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American College of Dentists

Objects: 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 effort by dentists; to confer Fellowship in recognition of meritorious achievement, especially in dental science, art, education and literature; and to improve public understanding and appreciation of oral health-service."—*Constitution, Article I.*

Announcements

Next Meeting, Board of Regents: Chicago, Sept. 11, 12, 1948. Next Convocation: Chicago, Sept. 12, 1948.

Fellowships and awards in dental research. The American College of Dentists, at its annual meeting in 1937 [J. Am. Col. Den., 4, 100; Sept. and 256, Dec., 1937] inaugurated plans to promote research in dentistry. These plans include grants of funds (The William John Gies Fellowships) to applicants, in support of projected investigations; and also the formal recognition, through annual awards (The William John Gies Awards), of distinguished achievement in dental research. A standing committee of the International Association for Dental Research will actively cooperate with the College in the furtherance of these plans. Applications for grants in aid of projected researches, and requests for information, may be sent to the Chairman of the Committee on Dental Research of the American College of Dentists, Dr. Albert L. Midgley, 1108 Union Trust Bldg., Providence, R. I. [See "The Gies Dental Research Fellowships and Awards for Achievement in Research," J. Am. Col. Den., 5, 115; 1938, Sept.]

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RECRUITMENT OF STUDENTS FOR DENTISTRY*

J. L. T. Appleton

Philadelphia

Needless to say, I welcome this opportunity to present my experience and views on this important subject to such a competent and influential group. Unfortunately, I doubt if I can bring you anything new. I shall do little more than present to you a catalogue of recruitment practices, suggested by experience, but not yet objectively checked and evaluated.

First, as a teacher having no responsibility for the selection of students, I became gravely concerned with the fact that in our student body there were too many individuals whose intellectual gifts were mediocre, who showed little spontaneous response to any challenge to use their heads or their hands, and whose motivation, if any, was mercenary. Some of these misfits were would-be medical students who had turned to dentistry either because their families had been unable or unwilling to afford the cost of medical education, or because they had been refused admission to a medical school, or because, seeing the handwriting on the wall (poor scholastic pre-professional records), they had had the wisdom not to apply for admission to a medical school. Others of these misfits were "studying" dentistry because the title of Doctor would enhance the social prestige of their families; while others had chosen dentistry for their life-work with a sadly inadequate and distorted conception (if not an actual misconception) of the functions and responsibilities of the dentist in modern society. A few others of these misfits seemed to be individuals who didn't particularly care what they did as long as they didn't have to work. The easiest way out for them seemed to be to remain in statu studendi as long as possible-never for a moment realizing that the fundamental root meaning of student is "one who eagerly and zealously strives toward a goal."

This situation was most discouraging to those of us who were trying to make the dentists of tomorrow more cognizant of their opportunities and more competent to meet the corresponding obligations than were the dentists of yesterday. Why didn't the Admissions Committee furnish us with more promising "material"?

A review of the credentials submitted by all applicants gave a clear answer. The glaring need was a larger number of better qualified applicants.

You are all aware of the behaviorist school of psychology. As I take it, this is nothing more than the good old practice of judging motives by deeds and works. Using this approach, it appears that the American College of Dentists is only secondarily interested in improving the status of "dentistry"

* Presented at the Annual Meeting of the New York Section of the College, April 27, 1948.

(an ambiguous term, as used here) or of dentists. Let us admit that the need for dental services in this country is enormous, far larger than can be met by the present number of dentists: and let us assume that there will be an increasing demand for more and better services to more people. Of course I cannot, and I have no wish or intention to, speak for the American College of Dentists: but am I not right in believing that your College is profoundly and fundamentally interested in this admission and this assumption? I would like to ask you a question, and not purely a rhetorical one: What are we going to do about it—not to preserve or to enhance our privileges or prestige as dentists, but to improve the welfare of the American People?

In the first place, we can follow the example of Pontius Pilate and wash our hands of responsibility; but world events have not made Pilate an heroic figure in history. In the second place, we can try to increase the number of dentists. We can seek to improve the training of dentists with or without increasing the numbers being trained. We can and should encourage the wider and wiser use of auxiliary personnel: and, speaking of auxiliary personnel, I am sure that dental practice can be better organized in many ways, e.g., group practice. Finally, and with some justifiable optimism, we can and should encourage and support dental research, with the prompt application of its results to clinical practice. No doubt there are other possibilities, or these possibilities might be arranged and formulated differently. They are not mutually exclusive but, rather, supplement each other.

