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Contents for March, 1962

Six Honest Serving Men

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It is inevitable that I should take for the subject of my Presidential Address some aspect of Dental Health Education, for this is the only subject on which I can claim any specialist knowledge, and my justification—which I make without apology—is a very simple one, and is found in the introduction to the recent masterly World Health Organization Report on Periodontal Disease—by an expert Committee on which two members of your Council sat—and which reads as follows:

> The generally accepted principle that prevention is better than cure applies to periodontal disease as much as to any other; this must be fully recognized by Governments and the general public because they will be required to meet the costs of preventive measures. It will therefore be necessary to educate the public as to the benefits of these measures by intensive dental health education.

Unless, then, the great mass of the public is made constantly aware of the need for it to practice its own active measures to prevent both caries and periodontal disease, there is little hope of our rising above our present very mediocre level of dental fitness. I think there is a danger, too, that we, as a Society, in our intense preoccupation with the problems of periodontal disease, may have lost sight of the fact that the majority of dental surgeons are failing to cope with this latter problem, and the vast majority of the population is not even aware that it exists.

In support of these sombre observations I would like to remind you of earlier papers given before the Society. Sam Cripps opened his Presidential Address in 1958 with this shattering broadside:

> The aim of this paper is to discuss the several reasons for the profession's world-wide failure to master that enigma known as periodontal disease. With the exception of a very small minority the profession is completely at sea. This is not provocation, but a studied statement of fact.

Presidential Address, 13th Session of the British Society of Periodontology held in the Eastman Dental Hospital, London, October 9, 1961.

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And concluding his paper on "Periodontology in the General Dental Service," MacFarlane said:

> This, then, is the general picture of periodontology in the General Health Services: apart from normal scaling (which I think we may assume to be the removal of supragingival calculus in most cases), very little periodontal treatment is done, and that at low fees. One of the reasons for so little being done is the unwillingness of the majority of patients to attend for regular treatment, with the result that when they reach the age at which periodontal treatment could help them they have lost so many teeth and are wearing such unhygienic dentures that it is too late.

It is not within my competence to deal with the education of the dental surgeon beyond paying my own tribute to the work and influence of this Society, which *must* both continue and increase, but I should like to examine in some detail this problem of the education of the public, and that is why I have called this paper "Six Honest Serving Men." You will, I hope, still remember your "Just So" stories, and the verses with which they were interwoven:

> I keep six honest serving men
> They taught me all I knew;
> Their names are What and Why and When
> And How and Where and Who.

WHAT SHALL WE SAY?

There is the most splendid confusion on this subject. A high pontificial note is struck with an exhortion to clean the teeth three times a day for four minutes using an egg timer, and this is followed by the militant atheist who cries "Burn your toothbrush—salvation is to be found in raw carrots." "Take your child to see the dentist from the age of six months" pleads the idealist; and he is countered by the cynic who says "Don't waste time on the deciduous dentition; you will probably do more harm than good anyway." And so it goes on. Use any good toothpaste. All toothpastes are a ramp and a waste of money. And then that inspired Cromwellian advice: "Take one spoonful of ordinary cooking salt, two spoonfuls of bi-carbonate of soda; mix thoroughly, and keep the powder dry." And as if this were not enough, the long-suffering public, like a great herd of sheep harried by conflicting shepherds, now sees looming up in front of it a jungle called Fluoridation, where warring tribes fight to the death, and which this evening we will not penetrate.

In an attempt to rationalize the problem of what to say, a small informal, unofficial Working Party, consisting of representatives of

the bodies who actually produce instructional material for the public in realistic quantities, has met together in the past few months under the aegis of the General Dental Council, together with representatives of the Oral Hygiene Service, the Ministry of Health, and the Central Council for Health Education. The value of this Working Party has now been officially recognized, and for better or worse it has been made a Sub-Committee of the Standing Committee on Dental Health Education. The Working Party consulted with a number of experts in various fields that have a bearing on dental health education, and from the many views expressed achieved a refreshing degree of unanimity, which led to the drafting of the following basic statement:

What Can Dental Health Education Say?

We must accept the fact that there will be a shortage of dental personnel for many years, and that the emphasis must therefore be on preventive rather than curative measures. Every adult can practice efficient oral hygiene, and children should be trained to practice it too.

What do we mean by *oral hygiene*?

It has been defined as the practice of habits which tend to preserve healthy teeth in healthy gums throughout life. People should be encouraged to do these four things:

1. Eat—and see that children eat—a balanced diet which contains adequate protein, and which therefore reduces the desire for sweet, sticky or soft foods between meals.
2. Remove food particles from the mouth after meals, and especially the last thing at night, by means of a toothbrush and toothpaste; and stimulate and harden the gums by a correct brushing technique.
3. Finish the meal with a hard, naturally cleaning food, such as an apple—or rinse the mouth vigorously with water—when toothbrushing is not possible.
4. See the dentist—and take the children to see him—as regularly as his services permit, not just waiting for an emergency.

These four precepts may be condensed into these four simple rules:

1. Eat nourishing meals—and no snacks in between.
2. Brush your teeth and gums after breakfast and before going to bed.
3. Rinse out your mouth after every meal—or eat an apple.
4. Visit your dentist regularly.

In the future, any new material produced by any of the organizations concerned will contain these four basic rules whenever appropriate, and I hope the noise from our little Tower of Babel will at least be harmonized. The information contained in these four basic precepts can of course be expanded and clarified in suitable pamphlets and visual aids, up to the point at which the individual dentist must inevitably instruct the individual patient.

WHY SHOULD WE SAY THESE THINGS?

I have already in part answered this in my reference to MacFarlane's survey, and I will not worry you with further quotations from the many reports from the School Dental Service—all showing the fall in manpower, the continuing high level of caries, and the general decline in our dietary habits. But you can lower the bucket almost anywhere and fish up some pretty grisly material. Take the current figures for the General Dental Services, which reached a total in 1960 of fifty million pounds for the first time, and we find that of this total approximately fourteen million went in the provision of dentures—six million of which went in the provision of dentures under the age of 45. And by contrast, 5 per cent of the total went in routine scaling, and 0.2 per cent in prolonged gum treatment.

I am indebted to Wing Commander Cloutman for some recent figures on the state of dental fitness of recruits into the Royal Air Force. Of 632 aircraft/apprentices in recent entries to Halton:

> Seven per cent were more or less dentally fit; 19 per cent required urgent treatment; 74 per cent required routine treatment; and 503 airmen also examined in recent months on entry into the Services at Bridgnorth required a total of 1,802 fillings, 379 extractions, and 231 scalings and gum treatment.

Within minutes of completing my paper I read in the current *Lancet,* Milne's inquiry into the dental state of 875 newly recruited National Servicemen, between the ages of 18 and 22. It showed the usual picture of carious disintegration—25 per cent of their teeth had already been destroyed, and 9 out of 10 of them still had active caries. Even more disturbing was the state of the supporting structures of the teeth, 4 out of 5 of them having active ulceration in the subgingival crevice.

The majority of entrants into the Services can be expected to be of above-average intelligence and physique. It is a sad reflection that the enormous improvement in the standard of general health of the young does not go hand in hand with that of their dental health.

WHEN SHALL WE SAY THESE THINGS?

Let us say them at all times which seem fitting and appropriate. As Rowntree has shown, in any Health Education Campaign there is the period of preparation and build-up, the comparatively short

period of intense activity (as in the Dental Health Week in a school), and perhaps most important of all, the still, small voice that goes on afterwards in firm reiteration.

The St. Albans Survey into the effects of dental health education on school children, which I carried out with Parfitt and James in 1956, showed that a period of intense indoctrination covering one term produced a dramatic increase in the awareness of the need to practice oral hygiene (though not necessarily the will to do it), and that this awareness, in the absence of reiteration, steadily declined until at the end of two more terms the picture was virtually the same as at the beginning.

The need for regular topping up which this Survey revealed is further emphasised by the follow-up examination recently reported by Slack following his clinical trial of the value of apple slices after meals for children in nursery schools, which showed that there was less caries and a very marked improvement in oral hygiene in the children receiving apple slices over a two year period.

Eighteen months after the end of the investigation a further follow-up dental examination was carried out to determine whether any differences still existed between the apple and the control group. Inquiry revealed the habit of issuing apple slices to the children after eating was broken completely since the free supply of apples had ceased, and that no family had made any adjustment to its budget to include the regular purchase of apples.

One might add as a footnote that the national budget includes over two hundred and fifty million pounds a year spent on sweets and confectionery.

We have established, then, *what* we shall say, and advanced cogent reasons *why* and *when* we should say it. Let us advance to the more prickly problem of *how* we should say it.

HOW SHALL WE SAY THESE THINGS?

In a recent article in *The Spectator,* Monica Furlong caused a very jolly flurry in the higher dental dovecotes by castigating what she called "the humourless dogmatism of oral hygiene teaching," and went on:

> The introduction of a moral tone to what is primarily a matter of economics is the most English and irritating aspect of the whole thing. The incidence of caries in teeth is discussed in precisely the same appalled tones as the frequency of road accidents or of sexual crimes committed

> against small children, with never an irreverent voice raised to remark that compared with these intolerable events, a few dental fillings, or even a whole mouthful of them, don't matter a hoot in hell.

I was irreverent enough to agree with much, though not with all, of what she said, and the article had the salutary effect of startling one into self-examination and the recollection that firstly, dental disease is not the only scourge of our time and must take its proper place with lung cancer, road accidents, accidents in the home, and other concomitants of welfare civilization: and secondly, that oral hygiene habits must not only be simple and practical and desirable as an end in themselves, but their advocacy must be conducted attractively and with a professional skill which will enable it to compete on a shoestring with the many millions of pounds a year spent on television advertising by the manufacturers of a vast range of fermentable carbohydrates, and the constant lure of extremely appealing advertising in the daily press and teenage magazines.

