80) is back from Utah but has her Indiana license.



Weddings are being planned by Mary Danusis ('77) to Dr. George Cooper (DDS '82) on October 26, as well as Lori Henniger ('80) in October. Cindy Dager Shultz ('82) and Cindy Wenrick Overmyer ('83) were recent brides, as was Kay Whybrew Rossok ('79) and Tammy Johnson Klingbeil ('82). Also Sheila Wilson ('83) changed her name to Grossman. Ann Samra Theurer ('82) is now a certified EMT in New Haven, is working on her EMS and is still working full time in dental hygiene. Ann Busch ('82) was a delegate to the ADHA convention in June in San Diego, CA, and continues to work part-time in private practice and enjoys her position with the State Board of Health.

Kathy Zuber Putnam ('69) was back from California visiting and we had a very enjoyable lunch and chit-chat. We were comparing duties, etc. - California vs. Indiana.

Prior to graduation, our annual Honors Program was held on April 29, 1985 in the Student Union Building. Those receiving the cream and crimson fourrageres presented each year by the Indiana University Alumni Association for outstanding academic performance were Karen Best Eckelbarger and Gayle Day Gilliom.

Karen Best Eckelbarger and Gayle Day Gilliom were elected to membership in Alpha Iota Chapter of Sigma Phi Alpha. The A. Rebekah Fisk award was presented to Patricia Robinson and the Gloria H. Huxoll award to Karen Best Eckelbarger. Cheryl Brazel received the Golden Scaler award presented each year by Hu-Friedy Instrument Co. Two faculty members presented unique plaques to students who showed great promise in their specific fields. Dr. Tim Shambaugh presented his Oral Pathology award to Gayle Day Gilliom.

Dr. P.E. O'Shaughnessy continues to honor Dr. Maynard K. Hine by acknowledging a leading student in the field of

Radiology—this year's recipient of the award was Patricia Robinson.

The Isaac Knapp Dental Hygiene Association presented their annual award for Outstanding Dental Hygiene Education to Theresa Farrer. The association also presented their annual two scholarships in the amount of \$250 each to Lynn Poe and Pam Parsons. The Isaac Knapp Dental Hygiene Association also enjoyed the privilege of serving the graduates, parents, friends and faculty with "goodies" following the program.

Our Christmas wish came through and a new prophy-jet will be utilized in our clinic! Also, we have received 10 new light-blue operator stools which are super-great. On order but not here yet are 10 mini-x-ray viewers that will be placed at each operatory. I feel that it's a great plus to be able to view the x-rays as the operators complete their work with each patient. Also a new x-ray machine and two new autoclaves. It does sound like there is a Santa Claus, doesn't it?

Until next time—please let me hear from you.

## **DENTAL ASSISTING FORT WAYNE**

*Rosemary M. Kovara*

Twenty-three Dental Assisting students graduated on Saturday, May 11, 1985, from Indiana University-Purdue University at Fort Wayne. Acting Chancellor Edward A. Nicholson presided at the ceremony. O. Franklin Kenworthy, assistant vice chancellor and dean of Academic Services, addressed the graduates.

Tina Lepper of Laotto received the Maynard K. Hine Award for academic achievement presented by Dr. Phillip O'Shaughnessy. Tina also received the Ruth White Award presented by the Isaac Knapp Dental Auxiliary.



Cheryl L. Nietert, president of the Isaac Knapp Dental Assisting Society, presented their annual award to Deanna Allison of Fort Wayne.

The Supervisor's Award for overall exemplary dental assistant was presented to Jennifer Heinzelman of Fort Wayne by Rosemary M. Kovara.

Other graduates were: Laurie A. Adams, Perri L. Barkdull, Lisa D. Belote, Wilhelmina R. Cordes, Emily A. Egolf, Deborah P. Fuller, Rebecca L. Gibson, Nancy A. Hall, Angela R. Lehman, Kristalia Makridakis, Connie McKinzie, Olga A. Nikolaenko, Joanna J. Pilarski, Tina L. Shaw, Susan K. Snyder, Cynthia K. Sorg, Angela D. Stackhouse, Tracy A. Thompson, LuAnn Wheaton and Cindy L. Whitenack.

The class of '85 participated in the Papers, Posters and Table Clinic competition at the 64th Annual Session of the Indiana Dental Assistants Association in May. LuAnn Wheaton received the Alice Krick Memorial Award for first place in the paper competition. LuAnn also won first place for her poster.

Our congratulations and best wishes go to each graduate.

### **DENTAL LABORATORY TECHNOLOGY FORT WAYNE**

*Charles A. Champion*

The 1985-86 school year opened on a very rewarding note. We were informed by the National Board for Certification that our Class of 1985 (16 students) placed fifth nationally on the Recognized Graduate Examination, which is the first phase of National certification. Fifty-one ADA-accredited programs participated in this examination. Congratulations to the members of the Class of 1985 for their noteworthy achievement.

This past May, many students from our program attended the spring meet-

ing of CDLI at Indianapolis. They were well received and thoroughly enjoyed the many programs presented.

Eighteen second year students have returned to finish their requirements for graduation in May 1986. We have 23 students enrolled for the Class of 1987.

At our annual Honors Program last May 3 the "Herbert Reininger Award" went to Dale Erwin; "Highest Academic Achievement" to Greg Benefield; and "Best Individual Improvement" to Greg Gore.

### **DENTAL HYGIENE INDIANAPOLIS**

*Evelyn Oldsen*

The 1985 Dental Hygiene graduating class received diplomas on May 12 and were also recognized at the School of Dentistry Honors Program. L. Carl Woods, Donna J. Dick, and Leigh Ann Darby all graduated with high distinction. New members of Theta Chapter, Sigma Phi Alpha include Donna J. Dick and Lisa J. Graver. Debra S. Braden received the A. Rebekah Fisk Award, and Rhonda I. Egler and Lisa G. Myers were recipients of the Rossya Kaufman Memorial Scholarship. Joni L. Davis received the C.V. Mosby Award and Donna J. Dick received the Harriett Hine and Hu-Friedy awards. We congratulate all new graduates and wish them well.

All of the second year students prepared Table Clinics for presentation at the IDA-IDHA annual session. The 1st place winners were Debra Braden, Rhonda Egler, Vickie Essenmacher and Carl Woods with their table clinic, "Hands Off Till Gloves On." Pat Dorris, Brenda Phelps, and Vickie Tomamichel received the 3rd place award for their table clinic, "Special Care for Special People."

The first year students had a very successful Dental Hygiene Day on April 17,



when they invited applicants and prospective students to the school to tour our facilities and to hear about the program from the student's perspective.

Amy Ewing, a 1978 graduate, has joined the part-time faculty. Amy is completing requirements toward an M.S. degree and is also employed in private practice. Amy replaces Tracey West, a

1978 graduate who has been a part-time faculty member for two years and is now enrolled in law school. We wish Tracey the best of luck and welcome Amy as a new faculty member.

We look forward to a productive and exciting school year and welcome the 33 new first year students and six new public health dental hygiene students.

## Alumni Notes

Susan Crum

Once again, you have responded to our request for alumni news and recollections with great wit, charm and enthusiasm. While it's true that all of you earned your degrees in dentistry, many of you have shown, through your contributions to the Alumni Notes, that you are as skillful with the pen as you are with the explorer.

For this issue we contacted one member of every graduating class and asked that person to pass along some news and conjure up some memories. In return we received humorous, heartwarming and newsy notes from all over the country. While we plan to keep on doing this (choosing names from the rosters at random), all alumni are encouraged to write ANYTIME. Maybe you have a special memory of a favorite dental school classmate, employee or teacher. If you do, write it up and send it in. Or send us a note (even a few words will do) on what you've been up to lately. Your classmates would love to know. And remember: For this section of the IUSD Bulletin, YOU ARE THE NEWS.

Dr. Eugene H. Williams, Class of 1930, surprised and delighted us with TWO contributions to the Notes for this issue. The first, which we will share with you

here, is an account of his recent visit to IUSD along with two other classmates (who have also written to us). In another piece Dr. Williams offers some news and reminiscences of the school. (See notes for the Class of 1930 for these other responses.)

Now, we'll let Dr. Williams tell his story:

*For 30 or 35 years, I have wondered what people do at a Class Reunion. That's about the period of time my class (IUSD 1930) has staged a reunion every five years (on the round years). Our original class president, Dr. Floyd Lytle, is still guiding the class activities. I think that I received the first of several letters in October 1984 preparing me for our 55th meeting set for April 29, 1985.*

*In all these years, I had never attended a reunion. In fact, I had never seen one member of my class since Commencement Day in Bloomington in 1930. I decided I would attend the 55th meeting. I knew there were only six surviving members and my anxiety increased by the day. My wife was happy to accompany me, even by Amtrak. If I must travel, I always prefer the train when possible.*

*I was advised to meet the others in the dean's office on Monday, April 29 at 9 am. Because I had never seen the new school, I could only think in visual frames of the old "castle" at Pennsylvania and Walnut Streets and I tried to imagine Dean Henshaw inviting anyone*



to his office. Dr. Lytle had sent me word there would be only three of us attending: he, myself and one other. I was a bit disappointed that there would not be more. I kept thinking: just three old goats. Mrs. Williams and I walked into the dean's office and a handsome fellow jumped to his feet and greeted me with great pleasure. I wouldn't have known him. It was Bert Lytle. For a guy to get that good-looking would take 55 years! Then a second fellow offered his hand and I knew him pronto. It was Louis Epstein. He hadn't changed a bit.

