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Responsibilities in Health Service

ARTHUR S. FLEMMING

Secretary of Health, Education, and Welfare

It is certainly a great privilege for me to have the opportunity of participating in this Convocation of the American College of Dentists on the occasion of the centennial celebration of the American Dental Association.

When I first received your program I was delighted to note that it was contemplated that former President Hoover would also participate in this program, speaking to us on "Responsibilities in Citizenship." It was my privilege to serve as a member of both of the Hoover Commissions. As a result, I know from firsthand observation that there is no living American who is better qualified to talk on the responsibilities in citizenship. His words carry with them always the conviction that grows out of the fact that without thought of self he has practiced what he has preached. No man in our history has traveled the second mile as often as he has traveled it in order to serve his fellow human beings.

Just after I resigned as Director of Defense Mobilization back in 1956 and returned to the presidency of Ohio Wesleyan University, I was asked by Dr. Adams, the president of the American Council on Education, to serve as chairman of a dental survey commission, the organization of which was inspired by those who are leaders of the American Dental Association. Frankly, I did not understand why the invitation was extended to me. In response to a direct question, Dr. Adams said to me that they were looking for a layman who was not identified with the issues that confront the profession at the present time. I assured him that he could not possibly find a layman who was more a lay stranger to those issues than myself and on that basis I would recognize that I qualified for the vote.

I was honored by the invitation, I accepted, and just as the Commission was organized I was invited by President Eisenhower to come back to Washington to assume my present duty. Consequently, it was necessary for me to resign as chairman of the Commission on

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Presented at the 1959 Convocation, September 13, New York City.

the Survey of Dentistry. I did it regretfully, but as I did so I recognized that in connection with the duties and responsibilities of my present position, I would be provided with another opportunity of becoming better acquainted with the contributions that your profession has made and is making to the welfare of our nation.

As you know, there has always been a significant relationship between your profession and the United States Public Health Service, which, of course, is one of the most important of the operating agencies of the Department of Health, Education, and Welfare.

This relationship was strengthened in a very substantial manner when the creation of a National Institute of Dental Research was authorized by the passage of the National Dental Research Act, an act that was passed to increase knowledge of dental and associated diseases with a view to improving oral and dental health.

It seems to me that it is significant that the budget for this Institute has grown from about $360,000 in 1949, to over $8,000,000 during the present fiscal year. In addition, $2,000,000 is being spent on dental research in other areas of the Public Health Service, thus bringing the total that will be spent for research and training in the dental health field in 1960 to a little over $10,000,000. And of course I am delighted, as you are, that we are now in the process of providing a new home in Bethesda for the National Dental Research Institute.

This afternoon I am going to presume on this very brief relationship that I have had with your profession, to discuss with you some common responsibilities that confront our department and your profession, as together we face issues that have a direct bearing on the ability of our nation to provide an adequate health service for our people.

First of all there is the manpower issue. I am informed that the supply of dentists has been declining for a generation when considered in relation to our growing population. Even now, with dental school enrollments twice their immediate post-World War II level, dental schools are not producing enough new dentists to keep up with population growth.

At current projected levels of graduates from existing and planned schools, total dentist supply will grow from approximately 98,000 in 1957 to approximately 120,000 in 1975. By then, however, we will need approximately 134,000 dentists if we are to meet the needs arising from population growth alone.

To reach even this level by 1975 will require facilities by 1970 capable of graduating annually approximately 2,700 more dentists than are currently in prospect. Of course, additional training facilities will lead to demands for still more manpower.

What can we do to solve this manpower problem? We can do a better job of counseling and guidance at both the secondary and liberal arts levels. Government can be of help at all levels as it seeks to strengthen its counseling and guidance programs. The most effective job, however, can be done by the members of this profession through the contacts that they can, and should, establish with counselors in both our secondary schools and in our institutions of higher education.

Also, I am convinced that we must face, in a realistic manner and with a sense of urgency, the need for additional training facilities. The Commission on the Survey of Dentistry, to which I have already referred, will undoubtedly be of assistance in helping us to reach an agreement on a national goal so far as dental training facilities are concerned. It is imperative for us to reach such an agreement if we are going to deal with this matter in something other than a hit-or-miss manner.

I hope that the Survey Commission will also help us to reach agreements in what constitutes a fair share of the responsibility for meeting a national goal for additional training facilities, on the part of government at all levels, and on the part of private groups. Unless we can reach agreements along this line we will not be focusing in an effective manner our total resources on meeting the national goal.

And then also we must utilize our available resources in a more intelligent manner. I am challenged and encouraged by the increasing emphasis that this profession is placing, for example, on the training and utilization of what you refer to as "chair-side assistants." I understand that some studies have demonstrated that the productivity of a dentist can be increased as much as 30 per cent through the use of these assistants. The benefits comparable to this development are taking place in other professions. As we move forward with programs of this kind, it is important for us to keep in mind the fact that the assistant, in this case the chair-side assistant, should not be treated as a second-class citizen. She also must be provided with incentives and opportunities for growth and development.

The next issue that we must face together is the issue of making additional resources, including manpower, available for research.

All of the Institutes connected with the National Institutes of Health, including the Dental Institute, have made amazing progress in the last six years in providing both leadership and resources in this area. This progress has unquestionably been due, in large part, to the willingness on the part of this profession as well as the members of other professions to give of their time and energy as members of our Advisory Council. Here again there is need for agreement on national goals, and also agreement on what constitutes a fair share of the responsibility for meeting these goals on the part of government at all levels, as well as on the part of private groups.

The very distinguished Bayne-Jones Committee in reporting to the Secretary of Health, Education, and Welfare, my predecessor Mr. Folsom, recommended that 50 per cent of the fiscal resources for medical and dental research should be provided by the federal government, and 50 per cent by government at other levels and private groups.

There will be a temptation to increase the percentage of participation by the federal government. In my judgment, if we yield to this temptation we will in the long run be weakening, rather than strengthening our research activity.

Next, we face the issue of the cost of dental care. At the beginning of 1959, 121,000,000 Americans had medical and hospital prepayment coverage of some kind, but only 500,000 of our citizens had dental prepayment coverage. This situation calls for a vigorous educational program because personal dental health services cost $1,700,000,000 per year, one-sixth of all the money spent for personal health services.

In my judgment, both the dental profession and the medical profession, as well as the government, are at a cross-road so far as dealing with the issue of the cost of dental and medical care is concerned.

Although we have made marked progress in expanding the coverage of voluntary insurance programs, we are now face-to-face with a proposal incorporated in the Forand bill that we abandon these efforts so far as the beneficiaries of the Old Age and Survivors Insurance programs are concerned, and let the federal government take over the entire job of providing protection to cover hospital, surgical, and nursing home costs.

In testimony before the House Ways and Means Committee it was stated that this administration is unalterably opposed to enactment

of this bill. There is no question but that the enactment of a compulsory hospital insurance law for the aged would bring to a virtual halt the voluntary efforts to deal with this group in our population.

About 40 per cent of the persons age sixty-five and over now have some hospital insurance protection, whereas as recently as 1952, only 25 per cent of the persons age sixty-five and over had any form of hospital insurance. If the federal government provides for a compulsory system to cover hospital and surgical costs, strong pressure would develop to extend the scope of benefits to additional types of service. As a result, voluntary insurance might soon be eliminated from the entire field of health protection for the aged. But in addition, an increased number of those who would be making payments for the Old Age and Survivors Fund for protection after sixty-five would express their willingness to make additional payments in order to attain protection before sixty-five. This would result in the broadening of the age group to the point where the whole system of voluntary health insurance would be seriously undermined.

We are now engaged in studies designed to determine whether or not there is anything the government can do to strengthen the voluntary insurance approach in dealing with the problems of the aged. We may conclude that there are some things that the federal government can do, in addition to what it is now doing. We may conclude that the dental and medical professions, as well as private groups and companies, can do more than they are now doing.

One thing is sure and that is that if government, the dental and medical professions, and private groups cannot agree on a program that will meet the need, compulsory health insurance for the aged will win out; and if such provision is made for the aged, we will start on the road then for provision being made for compulsory health insurance for all age groups.

We need to tackle this problem together if we want to prevent that from happening, and we need to search together for a solution with a real sense of urgency.

Finally, we must face together the issue of developing increasingly effective methods for persuading the American people to adopt measures which will help reduce the demands on the dental profession by preventing trouble. I am, of course, thinking about fluoridation, and all of you know the stand that has been taken by the Public Health Service and our Department in this matter. Yet in

spite of the findings of the Public Health Service, whose objectivity in medication for the welfare of our nation is above question, only 42,000,000 people in the United States, about one in three, who are provided water by community water supplies are drinking water containing the minimum or higher level of fluoride as recommended as desirable.

It is encouraging, of course, to note that since 1950 the number of persons in this country using fluoridated water has increased by about 33,000,000. The fact remains, however, that a militant minority has impeded progress in this area. Dentists who believe in fluoridation must become practical politicians in order to make it possible for an increasingly large number of our oncoming generation to enjoy the benefits of this health measure.

Yours is one of our great service professions. Because it is, I know that you must receive great satisfaction from your work. Speaking in behalf of the Department of Health, Education, and Welfare, I want to say that we not only stand ready but look forward to the opportunity of coming to grips with you with the manpower issue, with the opportunities that exist in the field of research, with the issues that grow out of the cost of dental and medical care, and with the opportunities for persuading communities to take action that will prevent dental decay. Do not hesitate to give us your suggestions.

For one hundred years your profession has made a major contribution to strengthening the health services of our nation. Significant as those contributions have been, I am confident that they are going to be even more significant in the years that lie ahead.

I like the quotation from Kettering that Dr. Percy T. Phillips, the President of the American Dental Association, lifted up in an article in the June 1959 issue of the *Journal of the American Dental Association:*

> We must use the past as a guidepost, not as a hitching post. We are not at the end of our progress but at the beginning. We have but reached the shores of a great unexplored continent. We cannot turn back.

It is in that spirit that I know you face the future, and we will be delighted to cooperate with you in the same spirit.

Recent Advances in Fluoridation

JOSEPH C. MUHLER, D.D.S., Ph.D.

Dr. Muhler received his Bachelor and Ph.D. degrees in chemistry and his dental degree from Indiana University, graduating with high distinction in 1948. He is a member of over 20 scientific and professional organizations; he was elected to fellowship in the American College of Dentists in 1958. At present, he is editor of the Journal of the Indiana State Dental Association, *and secretary of the graduate dental program at Indiana University. His teaching responsibilities include biochemistry, nutrition, and preventive dentistry; he holds a professorship. His major research interests pertain to fluoride metabolism, endocrinology, nutrition, and human dental caries studies.*

Are we losing the battle for the control and prevention of dental caries? In many ways dental scientists must answer affirmatively, for reliable statistical evidence shows that caries are more prevalent in some areas today than they were in 1900. This is appalling when one considers the recent advances in dentistry, medicine, and nutrition. At no time in the history of dental science has so much been available to both the dentist and his patient in terms of prevention.

Recent improvements in nutrition and prenatal care provide the expectant mother with those dietary factors known to aid substantially in the reduction of caries both for herself during her pregnancy and for her offspring following birth. More and certainly better educated dentists, the substantial benefits of communal fluoridation, better appreciation and more general use of oral hygiene measures, better dental materials for the repair and subsequent control of new caries, and still other dental advances are available, but dental caries increase. No clearer picture of this serious problem is available than from evidence provided by the Selective Service System from the dental and medical records of recruits drafted for military service during World War II (*Selective Service System,* 2:1, 1943).

In 1938 the dental requirement for military service was only that the recruit have twelve opposing teeth. In order to provide sufficient

manpower to meet our military obligations these most simple requirements had to be lowered, until in 1943 no dental requirements were a pre-requisite for military service. This is more appalling when one realizes that these young men are our country's best, from all standards, and in only a few years will be the same men leading our country's political, social, scientific, and health futures. The Selective Service System records show that of the first 2 million men examined for military service, more were rejected for dental causes than for any other reason. More than 40 per cent of the acceptable young draftees required immediate dental treatment for the relief of pain. Some 5 per cent had no teeth at all and had to be provided with dentures before proceeding with their military training.