Certainly the number of dentists, practicing dentistry as it is now practiced, is not large enough to take care of any greatly increased demand: and estimates of trends in population-dentist ratio are not satisfactory if society should come to demand many more dentists (Strusser: N. Y. State D. J., 16: 25-38, 1948). The ADA Council on Dental Education, in an analysis of the applications for admissions to dental schools in 1947, apparently believes that an increase in the number of dentists is desirable and that the number of applicants is not likely to return to prewar shortages. On the basis of these beliefs, the Council concluded that this country might support at least nine new dental schools. The Council, no doubt, is aware of the difficulties which the now existing schools experience in finding money for adequate support and of the related and still more urgent problem of finding competent teachers. And in all this talk of increasing the number of dentists, we must not overlook a fundamental question, irrespective of need or demand: Is society willing to pay enough for dental services so that conscientious and capable individuals can afford to devote themselves to the practice of dentistry? To have more dentists than society is willing to support at a living standard commensurate with the value of the services rendered and with the cost of preparing to render those services, and consonant with the maintenance of self-respect, will not solve the problem but will only make matters worse.

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Before committing ourselves to the large capital expenditures which the creating of nine new schools would involve, it might be wiser to re-orient our curricula with more effective emphasis on preventive measures and to increase the support of research. It would be premature, I admit, to begin to restrict the production of dentists on the assumption that research has already made or soon will make possible technics that will markedly lower the need for dental services. On the other hand, I am not convinced that an immediate increase in the production of dentists is socially the best way to meet the admitted need for dental services. Without the great discoveries in the last 100 or 150 years in the prevention of the acute infections and tuberculosis, this country would need a much larger number of physicians than is now supplied by our medical schools. Certainly no one with an awareness of our present dental needs and of the probably imminent increase in the demands for the satisfaction of those needs, would advocate a decrease in the annual production of dentists. But before committing ourselves to a policy of providing for a relatively large increase in the annual increment in the production of dentists, the whole situation should be thoroughly, critically, objectively, and realistically studied in terms of social welfare.

Nevertheless, whether we think the number of dentists in this country should be increased or should be kept at approximately its present level, we are now ready, I hope, to agree that there should be a large number of well-qualified applicants for admission to our dental schools.

Since the war, the number of applicants has been far larger than the number of available vacancies, sometimes embarrassingly so, and the quality of these applicants, as a group, is far superior to the quality with which we were only too familiar immediately before and during the war years. The dental students admitted in 1946 and 1947 are well qualified, and their zeal and eagerness to prepare themselves for dental practice leave little to be desired. I hold only the highest respect and expectation for these veterans. They know what they want and are willing to work for it.

What of the future? It now appears that the class entering in September 1948 will be of the same high caliber as were the classes entering in 1946 and 1947. How much longer this situation will continue is anybody's guess. I certainly do not care to prophesy. A good proportion of our students entering in 1946 and 1947 have told us that they could not have afforded to study dentistry but for the G. I. benefits. Unless some form of government subsidy is continued, the opportunity to study dentistry will be closed to many otherwise desirable applicants.

In my interviews with applicants, I always ask how they became interested in dentistry. The most common source of encouragement is a father or some other relative who is a dentist. The family dentist or some friend who is studying dentistry frequently seems to have had decisive influence. Many of the veterans have had their thoughts directed to dentistry by some dental officer in the Army or Navy or by personal experiences as dental technicians in the services. The effects of these latter influences will soon be exhausted. The fact remains, however, that some practicing dentist seems to have been the deciding factor: a fact which places serious responsibility upon, and opens an opportunity to, all dentists.

Anyone who intentionally or unintentionally influences a young man or woman to choose dentistry as a career should have a clear understanding of the nature and opportunities of dentistry not only as it is today but as it is likely to become through the next 25 to 30 years when today's neophyte will reach the peak of his professional life. This is an important responsibility, and the experience of the private practitioner of dentistry is not always sufficient to enable him to see dentistry as a whole or in true perspective, or to decide the qualifications desirable in tomorrow's practitioner. The dental curriculum is difficult enough as it is without having the student handicapped by a narrow and distorted concept of the nature of dentistry, at odds with the curriculum which is designed to help him to prepare himself for practice.