After a few minutes, Lytle introduced me to two other gentlemen: Dr. Maynard K. Hine, dean emeritus of the school, and Dr. Ralph E. McDonald, the present dean. Dr. McDonald, like Dr. Lytle, is a tall, attractive man. Their heads are embellished with a generous growth of white hair which belies their ages. They looked like replicas of the late Governor Paul V. McNutt. Dr. McDonald made us welcome and reminded me that I had merely come home after a long absence. It was impossible to feel that I was at home; my mind kept going back 55 years to the Pennsylvania Street building. However, I thought, if I am supposed to be a part of this beautiful, modern, up-to-date outfit, who am I to fight it?

Dr. Hine had been watching all of us with inquisitive eyes, and the eagerness to get started with his contribution to our program was apparent. Politely, he offered to give us a guided tour of the huge, modernly equipped building which he had taken a foremost role in developing. By ways of many twists and turns with the two deans leading, we found ourselves entering a spacious conference room. Somewhere I remember seeing an inscription "The Maynard K. Hine Room." It was somewhat like the Lincoln Memorial, only in this case, the honored one was acting host! After a moment our tour was resumed, leaving Dr. McDonald to prepare the lunch. Only a dean emeritus could request the dean of one of the finest professional schools to "have lunch ready when we return." I must say that Dr. McDonald really knows how to build a lunch!

After the tour we returned to the conference room and sat around the conference table.

The same handsome, young man who is dean during his "spare" time was now serving lunch. Simultaneously Bert Lytle called the meeting to order. Both deans remained with us throughout (We have always called Dr. Lytle "Bert." I can't say how Dr. Floyd Earl Lytle of Detroit adds up to "Bert" but that's the way it is.) I had wondered what we would do at a meeting after 55 years and with only three members. But I shouldn't have worried. Bert had brought his tape recorder, a camera and our class picture. He suggested that we refer to each other (most of whom have passed away, as I have said) and to recall our impressions of each man.

Our class was always sophisticated with the exception of Louis Epstein and myself. Sadly enough, neither of us has changed. As soon as we were seated, Dr. Epstein announced to the two deans and Mrs. Williams that he was the youngest and the best looking in the class. What could I do but change my original anticipation about the three 1930 "old goats" to "two old goats and one young goat."

As we recalled the memories of our silent members, some of them so long gone, there was a change in tempo. We spoke into the microphone, first Dr. Epstein, then myself and finally Dr. Lytle. Dr. McDonald seemed to be included in our period of somber moments while Dr. Hine searched our faces, apparently moved by our statements of tender recollections.

I am sure the other "boys" enjoyed the whole meeting as much as I did. There was a period of photography just before adjournment. Every possible combination of persons present was photographed.

By four o'clock it was all over: Dr. Epstein enroute to Cleveland, Dr. Lytle to Cincinnati, but I remained over for the annual homecoming of my old high school, Manual Training High.

Incidentally, I received a nice letter from Bert Lytle since returning home.

### Class of 1919

Dr. Louis H. Rabold, Vevay, IN, died on October 10, 1984.



### **Class of 1921**

It has been reported that Dr. Franz W. Stumpf, San Antonio, Texas, died in 1984 at the age of 95.

### **Class of 1922**

Word has been received of the death of Dr. Walter N. Kiesling, Logansport, October 1, 1983.

### **Class of 1923**

We have received notice of the death of Dr. Ross R. Kennedy, Elkhart, IN, date of death unknown.

### **Class of 1924**

Dr. Russell L. Sparks, Rochester, IN, died February 19, 1985.

### **Class of 1925**

Dr. and Mrs. George Guse, 1700 3rd Ave. W, Bradenton, FL 33505, celebrated their 60th wedding anniversary on June 15.

Dr. Robert W. Taylor, Villa Grove, IL, died January 17, 1985. Dr. George H. Murphy, South Bend, IN, died January 15, 1985.

We have received the following note from Dr. William A. Shoemaker, Jr. ('52):

*This is to inform you of the death of my father, Dr. W. Albert Shoemaker, graduate from the class of 1925. He had lived in Mishawaka, Indiana and was president of the Indiana State Board of Dental Examiners before retiring and moving to Tampa, Florida, where he died on June 28, 1985. His widow, Annetta, is at the following address: 4000 E. Fletcher, H-203, Tampa, FL 33612.*

### **Class of 1926**

Dr. Gorman F. McKean was installed last summer as an officer and board member of the Fort Myers Beach Voters Association in Florida.

Dr. Horace Garoutte, 12064 Bair Lake Street, Jones, MI, died in April, 1985 at the age of 90. Dr. Garoutte was born near New Carlisle, IN, and moved to Jones from Elkhart in 1971. He last practiced in Elkhart, and was a Navy veteran of World War I. Survivors include a daughter, Joan Garoutte, of Tucson, AZ, and a son, Dr. Horace Garoutte, Jr. (DDS '62), of Jones, MI.

### **Class of 1927**

We have received some address updates:

Dr. Joseph E. Morris  
6436 Taft Street  
Merrillville, IN 46410-3127

Dr. Robert Seaman  
P.O. Box 34  
Henry, IL 61537

A nice letter and personal update from Dr. B.B. "Rode" Rodefer, 2255 Reynolds Rd., Niles, MI 49120, has been forwarded to our office:

*Dear Classmates,*

*I have been a sports buff all my life. I have participated in basketball, baseball and have been an ardent bowler and golfer.*

*I am a life member of the Elks Club (a past Exalted Ruler), the Masonic Lodge, the Shriners, Delta Sigma Delta, and the American Dental Association. I am also a Kentucky Colonel.*

*I retired in January of 1981 and don't know how I ever found time to work. We keep so busy doing nothing.*

*Sincerely,*

*"Rode"*

When we asked Dr. Delmar Faun, Colfax, IN 46035, if he had any anecdotes to share with us about classmates or teachers from his dental student days, he responded with the following:

*"Sic 'em. Go get 'em, Old Age, sic 'em." That Class of 1927, THE CLASS, is slowly com-*



*ing apart at the seams. Our average age is less than 100 years, which is relatively young—compared to big sequoia trees. I recall, way back when, from my senior year this “goody”:*

*Dean Henshaw’s family and the Gant family were close friends. One morning Dr. Henshaw unburdened himself with a lecture of inconsequential utterances. Finished, he carefully removed his pince-nez, meticulously polished the lenses with his handkerchief as was his custom (remember) and said, “Fellows, did that go over?” Lyle Gant, who had more crust than mom’s apple pie, hoisted his paw above his head and wagged it at the Dean. Dr. Henshaw said, “Yes, Lyle?” And Lyle said, “Dr. Henshaw, wa-a-a-a-ay over.”*

*As I said, our class motto was “Don’t get ulcers, give ulcers.” Greetings to my wonderful classmates.*

Dr. Faun generously passed along some news from classmates’ letters. Dr. John L. Johnson is still practicing dentistry, going into the office about three days a week. And, despite some pretty high waters, Dr. Mark H. Rice, Venice, Florida, says that he managed to escape damage from hurricane Elena last summer.

Word has been received of the death of Dr. James B. Walker, July 25, 1985.

Word has reached us that Dr. Carl L. Menning died in Chicago on January 21, 1981.

#### **Class of 1928**

A new address: Dr. Lewis M. Davis, P.O. Box 2211, Norcross, GA 30071.

#### **Class of 1929**

We have received word that Dr. Alfred F. Keller, Dunedin, FL died January 14, 1985. Also, Dr. Clarence H. Wilcox, Mira Loma, CA, died February 1, 1985.

Dr. James J. Crossen, 78, a lifelong resident of Indianapolis, died July 10, 1985. He had retired 12 years ago after a career in private practice spanning 45 years. Dr. Crossen is survived by his wife, Dana Lee; a daughter, Barbara L. Wesling; a son, Dr. James B. (DDS ’64).