The American taxpayer is paying for this dental neglect, and the cost of this service to the taxpayer was, and still continues to be, staggering, thus making one wonder why there is not more attention paid to prevention of dental caries. Dr. James Shaw, of the Harvard School of Dental Medicine, has recently reported that of the total medical costs in the United States, the dental portion is over 1½ billion dollars. This medical cost figure includes not only dental and medical care in private practitioners' offices, but hospital services, health insurance, drugs, and so forth. The figure for dental care is 14 per cent of the total medical dollar, and on a dollar basis is larger than for the combined care of patients having tuberculosis and heart diseases.

Populations Using Fluoridated Waters

Such findings make one ask if there is any hope in the foreseeable future for even lessening the incidence of this disease. Dental educators and dental scientists feel more optimistic today than ever before, strange as this may appear in light of such evidence as cited previously. Their enthusiasm is based mainly on two developments: first, the increased interest in preventive dentistry, not only by the dentist, but by his patients also; and second, the increased number of communities fortifying their communal water supplies with fluorides. As an example of the latter point, in September, 1952, a summary of the present status of communal fluoridation showed that approximately 140 communities were adding fluoride to their community water supplies. Today, of the approximately 118 million people in the United States provided water by community water

supplies, 40.3 million (or about one in every three persons) in 3,534 different communities are drinking water containing the minimum or higher amounts of fluorides as recommended for obtaining optimal resistance to dental caries from this procedure. Of these 40.3 million persons, 35.2 million in 1,778 communities are supplied drinking water in which the fluoride is added to a fluoride-deficient water supply, and 7 million persons in 1,903 communities use drinking water naturally containing 0.7 ppm (parts per million) or more of fluorides. Since 1950, the number of persons using water fortified with optimal amounts of fluorides has increased by 32 million. The United States is not alone in its use and recommendation of fluoridated water, since Australia, Brazil, Canada, Chile, Colombia, Costa Rica, Egypt, England, Germany, Guatemala, Japan, The Netherlands, New Zealand, Panama, Panama Canal Zone, Peru, The Philippines, Scotland, and Sweden also participate actively in such programs.

Opposition to Communal Fluoridation

There are very few medical advances ever accepted without years of objections by certain people and organized groups. Many communities still do not chlorinate their community water supplies. Certain people object soundly today to the use of vaccines for the prevention of smallpox, and the effectiveness of the antipoliomyelitis campaign is being hampered seriously in many areas of the United States by apathy against the Salk vaccine. Certainly, opposition to communal fluoridation as a public health measure is not new in the annals of medical history. During the years 1945 through 1957, a total of 94 communities discontinued adding fluorides to their water, and of these, only 13 have re-instated this practice. Today, in 82 per cent of the present cities fluoridating their water, the governing body of the community authorized adoption of the measure. In 5 per cent, authority to fluoridate was obtained by referendums, and in 4 per cent the utilities commission authorized the measure. Thus, it appears that real progress is being made in bringing the benefit of communal fluoridation to more people each year even though there is some organized opposition to it. Communal fluoridation stands today as the only hope for ever closing the gap between the adverse effect and the enormous cost of correcting dental caries.

Effective at Low Cost

By every available set of standards, communal fluoridation has proved to be effective in not only reducing the incidence of the disease, but also in reducing permanently its severity. Good evidence is available today to show that if a child resides, for the first 8 years of his life, in an area where there is the optimal amount of fluoride in the water supply, he will have significantly less caries as an adult than comparable children who reach the same adult age without having used fluoride-containing water.

One of the greatest benefits of communal fluoridation rests in its mass application and low cost. True, only children under 8 years of age can derive the optimal benefit from it, but it should be remembered that while only this small group needs the water, the effect produced carries over throughout their adulthood. Eventually, in a community fortifying its water with fluorides at the present time, the entire population will receive optimal benefits as soon as the communities' children grow into adulthood. Such communities are investing today in future reductions of dental caries. On a per capita basis the cost per person of fluoridation is about $\frac{1}{20}$ the cost of the most simple amalgam restoration. One would be hard-pressed to find a measure more effective for the masses and which has such ease of application, at such a low cost per person, and which produces such complete assurance of reducing tooth decay in our future citizens than drinking fluoridated water today.

Reassuring Facts Concerning Lack of Toxicity

Notwithstanding these facts, many conscientious people still object to drinking fluoridated water. Are there any recent facts which may reassure such people in regard to the professed lack of toxicity of this effective preventive dentistry measure? In a recent book, *Fluorine and Dental Health* (Indiana University Press, 1959, Bloomington, Indiana), Drs. Frank A. Smith and Harold C. Hodge, of the University of Rochester, summarize the present status of fluoride toxicity as it pertains to the consumption of fluoridated water. Their findings overwhelmingly suggest the lack of toxicity of fluorides as used in fortifying water supplies. In particular, they have demonstrated that no skeletal deformities develop with fluoride intakes of three times the amount used in communal fluoridation, even when

such waters are consumed for long periods of time. Similar evidence is presented for the absence of deleterious effects on the thyroid gland, the kidney, the blood, and the blood-forming systems. No relationship between fluoride intake and arthritis has been found. These findings should provide real assurance for those conscientious persons who feel that the daily use of fluoride waters is associated with cumulative poisoning.

Much evidence shows that fluorides continue to accumulate in the skeleton throughout life if a person resides in a fluoride area. However, the important point to remember is that this skeletal accumulation is at a very slow rate and that it never proceeds to the point of causing any damage. When fluoride is ingested it combines with definite components of the skeleton to form a complex chemical substance in the bone called fluorapatite. There is no evidence whatsoever to indicate that fluorapatite has any harmful effect on the bone itself, or on the individual. If complete substitution of fluoride for the component of the bone that is capable of exchanging with fluoride occurs, the bone would theoretically contain about 3.5 per cent fluoride. In animal studies, the skeleton has been found to contain as much as 2.4 per cent fluoride with no abnormal physiological effects resulting. It has been accurately shown that at the age of 70 years a person who consumes fluoridated water at a level of 1 ppm all his life would have about a 10 per cent conversion to the possible 3.5 per cent theoretical value.

One of the more frequently heard arguments against communal fluoridation is that the addition of fluoride to a community water supply is "artificial" and differs both in effectiveness and toxicity from "natural" occurrences of fluoride in the water. Dr. Martin Wagner, of Baylor University, has made an extremely careful investigation of this subject and concludes that the results of dental caries studies in widely separated areas throughout the United States show clearly that within broad limits no differences are seen in the ability of fluorides to inhibit caries or be retained in the body, regardless of whether they are derived from either source.

Drs. Albert Russell and Carl White, of the National Institutes of Health, have studied the allegations of a relationship between fluorides and periodontal diseases. It is quite clear from their evidence that none of the findings from field studies with humans is consistent with the hypothesis that periodontal diseases are increased by

drinking fluoridated water. Three of the populations cited in their studies—Colorado Springs with 2.5 ppm, Santa Fe with 3.3 ppm, and Bartlett, Texas, with 8.0 ppm—were served by domestic waters with fluorides appreciably in excess of the recommended level of 1 ppm. These fluoride waters had been consumed for periods up to 44 years, and any adverse effect upon the oral tissues should have been revealed by one or all of these studies. The only conclusion consistent with the data is that use of a domestic water containing fluorides has no effect, for better or for worse, upon the health of the gingival tissues.

Professor Edward Largent, of the College of Medicine at the Ohio State University, reported on his investigations pertaining to the retention and excretion of fluoride in the body. As a result of his extensive human investigations he has concluded that the body will eliminate up to 95 per cent of the fluoride ingested from using water fluoridated at a level from 0.1 to 8.0 ppm.

Dr. Thomas Hagen, of the United States Public Health Service, has studied the available evidence concerning the effects of fluoridation on general health as reflected in mortality data. An examination of mortality in fluoride and non-fluoride communities in Illinois, a comparison of mortality in 32 paired cities, half of which were in a fluoride area and half in a non-fluoride area, and an analysis of mortality before and after the introduction of a controlled water fluoridation program, did not reveal any relationship between mortality experience and the presence of fluorides in the drinking water. These data do not validate the claims so frequently expressed by those opposed to fluoridation on health grounds suggesting that mortality is influenced by the ingestion of water containing fluorides, whether occurring naturally or added mechanically. On the contrary, the non-existence of a health hazard as demonstrated indirectly by an examination of all existing mortality data in such areas provides another link in the chain of evidence supporting the safety of water fluoridation.

I have considered the general question of whether or not fluoride is an essential dietary element. I suggest that fluoride, as of today, can be classified as an "essential" element on the grounds that it significantly promotes the development of teeth more resistant to dental caries than would develop in the absence of the element. Fluoride should eventually take its place as an essential element in

this regard along with such elements as sodium, potassium, chlorine, and perhaps the trace elements—copper, cobalt, and zinc—that are essential to specific functional physiological entities within the body.

Judicial Opinion

Mr. Bernard Conway, a leading legal authority in the United States, has shown that the courts of ten states have held that the fluoridation of public water supplies does not infringe upon the constitutional or legal rights of the individual. Under appropriate state-enabling authority it is, in fact, a proper exercise of the charter powers of local communities. Such decisions were rendered by the Courts of Last Resort in California, Louisiana, Ohio, Oklahoma, Oregon, Washington, and Wisconsin, and by Trial Courts in Maryland, Pennsylvania, and North Dakota. These decisions are strengthened by the fact that the Supreme Court of the United States has refused to review four of those decisions for the stated reason that no substantial federal constitutional question was involved.

In marked contrast to the number of favorable court decisions is the fact that only one court in this country has ever rendered an opinion adverse to fluoridation. In that one instance, a Trial Court in Louisiana rendered an adverse opinion which was reversed promptly by the Supreme Court of Louisiana, an action which the United States Supreme Court failed to review.

This unanimity of judicial opinion—an unusual fact in itself—gives the strongest support to the proposition that fluoridation satisfies every legal and constitutional criterion. The opponents of fluoridation have alleged that the procedure violates constitutional rights such as religious freedom and other fundamental liberties. These opponents have argued that fluoridation represents the unlicensed practice of medicine, dentistry, and pharmacy; that a community has no legal authority to adopt fluoridation procedures; that fluoridation is "mass medication" and a "poison"; that no reasonable relationship exists between fluoridation and the public health; and that the prevention of dental caries is not a proper object of community governmental efforts. Every conceivable legal and constitutional objection to fluoridation has been argued unsuccessfully in the ten cases that have been litigated on this subject. Thus, this evidence as well as much additional evidence, taken collectively, would seem to provide overwhelming support of the safety of communal fluorida-

tion. The contents of the book, *Fluorine and Dental Health,* provide reassuring evidence from the nation's outstanding scientists that *fluoridation is a safe and reliable* means of reducing the incidence of dental caries.

Other Methods of Using Fluorides

One of the frequently expressed objections to community water fluoridation programs is the assertion that other equally effective means are available for providing dental benefits of fluorides to large numbers of people. Fluorides can be, and are, used in many ways to prevent, or decrease, the severity of dental caries. For convenience, these methods may be divided into two general groups as follows: (1) methods for providing dietary fluorides, and (2) methods for applying fluoride solutions directly to the crowns of erupted teeth.

Optimum dietary fluoride for the infant and child during the period of tooth development leads to the formation of caries-resistant teeth. This resistance is permanent, at least in the case of persons who continue to use the fluoride-bearing drinking water. Careful consideration has been given to various methods of providing this optimum fluoride intake for prevention of dental caries. A committee of the Food and Nutrition Board of the National Research Council came to the following conclusions: "On the basis of . . . observations in fluoridated communities, the most reliable vehicle for supplementing the fluoride intake is water. . . . The adjustment of the fluoride content of drinking water to 1 ppm fluoride is in principle and in practice the soundest and most effective approach to caries prevention on a large scale known today." It should be noted also that water is the natural or normal source of dietary fluorides. Many community water supplies already contain fluoride at varying levels. To adjust these individual water supplies to the optimum level of fluoride is very simple. To provide dietary fluoride by any other food would not only be inherently difficult, or impossible, but it would be further complicated by the necessity of adjusting the fluoride-bearing food in accordance with the amount of fluoride already in the drinking water.