The viewpoint and attitude of the dental undergraduate can do him much harm or can give him much help; and anyone discussing the pros and cons of dentistry with a young man or woman should seek to make clear to the inquirer (a) the nature, opportunities and obligations of dentistry, (b) the objectives of dental education, and (c) the viewpoint or attitude which will help the inquirer to make the most of his professional life. Too often I get the idea that some well-meaning adviser has led the applicant or undergraduate to believe that failure to pass chemistry is a sure sign of aptitude for dentistry; or, to put it in more general terms, that intellectual mediocrity is a guarantee of professional success.

All that any dental school can do is to afford an opportunity for the student to prepare himself, under guidance, for the intelligent and successful practice of dentistry. The successful dentist is one who has the respect of his colleagues, the gratitude and confidence of his patients, and who makes enough money so he doesn't have to worry too much about money.

To practice dentistry intelligently, one not only should be able to answer the question "How?", by doing, but also should be able to ask and to give some sort of reasonable answer to the questions—"What?", "When?", and "Why?".

We haven't yet been explicit about the meaning we attach to the word "dentistry"; but a clear and definite concept is fundamental for anyone serving intentionally or unintentionally as a vocational guide. Personally, I like the following statement of the field of dentistry—possibly because after some consultation I wrote it. Dentistry is the health service specifically concerned with the establishment, maintenance, restoration, and improvement of the health, function, and appearance of the oral cavity and its associated parts in their relation to the individual as a whole. This definition includes the recognition of the oral signs of systemic disease; the prevention and treatment of oral diseases, injuries, malformations, and deficiencies; the repair of teeth when damaged by accident or disease, and their replacement when lost. The field of dentistry, thus, is comparable with such fields as ophthalmology, laryngology, otology, and dermatology; and its social importance and opportunities are at least as great.

In talking to lay groups or to young people about the nature and opportunities of dental practice, the above statement should not be given *verbatim*; but all the ground it covers, all the ideas and ideals implicit in it, should be made explicit and pointed by concrete illustration. To leave the inquirer with the belief that, except for a few negligible odds and ends, restorative dentistry (important as that is) is the whole of dentistry, is misleading to the inquirer and a disservice to dentistry and to society.

Instead of approaching the problem of the recruitment of students for dentistry as a propagandist or proselytist, I believe it wiser to take the position of a vocational counsellor or adviser. Ask questions that will stimulate inquiry and lead the inquirer to a truer and juster understanding of what dentists do and what they are trying to do; answer questions; supply all relevant information, pro or con; correct misconceptions; and leave the decision to the inquirer. That's his responsibility. I don't like "selling" him something against his will or something he's not likely to put to good advantage.

In presenting the picture of dentistry to lay groups or to some youngster, do not forget to point out that there are now many outlets other than general private practice. There are the specialties, and many opportunities in the, fields of public health and of industrial dentistry. The services of the Federal government—Army, Navy, USPHS, and the Veterans Administration— offer careers attractive to many; and, lastly, I would not want to overlook a chance "to put in a plug" for teaching and research.

The question of "monetary rewards" usually comes up in counselling, and should be frankly faced. What can a dentist expect to earn? An answer expressed as annual average net income is liable to be misleading; in fact, such an answer has little meaning. In the first place average figures are based on replies to questionnaires; the sampling may not be representative, and in other ways such data are suspect. Averages obscure the facts that peak earnings are not often reached in the first few years of practice and that often in later years one deliberately cuts down his working hours for more golfing or fishing or longer vacations. Averages do not take into consideration the community in which one practices; there are many towns in which one can still live as satisfying a life on \$5000 a year as would require \$15,000 in New York. Averages obscure the range of incomes and the ambitious youngster is more interested in the upper part of the range than in the average. Certainly no one

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should go into dentistry if he's after really big money; he should seek business or the law, or professional baseball, or Hollywood.

When the question of "monetary rewards" comes up, the best answer seems to be: "Think over the dentists of your community or the dentists you know. Would you be satisfied with what appears to be their standard of living? Your chances of doing at least as well should be pretty good."