#### **Class of 1930**

We were very pleased to receive an abundance of news from the Class of 1930 for this issue—half of the remaining members (Drs. Epstein, Lytle and Williams) have written, including recollections and accounts of their visit last spring to the dental school, which was hosted by Drs. Maynard K. Hine and Ralph E. McDonald. First, from Dr. Louis C. Epstein, 3813 Westwood Road, University Heights, OH 44118:

*The class was a small one, so those remaining are few (6), some of whom have been active in “Society” politics—and served well. There was Sylvester Schmid and Bert Lytle that I am aware of. About the others, I’ve heard that they all practiced, some longer than others, and all did well in their profession. The classmate that I hear of now is James Madorsky, who lives in Cleveland and is retired. He had some arm disability which prompted his retirement. I would like to hear about Dr. Percifield and Dr. Woltermann, who I believe are still with us. My memories are good ones and because of the small class we were closer to each other during our school work than we would ordinarily have been. I have enjoyed my work these 53 years, having retired as of December 31, 1983. I am quite well and have done volunteer work besides my hobbies of painting, collage, sculpture and travel. I have a moderate sized home and yard and do a lot of gardening—roses and many other plants and a few vegetables. I still play a little golf and go to spectator sports.*

Next, from Dr. Floyd E. Lytle, 550 East Fourth Street, Cincinnati, OH 45202:



... Williams, Epstein and I had a wonderful experience (at IUSD) seeing how dentistry was taught in 1930 and taught today. Students no longer carry the foot engine and instrument case from the locker room to the clinic. They go to a room and ask for what they want and everything is furnished. Dr. Maynard Hine, dean from 1945-68 and now Chancellor Emeritus, gave us a tour of the school as it was and as it is now. The large clinic room where everyone was together now has a cubicle for each student. During Dr. Hine's time as dean they added on and now all of the specialties have departments of their own. They now have about 40 incoming graduate students each year. Dr. Ralph McDonald (dean 1968-1985) gave us a run-down of how students are trained today. There is a big improvement in restorative dentistry. About thirty percent of each class are women. Most students have 4 years of pre-dent. About 300 Indiana dentists open their offices to let students observe. There is a waiting listing of 3 weeks for patients to get examinations. There are now 53 dentists waiting to take an associate. The three of us went into a bull session and talked about what we remembered about each of our classmates. We felt it was one of the best days we had enjoyed for a long time. We missed Madorsky, who was sick; Percifield, who was in Florida; Woltermann, who was on retreat. To all six of us I wish health and happiness. God bless you all.

And, finally, from Dr. Eugene H. Williams, Box 5286, San Francisco, CA 94101:

*Of course it is difficult to arrive at an opinion relative to the members of my class, the fact being most of them have passed away. It was our fifty-fifth reunion and it was the first one I have ever attended. In fact, it was my first time to see any member of the class since the day we graduated. I must say, I am proud of my class and I enjoyed the only other two who could make the meeting: Drs. Lytle and Epstein. Only three others are surviving: Drs. Madorsky, Woltermann and Percifield. Those that I saw at the reunion were very profes-*

*sional but fun-loving, much like in their student days. . . . I remember on the day before commencement, one member of our class, Gordon Bradford, was sitting in the laboratory with all of us, finishing up the last of our work. Suddenly we discovered that he was crying. Someone asked him about it to which he replied that he just realized, "this is the last day that we will all be together at one time." . . . There is not much to tell about myself. I have not practiced dentistry for a long time. I became a member of the staff of the U.S. National Bureau of Standards (Dept. of Commerce, Washington, DC) where I remained for sixteen years. I was transferred to the San Francisco laboratory during the war. I served as a chemist. I finally became a teacher for the San Francisco Community College District, working with foreign born: English, Math, Civics, U.S. Government and Medical Terminology. I retired twelve years ago.*

### Class of 1931

Word has been received of the death of Dr. Marvin S. Cochrane, 12160 SW Imperial Avenue #15, King City, OR 97224, on May 27, 1985.

We have received a copy of an article written by Jennie Morganstern, a staff member of the Blumenthal Jewish Home, which pays tribute to Dr. Francis Reid. Excerpts follow:

... Dr. Reid and his wife, formerly Marcella Myers, had two sons - Robert and Phillip. Robert was a graduate of Harvard University. Phillip attended the University of London. He now lives in North Carolina and is affiliated with the drama department of UNC-Greensboro.

Over the years, Dr. Reid has established an outstanding record of service, both as a professional and as a member of his community (Windsor, Vermont). He served eight years on the State Board of Dental Examiners, ten years on the State Board of Health, and is a for-



mer president of the Vermont Dental Society.

.... Dr. Reid is ... a long-time member of the Rotary Club. In fact, he was recently honored in a publication put out by the Club for 50 consecutive years of perfect attendance as a Rotarian.

The article also cited Dr. Reid's many contributions in serving the Boy Scouts of America for over 50 years. Dr. Reid's address is 166 State Street, Windsor, VT 05089.

### Class of 1932

We have received a newsy letter from Dr. Harold C. Asher, 13438 108th Dr., Sun City, AZ 85351—excerpts follow:

.... In the copies of the Bulletin .... we see where our faithful Harry Glass has been keeping your office informed as best he can about any of us he has heard from or about. It used to be that Lynn Vance did this but since he is the only one of our class that we know of who is still working, I guess he is so busy carting his money to the bank that he doesn't have time to write any more .... A few months ago three of the members of the class of 1932 were talking and we were wondering about some of those we have heard nothing of lately, so I wrote to the dean and asked what information he had of them, but all he could tell us were the last known addresses ... and some of those were a few years back. Our "three" are Robert Durham, Evan Steele and myself and we entertain ourselves in various ways and keep out of trouble. Harold Armstrong, Class of '29, came to live in Sun City a few years ago too so the four of us get together once in a while and reminisce about our days there at the corner of North Pennsylvania and East Walnut (where our school was then).

Steele's only grandchild, a grandson, is finishing his sophomore year there in Bloomington and Evan thinks the boy plans to enter Medical School. We were blessed with four grandchildren from our only child, our

daughter, and by May 4, 1985 every one of our grandchildren will be college graduates because our baby, Patti Skoronski, will be getting her degree. The oldest grandson graduated from Yale in 1979, the second got his B.S. from I.U. in 1981 and his J.D. last year, the third grandson graduated from Miami of Ohio after going there on a football scholarship, so we are mighty proud of our brood, especially since two of them are I.U. alumni.

As Dr. Asher has noted, one of our most loyal contributors to the Alumni Notes has been Dr. Harry M. Glass, 8728 N. Ridgeway Ave., Skokie, IL 60076. After the Class of '32 got together early last summer, Dr. Glass wrote us the following letter and enclosed a photo taken during the reunion:

*The Class of 1932, 53 years since graduation, met for their annual class reunion at the Hyatt Regency Hotel in Indianapolis during the Indiana State Dental Meeting on Saturday, May 4. The following attended: Harry Glass and wife Ina; Glen Lake and wife Margaret; William Milligan and wife Mary; Meredith Tom and wife Helen; and Lynn Vance and wife Verna. This group of ten had lunch together at the Porch Restaurant in the hotel. After lunch we met in Vance's room for our continued visitation and being brought up to date on all the news. There were drinks of all kinds, plus an assortment of refreshments to keep everyone occupied. Vance brought a camera and for the first time we are submitting a print of the men present and hope that the bulletin will publish this with the report. This is the group that continues to be most active in our reunions.*

William Milligan received his 50-year pin during the state dental meeting and Bill and Mary and the rest of us were very pleased about this. Adalbert Magyar wrote in to say that he was sorry that he and his wife Katalin were unable to attend and to tell us he had reached the age of 85 this last February 15; that his age kept him from having a faster recovery from his recent surgery. However, they stay pretty close to home and are comfortable. We did sign a get-well card and



mailed it to Adalbert.

We heard from Harold Asher of Sun City, Arizona, who gave us the following news, that he and his wife Bert are fine, and their three grandsons and a granddaughter are now all college graduates. They are very proud of this. He also reports that Robert Durham and wife Helen are doing all right; that Evan Steele shows up for their monthly meetings in his Cadillac, so all seems well with him; that Harold Armstrong (Class of '29) is still among their group of Indiana Alumni who get together monthly; and that Army and his wife play golf about three times each week.

Ralph Kroot wrote in to say that he and Pauline are fine. They are planning to make a trip up north this June which will bring them to Chicago and into the New England states. They intend to do this with their van.

Next year we are planning to have our meeting at the Embassy Suites, the new hotel on the old Claypool site, for our 54th year class reunion!

### Class of 1933

Two address updates:

Dr. George A. Myers  
2219 North Street  
Logansport, IN 46947-1615

Dr. Paul A. Purman  
3101 Indiana Avenue  
Ft. Wayne, IN 46807-1637

### Class of 1935

New addresses:

Dr. Max Jack Bean  
3925 Collins Avenue, Apt. 928  
Miami Beach, FL 33140-3701

Dr. James F. Favorite  
2440 Fairfield Ave #302/Regency  
Fort Wayne, IN 46807-1249

Dr. Joe L. Goshert  
12749 SE Cascades Ct. Eaglewood  
Hobe Sound, FL 33455-7620



Class of 1932 reunion participants, from left: Drs. Glen Lake, Harry Glass, William Milligan, Lynn Vance and Meredith Tom



We have received word that Dr. Ottis E. Scott, New Albany, IN, died November 29, 1984. Dr. Lawrence W. Crane, Attica, IN, died February 11, 1985.

Also, Dr. Pearl A. Schwartz, Indianapolis, died in July. Dr. Schwartz was a lifelong resident of Indianapolis and practiced dentistry for 49 years until his retirement in 1984. He had been active in the American Cancer Society and was the professional education liaison for the society's Lawrence Township unit. During World War II, he was a captain in the Army medical corps in Europe. Dr. Schwartz is survived by his wife, Maye; daughters, Mary Ann Sheeks and Phyllis A. Yount; and son, Glen Lee.