A community fluoridation program has been described as "a classic example of a public health procedure since it serves the entire population, requires no conscious and sustained effort on the part of the individuals within the community and automatically restricts

individual consumption of the fluoride supplement to levels which have been shown to be safe." The administration of fluoride supplements through a prescription by a physician or dentist or through home fluoridators is potentially useful for children living in rural areas. However, neither of these methods can substitute for communal fluoridation, since in all instances they require a highly motivated personality to produce effectively the desired results. Antiquity has clearly shown that when dental health matters are left to individual initiatives they will not be accomplished. Thus, communal fluoridation provides for the masses a cheap, practical, proven, and safe method of reducing dental caries for today's children and tomorrow's adults.

Today, the use of topical fluoride application is increasing rapidly, and may quite possibly gain importance as a result of the newer methods presently under clinical investigation. The pioneer studies of Volker, Bibby, Knutson, and Armstrong demonstrated clearly that a series of four applications of a 2 per cent solution of sodium fluoride every three years would reduce the amount of new caries in children up to 15 years of age by 25-40 per cent. Unfortunately, this technic is limited only to children, since the clinical studies conducted on adults produced no reduction in dental caries. Also, the use of the topical application of sodium fluoride showed no added benefit when used in children whose teeth developed in an optimal fluoride area. Notwithstanding these limitations, the clinical use of topical sodium fluoride not only has helped to limit the activity of caries in children, but also it has made many dentists, and literally millions of children and parents, cognizant of the fact that the incidence of dental caries can be reduced significantly.

In order to extend the excellent studies of these pioneer dental scientists, several universities began working to find new compounds which would be not only more effective than sodium fluoride, but also less restricted to the limitations mentioned previously. One such fluoride which has received extensive laboratory and clinical investigation is stannous fluoride. Recent clinical tests using this compound have shown that it is somewhat more effective than sodium fluoride; that it is of some benefit to adults; and that it can be used with added benefit in areas where the children's teeth have developed in the presence of optimal fluoride. Of greater importance is the fact that this fluoride can be used with only a single application instead of the

four applications required with sodium fluoride. As a result, the use of topical application has increased greatly. Reliable figures show that about 20,000 dentists in the United States, and about 2,000 dentists in Canada, are regular users of this technic. Much more research needs to be performed on the use of stannous fluoride before its absolute degree of effectiveness and its potential utility are known, but present evidence does suggest that it is an important anti-caries fighter. The greatest single disadvantage to topical application is the fact that it must be performed in the dental office, or dental clinic, by the dentist or dental hygienist, thus limiting greatly the number of persons that can be treated by this method.

The interest in fluoride tablets has also increased greatly during the past year. This method of using fluoride was designed for use primarily by those people who could not receive the established benefits of communal fluoridation. No clinical studies in the United States are available regarding its effectiveness. Until such studies are performed and independently corroborated, this method must be considered experimental. Also, one must be cautious in interpreting the results obtained from using communal fluoridated water when compared to fluoride tablets since the two methods are so drastically different, even though it is quite possible to ingest the same total amount of fluoride each day from the two sources. For example, if a child consumed one quart of drinking water fluoridated to a level of 1 ppm, he would receive approximately 1.0 mg of fluoride. Most fluoride tablets which are available are designed to provide 1.0 mg of fluoride per day. However, the fluoride tablet is usually ingested at one time and as a result is rapidly eliminated from the blood, thus providing only minimal periods of time for protection to the developing teeth. The consumption of fluoride from a fluoridated water system provides fluoride to the body during various periods of the day, and in addition, the use of such water increases the fluoride content of foods cooked in it. Both animal and human studies have shown that the fluoride tablet taken once a day does not duplicate the blood picture of a person drinking fluoridated water.

One means of overcoming this is to dissolve the fluoride tablet in a quart of water and permit the child to drink only this water. For infants, this, of course, is a better method than ingesting the tablet, but, in addition, the parent must also prepare the food from such water. The use of tablets or other prescription forms of dietary fluo-

rides requires strong motivation of both parents and children and must be practiced daily without exception, from birth through 8 years, for maximum benefit. Since few parents and children are motivated so strongly, this method is not considered a satisfactory substitute for either the consumption of communal fluoridated water or topical fluoridation.

Home fluoridators are in use in certain parts of the United States, but at present no clinical evidence is available to ascertain their effectiveness. It must be remembered also that the child drinks water at school and other places away from home.

Eating different foods, specifically chosen to provide high amounts of fluorides, is of such minor importance at the present time that no real anti-caries benefits can be demonstrated. The use of such foods (sea foods, bone meal preparations, tea, etc.) is of importance in evaluating the over-all total dietary ingestion of fluoride by a particular person, however, and must be evaluated when the use of fluoride tablets is being considered.

Interest in the use of fluoride dentifrices is increasing. Recent clinical studies using a special dentifrice formulation containing stannous fluoride have shown promise. This method of topical fluoride application is of real interest as a means of bringing the benefits of fluoride to more people. The greatest disadvantage of the method, of course, is the fact that too few people routinely use a dentifrice; even those who do, frequently do not spend sufficient time to clean their teeth properly. It is of particular interest, however, in discussing the use of a dentifrice to mention that the use of a stannous fluoride dentifrice prolongs the effectiveness of topical stannous fluoride treatments. Such an idea is of real interest to preventive dentistry since it suggests that probably more than one technic may be required to produce highly significant anti-caries results from the use of fluorides.

In all of the different methods for using fluorides, in addition to communal fluoridation, one is impressed immediately with the fact that in order to produce a significant and lasting reduction in dental caries a person must be motivated highly and must continue using the technic probably throughout life. The greatest single advantage of communal water fluoridation, besides its very low cost per person, lies in the fact that it is so easy to receive the anti-caries benefits. While the maximum benefits are obtained when a child resides in

an optimal fluoride area from birth through 8 years, there is evidence to suggest that even children 8 years and older do receive some reduction in caries if they move into a fluoride area. At present, the exact figure for this is not known, but good evidence does promise hope for even those children who were not born in a fluoride area.

RESOLUTION

Adopted by the Board of Regents American College of Dentists

WHEREAS, The fluoridation of water supplies constitutes a valuable health measure; and

WHEREAS, The effectiveness of fluoridation in preventing a major proportion of dental caries has been scientifically proven; and

WHEREAS, Scientific evidence has established that no systemic ill-effects occur when fluorides are utilized in proven amounts; therefore be it

Resolved, That the American College of Dentists fully endorses the fluoridation of communal water supplies.

Attitudes of Dental Students Toward Specialization and Research

ENRICO L. QUARANTELLI, Ph.D.

The author is a graduate of the University of Chicago having received his Ph.D. in 1959. He is at present an assistant professor in the Department of Sociology and Anthropology at the Ohio State University, after having been on the faculties of Indiana University, and Harpur College of the State University of New York. Dr. Quarantelli has also worked as a research sociologist for the National Opinion Research Center at the University of Chicago, and for the Disaster Research Group of the National Research Council in Washington, D. C. One of his major interests is in the sociology of occupations and professions. The results reported here were obtained in connection with the research done for his Ph.D. dissertation.

Dentistry today is undergoing major changes. Particularly noticeable is the increased trend toward specialization and the mounting interest in dental research. The future of these tendencies, however, depends partly on how they are accepted by new recruits into the profession. If dental students are inclined favorably, one might expect a continuation and acceleration of such tendencies. But if attitudes are negative, the expectation would be a resistance to the trend toward specializing and a lack of re-inforcement of the interest in dental research. To be sure, there are other factors operative in addition to the attitudes of new dentists, but their attitudes are among the elements that will influence the eventual outcome.

Recently the author conducted a sociological study of dental students. The objective was to obtain a picture of the past, present, and future aspects of the career-line as the student himself perceived them. In the course of this study, therefore, information was obtained regarding the attitudes of dental students toward specialization and research.

Personal interviews were obtained individually with 160 respond-

ents drawn in a statistical random manner from students at a private and at a state school. More data were obtained from other interviews with an additional 42 students who were not part of the random sample, and also from extensive participant-observations of the students in their school (including clinic) situations and in their living quarters. All these data were subjected to both a qualitative and quantitative analysis. Some of the findings have already been reported elsewhere.[1-3]

Attitudes Toward Specialization

What is the attitude of dental students toward specialization? This must be seen along three dimensions: there are differences in knowledge, intent, and apparent desirability of specialization among the students.

While there are exceptions, especially in the case of students with familial dental backgrounds and those who have had special work performed on themselves, most entering students have little knowledge of specialization. In this they resemble entering medical students.[4] In more than rare instances, there are beginning dental students who have no knowledge at all that there are specialties in dentistry. As one senior respondent noted: "You know that it wasn't until I got here that I realized all dentists didn't do the same kind of work. Of course when I got to school I knew nothing about dentistry. I knew nothing about the teeth in the mouth. I couldn't even name them. In fact, I didn't know they had names. So it was news to me when I found out there were specialties, and specialty boards, and you could limit your work to only one small phase of dentistry."

Even those entering students who do know about dental specialties have very limited knowledge about them. Less than a third of the freshman respondents indicated familiarity with even the names of the specialties. As one of them said: "If I did specialize, it would be in oral surgery. I wouldn't think that to be a, oh, what do you call him?—one who straightens teeth, would be very interesting."

Orthodontia was by far the best known. Other than oral surgery mentioned by several freshmen, not a single other specialty was acknowledged either by name or by indirection. There is no surprise in this. The recency of specialization in dentistry would hardly have permitted the impact of the trend to reach down to entering

students. Certainly it is more than doubtful whether the average American adult is aware of the existence of dental specialties in the same way he is of medical specialties.

As students proceed through school, their knowledge about the existence and nature of specialties increases. This knowledge is obtained rapidly rather than gradually. Sophomore students, although not having as deep a knowledge as upper classmen, exhibit a definite familiarity with the range and possibilities in the different specialties.

Naturally, an increased desire to specialize can only follow an increase in knowledge. This is what does occur. Prior to their entrance into dental school, only 12 per cent of the respondents had at any time thought favorably of specializing. (Interestingly, a similar low percentage has been reported for entering medical students.[5]) Yet 44 per cent of the respondents advanced reasons why they thought it would be desirable to become a specialist. From this it is clear, that in comparison with the near 88 per cent of the respondents who entered dental school with no favorable attitude toward specializing, a substantial number acquired such an attitude while in school.

However, it is also obvious that there is a discrepancy between the apparent desirability of specializing and an actual intent to do so. Only 16 per cent of the respondents definitely intended to specialize. (This figure contrasts with that found among medical students where over one in two intended to specialize.[6]) Another 36 per cent were as yet uncertain at the time of the study whether they were going to attempt to specialize or not. The rest, or 49 per cent, had definitely decided not to. These figures show that there is a very large gap between the number of students with a preference for specializing and the number of students with firm plans to implement such a preference.

Contrary to what might be supposed, students with a dental family background, or a dentist father, or who started in a college premedical program, were no more likely than other students to intend to specialize. Sons of physicians did show a slight tendency to be more interested in a dental specialty than other students. However, the low frequencies involved warranted no definite conclusion. A slight tendency toward specialization also existed among respondents

who considered dentistry only as contrasted with other career-choice patterns; these differences were not significant. Actually, none of the factors mentioned in this paragraph seemed important in either attracting or repelling students to or from specializing.