With such opposition then on the one hand from rival diseases and rival horrors, and on the other from rival seductions, we must deploy our limited resources to the very best possible advantage, avoiding pomposity and over-protestation. For oral hygiene is a subject which most people just don't want to discuss. It fills them with a sense of guilt that they ought to be doing more about it; a sense of fear that it will lead to unpleasantness if they do; or a feeling that the whole thing is just too boring to discuss anyway.

These intensely human attributes must be accepted and met by presenting the case that oral hygiene is a desirable attribute, that prevention is better than cure—albeit that modern dentistry is a highly skilled and largely painless operation—and that the study of the teeth and their supporting structures need not in fact be boring at all. If I may be allowed to borrow a quotation from an early work attributed to A. P. Herbert, "What at first appears to be quite a simple little cavity is really an elaborate affair."

Despite intensive propaganda there is little evidence to suggest that we have kept death off the roads, and there is no apparent falling off in the incidence of lung cancer, so there seems little point in telling a girl of 16 that she may have full dentures at 40 or rheumatism at 50. Let us on the other hand suggest that positive dental health is a desirable social attribute at all ages, so that the individual feels personally involved. Then we can say that the practice of good

oral hygiene habits can be a source of pride for parents, fun for children, and one of the necessities of successful marriage.

Perhaps we live too near to this subject to be able to see it through the eyes of the layman, and I think it is instructive to study his point of view. I recently had to judge an essay competition on the subject of "My Teeth" by boys and girls aged between 10 and 14. Out of the mouth of the winning babe came this life story, in almost biblical cadences, of two twin boys, Robert and John:

> When Robert got up in the morning he washed and cleaned his teeth after breakfast. He did not eat sweets between meals, and after a meal he would eat an apple whenever he could. When he did eat sweets he ate them after tea, just before he cleaned his teeth at night. Now John did all these things wrong. He cleaned his teeth when he felt like it, but that was about once every month, and sometimes not even that, and he ate sweets when he wanted to. Soon John had to have false teeth, but Robert had nice healthy natural teeth. Robert was always the better at things, probably because he had nice healthy teeth, and soon got married, but John married a dentist, and when she found he had false teeth it practically upset their marriage, and now John did not look half as nice as Robert.

I think it is a heavenly story—but with an earthly meaning.

WHERE SHALL WE SAY THESE THINGS?

All teaching must start in the home, and from the home be continued at school, and reinforced at all ages by the dental surgeon. In the home, parents can learn much from the Health Visitor, from magazine articles, and I hope in time by the more enlightened use of television. In schools, teachers can be provided with simple ready-made teaching material in the form of films, film strips, leaflets, and projects in which the children take part. School Dental Health Weeks are gaining momentum, and particularly successful ones have been held in Stony Stratford and Chalfont St. Peter in Buckinghamshire. At one of these the prize for the eight best essays was a day trip to the Zoo, including lunch, the chimpanzees tea party, and a lesson in comparative dental anatomy by one of the curators. I do not think this can be described as humourless dogmatism. Furthermore, we must seize any chance that presents itself of presentation in a wider field, such as in factories and exhibitions, agricultural shows, children's cinema clubs, and so on.

An experiment was carried out recently by the Monmouthshire

County Council, in conjunction with the Oral Hygiene Service, to assess the value of a mobile cinema van for visiting schools in different parts of the County. In the four days that the van was available, 28 schools were visited and 7,000 children saw a short program of films, which were introduced by one of the Health Visitors who, after the showing, gave the children suitable leaflets to take home. The arrival of the van in the playground excited intense interest; its presence for little less than half an hour caused the minimum of disturbance to the curriculum; and its warm reception by the various Head Teachers suggested that the idea should be developed for building a mobile exhibition cum cinema which could be used throughout the summer months by local authorities in opening up this wider field.

We have dealt with five of our Honest Serving Men, and we come finally then to perhaps the most important—WHO.

WHO SHALL SAY THESE THINGS?

Every few years—and I can trace such statements back to 1884—somebody gets up and says, "The time has come for us to launch a national campaign in Dental Health Education. The hour is grave. It is a disgrace to our civilization." The waters are momentarily troubled, but soon subside, and if they become at all seriously disturbed the Government sets up a Committee which emits just sufficient oil for them to settle again. The same technique is of course used in dealing with other social evils. It is known as crying "Wolfenden." Such a Committee was set up in 1957 as one of the recommendations of the McNair Report, one of whose functions was "to examine in all their aspects the measures necessary to secure public awareness in dental matters, to advise on the form the publicity should take, and to ensure that the several agencies carrying it out work together." The period of gestation of such Committees is notoriously long and the percentage of stillbirths high, but there are, as I have indicated earlier, at last some healthy stirrings in the womb of this one, and we await the outcome in hope.

This question of who should say these things is fraught with difficulties, administrative, financial, and political. I think it can be clarified if we distinguish between two sorts of education. And I think this is terribly important.

The first has as its object to rouse the mass of the population to the

fact that teeth matter, and to instill in it the elementary rules of dental hygiene, which would result in a great number of people seeking regular care.

The second sort is concerned solely with those who are, or who then become, more or less regular patients, and has as its object their further education so that they may appreciate the nature, variety, and quality of modern dentistry, whether it be in private practice or in the Health Service. This might lead short-term to an increase in demand for treatment, but long-term to a reduction in the incidence of dental disease. Furthermore, an informed public, conscious—perhaps painfully conscious—of the shortage of dental manpower, is more likely to press for action to overcome this, and for the introduction of measures such as fluoridation.

I believe that it is the duty and responsibility of the dental profession to provide this latter form of education, as is already done by the Bureau of Dental Health Education in the United States with its admirable range of instructional material for use by the profession in a clinical environment—leaflets explaining the need for orthodontic treatment; how to wear dentures; what is a bridge; why X-rays; why not fluoridation, etc., etc.

On the other hand, the awakening of the masses to their elementary dental needs is essentially a matter of imaginative and sustained publicity campaigns, in the techniques of which the dental profession is totally unskilled. Once you have established the few basic rules which you wish to make—in consultation with the dental profession—let one—or if you like, more than one—suitable publicity organization get on with the job, unhampered by the frustrating delays of committees and advisory bodies. Such campaigns would cost very considerable sums of money, and such money should, and could be made available from the many commercial sources which are concerned, directly or indirectly, with the preservation of the teeth.

It is interesting, in the briefest of digressions, to see that the Church of England now contemplating the launching of a national publicity campaign, is faced with a similar problem to the one which I have just posed. I would suggest, in all reverence, that it does not require the whole of the Convocation of Canterbury to produce the golden rule "Say your prayers regularly at least twice a day." How much better that *they* should concentrate on producing, shall we

say, a helpful pamphlet for the person who obeys this rule and then finds that he has doubts about the Creed.

But to return. In all this talk that goes on about who should be tackling the problem there is always the rather maddening implication that nothing is being done at the moment, or if it is, it is so minute as scarcely to be worthy of mention. This of course is not true, and without wishing to catalogue their achievements in detail I would say that the General Dental Council and the Oral Hygiene Service—these two in particular—through films, posters and a variety of teaching aids and through articles in the press and in magazines and so on, have provided a very high proportion of the population with at least the basic facts. This varied work of the Oral Hygiene Service, which has gone on now for nearly ten years, would not have been possible had it not been sponsored from the beginning by this Society, and I think it is fitting as I close that I should express my thanks on this occasion to the Society, to its Council, and in particular to Gerald Leatherman who was the first to give it his blessing, for the moral support and professional advice which they have never failed to give.

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Predicaments of Specialization In an Adaptive Civilization

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In considering the honor of addressing an audience radiating such a broad spectrum of talent as this one, my first reflection was that there could be only one subject upon which one could possibly speak with some special authority: namely, oneself. Unfortunately for me, I am told that the modern psychiatrist would even question my competence in this limited field.

By way of introduction to the chosen topic, let me make it clear that I am in fact a specialist, and proud of being one—a musician, as it were, in the great orchestra known as the "health team." I can claim to know something about dentistry; so you might say I can play at least one instrument—the "ivories." However, beyond this specialized background I have found, as you will, the equal need of other resources in order to adjust to new challenges and new environments. Some of you will become distinguished soloists and virtuosos within the fields of science and health. Others—and we don't know which ones—will serve in the composer's and conductor's roles, be it as chairman, dean, or director. You will suddenly some day find yourself with a baton in your hand and wish it were a magic wand. It is then that one begins to reflect upon the predicaments of specialization in an adaptive civilization.

To be sure, we need and want specialists. For it is precisely through a high degree of specialization that some of the greatest progress has been made with respect to many aspects of art and science. No one will deny that the science of anatomy and the dedicated efforts of anatomists was the springboard to the systematic progress of the health sciences. The foremost surgeon of the Middle Ages, Guy de Chauliac, stated, "A surgeon who does not know his anatomy is like a blind man hewing a log."

But the truth is that many other biological sciences now have

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Presented at the Health Science Awards Dinner, National Science Fair, Kansas City, Missouri, May 11, 1961.

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reached equal levels of sophistication. We do not wish a diploma to testify that "Mr. John Doe knows nothing expect his specialty." More and more bridges are being built between various specialized areas. Efforts are being made to amalgamate the various health sciences with a view to dealing with broad *issues* rather than individual *tissues.*

We are seeking in research as well as in education, new multidisciplinary solutions—what I have been known to refer to as a "smorgasbord" approach—which may be fine as long as it is not carried to extremes, turning into Norwegian "lapskaus," a relative of chop suey.