Dr. Ralph E. Gieringer, 3430 Gulf Shore Blvd. North, Naples, FL 33940 (Oct-April), 3840 Applegate Avenue 402, Cincinnati, OH 45211 (May-Sept), has responded to our request for news and reminiscences:

*I do not know what you expect me to say about our graduating class. My opinion: THE GREATEST. They respond to my requests for information. I correspond to each classmate every Xmas and at other times throughout the year. Presently there are 26 living graduates. Check your records to see how many were in our 1935 graduating class. (There were 32. Ed.) Most of our class send me news of interest after I send each one the Xmas card. . . . The classmate that I'd especially like to get some information on is Dr. John W. Farley (I keep posted on the others) . . . . I have pleasant memories of dental student days and no specific memories of special persons. It would take several pages to pin-point activities of each person during my four years of Dental School (two on North Pennsylvania and the last two on West Michigan).*

*Danny Dean and his staff are cooperative when we have our class reunions every five years. This year (#50) we are making plans (September '85 in Bloomington) and encouraging all 25 of us to be present . . . . For*

*news about myself . . . . I still practice on a limited basis in my former office in Cincinnati during the five months of the year that I am in Ohio . . . . Life has been good to me—my wife and I still play golf and believe that we have the best of two worlds.*

Dr. Lawrence E. "Fritz" Morris, 83, Indianapolis, died August 14, 1985. He had practiced in the city for 41 years before retiring in 1976.

In addition to his dental career, Dr. Morris was a professional musician. Excerpts from an obituary in the Indianapolis News follow:

. . . . (Dr.) Morris first began playing the violin professionally in his mid-teens. He left his first group, the Syncopating Five, to begin studies at Indiana Dental College.

He later left school to form a band called the Charlie Davis Orchestra, and became its business manager. Dick Powell, who later went to Hollywood to become a film star, was a singer with the group. An engagement at the Spink Arms Hotel led to jobs at the Casino Gardens, Severin Roof and the Ohio Theatre.

The group opened the Indiana Theatre, where it established its national reputation. In 1929, it replaced Rudy Vallee at the Paramount Theatre in New York City.

Morris resumed his education at Indiana University School of Dentistry and graduated in 1935.

. . . . Morris was the widower of Thelma "Peg" Morris . . . . Survivors - sons David and Tobe. . . .

#### **Class of 1936**

Address change:

Dr. Lee M. Scholnik  
2619 Fairfax Ct. NW  
Canton, OH 44708-1409



We received a quick reply from Dr. Frank L. Loskot, RD1, Box 93, Blairstown, NJ 07825, who shares his pride in a great dental class:

*The Class of '36 is one of the smallest, and, perhaps, most remarkable classes to graduate. It began with 29 students in the depth of the depression, five of whom were from New Jersey. We lost and gained a few members, and managed to release 28 dentists into a hostile world. The class bore future deans for two dental schools, president and eventually chancellor of a great university. It also produced a chairman in dental anatomy and several instructors at dental schools. The entire class was commissioned in the Army Dental Corps and found itself spread throughout the world in 1941-46. Unfortunately, the post-war mortality rate has been high with about 17 members remaining. Next year should be our 50th reunion. Ray Wurtz and Harold Crockett will try to get us together, I hope, for the last big "fling!"*

#### **Class of 1937**

Address updates:

Dr. Loras Wood Gardner  
26 Vista Garden Trail #102  
Vista Palm, FL 32960

Dr. Wade H. Jordan  
9191 Garrison Dr. #306A  
Indianapolis, IN 46240-1260

Dr. John W. Ketcham  
PO Box 406  
Arizona City, AZ 85223-0406

#### **Class of 1938**

Dr. Samuel Daubenheyer, 936 Commons Drive, Bloomington, IN 47401, has kindly responded to our request with a personal update:

*I retired from my dental practice in Merrillville in March 1980. I was fortunate in being able to sell my practice and office build-*

*ing without too much difficulty. We moved to Bloomington and thoroughly enjoy retirement here. We follow IU's many activities, play golf and duplicate bridge and have a very active social life. The classmates I see or hear from most often are George Riester, who lives a block from me; Bridane Brant—we usually have a golf game once a year in the fall during football season; Ken Siegesmund - occasional golf game during football season. The rest of my classmates I see in Indianapolis at our five-year reunions.*

#### **Class of 1940**

Dr. Samuel S Patterson became a life member of the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985.

Changes of address for:

Dr. Eugene E. Bales  
7209 Cricklewood Circle  
Indianapolis, IN 46250-2712

Dr. Gerald J. Morris  
PO Box 8  
Richmond, IN 47375-0008

Dr. Seymour Nadler  
8985 El Matador Drive  
Gilroy, CA 95020-9420

Dr. Richard L. Niles  
1132 Somerset Lane  
Ft. Wayne, IN 46805-2138

#### **Class of 1942**

Dr. Robert W. Wurtz has a new address: 8440 Browning Dr. #E, Indianapolis, IN 46227-6026.

#### **Class of 1943**

Change of address:

Dr. Edward J. Trafidlo  
180 Beacon Street  
Boston, MA 02116-1455

#### **Class of 1944**

Word has been received that Dr. Eldo



Schoenherr, San Diego, CA, died in May, 1984.

New address:

Dr. Charles A. Redding  
PO Box 2357  
Evansville, IN 47714-0357

At our request Dr. Ed Bromm, 810 Hulman Building, Evansville, IN 47708, has contributed the following information:

*Class is now in the retirement decision years. Known retirees are Bill VanHorn, Bob Brown and Russ Goebel. Recent deaths have been Irwin Goldenberg on the East Coast and Jim Van Ausdal in Florida. The classmates I see or hear from most often are the members at the 40th reunion in Bloomington (September 1984): Tom Beavers, Ed Bromm, Bob Brown, Victor DeFrank, Max Poyser, Harold Roth, Bob Slinkard, Bob Stone, Jim Pierce, Bill VanHorn—all from the Indiana and Illinois area and Marvin Beall who came all the way from southern California. These are the members who attend reunions regularly. . . . Oscar Segal, Lowell Renshaw and Bob Makielske usually attend reunions but had to miss the last one. The scientist of the class is Harold Fullmer who is director of the Institute of Dental Research at Alabama University Dental School in Birmingham. Several classmates stayed in the military and should be nearing or in retirement. These are Robert Arbuckle, Jose Gonzales, and Marcel Polz. Bob Slinkard and Bob Stone are avid golfers while Bill VanHorn and Ed Brown are fishermen extraordinaire, catching record fish in Canada, Florida, and the Carolina areas.*

*Bob Brown has homes in both Oakland City and on Kentucky Lake, but being an "entertainer" rather than a fisherman, this is what he likes at Kentucky Lake—guests and parties. Harold Roth travels a lot—Europe, even Russia, and enjoys this kind of life.*

#### **Class of 1946**

Dr. Joe G. White became a life mem-

ber of the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985.

Dr. Norman Becker has been reappointed as editor of the journal of the Massachusetts Dental Society. Dr. Becker practices in Revere, Massachusetts.

#### **Class of 1947**

Dr. Roland W. Dykema became a life member of the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985.

Changes of address for:

Dr. Norman Alley  
PO Box 141336  
Coral Gables, FL 33114-1336

Dr. John S. Routes  
23103 Olean Blvd.  
Port Charlotte, FL 33952

Dr. Jack D. Singer  
7220 Creeks Bend Drive  
W. Bloomfield, MI 48033-5211

#### **Class of 1948**

New address:

Dr. Richard S. Edwards  
PO Box 302  
Rensselaer, IN 47978

Dr. Thomas M. Boyd, a lifelong resident of Muncie, died in his office on May 26, 1985. He was a dentist and staff member of Ball Hospital. He was a past president of the IU School of Dentistry Alumni Association and held various offices for the East-Central Indiana Dental Association. Dr. Boyd is survived by his wife Alice; daughters Barbara McConnell, Susan, Nancy; and son Tommy.

#### **Class of 1950**

Dr. Henry Heimansohn, Danville, IN, recently reported on the second medical/surgical tour that he took with his



wife, Hilda, a registered nurse. (Henry was the only dentist in the group, and the only man.) The first such tour was to Russia; this tour of Spain was sponsored by Georgia State University. It included stops in Madrid, Seville, Cordoba and other sites. There were side trips to Morocco and Gibraltar.

The group toured operating rooms and saw surgery in progress. Henry pointed out that Spanish people are more family-oriented than we are. All members of even very large families gather outside the operating room and wait to see the patient come out of surgery. He also noted that the medical center had a bar and restaurant where the doctors could have a glass of wine after surgery.