In the recruitment of students for dentistry questions regarding the cost of dental education and the requirements and desiderata for admission to a dental school are of decisive importance; but, as they are technical matters, they had better be referred for an official answer to some dental school or to the Council on Dental Education. The relatively high cost, including the length of the training period, has kept many well-qualified men from dentistry. This fact is shown by the frequency with which many veterans state that they had always wanted to be dentists but looked upon the realization of this desire as hopeless until veteran benefits made it possible. It is important that preprofessional work be taken at an approved or accredited college, as otherwise the applicant may find he is not eligible to enter the dental school of his choice or to take the licensing examinations of the state where he wants to practice. Advise the youngster to go to a college which has a reputation for working its students hard. That's how he'll know he's getting his money's worth. He's working for himself. No one is exploiting him.

At least for the next year or two, the interested youngster should apply to more than one college for his preprofessional work or to more than one dental school.

Once in college, what courses besides the specified requirements for admission to a dental school should he take, and should he spend more than the minimum two years? After meeting the minimum requirements, he should elect further work in the natural sciences only if he would do so irrespective of any expectation of entering dental school. I am coming to feel that the social sciences—psychology, economics, sociology—are almost as important for the practice of dentistry as are biology, chemistry, and physics; but the value of the social sciences would begin to reveal itself chiefly after the beginning of practice.

The predental requirement was not adopted solely to prepare the student for specific courses in the dental curriculum. The college years permit a maturation and a conditioning in a favorable atmosphere, which should make it possible for the individual to get much more out of his experiences in dental school and in life and to make much more satisfying adjustments to his environment than otherwise would be likely.

The length of the predental course is a difficult question. I certainly would not require a veteran in his middle twenties to spend more than the present minimum of two years. After this minimum has been satisfied, I for one am

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much more interested in the quality of the applicant's record than I am in its quantity. This does not mean that three years of college or even four years will count against an applicant, but I would not like to see the longer periods of preparation made obligatory. Even as it now is, it is often difficult to meet the predental requirements in two college years without attendance at one or two summer sessions. This is not a bad way for a boy or girl to spend six or eight weeks in the summer, if one can afford it. Combined courses, leading to both the bachelor's degree and the dental degree in seven years, are possible in a number of colleges and universities. The possession of a bachelor's degree is often helpful or necessary if one should decide to specialize or to take advanced studies after graduation from a dental school. Academic advancement without the bachelor's degree will probably become increasingly difficult. It should be brought to the attention of prospective students that "a broad general education is a valuable asset not only in the social and professional relationships of later life, but in the better comprehension which it brings to the solution of the problems which arise in practice."

There are a number of pamphlets and books which will be helpful in supplying factual information to those who may be called upon to interest young men and women in dentistry or to counsel them as to the advisability of following this profession.

Up to this point we have considered the need for recruitment and its desirability; and we have presented some of the information which should be at the command of those who seek or may be called to do recruitment work. The private practitioner of dentistry, consciously or unconsciously, is probably our best recruitment officer, and I hope he will welcome this opportunity and responsibility. Nevertheless, although all Admissions Committees appreciate the efforts of brother dentists, alumni, politicians, *et al.*, in interesting young men and women in the study of dentistry, it should not be forgotten that the ultimate decision is the right and duty of the school which the applicant seeks to enter. Alumni, in particular, should not take it as a personal rebuff when their alma mater fails to accept an applicant whose claims and merits they have been urging. Credentials are confidential, and information which might completely justify the action of an admissions committee cannot be released to alumni or other interested parties.

Assuming that recruitment is desirable and that we have a pretty good idea of what dentistry is and of what it could become, and that we can answer a lot of other questions, how can we go about sharing our convictions, our enthusiasm and our knowledge with other people to the end that a relatively large number of well-qualified boys and girls will make up their minds that they want to practice dentistry?

We can reach these potential matriculants directly or indirectly. The practitioner of dentistry holds, as we have pointed out, a strategic position in his

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own office and in his community. Because of the predental requirements, it is well if the interest of the prospective dentist is awakened while still in secondary school so he can shape his plans accordingly. Meetings can be arranged under the sponsorship of Rotary and similar organizations, parent-teacher groups, and women's clubs, at which the local dentist or an invited representative of a dental school or of a dental society can talk on the nature and opportunities of dentistry. Some dental societies have sponsored dentist-boy dinners to which each dentist brings one or more boys of his acquaintance as his guests. After the dinner there can be a question-answer discussion or some more formal presentation of dentistry as a profession. At all such meetings it is extremely important that the speaker not only know whereof he talks, but that he and his talk leave a fine impression on the audience. More harm than good can easily be done.