Much of the pressure against commitment to specialization by those interested in it, stemmed from the additional schooling required. This is the major reason cited by 62 per cent of the respondents who gave reasons against specializing.[7] However, while the time factor in itself is occasionally seen as important, in most instances the additional time required assumed negative implications because of the social consequences entailed. This is illustrated in the comment of a respondent who said: "I've thought about orthodontia. I would specialize in that but with wife and child I don't, wouldn't want to subject them to two more years like this. But it's what I really would like. Then, too, my wife jokingly, I think, has given me an ultimatum. If I don't leave in a year, she'll leave me!"

It is said that medical students become more interested in specializing as they progressively become aware of the limitations of their knowledge and training during the course of medical school.[8] Dental students, on the whole, also become aware of a similar limitation, but there is only slight evidence that this is a factor in the increased interest and intent in specializing. Few of the verbalized motives for attention to specialization lend themselves to such an interpretation.

These motives can be classified into three major categories. Nearly two-thirds of 64 per cent of the respondents who gave reasons for specializing cited some aspect of the specialty work itself. Somewhat less than half, or 44 per cent, noted the additional financial rewards. One in ten observed that a dental specialty is closer to medicine than general dentistry.

A few dental students would like to specialize because they feel a specialty would give them more of a medical status. Without exception, every one of the respondents who felt this way had seriously considered medicine as a possible career. The desire for specialization in their case can be interpreted as a displacement of their original aspiration which was frustrated. One such respondent explicitly made this point: "Well, because as a young kid I always wanted to be a surgeon, a doctor. And oral surgery is that." Others of these respondents also indicated by their comments that the higher status accorded the dental specialist was important in their desire. Again

to quote: "It's more like a doctor when you specialize. At least most people seem to think so."

Many more students are attracted to specializing because of the larger financial rewards. In many instances respondents were quite frank about it. In response to a question, one student who was going into oral surgery noted: "I could give you a lot of reasons, but the main one is from an economic viewpoint. You get double or triple the income of a general dentist. I would lie if I did not say I liked the idea of all the extra money involved."

However, in some instances at least, the financial rewards accruing from specializing are seen as not unrelated to the type of patients one obtains as a specialist. People who undergo specialized treatment are perceived as people who care and are interested, and therefore more likely to appreciate the work of the dentist. Such appreciation in itself is valued and serves as a motive drawing students into the specialties. As one respondent interested in orthodontia observed: "That's one phase of dentistry where no one's hurt. There's no pain and it's also one part of dentistry that people appreciate. You take a girl coming in and after you work on her, you can have her coming out looking like Ava Gardner. Everyone loves you for work like that. They think you are just about the greatest. They don't dread coming to you."

Nearly two out of every three students interested in specializing were attracted by certain features of the specialty work itself. Sometime it is the variety that the work offers compared with the supposed routine of general dentistry. At other times the attraction was seen as the greater challenge the specialty work offered. Thus, the observations of one respondent: "I don't see general dentistry as much of a test of your abilities. It's just like operating a punch press." At still other times the end product of the specialty work was seen as the attractive force. Paraphrasing the words of several respondents about orthodontia: "In something like that the direct results of what you've done are there right before you, not hidden like in a lot of other dental work."

Attitudes Toward Research

Few students are impressed by, or at least attracted to, dental research or teaching (the latter might be seen as a way of doing the former). Only 1.2 per cent, or but two respondents in the total

sample had any serious aspirations toward being a dental school teacher. Even less attractive is dental research. Only 0.6 per cent, or one respondent in the study, had a definite intent to becoming a dental researcher.

Although some students grasp the importance and are intrigued by the place of research in dentistry, practically none visualize themselves as undertaking it. Thus, although 8 per cent of all respondents said they are stimulated by the challenging research possibilities they see in dentistry, very few had even given passing thought to a dental research career. Certainly there is little evidence that students in dental school are motivated toward aspirations for positions of research or teaching. However, this is not unique to professional dental students. A study of medical students has reported that only about 6 per cent of them had any expectation of devoting most of their time to teaching or research.[9]

Another way in which the negative attitude of students toward dental research manifests itself is in the expressed evaluation of the science teachers. Nearly 75 per cent of the respondents did not feel that these men were good teachers. The most frequently mentioned reason for this, by 52 per cent of our sample, was that the men who taught the science courses were only interested in research. While the appellation "research man" was not always used in a derogatory sense, it was almost always used as being in opposition to the term "teacher."

The reason for this is fairly clear. Students enter school with the expectation that much is known, and that this knowledge will be transmitted to them. When presented with many unsolved problems, or if questions are raised about assumptions, they are disturbed. This is not what they expect and seek. Accordingly, they not only react negatively to research as such, but also to the men that they perceive as playing the role of a research worker. It is no surprise therefore that so few students become interested in dental research.

Needed Decisions by the Dental Profession

The attitudes of students have been depicted. Whether such attitudes are "good" or "bad" for dentistry is not for a sociologist to answer. This must be done by dental educators and other dentists interested in the evolution of their profession. It is up to them also to decide what, if any, changes should be made to bring about differ-

ent attitudes if these are thought desirable. A sociologist might be able to analyze the consequences of a proposed change, but the decision for or against change is outside the realm of his competence and solely the jurisdiction of dentists themselves.

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8. Merton, op. cit., p. 164.

9. Ibid., p. 156.

The Opportunities of Dentistry In Hospitals

A Panel Discussion

Unsolved Problems of Dental Care
E. M. Bluestone, M.D.
New York City

Functions of an Organized Dental Service in a Hospital
S. W. Friedman, D.D.S.
Philadelphia

Problems in Hospital Dental Service
Gerard J. Casey, D.D.S.
Chicago

Moderator:

PERCY T. PHILLIPS, D.D.S.
Immediate Past President
American Dental Association
New York City

The papers that follow were presented at the Spring Meeting of the New York Section of the American College of Dentists. The meeting was held on March 8, 1960, in the NYU Club, New York City.

The paper presented by Dr. Bluestone, Consultant at Montefiore Hospital, New York City, was not available at time of publication of this issue.

The members of the Executive Committee of the New York Section, in charge of the arrangements for the meeting, were Dr. David Tanchester, Chairman; Dr. Gerard L. Courtade, Vice Chairman; Dr. C. Raymond Wells, Secretary-Treasurer; and Dr. Ralph J. Bowman. Dr. Bowman is a Regent of the College.

Functions of an Organized Dental Service in Hospitals

S. W. FRIEDMAN, D.D.S., F.A.P.H.A.*

Dental service in hospitals varies from emergency extractions to extensive maxillo-facial surgery and prosthetic restoration of jaw segments. The total or partial absence of a dental department in a hospital may be explained by the possible lack of awareness and understanding on the part of Boards of Trustees, of the vital necessity of such a service to the community which the hospital serves. Or it may be indifference to the community's need for dental services, and lack of knowledge that a dental service is as important as any of the specialty medical or surgical hospital services.

In a recent survey of dental facilities in the City of Philadelphia out of 32 hospitals reporting, 30 maintained a minor dental surgery service; 26 provided an X-ray service; 8 performed operative dentistry; and 3 prosthetic dentistry. Twenty-four out of the 32 maintained out-patient clinics of various activities, and only 11 conducted intern and resident training programs. A total of 60 questionnaires were sent, indicating that the remaining 28 which did not reply probably were without any type of dental service whatsoever, or maintained very minimal facilities for dental care.

The comprehensiveness of dental service in hospitals seems to depend somewhat on the size of the hospital and the community which it serves. Generally speaking, the functions of a well organized dental department in a medical center or general hospital are:

1. The care of in-patients.
2. The care of out-patients.
3. Consulting service to the other clinical departments of the hospital.
4. Training of dental interns and dental residents.
5. Postgraduate refresher courses for graduate dentists in the community.
6. Dental research.

In-Patient Service

A well organized dental department in a general hospital should be capable of extending complete service to the in-patient on the

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same professional level with the medical and surgical departments of the staff. Such service should encompass the treatment of all dental disorders, and not only those which contribute to systemic disease. It should be sufficiently comprehensive to provide major dental surgery involving removal of growths, treatment of maxillary and mandibular fractures, and correction of congenital deformities such as cleft palates and other surgical procedures in the oral cavity.

The scope of dental services in long-term or so called chronic disease hospitals, psychiatric hospitals, tuberculosis sanatoria, and similar long-term institutions may be more extensive than in the acute general hospital because of the opportunities provided by the prolonged length of stay of the patient. However, dental service in such institutions also varies greatly. Some provide it in most of the dental specialties, while others extend their activities to a fuller degree. In addition to the basic care of the teeth and their supporting structures, these hospitals:

1. Perform maxillo-facial surgery of the head and neck for the eradication of extensive malignancies of the jaws and surrounding soft tissues;
2. Fabricate prosthetic appliances such as obturators; guide planes to orient mandibular segments following partial mandibulectomy; mandibular implants of plastic or Vitallium; somato-prosthetic devices such as artificial eyes, ears, noses; plastic templates to guide the fabrication of bone grafts; stabilizing splints to maintain bone grafts; and moulages and intra-oral molds to help formulate therapeutic radium inserts.

Out-Patient Service

Out-patient dental clinics in general hospitals should provide such services as:

1. Oral diagnosis for the detection of oral pathology.
2. Operative dentistry for the restoration of tooth surfaces.
3. Minor oral surgery such as extractions, removal of cysts, and other procedures which do not require hospitalization.
4. Prosthetic dentistry, to include fixed bridge work, partial, and complete dentures.
5. Orthodontia, endodontia, periodontia, and other sub-specialty dental services.

Consulting Service

No dental department is complete without a well organized consulting service. A dental department should be geared for ready

consultation to all of the medical and surgical departments of the hospital. The chief of dental service should have his attending staff and house staff so organized to meet the dental needs of all in-patients without exception.

Insurance Programs

At this point we must comment on the subject of pre-payment dental insurance plans since they will most assuredly affect the welfare of the public, the dentist, and the services of the hospital.

As reported in the *Wall Street Journal* recently, dental insurance plans became available about five years ago. Today there are between 500,000 and 600,000 patients covered by various forms of prepaid insurance of this kind. This is not an impressive number when compared to the 123 million patients covered by medical insurance. However, dental insurance plans have doubled during the past two years and there are currently about 200 of them in operation.

Labor unions in various parts of the country are demanding that employers subsidize, in whole or in part, the cost of the dental insurance to their employees, and some of them have succeeded. Other unions which have failed at the bargaining table have set up their own dental clinics with their own dental staffs.

Commercial insurance companies are probing the possibility of writing insurance for dental care, and if their current experimental programs are successful (i.e., if they show a profit), they will probably expand their efforts to include large segments of the population by offering comprehensive dental care coverage within the means of the average consumer.

State dental societies concerned with the possibility that unions and insurance companies might seriously affect the patient-dentist relationship are setting up their own insurance plans. Dental societies in several states on the West Coast as well as in some states along the Eastern Seaboard are attempting to set up insurance-type plans.

The United States Public Health Service reports that only one-third of the population take advantage of the services rendered by our 88,000 practicing dentists. Those of us who were in the military service during the last World War will recall vividly the extent of

dental neglect existing in our population. The gap which has to be bridged is quite formidable.

Assuming that more pre-paid dental insurance coverage will be provided in the future to larger segments of the population, the role of the hospital for dental in-patient care will grow in significance. With it will develop many problems relating to insurance benefits for hospitalized dental patients and the control of abuses of unnecessary hospitalization. In Philadelphia, the Associated Hospital Service (Blue Cross) provides a one day limit for patients under 12 years of age, and a two day limit for all other subscribers hospitalized for dental surgery. Blue Cross and/or Blue Shield patients presently admitted to the hospital are limited to such surgery which consists of cutting procedures for the treatment of diseases and injuries of the jaw, such as removal of radicular and dentigerous cysts, alveolectomies, root resections, or the treatment of fractures and dislocations of the jaw, but not including the care of teeth or the extraction of teeth unless they are impacted.

Incidents of improper diagnosis have been noted. Blue Cross and Blue Shield withhold approval until the operative sheet of each dental admission has been examined, before determining the availability of benefits.