One could choose a variety of examples to indicate that our concepts of biological systems are changing rapidly. During my first academic half life—to use an atomic term—I was privileged to take part in some of the first applications of man-made radioactive elements to biological tracer research. I was interested in bones and teeth. My textbook concept of the skeleton was one of a very stable structure, a highly mechanical concept. Bones contributed to locomotion and to the protection of vital organs. Today, as a result of many new tools of research, we recognize that the skeleton serves many other functions: it renews itself from time to time; it is a chemical warehouse which can put away body elements in times of plenty; and it provides a reserve supply in times of emergency. To appreciate these new concepts has required many new tools of research and multi-disciplinary approaches. To signify this fusion of various specialists and a greater unity of fundamental knowledge, new terms have been coined—biophysics, molecular biology, and so on.

In education it is much more difficult to prove the validity of new concepts. We recognize the need for a scaffolding of general education. This skeletal framework gives one greater freedom of motion into many directions; it is a protection against premature specialization. Knowledge beyond the immediate needs must be stored as a resource for future emergencies. Concepts and ideas are not stable. The skeleton is there, but it is not the same one that you carried around seven short years ago. Neither are your ideas or concepts, perhaps not even your facts. The only constant feature is change. It is this kind of biological *adaptability without distortion of the whole* which we must seek at the intellectual and educational level.

It must be a source of considerable confusion to our young citizens that they are expected on the one hand to become extremely competent in some very special area, and at the same time be told that their salvation rests in a broad general background of education. Yet one cannot open the pages of any national survey without finding warnings against premature specialization.

Our predicaments extend far beyond individual specialities such as in science and health. The recently published report of the Committee on the University and World Affairs (The Ford Foundation) starts significantly with the following sentence, "The American university is caught in a rush of events that shakes its tradition of scholarship and tests its ability to adapt and grow."[1]

I know of no country which has subjected itself to more self-analysis than the United States in recent years, and widely publicized self-analysis. Most of the national surveys appear to have been focused on the pathology of our society. The reports range from atomic missiles to anatomic miseries. Every detail is reported—even the medical case histories of our chief executives.

This is in sharp contrast to earlier times. George Washington gave strict orders not to reveal his personal health problems. Indeed, he went so far as to camouflage some of his dental bills by paying his dentist's hat bill. Since the shock of *sputnik,* education has come under particular fire, from kindergarten through professional schools.

In one of these reports, "The High School in a New Era," Dr. Devereux Josephs describes the emerging American scene as follows: "The rapidity of change in the past 50 years and its increasing rate literally suggests that we are moving toward an explosive climax where our ingenuity will outrun our wisdom. For a second time, man may have partaken of the apple of the tree of knowledge before God had prepared him for it." He is afraid that Americans may stand in danger of losing individuality by drifting into the well-marked standards of group behavior. An increasingly important task, he submits, will be that as the number of required skills multiply, the more necessary it is to build up a firm general background. "Why take precious time," he asks, "to train for proficiencies which may disappear or be modified. We need to learn those things which will be useful to any career, how to relate to our surroundings, how to read critically, how to be honest with ourselves, how to reach rational conclusions, how to master our emotions, how to enjoy the accumu-

lated wealth of things and ideas which we have inherited and how to leave a richer heritage behind us. Unless there is instilled in each young person a resolve to develop himself to his full capacity he will be left behind."

He goes on to say, "The danger in our learning process will be as always the temptation to develop the skill for a particular job before we have established a foundational character in education."

In that same publication on the high school,[2] Dr. James Conant suggests that, "It is not so much professional education as the education provided prior to professional studies that varies from nation to nation." Dr. Conant emphasizes in particular the fact that traditional academic forces have played a far less important role in the period of change in which we are today still living in the United States. He states that in this country we are still in the process of adapting our schools, colleges, and universities to the current needs of our society, and trying to adapt to future needs as well.

Although our standard of living in such large measure is due to technological know-how and skills, we now are urged to beware of over-specialization. Not long ago, a prominent president of a manufacturing company submitted that our way of life in the United States faced a greater danger from internal ignorance than from external attack. He went on to suggest that our advanced technology had fostered the intellectually incomplete man as a result of our rapid growth of specialization.

Mr. Land, president of the Polaroid Corporation, in a recent talk before the American Academy of Arts and Sciences urged that, "a healthy modern culture requires in each individual a vigorous interplay of science and art; and, in particular, engineers must be deeply imbued with esthetic sensitivity." Chancellor Franklin Murphy of the University of California at Los Angeles translated this into a specific educational example when he submitted that an engineering student who does not also do well in English should not qualify for his engineering diploma.

One could go on with similar pronouncements from many fields, including my own, which has elements of technology, art, and science, insofar as we are also trying to hit a proper balance in education and prepare for the needs of tomorrow.

Some time ago I attended an Alumni Day Homecoming session, and I asked one of my colleagues why a certain fellow alumnus had

not shown up. I was informed that our friend—let us call him Jack —indeed had been urged to come. "It is a fine program," he had been told. "You might even learn something new." To which our friend, Jack, had replied, "Learn something! Heavens," he had said, "there are still things I learned in school ten years ago which I haven't even started using yet." To me, it seems our friend gave a simple definition of education: *Knowledge beyond one's immediate needs, which hopefully may contribute to wisdom.*

If we are asking for all this educational background and all this understanding among ourselves, how are we going to find room in the curriculum without sinking the boat that is to carry us across the waters of knowledge? Certainly, we cannot expect to carry with us everything that we shall need as we settle down for a career on the other side of the lake. The educators, as well as the students, are facing important decisions in selection, in value judgement. It is not enough to ask what we must crowd in. What can we afford to postpone? What are going to be the hardest things in the world to recapture later? What can we afford to leave behind? If we ask these questions and continue our analogy of the trip across the lake, obviously we must learn the usage of those facilities, and acquaint ourselves with those tools that may be likened to the fishing rod, the flashlight, and the matches. We must be prepared, on the other hand, to find on the other side of the lake a good deal of the firewood and the food.

We are in the process of adapting ourselves to a civilization in which no one can afford to completely specialize. The researcher cannot withdraw to the ivory tower. The laborer cannot divorce himself from the impact of science.

The politician finds himself in the midst of pulls in both directions. We need scientists who know more about government and labor. We need citizens who know more about science. In brief, we are faced with judgements, whether student or teacher, layman or professional.

In his book, "Education and American Civilization,"[3] Professor George Counts of Columbia University says, "The essence of any civilization is found in its values, in its preferences, its moral commitments, its esthetic judgements, its deepest loyalties, its conception of the good life, its standards of excellence, its measures of success, its teachings regarding the things for which and by which men should

live, and, if need be, die. The issue at stake in the coming years is nothing less than the birth, the death and the survival of values."

In his inaugural address as Chancellor of the University of Pittsburgh, Dr. Edward H. Litchfield puts it this way,[4] "With the growing specialization, the individual is increasingly limited to fragments of isolated bodies of technical and scientific information, His faculty is separately organized and his interests increasingly ingrown. He lives in a world of such complexity that few have the opportunity, let alone the responsibility, to bring these separate knowledges together." He views the function of the university in its contribution to society as one of facilitating the integration of the many specific knowledges which exist. "Let those who seek only a liberal education attend institutions devoted to that purpose and let those whose professions are not dependent upon breadth of background seek their training in technical institutions. But let those who desire the combination find it in the university." He concludes by stating that, "The university is principally concerned with those who have the capacity and the motive to become the professional and intellectual leaders in their communities."

These documentary quotations are persuasive, but it takes all of us to implement such ideas. The responsibility does not rest with the student alone. President Clark Kerr of the University of California has an interesting comment on the pressures that exist toward specialization on the one hand and a broad liberal arts background on the other. While it is common to say that students should have a broad liberal arts background, he also thinks that the people who say this do not always have such a background themselves and do not necessarily take on students with such a background. He feels that when people make decisions they are most apt to act the way they really think; and often their actions lead students to move toward the vocational and professional courses which prepare them for the threshold jobs that are open. According to President Kerr, "the enforcement of liberal arts requirements will come, if it comes at all, from college and university rather than business sources."[4] Also, he reminds us of the lessons from the "School of Life" itself, when he notes that, "among the heads of leading business concerns, according to a recent study, one quarter had no college education at all and this group was slightly greater than the Harvard, Yale and Princeton graduates added together."

So, let us not think there is only one way to Rome. We must not close the doors on the late bloomers, and not let formal degree requirements hamper the self-made man, be he inventor or explorer.

I can still recall from my younger school days how tremendously excited I was when I saw Roald Amundsen, a man with great individual endurance and courage, return to his native land after his polar expeditions. The same feeling we shared when Lindbergh landed in Paris. You may have heard of the lady who remarked on the astounding fact that Lindbergh did this all by himself, to which her husband (presumably an executive, perhaps a dean) replied that it would have been much more impressive if it had been done by a committee. Times have obviously changed when we note that the first exploration of space was made not by a single individual, but by a mouse and, whether mouse or man, it was evidently done by a committee of specialists.

Opportunities for contributions have changed. But your individual attitudes to these opportunities remain basically your own. In the field of health Guy de Chauliac, although he practiced in the Middle Ages, defined the ideal surgeon as one who was "bold when sure, cautious in danger, kind to the sick, considerate of his fellows, uninfluenced by gain"—attitudes to life, that is.