Vocational guidance programs of secondary schools and colleges often afford opportunities for a representative of dentistry to present his story. Unfortunately such audiences, I have found, are usually limited to those who already are seriously considering the study of dentistry, while we are more anxious to meet those who have not yet become interested.

Presentations at all such meetings might well be illustrated. The only motion pictures designed to interest boys and girls in dentistry that I have seen, have been disappointing and, I suspect, have done more harm than good. Motion pictures and lantern slides depicting scenes and incidents in dental offices and in dental clinics, as well as in dental school clinics and laboratories, might be used to advantage if selected to show the breadth and variety of the activities which the dentist is called upon to perform. In this field of visual supplements to talks on dentistry there is room for wide experimentation and vast improvement.

Tours through dental schools can be conducted for secondary school and college pupils, and some sort of program could be arranged so that they might have a rounded and somewhat consistent story of what they are to see or have just seen. Vocational guidance officers should be invited to visit the dental school either with or without student groups. Dentistry should be represented on the programs of meetings of vocational guidance officers. Some of the literature relevant to dentistry as a career should be called to the attention of, or provided for, the vocational guidance officers.

A number of times I have used the phrases—"young men and women" and "boys and girls". I wish we could interest more women in dentistry. The fields of dentistry for children and of orthodontics would seem particularly attractive, and the nature of the work makes it relatively easy to adjust a professional career to domestic duties. In this connection I would recommend the pamphlet issued by the United States Department of Labor.

The great shortcoming connected with talking on vocational guidance pro-

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grams is that usually the audience is largely limited to those already interested in dentistry. This is useful follow-up work and should not be neglected; but we also want to reach the boy or girl who has never thought of dentistry and whose inclinations run in some other direction. Sometimes advertisements of professional schools (law, medicine, dentistry) have been inserted in the undergraduate publications. I tried that for several years before the war, but have no idea as to the effectiveness of this method of recruitment. I suspect it's not very effective.

Most secondary schools and colleges have undergraduate science clubs—a Biology Club, a Chemistry Club, or a Premedical Club. Such groups might contain individuals, temperamentally suitable for dentistry, who have never seriously considered the study of dentistry. Several years ago I undertook to get myself invited to appear on the programs of some of these science clubs in and around Philadelphia. I would present a scientific report of some subject with which I was personally familiar, of general interest though obviously bearing on dentistry. I would not talk Dentistry or Pennsylvania, though my academic affiliation would be noted on the program or when I was introduced. After the meeting I was often invited to meet with the boys who wanted to question me about dentistry.

I have been delighted with these experiences. Whether or not there are any souls, saved for dentistry, to my credit, I do not know; but the student interest and response have always been most encouraging. Although I started this program primarily to reach students who at the time had no idea of becoming dentists, I soon found that I was accomplishing something which I had not anticipated. These science clubs have a faculty sponsor who usually serves as premedical or predental adviser. I found that I was making friends with and educating these advisers. They began to realize that dentistry is something different from what they had taken for granted. I was correcting some misconceptions, and dentistry was receiving a more understanding and sympathetic hearing. This was particularly fortunate because these advisers remain usually at their posts year after year, influencing successive generations of undergraduates.

In the past I have known cases of a college adviser's trying to persuade an outstanding student who was planning to enter dental school, to give up such a foolish idea—and to enter medical school where his talents would not be wasted. I think this advice is less likely to be given today than in the past.

I hope other and more effective technics of recruitment than the ones I have mentioned, will occur to you and that you will tell me of them. One thing, it seems, we can take for certain: we must rely on no single technic. They must be combined in different ways and repeated over and over again in different patterns. Their effects, let us hope, will be synergistic and cumulative.

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THE PERSONNEL PROBLEM IN DENTAL RESEARCH

(WITH SOME COMMENTS ON USPHS RESEARCH FELLOWSHIPS)

H. TRENDLEY DEAN, D.D.S.*

Volume five of the Report of the President's Scientific Research Board entitled "The Nation's Medical Research" has recently been published. In it attention is called to the deplorable neglect of dental research. Under "Conclusions and Recommendations—A Summary" it is stated:

Mental diseases and dental diseases which are widely prevalent in the general population and in the special population groups served by the Army, the Navy, and the Veterans' Administration, have received relatively little attention in Federal medical research programs. The acute shortage of trained personnel in psychology, psychiatry, and dental research makes authorized expansion in these fields especially difficult.