Intern Training Program

To resume our review of dental department activities, one of the most rewarding functions of a hospital is to train young physicians and dentists. The training of medical interns and residents has become a well established and accepted hospital responsibility. The young graduate from the dental school, however, has not always availed himself of the opportunities to improve his knowledge and develop his skills by accepting a dental internship or residency. It is true that most hospitals do not qualify for such training, and that relatively few hospitals maintain approved training programs for dental internships and residencies. However, there is a sufficient number of approved programs for the present demand, and if a greater number of graduating young dentists would apply for further training, more hospitals would furnish programs to meet the need.

At the Einstein Medical Center in Philadelphia, the dental internship provides a continuation and progression of the training begun in the dental school. The dental intern is on a professional

level with the medical intern. He makes daily rounds of the wards, answers requests for consultations, attends medical and surgical conferences, and is rotated through the departments of anesthesiology, pathology, and radiology. He is responsible for the dental examinations of all ward patients just as the medical intern is for the history and physical examination.

His assignment to the X-ray service provides him training in the diagnosis and therapy of malignant lesions of the oral cavity and adjacent tissues. In the department of pathology, he is instructed in laboratory procedures applicable to dental pathology with emphasis on oral lesions of benign and malignant types. He is trained in the elements of serology, chemistry, hematology, bacteriology, clinical pathology, and histology. He is required to attend post-mortem examinations.

The anesthesiology department provides him instruction in the administration of the open-drop technique in the use of ethyl chloride, vinethene, and ether. He is taught the use of sodium pentothal, nitrous oxide, cyclopropane, fluothane, and instructed in the technique of endotracheal anesthesia.

His clinical duties involve all of the basic procedures performed in the dental clinic, and these include oral surgery, periodontia restorative dentistry, children's dentistry, etc. He assists in the operating rooms for all oral and maxillo-facial surgical procedures. He is assigned periodically to the accident ward to assist in the handling of traumatic cases, and is encouraged in research problems relating to various fields of denal interest.

Resident Training Program

Residency training programs are provided by some hospitals in various specialties of dentistry. The most widely sought after residency is oral surgery. This residency involves a five year training program divided into one year of basic sciences, three years of residency training in the hospital, and one year of preceptorship. Obviously, this is quite a prolonged, extensive, and expensive training period for any dental graduate. It parallels the time required for residency training in general surgery, orthopedics, internal medicine, obstetrics and gynecology, and other medical and surgical specialties.

At a recent meeting of the Congress on Medical Education and Licensure held in Chicago, there was an expression of serious con-

cern among medical educators over the long period of medical training and the enormous financial burden of present day medical education. It should be emphasized that this has resulted in a serious drift of gifted students away from medicine to other fields, particularly the technical sciences. In fact, the study of medicine and related sciences is losing its appeal at a time when increasing numbers of physicians are urgently needed. Since the training period of a dental student is similar to that of a medical student, the same concern may be expressed regarding the future of dental education. Some method of shortening and facilitating the training of physicians and dentists is needed. In addition, it will be necessary, sooner or later, to reduce the financial burden of medical and dental education by governmental subsidy, if need be, in order to attract well qualified students to the healing professions.

Shortening of the length of training is particularly applicable to residency programs, and many educators are of the opinion that at least the year in basic science whether it be for general surgery, urology, orthopedics, or oral surgery might be abbreviated, integrated, or even eliminated.

Training in Anesthesia

In discussing training programs, it is interesting to recall the use of general anesthetics in dental offices 25 to 30 years ago. The dentist purchased a machine, received some instruction from the salesman, and proceeded to administer general anesthesia. When the patient turned slightly cyanotic, the dentist would remove the mask and attempt to extract the tooth. If the tooth broke, he would more often than not inject novocain at the site of the extraction and proceed to remove the roots. By this time the patient was half anesthetized generally and half anesthetized locally, and from there on, the less we recall the better. We provided the cartoonist with excellent subject matter for his editor. We also may have been responsible for some preventable deaths.

It is disappointing, in some respects, to find that, after the contributions made by Morton and Wells, the dental profession has accomplished relatively little toward the advancement of the art and science of general anesthesia. The medical profession has adopted

and developed the specialty of anesthesiology to a standard of remarkable excellence, and it is the hospital anesthesiologist to whom we in the dental profession should address ourselves for training in general anesthesia.

In a particular instance, at the request of one of our graduating dental interns and with the compliance of the director of anesthesiology, he was assigned to the two year training program. The first six months were spent primarily in observing anesthesia methods and reviewing basic sciences as they related to general anesthesia. During the second six months he gave anesthesia for relatively minor surgical procedures under close supervision. During the second year he was permitted increased responsibilities and, by the end of his training period, the intern was capable of administering general anesthesia for most major surgical procedures including chest surgery. I cite this as an example of what a dentist can achieve in the general field of anesthesiology, were he so inclined.

At a meeting of the Pennsylvania State Society of Anesthesiology several years ago, it was remarked that since dentists are permitted to administer anesthesia under the law, it is time that the medical anesthesiologist should do something about training him, so that he will be able to cope with any emergency which might occur in the administration of general anesthesia. A possible program for such training might be the organization of a postgraduate course in hospitals involving several days a week for a period of perhaps six months in the department of anesthesiology. With the acute shortage of medical anesthesiologists throughout the country, the American Society of Anesthesiologists might perhaps be prevailed upon to permit the training of dentists in this specialty. There is no doubt about the success of such a proposal if it were adopted and implemented.

Postgraduate Programs

Another important function of a medical center, that has received only passing recognition, is the conducting of postgraduate educational programs for practicing physicians and dentists in the community. The hospital, with its wealth of clinical material, should be the center of postgraduate training programs. Physicians and den-

tists who participate in such courses are invariably rewarded by personal, intellectual stimulation, and improvement in the quality of their professional performance. Medicine and dentistry are dynamic and ever-changing professions. The objective of postgraduate education is to make available to the practicing physician and dentist the many advances which are occurring constantly in their particular areas of activity. The hospital is the rightful source for the dissemination of such knowledge.

Research

The final major responsibility of a well organized dental service in a hospital is to maintain a program of research activity. Apropos of research in general and medical research in particular, it is commonly felt that this country is lagging in many investigative fields. More money seems to be spent in burying the dead than to keep the living alive. Cigarettes, alcoholic beverages, entertainment, each of these alone absorbs more of the nation's wealth than does the cost of medical research. The pace of medical and allied research must be increased and supported.

The hospital, with its physical facilities and clinical material, is the ideal workshop for conducting both laboratory and clinical investigations. At our institution we are currently engaged in over 70 research projects covering diversified fields of investigation and supported by grants from the National Institute of Health, Atomic Energy Commission, state allocations, and philanthropic organizations. In the dental department we are investigating the effect of sulfonamide compounds on transient bacteremia following extraction of teeth, the effect of systemic administration of antibiotics on the bacterial population of the mouth, the vascularity of the oral structures of the human fetus, and other related problems.

Research in the medical and dental sciences is not carried out in a vacuum. It is stimulated constantly by the clinical departments of the hospital which give impetus and direction to research activity. It returns to the clinician more effective ways of dealing with his problems of preserving life and promoting health.

Organization of Dental Department

There has been and will continue to be considerable discussion about the status of dental departments in hospitals. Should they be

autonomous, or should they be under the jurisdiction of the department of surgery? In small hospitals, where the dental service is limited to minor oral surgery, it has been recommended that "this service may be organized as a section of the surgery department coequal with the other surgical specialties." It has been stated elsewhere that: "In larger hospitals or hospital centers where the program includes a broader scope of long-term health services, the dental service should be established as a department of dentistry, and it should be organized into sections in conformity with recognized dental specialties. Under this pattern, the section on oral surgery should be administered as a section of the department of dentistry so that the quality and scope of oral surgical care may be kept consistent with the total dental health care needs of the patient."

The American Dental Association has stated that it "recognizes the responsibility of the oral surgery section in conforming to the procedural regulations of the department of surgery. It also recognizes the legal responsibility of the department of surgery and the hospital in fulfilling their function. Therefore, it provides that the section on oral surgery be responsible to the department of surgery to the extent that it operates in that department under the regulations of that department."

The Joint Commission on Accreditation of Hospitals specifies in its standards that patients admitted to the hospital for dental service shall be admitted on a surgical service and shall be the responsibility of the chief of that service. The surgical service might be interpreted to mean that the oral surgical service, provided that this service is the responsibility of the chief of the department of surgery. Within the framework of the hospital staff's by-laws, dentists should be appointed to and hold appointments in the division of oral surgery, just as physicians and surgeons are appointed to other services of the hospital.

However, one basic fundamental concept should not be lost sight of—the recognition of the professional standing of a dental service in a hospital by the medical and surgical departments depends largely on the caliber of the chief of dentistry as well as the performance of his attending staff. A dental department which can provide dental service of high standard will unquestionably earn the professional respect of medical colleagues. Where such respect has been attained, the dental department rises to an equal professional level with the

other clinical departments, and the subject of autonomy becomes of little or no importance.

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ORAL SURGERY: ". . . that part of dental practice which deals with the diagnosis, the surgical and adjunctive treatment of the diseases, injuries and defects of the human jaws and associated structures. The scope of the specialty of oral surgery shall include the diagnosis, the surgical and adjunctive treatment of the diseases, injuries and defects of the human jaws and associated structures within the limits of the professional qualifications and training of the individual practitioner and within the limits of agreements made at the local level by the health team concerned with the total health care of the patient."—*American Dental Association. Transactions* 1953, p. 218-9.

The dental profession acclaims oral surgery as a well established specialty of dentistry. It was under the aegis of dentistry that this specialty developed. The educational standards, the evolution of oral surgery literature and the establishment of the American Board of Oral Surgery all matured under the auspices of the profession of dentistry.—Kurt H. Thoma, *New England Journal of Medicine,* October-November, 1957.

The chief of the department of dentistry should be selected on the basis of his training and experience in administration, teaching, and practice and must perform executive duties at an administrative level and with coequality to the chief of other hospital departments. It is his responsibility to direct the activities of all divisions of dentistry through and in cooperation with the chief of each division.—Morgan L. Allison, *Journal of Oral Surgery, Anesthesia and Hospital Dental Service,* March 1959.

Problems in Hospital Dental Service

GERARD J. CASEY, D.D.S.*

In January 1953, there appeared on the hospital scene a new accrediting agency—the Joint Commission on Accreditation of Hospitals. The members composing the Commission were: American Hospital Association; American Medical Association; American College of Surgeons; American College of Physicians; and Canadian Medical Association. The Canadian member resigned in January 1959, and the seat occupied by that member was returned to the American Medical Association, which originally gave the seat to the Canadian Medical Association.

The objective of the Joint Commission is to ensure the *quality* of medical care in hospitals; inspections and accreditation have this one objective in mind.

The standard for hospital dental service approved by the House of Delegates of the American Dental Association and implemented by the Council on Hospital Dental Service, and the standards of the new Joint Commission were not uniformly acceptable to both groups, or in the best interests of our profession, or the public. In November 1953, the American Dental Association and the Joint Commission achieved an "interpretation" of the dental standard of the Joint Commission which concerned mainly the field of oral surgery. For the main body of dentistry, the problem is still unresolved. However, in the past few years relations with the Joint Commission have been more favorable. Frequent informal conferences with the staff of the Joint Commission have resulted in prompt attention in the resolving of difficult problems on hospital dental service.

Hospitals that are accredited by the Joint Commission, as a prerequisite, must be listed as acceptable hospitals by the American Hospital Association.

The American Hospital Association, in 1955, established eleven rules for listing acceptable hospitals. Point 3 of the listing states that only doctors of medicine and osteopaths may practice in the hospital. There immediately follows a parenthetical paragraph indicating that dental services are not to be eliminated in the hospital, but

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that the medical aspects of dental patients should be under the care of a physician on the staff of the hospital.