This was said at a time when man's search for knowledge in the humanities was far ahead of his knowledge of the sciences. Our attitudes and value judgement have deep roots in man's cultural evolution. But they will be forever basic to man's progress. To quote Dr. John W. Dodds, director of Special Progress in Humanities at Stanford University, in an article entitled "The Humanities Look Ahead": "The humanistic search for high intellectual and cultural standards will be important to whatever civilization we manage to retain."[4]

To preserve a free society in this adaptive civilization, we need to be concerned with the highest achievable level of education for all citizens. To expect the average scientist to be an educated citizen is one thing. This we do expect of you. To expect the average citizen to be an educated scientist is quite another. And yet, this is precisely what the free world apparently must adjust itself to. The issues at hand today include complex scientific and technological problems, upon which the average voting citizen is asked to pass judgement in a free, democratic society.

In choosing a field of science, you are entering upon a career which offers the greatest opportunities for contributions, at the individual, community, national, and international level. If those in the field of science and health cannot learn to see eye-to-eye, nobody can. For, in these fields, there are certain ground rules of behavior which transcend many traditional sources of conflict. In matters of scientific knowledge it is perfectly acceptable behavior to disagree with one's friends, and preserve a respectful friendship. For in the final analysis, any deep-seated arguments about scientific matters are usually attributable to an area of ignorance which can be, and usually is resolved when subject to adequate study and supported by adequate evidence. In the field of health, you have the additional satisfaction of seeing your knowledge applied to the welfare of your fellow man, a lofty goal to which this country is continuing to make such significant contributions, both individually and collectively, at a time when our healing "shots in the arm" may not seem as spectacular as the dramatic "shots into space."

You have proven your aptitudes for exploration into the natural sciences. Your attitude to this way of life you must test by your own score, and it is here that your general background in the humanities will help to strengthen your inner resources in times of need, to provide a perspective, and last but not least, to develop the sense of humility and of humor that helps in the adaptation to new and unforeseen situations.

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The Importance of Change

CARL L. SEBELIUS, D.D.S., M.P.H.

I wish this morning to thank each of you for your help during the past year, a year which in my life has been one of great change, both personally and professionally. Moving from Tennessee, after having lived in the state for approximately twenty-five wonderful years, does mean a real change for me. With this in mind, I should like to discuss briefly with you the importance of change; or, as we might phrase it, a look ahead.

Those of you who attended the evening dinner of the College in Philadelphia and heard the lecture on "Cave Man to Space Man" can agree that many changes have taken place in the last few years, especially in areas of technology and science. The same is true in the field of dentistry. But not too much advancement has taken place, as we were told that evening, in the behavior of man.

I think it would be worthwhile for us to recall the objects of the American College of Dentists, which are as follows: "The American College of Dentists was established to promote the ideals of the dental profession, to advance the standards of efficiency of dentistry, to stimulate graduate study and efforts of dentists, to confer fellowship and recognition of meritorious achievement, especially in dental science, art, education and literature, and to improve public understanding and appreciation of oral health service."

At the last two convocations of the College, dynamic programs have been presented. In Los Angeles in 1960, a digest of the Survey of Dentistry was presented. In Philadelphia in 1961, the program was devoted to a dental health plan for the American people. Many of you here today attended these two thought provoking sessions and gained much from the effort.

In Philadelphia my assignment was to present the subject of "The Responsibilities for Health Care as They Rest With the Profession and the Community."* During my presentation I stated

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Chairman's address delivered at meeting of the Tri-State Section of the American College of Dentists on December 9, 1961, Peabody Hotel, Memphis, Tennessee.

Dr. Sebelius is an Assistant Secretary of the American Dental Association.

* J. Am. Col. Den. 28:275-77, Dec. 1961.

that, "A principle used in social, political and administrative science should apply to a program of dental health for the American people. The principle is that the responsibility for the development and conduct of any program should rest with the smallest unit which has the capacity and is willing to carry out the delegation. . . . This principle is carried out in the long-standing statement of the American Dental Association . . . that dental health should be the concern first of the individual, then the family, the community, the state and the nation, in that order."

In developing my presentation in regard to the profession, I made the following statement: "Some of the responsibilities of the profession are to work out ways of providing dental service to groups such as welfare recipients, the handicapped, aged, institutionalized or hospitalized patients, unions seeking care for their members and families, and others; to cooperate with agencies designed to promote better dental health and to understand their aims and objectives; to maintain standards so that all people have a higher regard for dentistry and do not consider it a luxury service; to take its rightful place in the community by being active in civic affairs and participating in dental programs of education, prevention and care; to participate in program planning which places special emphasis on the prevention and control of dental diseases and to promote dental health through organized community efforts." I wish to restate that programs should rest with the smallest unit which has the capacity and is willing to carry out the delegation. I think that the dental profession is in such a position, yet it will take leadership, vision, and courage to do what is needed to improve the dental health for the people of our country.

Dr. Donald Gullett,[1] in his presidential address at the 1960 Convocation in Los Angeles, used as his text, remarks from the address of Arthur S. Flemming at the 1959 Convocation. Dr. Gullett titled his address, "The Meaning of the Present," and I quote: "One thing is sure, and that is, that if the government and the dental and medical professions, and the private groups cannot agree on a program that will meet the need, compulsory health insurance for the aged will win out. If such a provision is made for the aged, we will start on the road then for the provision being made for compulsory health insurance for all age groups." And then he went on to say, "We need to tackle this problem together."

In 1955 each committee chairman was asked to present a committee report at the Convocation of the College in San Francisco. At that time I was serving as chairman of the Committee on Preventive Service, and I was asked to prepare a report on the subject, "Prevention—The Earmark of the Profession."[2] As many of the questions asked then still apply today, and many still need to be answered, I should like to read a section of the report presented some six years ago:

> In recent years many changes have taken place. There has been a remarkable growth in our population with the birth rate nearly double since 1940. Marriages have decreased but there are more three-, four-, and five-child families in our present population.
>
> A new pattern of living has developed: suburbanism is more common; educational methods and procedures are changing and the public is confused by false advertising especially through the media of television and other types of commercial exploitation in dental matters.
>
> The financial side of living has also changed: the income of the middle class has increased nearly 200 per cent during the past ten years in many areas; there are fewer exceptionally wealthy and fewer exceptionally poor people; luxury buying has become the rule rather than the exception, with air conditioners, automobiles, television sets, and other items now purchased by many. Time payments and insurance buying have now become a way of life.
>
> Has the attitude toward medicine and science accompanied the economic change? Many changes have taken place in the science and practice of dentistry. Scientific achievements have been noted in the dental field: water fluoridation; topical fluoride; the team approach to the treatment of handicapped people such as the cleft palate child; more scientific treatment of malocclusion; the use of new antibiotics; more effective cutting instruments; better operative technics and indices for measuring the prevalence of dental caries and the potential development of indices for periodontal disease as well as measuring the prevalence of malocclusion. Has the dental profession effectively utilized to the fullest these procedures to provide a better dental service for more people?
>
> Another question to be answered—is dentistry as a profession meeting the preventive requirements which earmark it as a true

profession? At the present rate approximately 25 years will be needed to fluoridate all approved municipal water supplies, and at the present time few children are receiving topical fluorides as a routine procedure.

There are many other questions worthy of an answer, such as, are the dentists using effectively known accepted preventive procedures at this time? What percentage of dentists is utilizing low carbohydrate diet plans and lactobacillus counts as a preventive procedure? What percentage of dentists is attempting to do something in the field of interceptive orthodontics? What place is dentistry to play in the control of chronic diseases and the problems of the aging? Has sufficient interest been demonstrated in the prevalence, etiology, diagnosis and treatment of periodontal disorders? Do we know the prevalence of oral neoplasms in the population as to type and location? Is dental research receiving adequate attention when only one dollar is now being spent for dentistry for every 100 in the field of medical research? Are public health programs being adequately supported by the dental profession when even today there are several states without the services of a dentist to direct a public dental program? There are 53,000 full-time public health workers and approximately one per cent of them are dentists.

Has the dental profession utilized auxiliary personnel to the fullest? It is known that much is to be desired as far as dental manpower is concerned. Available data indicate that there is need for 15,000 additional dentists. Available data also indicate that the ratio of dentists to population is gradually decreasing. How can the present dental manpower offer more service to the people? Can the dentist do so by increasing his productive capacity by means of the more effective utilization of auxiliary aids such as hygienists, technicians and assistants? It has been demonstrated that a dentist with one auxiliary aid can see 36.8 per cent more patients. A dentist with two employees can treat 68.8 per cent more patients.

With 56.8 per cent of the dentists employing one assistant, 6.3 per cent two assistants, and 4.6 per cent one hygienist, are all dentists seeing as many patients as they are able? Should consideration be given to the redistribution of dentists where there is a demand and a lack of dentists to provide dental care?

Is the dental profession taking advantage of the increased income in the population? Is the profession utilizing the technics and abilities of the social scientist? If not, more thought should be given to ways of motivating people to practice known preventive procedures as well as to seek the dental service needed. If the profession knew more about the motivation of people, would not prospective dental patients replace part of their luxury buying with sound investments in health?

In the past six years, many progressive changes have taken place. With sound leadership and cooperation, many of our dental problems can be solved at least in part. Dr. Willard C. Fleming in the June 1959 issue of *The Journal of the American Dental Association,*[3] wrote on the subject "Dentistry Tomorrow." I hope that you will read this article since, in the area of social impacts on the practice of dentistry, Dr. Fleming has listed the following: the broadening and deepening of auxiliary services; greater use of fee schedules; wider use of contracts between dental groups and others; county, state, and federal welfare dentistry, eventual complete health insurance for all, not by a single program but by many, both private and public. I should like to quote from the last paragraph of Dr. Fleming's article:

> It must be remembered that these are not the author's recommendations or suggestions. They simply seem to be the logical projection of past experiences. Three categories have been mentioned: technical and clinical advancement, biological advancement, and the category designated as the social impacts on the practice of dentistry. . . . Of these three, the least predictable category is that of social impacts, for the actions of men are so varied and uncertain that best estimates of human conduct must be inexact. All of us are striving to understand the courses of human action, and being human we wish to shape them for our own purposes, whether these purposes are selfish or unselfish. It is a difficult task to anticipate the future, but the more difficult the task, the more the need for inquiry and speculation. The writer has sought to recount the experiences of the past and project these experiences as best he could into the years ahead. He is fully aware that among the 90,000 active dentists in this country there are none who will agree with all aspects of this article as it is written.