Other comments from Dr. Heiman-sohn's report:

*"Dentistry is considered a specialty of medicine and one must earn an M.D. degree before pursuing dentistry. I did not tour a dental school in Spain but did get a photograph of the dental school in Madrid . . . The Spanish medical system is actually two systems: the social security hospitals, which practice socialized medicine, and a much smaller system of private hospitals that cater to Spanish citizens with special insurance. In Madrid, all Spanish citizens may receive free emergency medical care from the medical and dental schools at the Madrid medical center. . . ."*

*"A clinical study session included intensive discussion on DRG's (Diagnostic Related Groups) which is the latest popular determinant for cost of hospital stays. I gave a short talk on diagnosis and treatment of dental pain. Part of our classwork was accomplished while seated at the rear of a swaying bus as it traveled at a high speed through the Spanish countryside. . . ."*

#### *Spanish Vignettes*

*"Militia walking in pairs with their quaint, three-cornered hats—severely trimmed trees along the Madrid boulevards—older women dressed in dark, staid outfits—white cottages in the countryside with tile roofs and bars on*

*the windows—olive trees in perfect alignment among green hills—chaotic groupings of T.V. antennas on the tops of Madrid apartment houses—surgically clean appearance of Spanish buildings, people, autos—beggars in streets—Gypsy women selling tablecloths in streets to tourists—profusion of food in stores—shopkeepers adding up purchases on 3 × 3 paper squares—little girls all dressed alike on religious school playground—the 2500-year-old city of Toledo (we were told that the expression "Holy Toledo" stems from religious activities carried on there)."*

#### *Moroccan Vignettes*

*"People dressed in long white robes, men with red fezes and women with veils—narrow streets in the Casbah with buildings sporting T.V. antennas—profusion of young peddlers in streets—universal haggling over purchases—extreme cultural differences with Spain only 15 miles away, across the Straits of Gibraltar."*

Word has been received of the death of Dr. Joseph R. Waymire on March 26, 1985.

#### **Class of 1951**

An address correction has been received for Dr. James M. McClure: 30 Arrowhead Drive, Sedona, AZ 86336

It has been learned that Dr. Charles E. Denton died October 25, 1984. Dr. Denton had practiced in Madison, Indiana since graduating from IUSD. He is survived by his wife Bernadette, two sons and two grandchildren.

The following letter has been received from Mrs. James Hanrahan, 12121 West Street, Garden Grove, CA 92640:

*Just a short note to inform you of the death of Dr. James T. Hanrahan. He passed away November 4, 1984 after a 5-month battle with leukemia.*

*Immediately after graduation in 1951 he served with the Army in Germany, then prac-*



ticed in Bedford, Indiana until the move to Garden Grove, CA in mid-1963. Practiced in Garden Grove until his death.

Dr. Donald J. Walden died in Colorado in February of 1985.

Also, Dr. Robert J. Gallagher, Merrillville, IN, died April 9, 1985.

### Class of 1952

Two address updates for this class:

Norbert J. Buechler  
3225 Black Maple Court  
South Bend, IN 46628

Dr. William F. Cain  
1620 St. Joe River Drive  
Ft. Wayne, IN 46805

In response to our request, Dr. Rodney Phelps, 6512 E. Washington, Indianapolis, IN 46214, offers reflections and memories and raises some interesting questions:

*We all are getting older and wiser and with all the new requirements and increased expenses and paperwork, dentistry seems to be getting, to quote an old Navy saying, "Situation normal—all screwed up!" Not really, but life gets more and more complicated. The classmates I see or hear from most often are Dick Ernsting, Gerry Epstein, Bob Tarplee, Ray Janes, Charley Hutton, Harvey Thomas—at District Dental Meetings. Bob Tarplee seems to have advanced the highest—13th floor of the AUL Building! The classmates I see have all done well in dentistry, seem happy and are "hanging in there." Among the classmates that I'd especially like to get some information on are: Charley Scott (address unknown); Ed Thibodeau in Florida; any of our classmates in California. I wonder how many of the Class of '52 have completely retired and how many are partly retired? How many have "off-spring" in dentistry?*

*My most distinct memories of dental student days: Senior party at Yellowwood Lake; Razz Banquet in Beech Grove; the large attendance*

*at burlesque theatre on Illinois Street following Senior party; the good food at the "Greasy Spoon" next to the Dental School; Ray Janes asking janitor what size dentures he wore and fitting him with our "technique dentures"; trying to memorize Big John Johnston's "Pink sheets" in Crown and Bridge; Drex Boyd—THE BEST.*

*I'm still living on the same property that I was born and raised on. Active in Survivors of Pearl Harbor Association and attend all Reunions of U.S.S. Curtiss. Hobbies: gardening, Boy Scouts, grandchildren.*

### Class of 1953

Rear Admiral Thomas W. McKean, Dental Corps, United States Navy and Inspector General of the Naval Medical Command, was honored with a retirement ceremony in Bethesda, MD on September 27.

### Class of 1954

Dr. Lloyd J. Phillips became a life member of the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985.

Address updates:

Dr. Michael Gordon  
646 N. Cline  
Griffith, IN 46319

Dr. Richard L. Phillips  
PO Box 427  
Monroeville, IN 46773-0427

Dr. Robert L. Bogan, Associate Dean of the Indiana University School of Dentistry, has been selected as 1985 recipient of the prestigious Maynard K. Hine Medal. The medal honors Dr. Hine, former dean of IUSD and first chancellor of IUPUI, and is awarded each year by the IU Alumni Association in recognition of "unique and significant contributions to Indiana University in Indianapolis." Upon learning of this year's selection, Dr. Hine said: "I ap-



plaud the selection of Dr. Bogan for this recognition. Over the years he has been a competent, dedicated, enthusiastic and loyal leader in all of the aspects of the dental school and university activities. I'm elated he is to receive this honor."

And, from Dr. Donald Spees, 100<sup>1</sup>/<sub>2</sub> S. Main, Zionsville, IN 46077, a brief note in response to our request for news:

*The Class of 1954 has always been a close knit group, having many get-togethers at meetings and conferences. Last September at our 30th reunion in Bloomington, a great time was had by all that attended. Thirty-nine class members were in attendance. We had the largest number present of any of the reunion year classes. We also had the largest percentage of the class present. Some class members had not taken part in any previous class reunions. It was great to see everyone. I had not remembered that so many of my classmates were older men.*

#### **Class of 1955**

An address:

Dr. W. Kelley Carr  
PO Box 25  
Lafayette, IN 47902-0025

#### **Class of 1956**

A new address for Dr. Donnell C. Marlin: 440 N. Winona, Apt. 301, Indianapolis, IN 46202-2852.

#### **Class of 1957**

New address:

Dr. David L. Cook  
7053 E. 47th  
Indianapolis, IN 46226-2604

Dr. Carl W. Edds, 57, of Cicero, Indiana, died in his winter home at Naples, Fl on March 18, 1985. He received his graduate degree in orthodontics from Tufts University in 1964. He retired from his orthodontic practice in Indi-

anapolis in 1982 although he continued to teach in the Dept. of Orthodontics at the Indiana University School of Dentistry.

Memorial contributions may be made to the IU Foundation's Carl W. Edds Scholarship Fund in care of the IU dental school's orthodontics department.

Dr. Edds is survived by his wife, Jeanie; daughters, Elizabeth and Amy Edds; and sons, John and Andrew.

#### **Class of 1958**

Dr. John Turchi, PO Box 347, Crawfordsville, IN 47933, who has responded to our request for alumni news, regards his class as:

*Hardworking but fun loving. Many class members are serving on committees of organized dentistry or related groups or dental schools. Dr. H. William Gilmore was recently appointed dean at IUSD. The classmates I am still in contact with are: Jack Boyd, William Gilmore, Frank Portolese, Bob Mattern, Bob Moon (through IDA related meetings); Dallas Cope (yearly in Florida and we correspond); William Hart (IUSD Alumni Fall Conference); and Ken Miller (Impaired Dentist Committee). My most distinct memories of dental student days include: Senior class picnic at Brownsburg; dances at the ZIP house (Cope's dancing to "Blueberry Hill"); Bill Hart's hard-top convertible; Jim Puccio being first done in all technics; fishing with Ken Miller and Don Traicoff; Ralph Beatty doing all those extractions in oral surgery clinic. I would like to see everyone at our 30 year reunion in 1988!*

Address update:

Dr. Ralph Emerson Beatty  
RR2, Box 303  
Poland, IN 47868-9409

#### **Class of 1959**

Address change for Dr. John H. Schulz: 3801 N. Meridian #1802, Indianapolis, IN 46201-4031.



### Class of 1960

Address change for Dr. Darrel McFall: 50 Ashley Lane, Oldsmar, FL 33557-2324.

### Class of 1961

Dr. Ralph E. Walls, 12556 N. Meridian St., Carmel, IN 46032, answered our request for news with the following thoughts and recollections:

*The Class of 1961 continues to be an outstanding class of dentists as I recognize the consistency and continued motivation toward quality dentistry by a group of outstanding people. Even after 24 years at the chairside.*

*I don't see many of my classmates frequently. I ran into Ron Bowman at a wedding last Saturday. Always exciting to see a classmate. Four years together in dental school creates a bond that is hard to explain. Among the classmates that I'd especially like to get some information on are: Jim Parker, Dave Sawyer, Jim Vaught, Bill Watts, and Don Derrow.*

*Some memories of dental student days: I remember Burt Cleveland looking over everyone's shoulder to inspect their work. I recall Jack Williams going to movies the night before the final exams; Don Derrow brushing the rats' teeth for the Procter and Gamble fluoride tests; John Newlin's hand shaking after one cup of coffee at Bea's. I remember a very fine clan trying to make friends with Jack Mollenkopf—we all wanted tickets to Purdue's game.*

*I am really enjoying my profession after 24 years and my son just informed me that he is going to pursue a career in dentistry. Color me a Proud Father.*

### Class of 1963

Addresses:

Dr. J. Thomas Bohnert  
1825 Queensbridge Drive  
Indianapolis, IN 46219-2449

Dr. William H. Rosenstein  
3225 Citadel Ct  
Indianapolis, IN 46268-1345

### Class of 1964

We have received the following address change:

Dr. Kenton S. Hartman (MSD '70)  
13205 Partridge Drive  
Silver Spring, MD 20904

We received a nice letter from Dr. Thomas D. Van Osdol, 2259 East Dubois Road, Kosciusko Professional Arts Building, Warsaw, IN 46580, who has given us a personal update at our request:

*. . . I have been in general practice in Warsaw, Ind for 18 years. I have three sons: Mike (21), Scott (19), and Matt (12). My wife Linda and I will celebrate our 23rd anniversary October 13, 1985. My practice continues to grow and I enjoy dentistry very much. My interests are my family, outdoor recreation, hunting and fishing. I feel our Class of 1964 was and is very special in many ways. I hope we can all stay in touch.*

### Class of 1965

Dr. Richard Lasbury, Kokomo, IN, recently received the Fellowship award from the Academy of General Dentistry in Detroit, MI.