The Council discussed the listing requirement with the Council on Professional Practice of the American Hospital Association. The Council on Professional Practice will consider a suggested amendment to include dentists.

The American Dental Association and the American Hospital Association are cooperating in a series of Basic and Advanced Institutes on Hospital Dental Service. The Basic Institutes were inaugurated in 1957, and are designed to set forth the philosophy of the dental profession in regard to the dental patient in the hospital. The position of the dentist on the hospital staff, and the position of the dental service in the administrative and professional organization are explained, and methods of solutions to problems on these two points are sought by small group committee work.

The Advanced Institutes are to be inaugurated in November 1960, and are designed to explore in depth and comprehension a specific area of hospital dental service. For example, a series of presentations on dental service as a diagnostic service would show hospital personnel that oral and associated tissues have early manifestations of systemic pathology.

The American Hospital Association cooperates with the American Dental Association in publication of articles on hospital dentistry in the journals of each association.

It is mainly with these two organizations, the American Hospital Association and the Joint Commission, that the Council on Hospital Dental Service seeks solutions to problems on hospital dental service.

In 1953, the American Dental Association adopted the following definition of oral surgery:

> The specialty of oral surgery is that part of dental practice which deals with the diagnosis and the surgical and adjunctive treatment of the diseases, injuries and defects of the human jaws and associated structures.

This definition was in response to an action of the House of Delegates of the American Medical Association which adopted a definition of oral surgery which was unacceptable to the dental profession. In the subsequent years, the Council on Hospital Dental Service has used the American Dental Association definition in all its conferences, both local and national, to determine the extent of oral surgery in hospitals.

Intimately connected with the definition of oral surgery is the problem of privileges granted by the hospital to dentists. The Basic Standards on Hospital Dental Service in the paragraph on "Qualifications of Dentists" states: "All dentists who are appointed to the active dental staff or are granted privileges to operate in a hospital should have qualifications which include previous hospital experience, technical ability and scientific training comparable to that of members of other services in the hospital." The general dentist working on patients in the restorative and prosthetic areas of dentistry usually presents no problem in the granting of privileges. It is the dentist seeking surgical privileges that often presents a problem to the credentials committee because that committee is not familiar with the definition and scope of oral surgery.

The problem comes to the Council on Hospital Dental Service for solution. The Council requests that credentials committees have dental representation to evaluate properly dental applications for privileges. To help guide the local situation, two sets of regulations for hospital dental service in regard to oral surgery are sent. These guides have been worked out in hospitals where extremely good relations exist between physician and dentist. The local committee on credentials is able to keep the local situation in the fore so that the dentist receives privileges according to his experience, training, and demonstrated competency.

Recently, problems concerning the admission and discharge of dental patients have been referred to the Council. The policy of the American Dental Association states that: "Dentists may admit and discharge dental patients." The Joint Commission is in agreement with this position. However, concomitant with the admission of the dental patient is the rule of history and physical examination on each patient admitted to a hospital. Both the Joint Commission and the American Dental Association agree that a physical examination by a physician on the staff of the hospital be done on patients undergoing surgery of a dental nature.

Dentistry is a dynamic profession. To stay in one place or position is impossible. Attainable goals in the future must be our directing force.

Our moderator, Dr. Percy T. Phillips, in his term as President of the American Dental Association, delivered an address to the Colorado State Dental Association. The title of his presentation was "The

Hour of Indecision." It was unmistakably positive and undeniably decisive. Dr. Phillips said: "The health professions, ours perhaps a little more than some of the others (because of its adjunctive stature and its youth) must quickly react, evaluate and determine the course to be charted in the light of the inescapable trend." Dr. Phillips continued: "The status of dentistry and of the dentist in the hospital has remained an unresolved problem, although some degree of progress has been made within the past year. The true effort on this problem must be done at the grassroots of local and state level, but on the national plane the right to demand an official accepted position is definitely indicated. We must not delay! The victory in the Supreme Court of New York State, and in other states, for the direct payment by Blue Shield associates to dentists for services rendered by dentists in hospitals, brings this into sharper focus. Reasonable consultative service to, if not immediately full membership on, the Joint Commission on Accreditation of Hospitals must be promptly obtained. The public's welfare and the dental profession's rights are involved. Failure to press the Joint Commission representation could well result in these legal victories mentioned above, giving dentistry the right to perform certain services in hospitals, but no accredited place wherein to perform them." The Council on Hospital Dental Service is under directive from the House of Delegates to negotiate for membership on the Joint Commission.

The Commission is presently reviewing and re-drafting its *Standards for Hospital Accreditation.* The Council has begun a series of conferences with the Commission on a review and re-draft of the "dental standard" in the hospital standards. The Council has already indicated that the approach to the re-draft will be from the viewpoint of a complete dental department. The Commissioners will review the re-draft of the complete standards on April 30.

In the January 16, 1960, issue of *Hospitals* there appeared an editorial, "Man and Mouth." In part, the editorial said: ". . . the most striking example of professional insularity today is the practice of dentistry. Some holes have been made in the traditional fabric of the solo practice of dentistry, but, by and large, the dentist practices as an individual in the four walls of his office. He is not integrated into the hospital, the institution which represents centricity in our society in the delivery of health care. Fault lies on both sides. The dentist too often looks at the mouth as if there were no man. In

the hospital, too often is the man looked at as if there were no mouth." The editorial concludes by stating that hospitals and dentistry have a real responsibility. They must discharge this responsibility together.

Dr. Fred A. Henny, editor of the *Journal of Oral Surgery, Anesthesia, and Hospital Dental Service,* has written: "It is to the patient's advantage to have the best possible cooperation between the dental staff and all divisions of the hospital organization. In order to develop such relations, however, it is important for the staff members of the various hospital departments to understand the educational background and clinical contributions of the dental staff."

The modern hospital, marshalling as it does many professions, services, and facilities, provides a great challenge and opportunity for interprofessional cooperation in the service of the individual patient.

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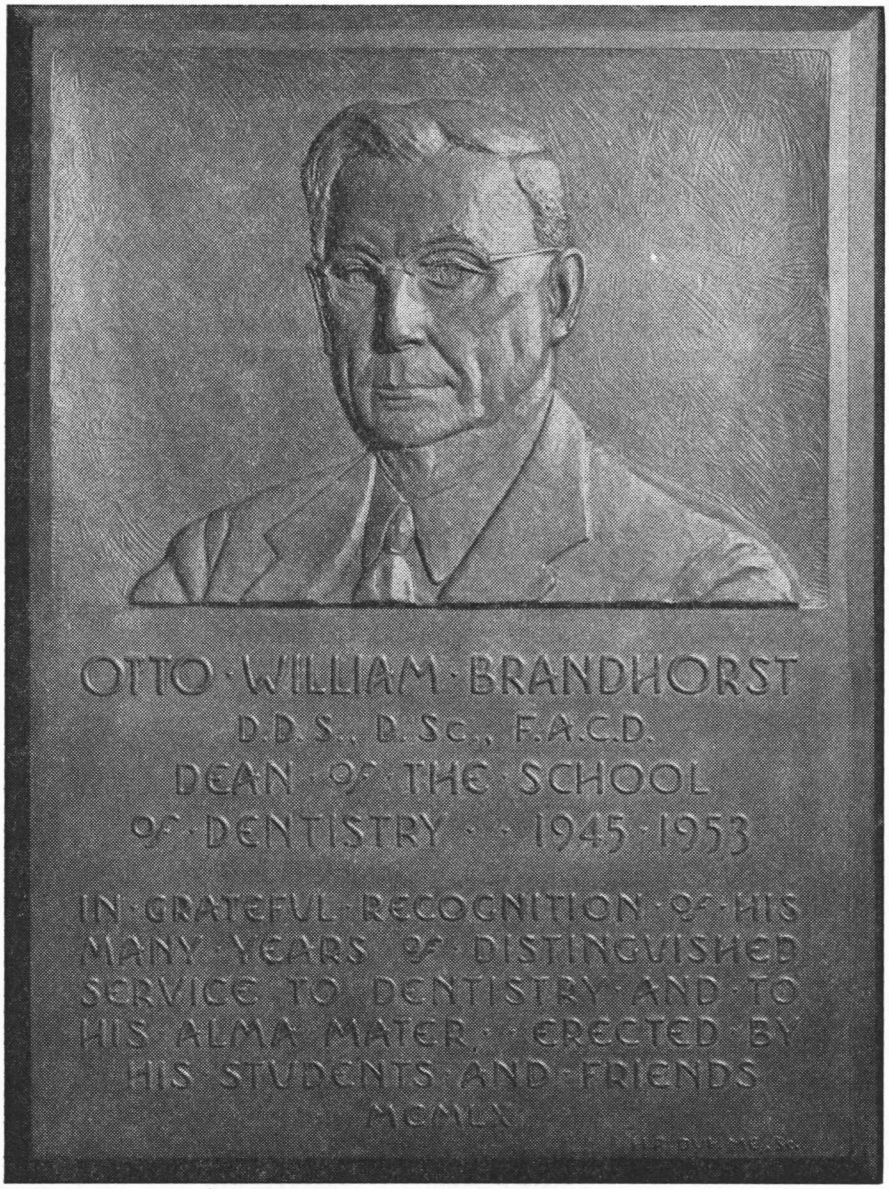
NOTA BENE: SECTION OFFICERS

There are 33 Sections of the American College of Dentists (see the listing on page 141). The meeting structure of these Sections vary. But at some time during the course of activities each year, meetings are held and noteworthy papers are presented.

An example is the panel discussion, just preceding, sponsored by the New York Section. These papers were called to the attention of the editor, were submitted and found acceptable, and were scheduled for publication.

Section officers of the College are urged to consider the JOURNAL as an outlet for similar worthwhile presentations, and are invited to submit such papers to the JOURNAL.



SECRETARY BRANDHORST HONORED

This plaque was presented to the Washington University School of Dentistry by its alumni during the 94th annual meeting of the Alumni Association, March 25 and 26, 1960, at St. Louis. Dr. Brandhorst, dean emeritus of the School, has served as president of the American Dental Association. He is executive secretary of the American College of Dentistry.

Why I Want to Be a Dentist

SAMUEL OLSHER*

The purpose of this paper is to define and outline the factors which have influenced my choice of dentistry as a career. Of the five reasons discussed in this paper, four can be considered secondary motivating forces. They are: a desire to affiliate with a profession that maintains high ethical standards; the independence which results from self-employment; the monetary remuneration from the practice of dentistry; and the opportunity to enjoy a position of respect in the community. However, to me, the primary factor, and unquestionably the most important one, is the basic feeling of altruism, which is a "regard for and devotion to the interests of others."[1]

The reason for the division between the two categories is that the secondary factors may, in some measure, be satisfied by other occupations. But altruism manifests itself greatly in the healing arts, and it is distinctive of dentistry, as of few other professions, that both these categories are combined in a most gratifying manner.

The first point in my discussion is the ethical values of the dental profession. At their best, dentistry and the other healing arts promote an outstanding code of ethical behavior. The dentist is privileged to belong to a profession whose governing body, the American Dental Association, maintains high ethical standards.

"Principles of Ethics," of the American Dental Association, outlines and explains ethical concepts within the actual practice of the dentist and in his community. Regarding recommended ethics for the dentist, the American Dental Association stresses service to the public, emergency service, education of the public, and education beyond the usual level for the dentist,[2] points which Peterson[3] and Alstadt[4] also consider. Brandhorst[5] further defines the ethics of service to the public when he states that the obligation of the dentist is to relieve pain, control dental diseases, and practice preventive dentistry.

It is this ethical approach which sets dentistry apart from many

* Class of 1960, Temple University, School of Dentistry.

This essay was judged first in the 1960 Writing Award Competition of the American College of Dentists.

other fields. It is the spirit to perform one's job to the highest level of ability, which has been influential in attracting me to the profession. Too often, an occupation demands a goal and ignores the means by which one arrives at that goal. The dental profession is striving toward ethical concepts which will permeate the entire behavior and attitudes of its members. It is this endeavor which enhances dentistry and adds meaning to it.