It could also be added that dental research has received relatively little attention in many dental schools. A comparison of the type, amount, and quality of research being done in those universities having both a medical school and a dental school might give some estimation of the lag in dental research.

The dental research problem today is not only one of more money for research projects, but also the immediate training of additional investigators for work in the dental research field. Trained investigators with creative imagination activate research dollars into research findings. Inauguration of dental research in schools where it is now practically nonexistent or the expansion of such activities in schools long known for active research programs is strictly limited by the availability of trained personnel. The increasing amounts of funds now being made available for dental research projects seriously accentuate this dearth of dental research workers.

This unfortunate situation would have calamitous proportions were it not for the small number of dentists who, during the past decade or two, engaged in graduate study in the basic sciences. These, together with an increasing number of Ph.D's in the coordinate fields of physics, chemistry, biostatistics, anatomy, physiology and bacteriology, have kept alive some semblance of research in dentistry. If dentistry is to take its proper professional place in a scientific age, this deficiency of trained personnel must be remedied at the earliest possible time.

In this connection attention might be called to the fact that the Surgeon General of the U. S. Public Health Service has been given the authority to establish and maintain research fellowships. These fellowships are not de-

^{*} Director, National Institute of Health, Bethesda, Maryland.

signed to give support to students taking the usual courses leading to the degree of D.D.S. or M.D. but are designed to promote the training and development of research workers in the fields of medicine and dentistry and in the related basic sciences. The applicant is expected to make his own arrangements with the institution where the fellowship work is planned. The successful applicant incurs no obligation to engage either in teaching or in research after completion of the fellowship; the decision as to future activities rests solely with the Fellow. As of 31 October 1947, 234 awards of fellowships have been made, 4 of which were made to dentists.

The types of fellowships which may be awarded and the stipend for each are shown in Table I.

Designation	Educational Requisites	Stipend			
		Without Dependents	With Dependents	Remarks	
1. Predoctorate	Bachelor's Degree	\$1200.00	\$1600.00	Tuition paid by USPHS	
2. Predoctorate	Master's Degree or equiv- alent in graduate train-	\$1600.00	\$2000.00	Tuition paid by USPHS	
3. Postdoctorate	M.D., D.D.S., or Ph.D., etc.	\$3000.00	\$3600.00	Tuition not paid by USPHS. \$300 increase each year if reap- pointed	
4. Special	Postdoctorate requisites plus outstanding ability or specialized training	Determined for each individual case		niki ora Mila Dagartak ja Maja Kajartak	

TABLE I.-Types of Fellowships Awarded

To the young dental graduate interested in a career of research or teaching, the postdoctorate fellowship listed under number three would seem particularly appropriate. Under its provisions a qualified applicant could spend one or two years in graduate school training. For the non-dentist who might wish to prepare himself for a career in dental research, the fellowships available under one and two provide opportunities for advanced training in any of a number of the basic sciences intimately related to dental research; or if he is already the holder of a Ph.D., number three would permit further study in a field relevant to dental research.

Fellowships are awarded for one-year periods and may be renewed. Postdoctorate Fellows are not reappointed for a third year except under unusual circumstances. Fellowship applications are acted upon and awards made approximately every ninety days.

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Travel expenses (first-class transportation only) may be granted from the institution of residence or from the home of the Fellow to the institution selected for fellowship training. No allowance will be made for return travel, transportation of dependents, or for shipping charges for personal effects and/ or household goods.

Fellows who contemplate applying for reappointments are required to submit a progress report at the end of eight months; all others at the end of the fellowship year. The person under whom the Fellow is working will also submit a report on the progress made.

A Fellow may participate in the formal teaching program of the institution not to exceed one hour of teaching or lecture, or three hours of laboratory instruction per week during one semester only. The effective date for beginning fellowship work may be set at any time mutually agreeable to the successful applicant and the institution in which he will be working.

In regard to income tax exemption, the U. S. Public Health Service has been notified by the Collector of Internal Revenue that "generally where fellowships or scholarships are awarded to individuals in order to enable them to pursue a particular line of research or study, for their improvement and benefit, and no consideration of any kind is given by the recipient in return for such an award, the amount received is considered a gift or gratuity and would not be subject to withholding tax."