In this connection, I think you would be interested in knowing of

some of the general topics discussed at the meeting of the Council on Dental Health of the American Dental Association, held in Chicago November 16-17, 1961. Included was a study to determine the relative cost of various procedures when the time involved is reported as a component of the dental fee. Other items discussed were dental work specifications, dental health insurance, dental service corporations, budget payment plans, programs for the purchase of dental equipment by recent graduates, the National Health Council and its program of activities, an approach in planning for a dental health program, emergency dental care programs, more adequate fluoridation promotion and dental care for the chronically ill and aged. The Council also reviewed the recommendations of the Association of State and Territorial Dental Directors and the dental provisions in the recently passed Community Health Service and Facilities bill, as well as many other items.

I should like to mention that the Council on Dental Health of the American Dental Association will conduct the Thirteenth National Dental Health Conference in Chicago during the period of April 30 through May 2, 1962. At that time many of the foregoing subjects will be discussed for assistance and guidance to state and district dental societies as they become more active in programs which will make for a better relationship between the profession and the public and provide a more adequate health service.

Dr. Henry Swanson, president of the College, recently stated in a letter to the membership that he thinks that many of the programs instituted by sections are too self-limiting. However, he did state that some sections have positive projects that he recommends most heartily. I hope that you will feel that the program this afternoon has been so planned and directed.

I am glad that both Dr. Reynolds and Dr. Blakemore had the opportunity to attend the recent meeting in St. Louis where a conference was held on the subject of positive sectional programs. I am sure that you will be hearing much more from them in the future.

In closing I wish to thank all of you for your cooperation during the past year. All requests have been willingly fulfilled. I wish especially to thank Dr. Reynolds, secretary-treasurer, and all members of the committees for their assistance and cooperation. I do hope that the Tri-State Section of the College will grow and that a more aggressive program of activities will develop. The fact that nine new

members were admitted to the College this year from the Tri-State area as compared to only one last year is an indication of progress and activity. I hope the talents of our newest members will be used as we look ahead together.

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Preventive Utilization of Dentists' Services Among Teenagers

LOUIS KRIESBERG, Ph.D. and
BEATRICE R. TREIMAN, A.M.

In an earlier article we sought to explain the high relationship between socio-economic status and the utilization of dentists' services among the adult population of the United States.[1] Several factors were found which help explain that relationship: early childhood training, practices of the respondents' dentists, and financial resources; other factors such as believing in the efficacy of professional dental care and valuing maintaining one's natural teeth were also found to play a role. On the other hand, factors such as general orientations about self-control and time perspective, specific information about teeth and their care, and the fear of going to the dentist, did not help explain the relationship.

In this article a similar analysis of teenagers and their preventive utilization of dentists' services is presented. This analysis provides an additional test of some of the interpretations made earlier; many, but not all, of the findings are similar. The analysis of the teenagers also permits a detailed examination of one mechanism which is of particular importance in explaining the relationship between socio-economic position and utilization of dental services—parental influence.

The analysis is based upon data collected in a national survey of public attitudes and practices in the field of dental care.[2] Within each family in the sample, an interview with one randomly-selected adult was sought, and in each family in which there was a teenager, one teenager was randomly selected to be interviewed. For purposes of this survey, a teenager was defined as a person 14-19 years of age and unmarried or not living with his or her spouse. In all, 340 teenagers were interviewed. Except in 23 cases, one adult from the

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From the National Opinion Research Center, University of Chicago, November 1961.

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same family was also interviewed; in nearly all cases the adult respondent was either the teenager's mother or father.

Our concern here is with the practice of going to the dentist for preventive dental care.[3] This practice is crucial for the maintenance of dental health, and efforts directed at increasing the practice can benefit from a better understanding of the factors affecting it. In addition, a better understanding of the influences upon going to the dentist for preventive care can also increase our understanding of the utilization of dental services in general and perhaps, also, the utilization of other health services.

For the measure of going to the dentist preventively, the answers to several questions were used.[4] To be categorized as going preventively, the respondent must have answered that he sometimes goes for a dental check-up, *and* answered a follow-up question that he goes at least once a year, *and* have reported actually having gone to the dentist within the twelve months prior to the interview. Forty-four per cent of the teenagers were categorized as going preventively. At the other extreme, 22 per cent of the sample consists of teenagers who go only when they need to, only when they have a toothache, and have never gone for a check-up, or have never been to the dentist at all. The remaining respondents gave other combinations of answers to the questions; this third of the teenagers occasionally go to the dentist preventively.

In Table 1 we can see to what extent going to the dentist preventively is related to various socio-economic measures of the teenager's family. Teenagers in families with smaller annual family incomes are much less likely to go to the dentist preventively than are teenagers in more well-to-do families. Teenagers whose mothers or fathers have eight or less years of education are much less likely to go to the dentist preventively than are teenagers whose mothers or fathers have more education; interestingly, there are no marked differences between teenagers whose parents had at least some high school or at least some college education. There is also considerable difference in the preventive utilization of dentists' services among teenagers in families with main earners in different occupation categories; on the whole, those from white-collar families are much more likely to go to the dentist preventively than are those from manual-worker families. There is, then, a high positive relationship between teenagers' preventive utilization of dentists' services and

TABLE 1
DEGREE OF PREVENTIVE UTILIZATION OF PROFESSIONAL DENTAL SERVICES BY MEASURES OF SOCIO-ECONOMIC STATUS

Measures of Socio-economic Status	*Degree of Preventive Utilization*			*Total Per Cent*	*Total Number of Cases*
	GO TO DENTIST PREVENTIVELY	OCCASIONALLY GO TO DENTIST PREVENTIVELY	DO NOT GO TO DENTIST PREVENTIVELY		
A. Family income:					
Under $2,000	17	33	50	100	(34)
$2,000-$4,999	27	37	36	100	(99)
$5,000-$7,499	52	33	15	100	(108)
$7,500 and over	65	30	5	100	(84)
B. Father's education:					
Grade school	24	38	38	100	(111)
High school	60	29	11	100	(117)
College	60	24	16	100	(37)
C. Mother's education:					
Grade school	22	34	44	100	(78)
High school	56	32	12	100	(188)
College	48	45	7	100	(29)
D. Main earner's occupation:					
Farmer	34	32	34	100	(41)
Laborer	23	36	41	100	(17)
Operative	42	27	31	100	(65)
Skilled, craftsman	39	48	13	100	(69)
Service	50	31	19	100	(16)
Clerical	42	53	5	100	(19)
Sales	67	16	17	100	(12)
Managerial	63	31	6	100	(48)
Professional	85	10	5	100	(19)

the socio-economic position of their families. Now let us turn to a consideration of several possible explanations of this relationship.

General Orientation, Information, Values, and Beliefs About Teeth and Their Care

One possible explanation of the relationship between socio-economic position and going to the dentist preventively is that teenagers learn different general orientations within different social classes. For example, teenagers from low-income families may learn to live from day to day rather than have long-range time perspectives

and be able to postpone gratifications. To test this idea, respondents were asked, "Some people say nowadays a person has to live pretty much for today and let tomorrow take care of itself. Would you agree strongly, agree somewhat, disagree somewhat, or disagree strongly with that?" They were also asked whether or not they agreed with this statement: "It is often better to do without something now so that things will be better later." Another question was, "Judging by the things people do, would you say that most people are more concerned with the past, the present, or the future?" Only the first item is even slightly related to family income, and, holding family income constant, teenagers who answer the question so that they indicate a longer time perspective are no more likely to go to the dentist preventively than are those who answer it in the opposite way; in fact, in the case of the second item, the relationship is slightly in the other direction.

The respondents were also asked, "How often can you get yourself to do what you think you should do—nearly always, most of the time, sometimes, or hardly ever?" Teenagers from high-income families are slightly more likely to give responses indicating greater self-control than are those from low-income families. Furthermore, teenagers who report that they nearly always have self-control are slightly more likely to go to the dentist preventively than are teenagers who say they can do so only sometimes or hardly ever. On the whole, however, we must conclude that at least these gross measures do not support the explanation that persons from low-income families do not go to the dentist preventively because they have a general orientation inimicable to long-run planning. The findings from the analysis of the adult respondents agree with this conclusion.

Perhaps, however, values and beliefs more directly relevant to care of teeth are related to teenagers' family incomes and their preventive usage of dentists' services. First, we will consider the information items in the questionnaire. Two items are in the form of statements with which respondents were asked to agree or disagree: One statement was, "If teeth come in straight, they can still shift and become crooked later"; the second statement was, "Once you get your permanent teeth, what you eat or drink can't affect, one way or the other, how much your teeth decay." Agreement or disagreement with these statements is not related to the respondent's family income. Furthermore, among teenagers in families with incomes under $5,000 a year, respondents correctly agreeing with

the first statement are actually slightly less likely to go to the dentist preventively than are those who disagreed; among teenagers in families with incomes of $5,000 or more, there is no relationship between answers to this question and going to the dentist preventively. Holding income constant again, teenagers correctly disagreeing with the statement about the irrelevance of diet for dental decay are somewhat more likely to go to the dentist preventively than are those who agreed with the statement.