During the time I searched for a field that would satisfy and sustain me for the rest of my life, I discovered the tremendous value of independence. Self-employment frees the individual from demands of the employer which might limit one's performance. It allows the dentist to evaluate a patient and care for him without having to consider the ambitions and desires of another person or group. Independence permits the dentist to fulfill the ethics previously outlined, even those which might not serve the interests of an employer. For example, a dentist may, of his own volition, elect to perform a service for a patient who cannot pay the usual fee. Frequently, the employee finds that there is little time and less interest in performing a service for a person who cannot reimburse you. One often must refuse aid to a person because of company policy, when in reality, the person needs the aid.

Furthermore, independence allows one to schedule working hours with greater flexibility, and it is feasible to structure the working day to allow free hours for various activities, such as more leisure time, teaching, work in clinics, time for postgraduate education, or research.

In consideration of the third point, monetary return in dentistry, it is undeniable that the anticipated financial return in dentistry is greater than in many other fields. In 1955, the estimated mean income for the independent dentist was $12,480.[6] From a practical approach, a man must choose an occupation that will provide sufficient security to satisfy the "obligations to himself and his family which arise out of his service to the individual and the community."[7] In view of the estimated income given by the American Dental Association, one can be assured that dentistry will adequately provide this security. Financially, it is enough to know that one can satisfy the obligations stated by Hillenbrand, through the choice of dentistry as a career. He expressed aptly the more significant point in regard to financial return in dentistry, when he stated, "The essence

of a profession is that, though men may enter it for the sake of livelihood, the measure of their success is the service which they perform, not the gains which they amass."

Another attraction of dentistry is the respect which the profession commands. Nevertheless, the respect and consideration from members of the community also entail a responsibility. If the public looks upon the dentist as a voice of authority in matters of health, and his views regarding preventive measures in combating dental diseases are heeded, then it is his obligation and duty to acquire and maintain the best and most current theories in these fields. He must strive to incorporate the findings of the most reliable dental research into his practice.

Prestige hinges on the dentist's ability to inculcate the following principles: leadership in community health, especially oral health; leadership in broader community problems; control of dental diseases and oral treatment; and care of community citizens.[8] Without a great concern for general welfare and a desire to take an active part in prevention of disease, any prestige which the dentist attains is without foundation. Although an individual may choose dentistry partly because of the prestige, it will not be forthcoming if the dentist does not fulfill his responsibilities. The title of "doctor" will gain respect and importance only for the person who serves that title capably.

The previous points complete the secondary reasons for choosing dentistry as my profession. Increased knowledge about the field has enabled me to evolve these reasons, but the primary motivating force is altruism. The desire to heal people was present long before I realized and evaluated other factors in choosing a profession.

It is interesting to note that the first motivation influencing my selection of dentistry remains the most important one. Perhaps when an individual realizes what must be done to assure security in the world, he sublimates his basic desire in order to achieve this success. Often, what a person really wants from life is lost in the demands of everyday living. This could be a reason why so many people are unhappy in their jobs. They are not doing what they really want to do. It is this uniqueness of dentistry, in which is combined the satisfaction of altruistic motives with other practical considerations, that caused me to choose this field.

In accordance with Jacobs,[1] I feel that the basis of dentistry should

be altruism, although it is not always the case. No other professions should embody this spirit more than the health professions. It is defined as the regard for and devotion to the interests of others.

Humanitarian concepts have enabled men of our profession to grasp the very foundations of dentistry and raise it from its origin of mere mechanical performance in the days of the barber-surgeon to a level of unquestionable service and achievement. Because of this altruism, and often at the expense of material gains offered in private practice, men of our profession enter dental research, elect to dedicate their lives in administrative duties in the field of dental education, accept positions in teaching, or assume roles as public health practitioners of dentistry. It is this desire to serve their fellow man which has given the dental profession so many distinguished men. Surely then, if a student elects to become a private practitioner, he unavoidably, undeniably, and unselfishly must desire to embody the same fine motives as the leaders of the profession. If not, why, without altruism as the most basic prevailing motive, should a man select dentistry?

There are fields where the other qualifications are available also. In pursuit of the healing arts, one can not expect a life of little exertion, without tensions, devoid of responsibility, and offering vast material gain. Dentistry is demanding and absorbing, and to perform the role of private practitioner in the ideal manner, it is often fatiguing and extremely wearisome. Without a philosophy—a meaning—a reason with which to face the everyday routine in dentistry, one can become rapidly disillusioned. Only with the desire and knowledge that one is performing an immeasurable service to the patient, as a total entity, can the field of dentistry be fulfilling to the greatest extent.

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Editorial Interpolation

One of the major continuing projects of the Committee on Journalism of the College has been ". . . to find methods to instill in students . . . an interest in dental periodical literature; to make suggestions for ways to get them to *want to* read and to *continue* to want to read; and to devise and suggest ways to bring about maximum utilization of professional literature."

In the furtherance of that aim, the Committee suggested and the Regents approved, the initiation and promotion of a competition in the writing of papers and essays for senior students in the dental schools of the United States and Canada. The award is $500.00, with a runner-up award of $100.00. Appropriate plaques are presented to the national winners, as well as to the winners from each school competition.

The topic is selected by the Committee on Journalism; it is on a non-technical aspect of dentistry. The ethical, social, historical, or cultural relationships of dental practice, education, research, organization, and journalism are the areas from which a topic is selected.

Since 1957 the topics have been: "Responsibilities of the Dentist in Health Service"; "Ethics in Dental Practice"; "Dentistry's Potential Contribution to Society," and "Why I Want to Be a Dentist." The 1961 topic is "The Need for Continuing Education in Dentistry." The winning papers are published in the JOURNAL; the 1960 essay appears in this issue.

The schools that participated in the competition (1957-1960) have been: University of California, College of Medical Evangelists, Georgetown University, University of Illinois, University of Iowa, Loyola (New Orleans), University of Kansas City, St. Louis University, Creighton University, Emory University, University of Pennsylvania, Temple University, Chicago College of Dental Surgery, Columbia University, University of North Carolina, Medical College

of Virginia, University of Toronto, Fairleigh Dickinson University, Baylor University, McGill University, Washington University, Indiana University, College of Physicians and Surgeons, and University of Southern California.

The interest in the competition that developed during the past four years has been gratifying. (Another national dental organization recently discontinued an essay contest because of so few entries.) However, the College through the Committee on Journalism would like to see participation by more schools and by more students in each school. Several recent actions by the Committee on Journalism are aimed at stimulating such additional participation.

This interjection by the editor is an appeal to those Fellows of the College who are members of school faculties, to create and promote in their school more interest in the competition.

How this stimulation is to be furnished must be decided at the school level. But it would be a worthwhile contribution by faculty Fellows if they encouraged more students in more schools to enter this competition. The rules and procedures of the Writing Award Competition may be obtained from the Executive Office.

The Fund for Dental Education

A Progress Report

MAYNARD K. HINE, D.D.S.*

Since the turn of the century, dentistry's responsibilities have expanded far beyond the three R's—relief of pain, removal of teeth, and restoration of missing teeth or parts of teeth—into a true health service, with emphasis on prevention of oral disease, improvement of oral health, and extension of availability of health services. Concurrent with this expansion of dentistry's horizons, the dental educational system has also expanded; or to take the educator's viewpoint, increasing the length, scope, and depth of dental education has resulted in expansion of dentistry's horizons.

Of course, many factors are responsible for the recognized improvement of status of the dental profession. Dental organizations, dental literature, dental legislation and licensure, advancement in other fields of science and better economic conditions have all joined with enriched dental education to elevate the status of dentistry. One of the *undesirable* results in the improvement of dental education is its marked increase in cost. No longer can a sound dental educational program be supported by income from dental clinics and student fees.

No one denies that dental education is expensive, both to the dental student and the dental school. It is generally recognized that most dental students are graduated with heavy tangible debts and intangible moral debts to the dental school which supplemented their tuition payments with funds from many sources. No dental student today pays for more than a fraction of the cost of his education, yet if fees were to be increased the number of students who could afford to attend dental school would be lessened proportionately. Even now ambitious, qualified students often turn away from both medical and dental education because careers in business require shorter and less expensive preparation. Also, capable dental graduates often-

* Dr. Hine is President of the Board of Trustees of the Fund for Dental Education, Inc., and Dean of the Indiana University School of Dentistry.

times find the additional education which is needed to become a specialist, researcher, or dental teacher, impossible because of costs. The desire of students to become financially solvent as rapidly as possible after graduation is understandable but sometimes results in reducing the idealism so desirable in dental practitioners. There can be no doubt that economic pressures interfere with dental education and it is important that methods of reducing dental educational costs be found.

Accordingly, the Fund for Dental Education was organized in the hope that some financial aid could be attracted to allow continued expansion of dental education without increase of cost to student or institution. As has been reported previously,[1] several foundations have helped dentistry and dental education in the past, but there was no national fund with the sole purpose of aiding dental education until the Fund for Dental Education, Inc., was organized. The Articles of Incorporation for the Fund state that the Fund is a corporation with the following purposes:

> (a) To accept, receive, hold, invest, reinvest and use gifts, legacies, grants, funds, trust benefits (absolutely or in trust) and any and all properties of any nature or value without limitation as to either value or amount, and to grant use, lend, empty, expend, apply, donate or otherwise disburse the income from and the principal thereof for and to devote the same to the fostering, improving, broadening, upholding or otherwise aiding and assisting dental education in any and all ways consistent with the purposes of the corporation, to or through or in cooperation with dental schools and the students thereof, or otherwise;
>
> (b) To aid dental education further in assisting in the selection of research fields and questions therein, to aid in the financing thereof in order that such educational research can be conducted by competent persons under proper scientific supervision;
>
> (c) To assist in the growth, development and advancement of dental education through aiding in the creation of sources of non-artisan and authoritative investigation and experimentation on problems appertaining to dentistry; and
>
> (d) To interpret the requirements of dental education with respect to the American public, to foster the constant improvement of standards and methods of training and education of dental manpower in the United States, to provide adequate personnel of properly trained men and women to care properly for the dental needs of the American people.[2]

The Fund for Dental Education, Inc., under its broad general charter is a special purpose foundation. Its special purpose, however, that of promoting dental education, is so broad that it could be considered a general purpose foundation. The general objective

of the Fund is to assist in the growth, development, and advancement of dental education.

The organization of the Fund is similar to that of other funds already serving the other health professions. In other words, the Fund for Dental Education, Inc., is a foundation set up in general terms to *aid dental education.* It can receive funds earmarked for special projects or for general use. The first members of the Board of the Fund were chosen by the Executive Committee of the American Association of Dental Schools. The present Board of Trustees is composed of the following: Otto W. Brandhorst, D.D.S., Secretary, American College of Dentists; John E. Buhler, D.D.S., Dean, Emory University School of Dentistry; Harold Hillenbrand, D.D.S., Secretary, American Dental Association; Maynard K. Hine, D.D.S., Dean, Indiana University School of Dentistry; Robert M. Kerr, Jr., President, Kerr Manufacturing Company; William R. Mann, D.D.S., Associate Director, W. K. Kellogg Foundation Institute, University of Michigan; Herbert A. May, Senior Vice President of Westinghouse Air Brake Corporation; Marion W. McCrea, D.D.S., Professor of Dentistry, Temple University School of Dentistry; Emory W. Morris, D.D.S., President and General Director, W. K. Kellogg Foundation; Raymond J. Nagle, D.M.D., Dean, College of Dentistry, New York University; Harold J. Noyes, D.D.S., Dean, University of Oregon Dental School; Wendell D. Postle, D.D.S., Dean, College of Dentistry, Ohio State University; Donald C. Power, Chairman of the Board, General Telephone and Electronic Corporation; Henry M. Thornton, President, Dentists Supply Company of New York, and O. Meredith Wilson, President, University of Oregon. It is planned to expand this board to include other prominent citizens who have an interest in dental education.