New address:

Dr. Jan L. Silagi  
6211 Edgemere 'Ste J  
El Paso, TX 79925-3472

### Class of 1966

Address update:

Dr. David F. Eichenauer  
R3, PO Box 928  
Decatur, IN 46733



### **Class of 1967**

Address changes:

Dr. Harold I. Odle  
Rt. 1, Box 476P  
Ft. Myers, FL 33905-9782

Dr. Gene F. Stout  
6019 Spring Oak Hollow  
Spring, TX 77379

Dr. Jerry W. Travelstead  
916 E. Main St.  
Brownsburg, IN 46112

### **Class of 1968**

We have received the following addresses:

CDR Jeffery P. Allen  
USS Puget Sound (AD-38)  
FPO, NY 09544-2520

Dr. Paul A. Mosele  
4503 Melbourne Road  
Indianapolis, IN 46208-2771

### **Class of 1969**

Dr. Joseph Lovasko was honored last April by the Northwest Indiana Dental Society as he completed his tenure as president of the Society. The second annual Northwest President's Dance was held at the Sand Creek Country Club in Chesterton.

Some address changes:

Dr. Gary L. Dickinson  
12317 Eastridge Dr. NE  
Albuquerque, NM 87112-4604

Dr. Richard G. Smith  
1550 S. Highland #A  
Clearwater, FL 33516-2337

Dr. Herbert Ray Stevens  
RR 3, Box 503  
Paoli, IN 47454

### **Class of 1970**

More address updates:

Dr. Patrick E. Barrett  
PO Box 149  
Kingston, WA 98346-0149

Dr. Stephen J. Guidone  
457 34th St  
Manhattan Beach, CA 90266-3307

### **Class of 1971**

Addresses:

Dr. Robert E. Hickam  
Box 159  
Idaho Springs, CO 80452

Dr. George McWalter (MSD)  
University of Texas  
Dental School  
7703 Floyd Curl Drive  
San Antonio, TX 78284-0999

Dr. David W. Riggs  
13 Tocovi Ct N  
Brownsburg, IN 46112-1011

Dr. Stephen M. Silston  
82 Eleven Levels Rd  
Ridgefield, CT 06877

### **Class of 1972**

Address update:

Dr. Frederick W. Linden, III  
9772 Willow Glen Circle  
Santa Ana, CA 92705

Dr. Craig A. McEwan, 3012 S. Franklin, Michigan City, IN 46360-6144, has provided an update at our request:

*The members of the Class of 1972 are enjoying successful professional careers. The emphasis within our class is private practice with few in full time academics. The classmates I see or hear from most often are: Perry Wainman, Chester Rycroft, Bob Sexton and Gary Schinbeckler, who seem to show up on the golf course at the Fall Dental Conference each year. Roger Miller, Logan Ballard and Ron Corley all practice down the road from me in LaPorte. There are many other classmates in private practice in northern Indiana.*

*Would whoever has our class movie, "The*



*Cockroach Orange," please give me a call? We would like to feature the movie at our 15-year reunion.*

*Most distinct memories of dental student days: the good time we had and the awards we presented at the Senior Razz Banquet.*

*On February 11, 1985, I moved into my brand new office building. The excitement continues even as the bills roll in.*

### **Class of 1973**

Address updates:

Dr. Richard D. Nickels  
PO Box 329  
Mundymill Road  
Oakwood, GA 30566

Dr. Patrick J. Stetzel  
USAF Clinic/SGD,  
APO New York NY 09188-5000

### **Class of 1974**

Dr. James Macri (MSD '76), an orthodontist in South Bend, has been taking care of some special "patients" lately: Cabbage Patch dolls! A photo published in the South Bend Tribune last summer showed Dr. Macri adjusting the "braces" on a soft-sculpture doll, much to the delight of Beth Seay, the doll's owner who is also a patient of Dr. Macri. His office provides the service for the youngsters' dolls at no charge.

Addresses:

Dr. Charles P. Jones  
73 Forest Hollow Dr  
Cicero, IN 46034-9665

Dr. Raymond L. McCutcheon (MSD)  
Rt. 2, Box 219  
Renick, WV 24966

Dr. David A. Wagner  
1220 Medical Park Drive  
Ft. Wayne, IN 46825-5843

### **Class of 1975**

Dr. Daniel W. Fridh has taken Dr.

Gregg A. Noll ('84) as an associate in his family dentistry practice in LaPorte, IN.

Dr. Mark E. Mallatt became a member of the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985.

More addresses:

Dr. Michael B. Gasko  
225 N Notre Dame Ave  
South Bend, IN 46617-2895

Dr. Laurence D. Johns  
5718 E. Betty Elyse Lane  
Scottsdale, AZ 85254-1815

Dr. Mark L. Johnson  
914 Macalan Drive  
Marion, IN 46952-2039

Dr. Thomas H. Kelley  
30902 Colonial Place  
Laguna Niguel, CA 92677-2433

Dr. Paul A. Weber  
32 Village Road  
Batesville, IN 47006-9196

### **Class of 1976**

Dr. Charles L. Nelson became a member of the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985.

We have received some address changes:

Dr. Peter B. Claussen  
768 N. Longwood Circle  
Panama City, FL 32405

Dr. Jack L. Williams  
3671 Lima Ct.  
Indianapolis, IN 46227-8171

Dr. Linda Smith Morse  
2890 Knollwood Tr (home)  
East Pt., GA 30344

2600 M.L. King Jr. Dr SW (office)  
#308  
Atlanta, GA 30311



Dr. Smith Morse also let us know that she married Carlton H. Morse, Jr. in 1983. They have a daughter, Allison Nicole, born April 20, 1984.

In response to our request for news and reminiscences, Dr. Jeffrey P. Blair, 2408 Houma Blvd. #409, Metairie, LA 70001, remembers the class of 1976 as:

*Very rowdy and very comical. A lot of achievers in both personal and dental careers. First class to go through the new (at the time) curriculum and come out with flying colors. The classmate I see most often is John Meier. He introduced me to Rotary International's 3-H program and I spent a month working in Hong Kong at the same refugee camp that John did in '81. John went to another refugee camp in the Philippines through the same program in '84. I also did some part-time carpentry work at John's house that I never let John forget!*

*Some favorite memories: Greg Johnson helping Bernie J. during the histology review our first year; Ross Brady acting as M.C. when our instructors showed up late for lecture; and filming our senior class film and all the work that went into editing and synchronizing the sound - only to have two projector bulbs burn out at the senior banquet.*

### **Class of 1977**

Address changes:

Dr. Rebecca Stuart Donnelson  
3572 Brumley Way  
Carmel, IN 46032-3066

Dr. Robert L. Malik  
1917 Welnetz Rd  
Michigan City, IN 46360-7150

Dr. Glen R. Schepers  
10 Keystone Court  
Jasper, IN 47546

Dr. Gary A. Scheumann  
1806 N. Main St  
Auburn, IN 46706-1048

Dr. Nicholas C. Mahon (MSD '77), of Dublin, Ireland, has been named a

Diplomate of the American Board of Periodontology.

### **Class of 1978**

Dr. Daniel M. Bade, FAGD, 2627 45th St., Highland, IN 46322, has recently been named director of the new TMJ clinic at St. Margaret's Hospital in Hammond, Indiana. Dr. Bade also maintains a private practice in Highland.

Col. Lewis Lorton (MSD) was featured last summer in an article appearing in the ADA News. As head of the bioengineering branch of the U.S. Army Institute of Dental Research, Dr. Lorton has designed a computer program that can speed identification of bodies through dental records. A pilot test of the program, called Computer Assisted Postmortem Identification (CAPMI), is taking place at Fort Carson, CO and has the potential to serve the entire Army and military services, as well as aid in identifying bodies in civilian disasters such as air crashes.