Two other questions concerned the respondents' level of information about gum conditions. One question was, "Do you happen to know what pyorrhea is?," and if the respondent answered "Yes," he was asked, "From what you know about it, can you tell me what it is?" Simply dividing the respondents into those who said they did not know or said they knew but gave only vague or completely incorrect answers and those who gave some specific answers, we find no relationship between their answers and their family incomes. Furthermore, holding income constant, there is no relationship between answers to this question and going to the dentist preventively. The results are the same in the case of answers to the question, "As you understand it, what causes gums to become diseased?" On the whole, then, as was found in the analysis of adult respondents, the level of information concerning dental care does not help explain the relationship between family income and going to the dentist preventively.

In the analysis of the adult respondents, it was found that belief in the efficacy of professional dental care and values about the importance of teeth did help to explain going to the dentist preventively and the association of this practice with family income. Let us see if these beliefs and values help our understanding in the case of the teenagers. Four questions pertaining to belief in the efficacy of dental care were in the form of agree-disagree items: (1) "No matter how well you take care of your teeth, eventually you will lose them"; (2) "A person can always tell if there is something wrong with his teeth and gums"; (3) "You can help prevent tooth decay if you have your teeth cleaned regularly in a dental office"; and (4) "You can help keep your gums in good condition if you have your teeth cleaned regularly in a dental office." Only in the case of Items (1) and (2) is there even a slight relationship between the teenagers' family incomes and their answers. For all four statements, in any event, holding family income constant, there is no re-

lationship between answers to these questions and going to the dentist preventively.

Among adult respondents we found that those who expressed relatively high valuation of maintaining their natural teeth were more likely to go to the dentist preventively than were those who did not. In the case of the adults this helped to explain, in part, the relationship between going to the dentist and socio-economic position. There is no such relationship among the teenagers. Questions were in the form of agree-disagree items—for example, "False teeth are less bother than natural teeth"; in the form of hypothetical cases with alternatives indicating relative concern with teeth; in the form of estimates of the importance of the appearance of teeth—for example, in making friends; and in the form of ranking reasons for taking care of one's teeth. The responses to none of these questions are related to the teenagers' family incomes; and, holding income constant, teenagers who accord more value to the appearance of teeth or to their maintenance are no more likely to go to the dentist preventively than are those giving answers indicating less concern.

Apparently, then, neither teenagers' information about teeth, beliefs about the efficacy of dental care, nor values concerning the importance of teeth is related to going to the dentist preventively. Perhaps these negative findings are not too surprising. Presumably, whether or not teenagers go to the dentist preventively would not be determined by their attitudes so much as by the actions and attitudes of their parents, dentists, and other relevant adults. Actually, even in the analysis of adults we found that their childhood training and the practices of their dentists seemed most related to going to the dentist preventively. In this analysis of the teenagers we will examine their school dental experience, certain practices of their dentists, and then, in more detail, the attitudes and practices of their parents.

School Dental Experience

All the teenager respondents were asked whether or not (1) they had ever had any class sessions where there were lectures or talks about teeth and gums and taking care of them, (2) they had ever had their teeth examined or checked as part of a dental care program for school-age persons, and (3) they had ever had dental work

like having cavities filled or teeth extracted as part of a program for school-age persons. Only in the case of school examinations is there any relationship with teenagers' family incomes; teenagers in families with annual incomes of $5,000 or more are slightly more likely to report having such experience than are teenagers from families with smaller incomes. Only among teenagers with family incomes under $5,000, however, is there any relationship between having had such school experience and going to the dentist preventively (see Table 2). Of course, it is among children from lower-income families that the school programs would hopefully be particularly important.

TABLE 2

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY HAVING HAD A DENTAL EXAMINATION AT SCHOOL

School Examination	*Income*	
	UNDER $5,000	$5,000 AND OVER
Had	32 (68)[a]	59 (115)
Never had	17 (65)	56 (73)

[a] In this and in all other tables, the figure in parentheses is the number of cases upon which the percentage is based.

Note that one can see the relationship between school examination and family income by examining the numbers in parentheses. Thus, among respondents from families with incomes under $5,000, 68 reported having had an examination and 65 did not; that is, 51 per cent did. Among respondents in the $5,000-and-over category, 115 reported having had an examination and 73 did not; that is, 61 per cent did.

Characteristics of Dentists

In the analysis of the adult respondents and their use of professional dental services we concluded that the dentist himself significantly affects the practice of going to the dentist and is one of the major mechanisms in the association between social class and going to the dentist preventively. This interpretation is strengthened by the analysis of the teenagers.

The teenagers were asked about certain practices of the dentists they have seen. These practices are highly associated with the teenagers' family incomes and within each income level are highly associated with going to the dentist preventively. For example, teenagers were asked if they had ever had their teeth cleaned in a dental

office. Within each income level, teenagers who report having had their teeth cleaned in a dental office are more likely to go to the dentist preventively than are those who report they have never had this done (see Table 3); and teenagers from higher-income families are much more likely to report having had their teeth cleaned in a dental office than are teenagers from lower-income families. The same relationships exist among teenagers who have had their teeth cleaned, when we compare those who report that their dentist cleans their teeth at least once a year with those who report he cleans their teeth less frequently. The same relationships hold for teenagers reporting whether or not they have ever had their teeth x-rayed and whether they have that done regularly or only sometimes. Similarly, if teenagers report that they have a regular dentist, that their dentist reminds them to make an appointment, or that he ever volunteers advice on how to take care of their teeth, they tend to come from high-income families; furthermore, within each income level, if they make such reports about their dentist, they tend to go to the dentist preventively. Finally, even whether or not the teenagers report that their dentist has a high-speed drill is related to the teenagers' family incomes and within each income level is related to going to the dentist preventively (see Table 4).

Here, then, is an important mechanism explaining the relationship between socio-economic position and going to the dentist preventively. Apparently teenagers from higher-income families have dentists who practice dentistry which is more preventive[5] and probably try to induce their patients to visit them on a preventive basis. The analysis of the adult respondents led to the same inference; however, among the adults there is the important possibility that the patient selects the kind of dentist he wants, and upper-income persons seek

TABLE 3

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY REPORT OF EVER HAVING HAD TEETH CLEANED IN A DENTAL OFFICE

Teeth Ever Cleaned	*Income*	
	UNDER $5,000	$5,000 AND OVER
Had teeth cleaned	49 (53)	69 (140)
Never had teeth cleaned	13 (55)	37 (41)

TABLE 4

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY REPORT THAT DENTIST HAS A HIGH-SPEED DRILL

Report of High-Speed Drill	*Income*	
	UNDER $5,000	$5,000 AND OVER
Never heard of drill	25 (73)	44 (80)
Heard of it, dentist does not have one, or do not know if dentist has one	25 (16)	52 (35)
Heard of it, dentist has one	55 (20)	84 (69)

dentists who are more preventive and ask for more preventive care. This is not likely to be the explanation for the relationships among the teenagers, although parental selection may be affected by such practices by the dentist. We can conclude that we have additional evidence of the significant independent role that the dentist plays in determining whether or not his patients go to a dentist preventively.

Fear of Pain

In the analysis of adult respondents we conjectured that since persons of lower socio-economic status usually go to the dentist when they need to have treatment of acute conditions, they therefore have more painful experiences and are thus more fearful of going to the dentist, and this constrains them from going preventively. Furthermore, we might expect that dentists treating higher-income patients would be more likely to have equipment such as high-speed drills which would reduce the amount of pain, and thus fear, for their patients, compared to dentists with lower-income patients—at least in the first years in which the new equipment became available. We found that there was some relationship between not going to the dentist preventively and fear of going to the dentist, but there was no relationship between the acknowledgement of fear and the respondents' income levels.

The results are somewhat different for the teenager respondents. The teenagers were also asked, "Many people expect and fear a lot of pain when they go to the dentist for work on their teeth. When you go to the dentist for dental work, how do you feel?" The answers were coded into three major categories in terms of the degree of fear acknowledged: great fear, some fear, and no fear. On the whole,

the general distribution of responses does not differ between teenagers and adults. There is, however, a tendency for teenagers from families with annual incomes under $5,000 to admit great fear compared to teenagers from families with incomes of $5,000 or more (see Table 5). Furthermore, within each income level there is a tendency for persons admitting great fear to be less likely to go to the dentist preventively than for those admitting only some fear or claiming they felt no fear. The lack of relationship between fear and income among adults and the existence of the relationship among teenagers is puzzling. Perhaps differences in the degree of pain experienced in dental work could vary among dentists only with the introduction of new equipment, and since this is relatively recent, it would materially affect the feelings of teenagers.

TABLE 5

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY AMOUNT OF FEAR ACKNOWLEDGED ABOUT GOING TO THE DENTIST

Amount of Fear	*Income*	
	UNDER $5,000	$5,000 AND OVER
Great fear	12 (40)	47 (36)
Some fear	36 (28)	60 (60)
No fear	27 (51)	57 (80)

Childhood Training and Parental Influence

Now we turn to an analysis of the role of parental attitudes and behavior in determining whether or not the teenagers go to the dentist preventively. In the analysis of adult respondents we had found that early childhood training, as reported by the respondents, was highly related to going to the dentist preventively. The same relationships appear in the analysis of teenagers. For example, as can be seen in Table 6, teenagers from upper-income families tend to have gone to the dentist before they were six years old, and those who had gone to the dentist before they were six are more likely to go to the dentist preventively than are those who were six or older when they first went to the dentist. The same relationships hold when we use the teenagers' reports of what their parents did or tried to do to get them to take care of their teeth when they were children.