Incorporated in Indiana late in 1955, the organizing directors of the Fund moved carefully to build a sound organizational structure for the new activity, and quietly sought "seed money" with which to underpin the program. By 1958 sufficient funds had been raised to launch the program in July of that year on an active basis. A full time office is located in Chicago not far from the headquarters of the American Dental Association. In the meanwhile, the Internal Revenue Service ruled that the Fund is a non-profit educational activity and has declared officially that all contributions to it by both individuals and companies are deductible for income tax purposes.

The Fund has received the sponsorship and endorsement of many important organizations in dentistry. Among those who have taken the lead to endorse the Fund through official action of their Boards are: American College of Dentists, American Dental Association, American Dental Trade Association, American Society of Oral Surgeons, other specialty groups, and an ever-growing list of state dental associations.

There is only one fundamental and important purpose to which the efforts of the Fund for Dental Education are directed: to help dental education grow to meet its increasing responsibilities. Schools must be enlarged and perhaps new dental schools founded so that more and better trained dentists can join the ranks of the profession. More dental teachers must be educated and the teaching must include the elements for dentistry's continuing improvement. More opportunities, facilities, and individuals must be made available for dental research if the profession is to add significantly to the growing body of scientific health knowledge. And more highly qualified students must be motivated to enter upon a dental career. Last Fall freshman classes in the dental schools opened with 130 vacancies, not because there are not enough qualified students available, but because there were not enough qualified students applying to dental school.

Reliable sources estimate there is a pressing need for over 100 full time and at least 100 part time faculty in the dental schools. There are not enough fellowships and other forms of help available to educate new teachers, and because teaching salaries are too low in relation to practice income, to attract enough dentists into teaching.

"Physicians for a Growing America," a report of the Surgeon General's Consultant Group on Medical Education, estimates that while the nation is currently turning out 3,100 new dentists per year to care for 180 million people, there will need to be produced 6,180 new dentists per year by 1975 to care for 230 million people in this country. Where there are now 47 dental schools in the United States, 69 dental schools, or their equivalent, will be needed by 1975 to do the job of dental education that must be done. This is 22 new dental schools, or a lesser number of new ones plus greatly expanded existing schools—an increase of almost 50 per cent in the facilities for dental education over that which we are now able to support.

The Directors and Committees of the Fund for Dental Education, Inc. are acutely aware of the existence of these and other problems facing dental education today. They have become equally convinced that there is sufficient leadership in dental education and the profession to solve these problems, once funds are available to turn plans into action.

The Fund has already established teaching fellowship programs to train new dental teachers and will set up many more—just as soon as money is available. It has sponsored meetings of dental teachers to amass the latest knowledge in various fields of dentistry and develop more productive teaching techniques. It has financed a conference sponsored by the American Association of Dental Schools on improvement of dental school administration which was attended by the leading dental educators in the country. It is working with the dental specialties in a move to strengthen postgraduate education in those specialties. When funds are available, it will broaden its activities in these fields and work to make national dental scholarships available to undergraduate dental students.

The Fund is currently working in conjunction with the American Association of Dental Schools in helping to develop ideas for a dental student recruiting program, designed to attract to dentistry the number and quality of dental student applicants to assure an adequate supply of future dentists and auxiliary personnel.

The long range plans of the Fund are to help raise enough money so that a grant can be made annually to every dental school in support of teaching budgets which will help bolster and advance dental education to meet the challenges ahead. Dentists in the past have not generally been encouraged to give generous support for dental education. It is hoped that dentists will follow the lead of the dental industry and organize a solicitation which will result in every dentist in practice today giving generously in support of dental education.

The dental profession has compiled an impressive record in the past in its acceptance of responsibility. With a thorough knowledge of the needs of its educational program for substantial support, it can become a substantial supporter of dental education, and provide an example for others less close to dentistry to follow.

More than $250,000 has been contributed to the Fund for Dental Education, Inc. during its short period of existence, with $136,509

given in 1959. While this is a noble and heartening beginning, it is but a good start and much remains to be done. The aid of everyone interested in dentistry and the health of the people is needed.

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DENTAL EDUCATION IN THE AGE OF ROCKETS

"It is perhaps the recognition of a rapid growth of population, increased life expectancy, an increasing demand for dental service, the inadequate distribution of dental service and the problems arising from the rapidly changing socio-economic picture in our nation that compels us now to think and plan for the next century of progress and development. . . .

". . . as we look at some of the future needs of the profession and of the schools in particular, it seems unlikely that the tremendous expansion programs that are necessary to meet the needs of the immediate future can be carried out by the schools alone. . . .

". . . all of us present today must recognize our continued responsibility to support dental education. In closing, I wish to emphasize again that to a large degree the future of the entire dental profession is dependent on the support given dental education and research. Through your help, the dawning age of dentistry as it begins its next 100 years, can be brighter and more promising than otherwise could be possible. I hope we may look forward to continued support, financial and otherwise, from all segments of our profession and the public we strive so hard to serve so well."—*(Excerpts from an address by Dr. Paul H. Jeserich, President of the American Dental Association, at a Fund for Dental Education Luncheon during the December 1959 Greater New York Dental Meeting, New York City.)*

The American Association for The Advancement of Science

Proceedings of Section Nd (Dentistry)

REIDAR F. SOGNNAES, D.M.D.

The 126th Annual Meeting of the American Association for the Advancement of Science was held at Chicago, December 26-31, 1959. Two symposia were held. The following groups co-sponsored one or both of these meetings: American Dental Association, International Association for Dental Research (North American Division), American College of Dentists, American Association of Dental Schools, American Academy of the History of Dentistry, AAAS Section N (Medicine), and the Gerontology Society.

Arrangements for these meetings were made by Dr. Frank J. Orland, Director of the Zoller Memorial Dental Clinic, University of Chicago.

It has been the custom that abbreviated proceedings of this annual meeting be published in the JOURNAL. *Dr. Sognnaes (Harvard School of Dental Medicine), Secretary of Section Nd, graciously compiled the following report.*

The first symposium (December 28) "Oral Aspects of Aging" with Dr. R. F. Sognnaes as moderator, covered various levels of observations from gross morphology to ultrastructure with the following sub-topics:

1. Dr. Samuel Pruzansky (University of Illinois) reported on aging of the face as observed by means of cephalometry of the craniofacial growth pattern, with special reference to the syndrome of progeria in which the affected child resembles a very aged person.

2. Dr. Earl O. Butcher and Dr. Julius Klingsberg (New York University) reported on histological aging changes in the supporting tissues of the teeth in rats, hamsters, and monkeys of different age groups, and noted various differences in the susceptibility of these

animals to gingival inflammation versus alveolar bone destruction.

3. Dr. John R. Ring (Washington University, St. Louis) applied histochemical techniques to the study of subepithelial connective tissue of the mouth, noting age changes which may be responsible for an impeded interchange of body fluids and the connective tissue cells.

4. Dr. A. A. Dahlberg (Zoller Clinic, University of Chicago) presented a comparison from an anthropological point of view of the aging pattern in teeth from different population groups, noting variations in physiological response, wear and tear, in the aging pattern from group to group.

5. Dr. John Nalbandian and Dr. R. F. Sognnaes (Harvard) discussed the microstructural age changes in teeth of contemporary man, focusing primarily on the microradiographic and electron-microscopic nature of dentin in connection with the increasing sclerosis of the root dentin with age.

Dr. David Weisberger (Harvard), in absentia, projected certain areas of oral age manifestations warranting further study in the future.*

The second symposium (December 29) represented the final commemorating event of the 100th anniversary of the American Dental Association entitled "American Dentistry at the Centennial Crossroad." Dr. F. L. Orland was moderator.

1. Dr. George C. Paffenbarger (National Bureau of Standards) reviewed the development and application of the varied types of dental materials employed in restorative dentistry over the past one hundred years.

2. Dr. H. Trendley Dean (American Dental Association) discussed the use of the epidemiological method in dental research, illustrating its importance by reviewing the development of water fluoridation as a public health measure.

3. Dr. Robert M. Stephan (National Institute of Dental Research) illustrated the antiquity of many so-called "modern" ideas, and emphasized the need for making quickly available to investigators the latest world-wide research information.

4. Dr. Shailer Peterson (American Dental Association) reviewed

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* Four full length papers from this symposium (No. 2-No. 5) are being included in a comprehensive monograph on "Aging" to be published in the Fall of 1960 by the American Association for the Advancement of Science, Washington, D. C.

the importance of dental education in the growth of dentistry as a profession, stressing the recently rapid extension of the graduate and postgraduate studies, hospital internships, and residencies.

5. Dr. Lon W. Morrey and Dr. N. C. Hudson (American Dental Association) presented a complete review of the periodical literature from the time of the publication of the first *American Journal of Dental Science,* 1839, until 1958 when 173 dental publications were issued in the United States, compared with 192 dental journals in 49 other countries.

6. Dr. Byron S. Hollinshead (Director, Survey of Dentistry) discussed certain philosophical problems of dentistry in its 100th year, including the relation between the profession and the public and the role of dental education and research in the progress of dentistry.

Following these two formal scientific gatherings of Section Nd, resolutions were made on the deaths of two distinguished contributors to dental science during 1959, Dr. Edward Hatton, past President and for many years Secretary-Treasurer of the International Association for Dental Research; and Dr. Frederick McKay, pioneer in the epidemiological research on mottled enamel which led to fluoridation as a public health measure.

At the conclusion of the dental section meetings, Dean Paul Jeserich (University of Michigan), President of the American Dental Association, addressed a concluding luncheon meeting of Section Nd, and emphasized the need for coordinated efforts between the dental groups representing practitioners, educators, and research workers.

In addition to the above program, Section Nd co-sponsored three other meetings. First, the large symposium on aging arranged by Section N (Medicine) with four half-day sessions dealing with (1) "Implications for Society"—economic, therapeutic, retirement, and employment aspects; (2) "Aging in Tissues and Cells"—genetic, developmental, structural, and biochemical aspects; (3) "The Integrated Organism"—cardiovascular, endocrine, radiation, and personal aspects; and (4) "Theories of Aging"—stress, dynamics and behavioral theories, and concluding with a philosophical look at aging.

Second, Section Nd co-sponsored the extensive symposium on "Germ Plasm Resources in Agriculture," arranged by Section O (Agriculture) covering five half-day sessions regarding origin, utiliza-

tion, development, new approaches, perpetuation, and protection of crops and livestock.

Finally, Section Nd co-sponsored the annual meeting of Alpha Epsilon Delta, national premedical honor society, which had arranged a symposium on "Premedical and Predental Education." Dr. L. R. Gribble, National President of Alpha Epsilon Delta, presided, and Dr. Isaac Schour, Dean of the University of Illinois College of Dentistry, gave the welcoming remarks. The first two papers reviewed the usefulness and pitfalls of aptitude tests as predictions for success in medical and dental schools, Dr. C. F. Schumacher discussing the medical and Dr. Grace Parkin discussing the dental aptitude tests. The third speaker reviewed the recent Frank Bane Report (U.S.P.H. Publ. No. 709) emphasizing the greater need for medical and dental practitioners at present and in the future, and the financial predicament of professional students. This part of the meeting was followed by panel discussions concerning the qualifications of students and specific approaches used by certain schools to select students. A luncheon meeting followed, during which Dr. H. E. Longenecker (Vice-President, University of Illinois) spoke on "Applicants in Future Years."

At the concluding Council meeting of the AAAS the election of two new officers of Section Nd was announced: for Vice President and Chairman, 1960, Dr. Joseph L. T. Appleton, Professor Emeritus and former Dean, School of Dentistry, University of Pennsylvania; for Councillor-at-large, 1960-1963, Dr. John Hein, Dean, Tufts University School of Dental Medicine.

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CALENDAR OF MEETINGS

CONVOCATIONS

October 16, 1960, Los Angeles

October 15, 1961, Philadelphia

October 28, 1962, Miami Beach

October 13, 1963, Atlantic City

November 8, 1964, San Francisco