Addresses:

Dr. Dennis M. Brich  
3924 14th Ave South  
Great Falls, MT 59405

Dr. John J. Cash  
RR 32, Box 487  
Terre Haute, IN 47803

Dr. Steve L. Caudill  
1699 Williams Way East  
Anderson, IN 46011

Dr. C. Ronald Chamberlain  
1272 Winema  
Chesterfield, MO 63017-2444

Dr. Jerry R. Davis  
4203 Bending Lane  
Greenwood, IN 46142-8105

Dr. Linda J. Kirchoff  
576th Medical Detachment (DSD)  
APO New York 09252



Dr. Jeffrey W. Rhonemus  
RR #2, Box 34A  
Liberty, IN 47353

Dr. George J. Zorawski  
519 East F St.  
Elizabethton, TN 37643

### **Class of 1979**

Dr. George P. Willis became a member of the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985.

#### **Addresses:**

Dr. Michael J. Conley  
55 Fawn  
Warsaw, IN 46580-9745

Dr. Michael J. Garry  
RR 52, Box 112  
Terre Haute, IN 47805-9607

Dr. Charles Gordon  
3610 E. 77th  
Indianapolis, IN 46240

Dr. Mark S. Putt (MSD)  
3311 Cabot Lane  
Fort Wayne, IN 46805-2419

### **Class of 1980**

Dr. George R. Zundo, 907 West Fairchild Street, Danville, IL 61832, dropped us a note last summer:

*I would like to give you my new address. Two weeks ago I moved into an old converted brick house which will give me twice as much space as I previously had. Coming back to Danville five years ago, I have managed to stay quite busy. This year I will be attending the ADA meeting as a voting delegate. Enclosed is a little article about the state award I received. Could you please forward it to Drs. Derry and Bogan—they will be happy to know that another one of their boys is staying active professionally as well as in the community.*

Excerpts from the article about Dr. Zundo follows:

Danville dentist Dr. George Zundo has been awarded the William J. Greek Leadership Award for 1985 by the Illinois State Dental Society. . . . (It) recognizes a young member of the Illinois State Dental Society who has demonstrated "outstanding professional leadership." . . . It is given to a dentist who has been in practice for no more than five years and has exhibited a "sincere involvement in society affairs and demonstrated exemplary leadership qualities." . . . Dr. Zundo is president of the dental staff at St. Elizabeth Hospital and is on the dental staff at Lakeview Medical Center.

He also is on the board of directors of American Cancer Society . . . .

The dentist also is an active lecturer, gives presentations on dental care to prenatal classes at both city hospitals and visits local schools during National Children's Dental Health Month.

Dr. Zundo also is a staff dentist at Americana Healthcare Center and Vermilion Manor Nursing Home.

He and his wife, Mary Beth, have two sons.

#### **Address changes:**

Dr. Terry L. Baker  
115 Brandywine Lane  
Decatur, IN 46733-2601

Dr. Michael G. Benac (MSD '81)  
59 Bonhill Drive  
Salisbury, MD 21801-9496

Dr. Robert D. Borders (MSD)  
304 Mosley Dr  
Brentwood, TN 37027-5122

Dr. Steven W. Buedel  
2900B E. Morgan Ave  
Evansville, IN 47711-4426



Dr. Laura Kutka Hannon  
1 Pine Trail Box 416  
Portage, IN 46368-1008

Dr. Gary A. Hunt  
13157 Hazelwood Dr.  
Carmel, IN 46032-4628

Dr. David J. Ottilie  
9130 Sherwood Lane  
Indianapolis, IN 46240-1252

Dr. Janet Ann (Pole) Stropes  
5822 Elaine St  
Indianapolis, IN 46224

Dr. Gerald Warrell  
63555 Orange Road  
South Bend, IN 46614-9661

#### Class of 1981

Dr. Steven M. Patterson (MSD '84) has been appointed editor of the Indianapolis District Dental Society Newsletter.

#### Address updates:

Dr. John D. Anoskey  
1605 Madison Ave  
Evansville, IN 47714-2857

Dr. Roy C. Blake (MSD '84)  
1630 Embassy Dr. #302  
W. Palm Beach, FL 33401-1955

Dr. Annette Tepner Farthing  
403 Woodland E. Drive  
Greenfield, IN 46140-8888

Dr. Rodger W. Janes  
PO Box 759  
Belle, MO 65013-0759

Dr. Arthur M. Kammerman  
6717 Park Heights Ave #1D  
Baltimore, MD 21215-2443

Dr. Dennis E. Kelley  
5805 E. New York St.  
Indianapolis, IN 46219-5921

Dr. Charles E. Kendall  
8121 Newbury  
Evansville, IN 47711-9652

Dr. David Lasho (MSD)  
9134 Park Tr  
San Antonio, TX 78250

Dr. James C. Potts  
3903 Spurwood Circle  
Ft. Wayne, IN 46804

Dr. Brian C. Smith  
905 Wisconsin Ave  
St. Joseph, MI 49085-1537

Dr. Thomas E. Worster  
500 Regatta Rd  
Naples, FL 33940-4139

Dr. Robert J. Zajac  
2050 Sherwood Lake Dr #3A  
Schererville, IN 46375-2747

Dr. Craig Fitch, 2051 Janis Way, Carlsbad, CA 92008, has responded to our request for alumni news:

*The classmates I see or hear from most often: Steve Patterson—his recent presentation to the AAE of his research was well received and well delivered. He practices in Lafayette as well as with his father in Indy. Butch Welbourn—he is about to start an oral surgery fellowship in the Navy at the Great Lakes Training Center in Chicago. Butch may be the Navy Dental Corps' next admiral. Rick Grassmeyer—recently inducted into the Navy and is currently stationed in Okinawa. Gary Nondorf—happily practicing in Valpo and still making babies! Among the classmates that I'd especially like to get some information on: Bob Findley, Victor Escobar, Mark Bohnert, Steve Overton, Jim Dippel, Tim Bray, Karl Keiser, Jim Gordon, Ed Posluszny, Jan Bosserman, Mike Boggs, Bob Demick, Greg Winteregg, Dave Bolinger.*

*Distinct memories of dental student days: The hassles incurred while attempting to complete the Crown & Bridge requirement; the relief of finishing finals.*

*News about myself: I married a lady from California the year after we graduated. I subsequently moved there after the GPR program at Wishard. I am currently finishing a three-*



*year stay in the Navy, and plan to open my office in North San Diego County late in 1985. Our first child is "in the oven" and should be born around June 8, 1985.*

### **Class of 1982**

More addresses:

Dr. Thomas K. Brown  
1326 N. Kelley  
Edmond, OK 73034

Dr. Brian J. Casciari  
9320-A Carmel Mtn Rd  
San Diego, CA 92129

Dr. Bradley N. Crawford  
RR2, Box 479  
Winamac, IN 46996-9402

Dr. Christopher C. Cron  
4162 Darby Way  
Suluth, GA 30136-2667

Dr. Mary M. Eichler  
505 N. Lake Shore Dr #2511  
Chicago, IL 60611

Dr. Jeffrey P. Huston  
1424 Bordeaux Drive  
Lodi, CA 95240-6529

Dr. Kevin B. Klein  
9150 Kerwood Drive  
Indianapolis, IN 46240-1322

Dr. Joyce M. Litch (MSD)  
4212 Medical Drive #710  
San Antonio, TX 78229-5612

Dr. Lee A. Michaelis  
9004 Lake Nora W Dr #C  
Indianapolis, IN 46240-1626

Dr. Stephen W. Peterson  
110 E. Ludington Ave  
Ludington, MI 49431-2108

Dr. Jerry L. Rinehart  
145 Brunswick, Apt G  
Columbus, IN 47201-7196

### **Class of 1983**

Addresses received:

Dr. John P. Atkinson  
559 Main  
Rockport, IN 47635

Dr. Cristene A. Carlson  
411 Bryn Mawr  
Birmingham, MI 48202-1557

Dr. John M. Castor  
3301 Quarry Pl #F  
Lafayette, IN 47905-5407

Dr. Mark E. Catton  
5941 Crestview Ave  
Indianapolis, IN 46220-2750

Dr. Jeffrey A. Dean (MSD '85)  
625 Mulberry  
Zionsville, IN 46077-1119

Dr. Murray Dock  
2004 Washington Cr  
Cincinnati, OH 45215

Dr. David W. Hamula  
3901 Cameo Dr  
Oceanside, CA 92056-3336

Dr. Stuart G. Kelly  
402 W. Washington  
Marion, OH 46953

Dr. Donald Richard McBride  
321 E. 51st Street  
Indianapolis, IN 46205-1020

Dr. David R. Miller  
310 E. 3rd St  
Mt. Carmel, IL 62863

Dr. Timothy W. Robison  
8717 Dayton Ave N  
Seattle, WA 98103

Dr. Phillip J. Santucci  
8650 E. Bonnie Rose Ave  
Scottsdale, AZ 85253

Dr. Marti Kemnitz Skelton  
10622 Brewer Dr.  
North Glenn, CO 80234

Dr. Jeffrey L. Snoddy  
RR 51, Box 914  
Terre Haute, IN 47805-9404



Dr. Howard E. Stevenson  
6114 Georgetown #D  
Indianapolis, IN 46254

Dr. Jon W. Susott  
6615 N. Hillside Ave  
Indianapolis, IN 46220-1413

Dr. Claude K. Slater (MSD)  
5400 Water Oak Ln #404  
Jacksonville, FL 32210

Dr. E. Mark Thurber (MSD)  
1151 E. Costilla Ave  
Littleton, CO 80122-1345

Dr. John C. Walter  
900 N. 21st St #A  
Lafayette, IN 47904-2215

Dr. Rick A. Warner  
2515 Donna Lynn Lane  
Huntertown, IN 46748-9744

#### **Class of 1984**

We have had forwarded to us a photocopy of an article from the Gary Post-Tribune regarding Dr. Ted E. Mioduski, Jr. and his brother Michael. For those of you who may be wondering what Dr. Mioduski has been up to since graduation, here are some excerpts from columnist Jim Barrickman's article entitled, "Mioduski brothers live up to expectations":

Ted Jr., the older of the two at 26, is actually Dr. Mioduski, the dentist, with a year of residency at St. Joseph's Hospital in Denver, Colo., just past. He's in private practice now with another dentist in Loveland, Colo., but the mark he made during his residency must have been impressive because he will continue to serve St. Joseph's as its chief dental consultant. . . .