If childhood dental training is an important mechanism in the relationship between class position and going to the dentist preventively, which parental beliefs, attitudes, and patterns of behavior are particularly relevant in explaining that mechanism?

We have already observed that certain information items, although somewhat related to family income, did not seem to help explain differences in going to the dentist preventively. Nevertheless, parental information does seem to be related to their teenager off-

TABLE 6

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY AGE AT FIRST DENTAL VISIT

Age at First Dental Visit	*Income*	
	UNDER $5,000	$5,000 AND OVER
5 years or younger	53 (19)	72 (78)
6 years or older	25 (80)	53 (89)
Never been	.. (24)	.. (8)

spring's going to the dentist preventively. For example, in Table 7 we can see that teenagers from families in which the adult respondents disagreed with the statement, "Once you get your permanent teeth, what you eat or drink can't effect, one way or the other, how much your teeth decay," are more likely to go to the dentist preventively than are teenagers from families in which the adult respondent agreed with the statement. This holds at both income levels. Incidentally, when we hold parental relationship constant instead of income, we find that the relationship seems a little greater

TABLE 7

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY PARENTS' BELIEF THAT DIET CANNOT AFFECT PERMANENT TEETH

Parental Belief	*Income*	
	UNDER $5,000	$5,000 AND OVER
Diet can affect permanent teeth	32 (77)	61 (139)
Diet cannot affect permanent teeth	11 (38)	50 (36)

for the mother's belief than for the father's belief. For two items more directly connected with going to the dentist as a child, the relationship between parental beliefs and teenagers' going to the dentist preventively is even clearer. One item was agreement or disagreement with the statement, "There's no point in filling cavities in baby teeth since permanent teeth will replace the baby teeth." Teenagers from higher-income families are likely to have parents who disagree with that statement; and within each income level, if their parents disagree with the statement, the teenagers are more likely to go to the dentist preventively than are teenagers whose parents agree with the statement. The results are similar for the other item (see Table 8). Teenagers whose parents think a child should go to the dentist by the time he is five years old are much more likely to go to the dentist preventively than are those whose parents think a child should wait until he is ten or older or wait until there is some sign of dental trouble. This relationship holds at each income level, and the belief is related to the parental income level. Incidentally, in this case the father's beliefs seem more highly related to the teenagers' going preventively than are the mother's beliefs.

As noted earlier, in the analysis of the adult respondents we found that belief in the efficacy of professional dental services helped to account for the relationship between socio-economic position and going to the dentist preventively. In the case of the teenagers we do not find that such beliefs help explain the relationship. Significantly, when we compare parental attitudes about the efficacy of professional dental care with their offspring's going to the dentist preventively, we find no relationship if we hold parental income constant. The same results are found when we analyze parental attitudes about

TABLE 8

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY PARENTS' BELIEF ABOUT PROPER TIME TO SEND CHILD TO DENTIST

Parental Belief When Child Should First See Dentist	*Income*	
	UNDER $5,000	$5,000 AND OVER
4 years or younger	41 (27)	70 (46)
5-9 years	32 (47)	62 (84)
10 years or older, or at first sign of trouble	9 (43)	41 (39)

the value of preserving one's own teeth and their teenagers' preventive use of dental services.[6]

There is additional evidence that quite specific parental characteristics affect their teenagers' use of preventive dental services. We can compare teenagers whose parents have reported different patterns of care of their own teeth. As can be seen in Table 9, parents who themselves go to the dentist preventively are much more likely to have teenagers who go preventively than are parents who do not go preventively themselves. Indeed, although the number of cases is small, among parents who go preventively, the income difference no longer is related to the teenagers' going to the dentist preventively. Significantly, the parents' patterns of tooth-brushing is only somewhat related to their children's going to the dentist preventively. Whether or not the parents avoid foods which they think are bad for their teeth is not related to their children's preventive use of dental services. Apparently the use of dental services is a specific pattern of behavior which is learned by precept and example and may be learned without a comprehensive set of supporting beliefs, attitudes, and values.

We have noted that the age at the first dental visit, among adults as well as among teenagers, is predictive of going to the dentist preventively. This can provide the basis for additional understanding of how parental influence affects preventive utilization of dental services. The parents' beliefs about the proper age at which a child should see a dentist are clearly associated with the age at which their teenager offspring first visited a dentist (see Table 10). Interestingly, among persons in lower income levels, the parental beliefs are particularly important in affecting whether or not the teenager has yet

TABLE 9

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY PARENT'S GOING TO DENTIST PREVENTIVELY[a]

Parent	*Income* UNDER $5,000	$5,000 AND OVER
Goes preventively	79 (14)	79 (57)
Does not go preventively	17 (72)	46 (93)

[a] Persons who have lost all their teeth are excluded; this accounts for the decline in the number of cases reported in the table.

TABLE 10

AGE AT WHICH TEENAGERS FIRST WENT TO DENTIST, BY INCOME AND BY ADULTS' BELIEFS ABOUT WHEN A CHILD SHOULD FIRST VISIT A DENTIST

Age of Teenager at First Dental Visit	*Income*					
	UNDER $5,000			$5,000 AND OVER		
	When Child Should Go			When Child Should Go		
	3 or younger	5-9	10 or older or at first sign of trouble	3 or younger	5-9	10 or older or at first sign of trouble
5 or younger	12	19	10	56	40	35
6-13	84	62	66	42	57	60
Never	4	19	24	2	4	5
Total per cent	100	100	100	100	100	100
Number of cases	(25)	(43)	(41)	(43)	(80)	(37)

been to the dentist; among persons in higher income levels, the parental beliefs are particularly important in affecting whether the teenager first visited the dentist before he was six years old or afterward. The age at which the parent first went to the dentist is also related to income level and within each income level is related to the age at which his teenager son or daughter first went to a dentist. Other parental values and beliefs about teeth and their care do not seem to be related to the age of the child's first dental visit within each income level. This evidence, also, then, indicates the specificity of the pattern of going to the dentist preventively.

Financial Resources

Finally, as in the case of the analysis of the adult respondents, we must consider the simple lack of financial resources as a reason for teenagers from lower socio-economic families being less likely to go to the dentist preventively. As a measure of financial resources we will use the answers provided by the parents to a question which has some drawbacks for our present purpose but which provides an appropriate measure: "If the family here suddenly had to pay out a $200 dental bill, could you handle this without too much trouble,

or would it be very difficult, or would you just not be able to pay it?" The results are presented in Table 11. Obviously, as we can see from the numbers in parentheses, the available funds of the family is strongly related to the family's annual income. It is also clear that simple availability of funds does seem to be related to the teenagers' going to the dentist preventively within each income level. The relationship is even more marked than was the case among the adult respondents; presumably the desirability of sending children to the dentist preventively is more widely accepted than going preventively as an adult, and therefore lack of money affects more directly whether or not a child goes.

TABLE 11

PER CENT GOING TO DENTIST PREVENTIVELY, BY INCOME AND BY PARENT'S REPORT OF ABILITY TO PAY OUT $200 FOR A DENTAL BILL

If Family Had to Pay Out $200 for a Dental Bill, Could Pay	*Income*	
	UNDER $5,000	$5,000 AND OVER
Without too much trouble	39 (28)	68 (109)
Would be very difficult	34 (41)	49 (61)
Just not be able to	11 (53)	20 (10)

Summary and Conclusions

We have noted at the outset that there is strong relationship between the socio-economic position of the teenagers' families and whether or not they go to the dentist preventively. We have, then, examined several possible explanations for this relationship. Neither general orientations nor attitudes and beliefs about teeth and their care seems to contribute to an explanation. Among adults, however, values about preserving one's teeth and belief in the efficacy of professional dental services did help to explain the relationship between socio-economic position and going to the dentist preventively. The lack of such associations among teenagers might suggest that the associations among adults *follows* rather than motivates the practice of going to the dentist preventively. It is likely, however, that teenagers are less free to follow their own values and beliefs than are adults and that is the reason for the lack of association. The teenagers were asked, "Who decides you should go to the dentist for a

check-up?" Among the teenagers categorized as going preventively, 60 per cent mentioned their mothers, 40 per cent said themselves, 26 per cent said the dentist, 21 per cent mentioned ther fathers, and 2 per cent mentioned the school or other person (more than one answer was given by many respondents). This certainly indicates the importance of adults in affecting the teenagers' preventive use of dental services.

Two variables which were not found to be important in the analysis of the adults contribute something to an explanation of the relationship between going to the dentist preventively and socio-economic position among teenagers. The variables are (1) having had dental examinations in school, and (2) not fearing going to the dentist.

The simple lack of financial resources among lower-income families is particularly striking as a factor explaining the relationship between socio-economic position and going to the dentist preventively. This seems to be more important as a factor among the teenagers than was the case among adults. Perhaps this is a corollary of the greater relevance among adults, compared to teenagers, of values and beliefs not supporting going to the dentist preventively. That is, adults may believe that preventive dental check-ups are not really very important for themselves, and this attentuates the relationship with their financial ability to pay for such check-ups. As parents they may feel that check-ups are important for their children, and the ability to pay for such examinations can significantly affect the likelihood of regular dental visits. This interpretation is supported by the finding that teenagers are more likely to go to the dentist preventively than are adults; using the same definitions and excluding persons who have lost all their teeth, 44 per cent of the teenagers go preventively compared to 35 per cent of the adults. The data presented in Table 9 also support this interpretation.