Dr. Gregg A. Noll has become an associate of Dr. Daniel W. Fridh ('75) in the practice of family dentistry in LaPorte, IN.

And now, for some addresses:

Dr. Michael Bagnoli  
1210 Main St #4  
River Edge, NJ 07661

Dr. Steven J. Butler  
19242 Silver Springs Dr. #101  
Northville, MI 48167

Dr. Bruce Cable  
1135 W. Iowa St  
Glenwood, IL 60425-1024

Dr. Sophia Chi-Huei Chiang  
3760 Woodbridge Dr.  
Evansville, IN 47710-5135

Dr. Diane (Danner) Bagnoli  
1210 Main St #4  
River Edge, NJ 07661

Dr. Thomas A. DeVol  
5743 Summerside Ln  
Sarasota, FL 33581-8370

Dr. Brian D. Eberhart  
2601 Lindsay Ave #H2  
Louisville, KY 40206-2246

Dr. Jon B. Inman  
9322 Rockville Road  
Indianapolis, IN 46234

Dr. Ted E. Mioduski  
1802 W. 23rd St  
Loveland, CO 80537

Dr. Larry G. Payne  
5518 Champions  
Lufkin, TX 75901-7214

Dr. L. Colin Ress  
1135 N. Vermillion St  
Gary, IN 46403-1543

Dr. Thomas J. Steckbeck  
7122 Whitetail Lane, Apt 2-C  
Indianapolis, IN 46254

Dr. Anthony C. Stringfellow  
714 Vine St  
Clinton, IN 47842-1811

Dr. Martin L. Supowitz (MSD)  
5867 Hobart St  
Pittsburgh, PA 15217-2109



Dr. Nai-Huei Wang  
3339 Dew Point Lane  
Sugarland, TX 77479-2234

Dr. Ned Alan Warner  
329 E. 36th  
Indianapolis, IN 46205-3525

### Class of 1985

The following members of the 1985 graduating class were taken into the Omicron Kappa Upsilon honorary fraternity at the annual luncheon in Indianapolis in May, 1985: Drs. David A. Albright, Christopher A. Burns, Kevin A. Deardorf, Park L. Firebaugh, Margaret J. Fox, Chris D. Kinney, Craig T. Leland, Jean L. Musselman, James R. Oxford, Herbert P. Pleiman, Jr., Robert J. Relle, Christopher W. Shultz, and Richard E. Zollinger.

Some addresses:

CPT Robert H. Cinatl  
9 Cardross Lane  
Columbia, SC 29209

Dr. Brett Lehocky  
1147 Patterson Rd  
Dayton, OH 45420

Dr. Craig T. Leland  
533 East 3rd St  
Greenville, OH 45331-2021

Dr. Jean Musselman  
4036 N. Central  
Indianapolis, IN 46205

Dr. Kenneth Silva, Jr.  
3931 Queenston Court, #E-3  
Carmichael, CA 95608

Dr. Neal A. Yoder  
901 East Waterford Street  
Wakarusa, IN 46573

Dr. Susan E. Wagner is now practicing with the Michiana Dental Group, 1331 Chimes Blvd., South Bend, IN 46615. Other group members include Dr. Gregory C. Moo ('77) and Dr. C. Wesley Magnuson ('82).

Sarah Manion received a letter last fall from Katherine A. Patton, 260 Slater Boulevard, Staten Island, NY 10305. Some excerpts follow:

*I hope all is well at IUSD. Things are going well for me. My (GPR) residency keeps me very busy but I can't complain for I am getting some excellent experience. It is different living here in New York - everything is so intense and high pressure. At times I miss the Midwest, but knowing that I am here probably for one year makes it more tolerable. There are so many exciting things to do here that one could never get bored. I have been to several Broadway shows which have been fantastic and the shopping here is excellent!*

Microbiology  
(continued from page 74)

*And we are not to wipe them down with alcohol?*

That is usually the only choice left if it is a non-autoclavable handpiece. I recommend using an iodophor called Wescodyne diluted 1 to 213 with water as directed by the label instructions.

Raper  
(continued from page 82)

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.



## Dr. Furnas, Class of '10, Is Dead at 96



**Dr. I. Lester Furnas**

Dr. I. Lester Furnas, a 1910 graduate of the former Indiana Dental College and a leader in prosthetic dentistry, died in his LaJolla, California, home on August 17. He was 96 years old.

For many years Dr. Furnas made an annual trip east to visit friends at the Indiana University School of Dentistry and attend the Indiana Dental Association meeting. His last visit was in May of this year.

Readers of this publication will undoubtedly remember Dr. Furnas's outstanding series of nostalgic articles on his Hoosier boyhood and the "good old days" at Indiana Dental College three-quarters of a century ago. The last of these articles was published in last spring's issue.

Dr. Furnas was born in Lynn, Indiana, on September 13, 1888, and his ancestors were early settlers in the state. After receiving his D.D.S. from Indiana Dental College (which became the Indiana University School of Dentistry in 1925),

he served as an intern at the State Hospital at Fort Wayne and then joined the faculty of the College as an Instructor. Four years later he became Professor of Prosthetics, a position he held until 1920.

In that year Dr. Furnas accepted appointment as Professor of Prosthetics and Dental Technology at Western Reserve University in Cleveland. He retired from teaching in 1938 to conduct a practice limited to prosthodontics in LaJolla.

Dr. Furnas presented papers and lectured before dental groups in 43 states; made two extensive lecture tours of major European cities; and spent two summers with Dr. Alfred Gysi in Zurich, Switzerland. He was a past President of the Indianapolis District Dental Society, the Prosthetic Section of the American Dental Association, and the Academy of Denture Prosthetics. He was a charter member of the Academy and served as its Secretary-Treasurer for 23 years.

Dr. Furnas was the author of many scientific articles, and a co-author of THE



AMERICAN TEXTBOOK OF PROSTHETIC DENTISTRY. He made a survey of Eskimos on the Arctic coast of Alaska for the U.S. Government and later delivered numerous lectures on "The Arctic and Its People."

Honors received by Dr. Furnas included membership in Omicron Kappa Upsilon, honorary membership in the European Dental Society, and designation as Sagamore of the Wabash by Indiana Governor Robert Orr. In 1978 he was given special recognition at the 50th Reunion Dinner of the Class of 1928 at Case Western Reserve School of Dentistry. Dr. Furnas was also a member of Kiwanis International, with a 47-year record of perfect attendance.

Survivors include his wife, Angela; and a daughter, Mrs. Helen Bender, Oak Creek Canyon, Arizona.

## Dr. Swenson Receives Gold Medal Award

Dr. Henry M. Swenson, professor of periodontics at the Indiana University School of Dentistry, received the Gold Medal award of the American Academy of Periodontology, on Friday, September 13, during the annual meeting of the Academy in San Francisco.

The annual award is the highest honor presented by the Academy and recognizes "outstanding contributions to dental science, particularly to periodontics."

A faculty member at the IU School of Dentistry since 1945, Dr. Swenson also practices periodontics in Indianapolis and Kokomo. He is a native of New York and received his D.D.S. degree from the University of Illinois in 1942, with advanced study at the Medical College of Virginia. He served in the Navy during World War II.

Dr. Swenson has held many offices in professional organizations, including the presidency of the Indiana Society of Periodontists, the Midwest Society of Per-

iodontology, and the American Academy of Periodontology. He is a former member and former secretary-treasurer of the American Board of Periodontology.

Dr. Swenson's memberships include Omicron Kappa Upsilon (dental honorary society); the International Association for Dental Research; the American Equilibration Society; the American Dental Association; the Indiana Dental Association; and the Indianapolis District Dental Society. The author of numerous scientific articles, Dr. Swenson is also a consultant in periodontics for the Veterans Administration. For many years he has served on the School of Dentistry Promotion and Tenure Committee.

With Dr. Swenson's selection for the Gold Medal Award, he becomes the third Indiana University faculty member to have been so honored. The others are Dr. Timothy J. O'Leary, chairman and professor of periodontics, and Dr. Maynard K. Hine, IUPUI chancellor emeritus and professor emeritus of periodontics.



Dr. Henry M. Swenson



Indiana University School of Dentistry  
(**ALUMNI BULLETIN**)

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