Two other variables emerge as particularly important explanations of the relationship between socio-economic position and going to the dentist preventively: the practices of the respondents' dentists and the attitudes and practices of the respondents' parents. These two variables also emerged as particularly important in the analysis of the adults. In the case of the adults, the independent effect of the dentist upon regular visits for examinations might be questioned on the basis that upper-income persons choose dentists who encourage

this practice. In the case of the teenagers, however, this is less likely; of the 79 per cent of the teenagers who say they have a regular dentist, 83 per cent report that someone else in the family goes to him. Presumably, the dentist usually is chosen by the teenager's parents. Of course, some selection by the parents in terms of the dentist's emphasis upon prevention may be involved. On the whole, nevertheless, it seems clear that the dentist can greatly affect the extent to which his patients visit him on a regular preventive basis.

The present analysis, combining results from teenagers and adults of the same families, has permitted some specification of how parental influence affects preventive utilization of dentists' services. We have already noted in the analysis of the adult respondents and in this analysis that childhood training and experience in dental care is predictive of going to the dentist preventively. Perhaps the most striking finding is that very specific parental attitudes and practices among parents are related to this pattern among their children and thus in the children's later life. That is, parental beliefs and practices about going to the dentist early, regularly, and preventively are more highly associated with the children's going to the dentist at an early age and then continuing to go preventively than are the parents' general attitudes or their beliefs and practices about teeth and dental care.

These findings help to explain the differences among persons in various socio-economic positions in their utilization of preventive dental services. Patterns learned in childhood are acquired by specific inculcation of this particular pattern. How, then, is there any change, and how can we explain the general increase in utilization of dental services? On the basis of the analysis presented, an extension of dental programs in the elementary schools and an increased concern about preventive dentistry among dentists could help explain such developments and could be the means for a further increase. We have also found that parental beliefs about the importance of preventive dental visits do affect the children's utilization, and if there is the financial ability, those beliefs are actualized. Thus, increased information about the value of utilizing professional dental services and a higher standard of living would account for the changes in over-all utilization. If there is continued increase in the belief in the value of going to the dentist preventively and in the possibility of paying for such services, and there is an increase in

the availability of dental services, we can expect a more nearly equal utilization of dental services among the social classes in the country. There is also an implication that education campaigns may be most effective if they are directed at parents and encourage a specific practice—sending their children to the dentist preventively.

NOTES

1. Louis Kriesberg and Beatrice R. Treiman, "Socio-Economic Status and the Utilization of Dentists' Services," *Journal of the American College of Dentists,* Vol. 27 (September, 1960), pp. 147-165.

2. Other portions of the findings are reported in Louis Kriesberg and Beatrice R. Treiman, *Public Attitudes Toward Prepaid Dental Care Plans* (Chicago: National Opinion Research Center, October, 1960), Report No. 76; Louis Kriesberg and Beatrice R. Treiman, "The Public's Views of Dentistry as a Profession," *Journal of Dental Education,* Vol. 25 (September, 1961), pp. 247-268; Louis Kriesberg and Beatrice R. Treiman, "Dentists and the Practice of Dentistry as Viewed by the Public," *The Journal of the American Dental Association,* forthcoming; Louis Kriesberg, "The Bases of Occupational Prestige: The Case of Dentists," *The American Sociological Review,* forthcoming.

3. In the analysis of adult utilization of dentists' services, we also analyzed why people do not go to the dentist when they think they need dental care. This analysis was not feasible for the teenagers. Using the same classifying system as among the adults, 10 per cent of the teenagers had not gone to the dentist within the year prior to the interview, although they felt that they needed dental work. Because of the small size of the sample of teenagers, there were too few cases to permit an analysis. Among the adults the sample was much larger, and about a fifth of the cases were categorized as not going to the dentist when they recognized the need to do so.

4. The measure was constructed by the same procedure as the one used for the adult respondents in the earlier analysis. Respondents who have lost all their natural teeth are not included; in the case of the teenagers, this involved the exclusion of one person. In addition, if any of the relevant questions were not answered by a respondent, he is excluded from the analysis.

5. In a study of preventive practice of dentistry it was found that "Dentists whose patients are predominantly in the higher income group have more preventive practice than dentists whose patients are predominantly in the middle or low income groups." Beatrice R. Treiman and Patricia Collette, *Factors Associated With Preventive Practice of Dentistry* (Chicago: National Opinion Research Center, 1959), Report No. 69, p. 55.

6. All these results support our suggested interpretation of the relationships noted among adults. Apparently low-income respondents' pessimism about preserving their teeth and the associated de-emphasis of the value of preserving one's teeth are specific attitudes related to their experiences and are not transferred to their children so as to affect the children's behavior. Kriesberg and Treiman, "Socio-Economic Status and the Utilization of Dentists' Services," *op. cit.,* p. 158.

The American Association for the Advancement of Science

Proceedings of Section Nd (Dentistry)

REIDAR F. SOGNNAES, D.M.D.

Section Nd, in keeping with the general program scheme of recent years, again chose to organize a multi-disciplinary symposium on a topic basic to oral health, namely *Oral Aspects of Genetics.*

The two-session symposium, held in the Cosmopolitan Hotel, Denver, December 27, 1961, was organized under the direction of Albert A. Dahlberg, University of Chicago, with co-sponsorship by Section N (Medicine); the International Association for Dental Research, North American Division; the American Dental Association; and the American College of Dentists, and with a grant for partial support by the National Institutes of Dental Research, United States Public Health Service. This was the 128th meeting of the AAAS.

The morning session considered (1) Recent advances in dental genetics (C. J. Witkop, Jr., Human Genetics Section, Nat. Inst. of Dent. Res.); (2) The respective role of twin, sibling, family, and population methods in dento-medical studies (R. H. Osborne, Sloan-Kettering Inst. for Cancer Research, and Cornell University Medical College); (3) Effects of heredity and environment on the development of the dentition (J. D. Niswander, Dept. of Human Genetics, University of Michigan Medical School); (4) Chromosomes nondisjunctions and oral anomalies (R. Gorlin, Dept. of Oral Pathology, University of Minnesota); and (5) The effectiveness of selection in producing laboratory stocks genetically uniform for resistance or susceptibility to dental caries (H. R. Hunt, Michigan State University and Samuel Rosen, College of Dentistry, The Ohio State University).

The afternoon session covered (6) Family studies of the facial complex (B. Hanna, Human Genetics Section, Nat. Inst. of Dent. Res.);

Abbreviated proceedings of the annual meeting of the AAAS have long been published in the JOURNAL. Dr. Sognnaes is secretary of Section Nd, and graciously compiled the report.

(7) Some clinical aspects of genetic research in dentistry (S. L. Horowitz, Inst. of Reconstructive Plastic Surgery, Bellevue Medical Center and School of Dental and Oral Surgery, Columbia University); (8) Third molar polymorphism and dental genetics (S. M. Garn and A. B. Lewis, Dept. of Growth and Genetics, The Fels Research Inst., Yellow Springs, Ohio); (9) The regulative changes in tooth germs grown in tissue culture (S. Glasstone Hughes, Strangeways Res. Labs., Wert's Causeway, Cambridge, England). The symposium was attended by about 50 participants, and was concluded by a general discussion by the panel and audience.

In addition to its own program, Section Nd co-sponsored a meeting on "Career Opportunities in Medicine and Dentistry" arranged by Alpha Epsilon Delta, which attracted a large audience on the morning of December 28 in the Denver Hilton Hotel. Following introductory remarks (Norman F. Witt, University of Colorado), two formal reports were presented on the future needs in medicine (A. N. Taylor, American Medical Association) and in dentistry (R. F. Sognnaes, UCLA Medical Center School of Dentistry). There followed two panel discussions on future challenges in store for physicians and dentists. The dental panel was moderated by H. B. G. Robinson, School of Dentistry, University of Kansas City, with discussers from several schools: W. C. Fleming (University of California, San Francisco Medical Center), H. J. Noyes (University of Oregon Dental School), and B. C. McKinney (University of Texas).

Following a group luncheon, which was addressed by Robert J. Glaser, Dean, School of Medicine, University of Colorado Medical Center, opportunities were arranged for individual conferences with college admission officials and visits to local professional schools.

Following these sessions, Section Nd co-sponsored with the Section on Medicine (N) a two-day symposium on "General Aspects of Genetics," held at the Denver Hilton Hotel, December 29 and 30.

Ned B. Williams, Professor of Microbiology, University of Pennsylvania School of Dentistry, was elected to succeed Harold J. Noyes as Vice-President and Chairman of Section Nd (1962); and for new Committeeman-at-Large (1962-65), S. Wah Leung, Professor of Oral Biology, UCLA Medical Center School of Dentistry, was elected to succeed Thomas J. Hill, who has completed his four-year term of office.

YOU'VE GOT TO HAVE HEART

The most debatable invention I've ever seen
Is the fabulous, tabulous business machine.
With impartial skill it possesses an art
Of figuring service—without any heart.
It multiplies figures for all colored charts
And tells where all the deficiencies start.
It rips wide open comparative flaws
With its infectious, malicious, insidious claws.
Columns of figures for audits it draws
This wonderful, infallible, Wizard of Oz.

Comparisons are odious and figures don't lie
But true values are missed and I'll tell you why:
The heart and the soul and the conscience applied
By services rendered with honor and pride
Are not reflected in bold black and white;
Type cannot measure their invisible height
So in far away places where records are read
Remember how broadly this B.M. was fed.
Allow for the personal, altruistic touch
For I fear that without it—service wouldn't be much.

FRED GOLDSMITH ROLLINS
Wollaston, Mass.

CALENDAR OF MEETINGS

CONVOCATIONS

October 28, 1962, Miami Beach

October 13, 1963, Atlantic City

November 8, 1964, San Francisco

November 7, 1965, Las Vegas