For full details regarding the USPHS Research Fellowship Program, applicants should address: Division of Research Grants and Fellowships, National Institute of Health, Bethesda 14, Maryland.

The critical shortage of trained dental research workers and teachers makes imperative a thoughtful consideration of this and other fellowship programs. Advanced training for promising young dental investigators must be provided; Deans, other educators, and scientifically-minded practitioners should stimulate and encourage likely candidates to pursue graduate training. The number of young dental graduates continuing their education at the graduate level should be considerably enlarged. Increased funds for research grants will mean little unless trained personnel are available to utilize them.

For many years dentistry has deplored the fact that little money was available for dental research. In 1944 the American people paid to the civilian practitioners for dental services about \$650,000,000; yet today it is very doubtful if as much as one-tenth of one per cent (\$650,000) is being spent annually throughout the United States for dental research. During the past year and a half, however, an increasing amount of public support for research has become available. Among others, the National Institute of Health makes research grants-in-aid to universities, hospitals, laboratories, and other institu-

tions and individuals. Applications are reviewed by special Study Sections composed of leading scientists in each of twenty-one major research fields, one of which is dental. These Study Sections make recommendations for final action to the National Advisory Health Council.

The Dental Study Section that passes upon applications for dental research consists of:

Dr. Paul C. Kitchin, Chairman
Dental Director H. Trendley Dean, USPHS, Executive Secretary
Dr. Hermann Becks
Dr. George C. Paffenbarger
Dr. Isaac Schour
Dr. Harold C. Hodge
Lt. Col. Joseph L. Bernier, DC, USA
Comdr. Carl A. Schlack (DC) USN
Dr. Lyman D. Heacock, U. S. Veterans Administration

During the period 1 January 1946 to 31 August 1947 research projects activated under the National Institute of Health Grants-in-Aid totaled \$8,696, 537. (Research grants for cancer and mental hygiene are not included in this amount). Of this amount \$135,607 went to dental research. Included in this amount were 21 projects totaling about \$120,000 and distributed among 14 undergraduate dental schools. Three other projects for dental research were approved, 2 in a graduate school and 1 in a state agricultural college. Applications from 5 other dental schools were disapproved or referred back for further information or resubmission in a different form. It is of interest that 21 of the 40 undergraduate dental schools made no request for research grants. In many of the schools included in the latter category, so far as is known, little or no research is being conducted.

Research should be conducted in all dental schools. Exposure to active research during undergraduate days may constitute the spark that would enkindle in a dental student the research spirit. In order that dental students might be brought into contact with research work actually being done in their school by their teachers, faculty members should be provided with the time, opportunity, and facility for carrying on research work. The dental school should be the training center for the dental investigator as well as the dental clinician.

The Report of the President's Scientific Research Board cited in the opening paragraph states in respect to this question: "The discovery of one first-class investigator in every medical school each year would more than repay any expenditure necessary to provide opportunities and support for medical students who show aptitude for research."

If essential to the healthy growth of medical research, this is surely equally

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applicable to dental research. In every dental school there should be at least one focus of research toward which the student with a talent for investigation might be attracted.

No other American profession occupies the unchallenged position of World leadership as does American dentistry. Much of this leadership, however, rests upon basic contributions in the field of the physical and biological sciences. Dentistry will add further to its laurels when men and women trained in its own discipline contribute their proportionate share to the solution of dental problems involving fundamental research. The first step in the upward climb is to provide the research workers and teachers of tomorrow with graduate training today and to awaken in the talented undergraduate the desire for a career in research or teaching.

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MILTON B. ASBELL Camden, N. J.

I. THE DENTISTRY OF JOHN ARDERNE (1307 A.D.- ?)

Few facts are known about the life of John Arderne, the fourteenth century English surgeon. That he was born in 1307 is certain and also that he died in the latter part of the fourteenth century. Where he received his early professional education is unknown, but before he was thirty years of age he had become so proficient in the surgical art that he was a surgeon in the service of Henry Plantagenet, Earl of Derby and, later, Duke of Lancaster. Following the death of the Duke he might have been in the service of John of Gaunt, the Duke's son-in-law, King of Castile and Leon. In 1349 to 1370 he is known to have practiced in Newark and then to have moved to London, where he probably was admitted to the Surgeon's Guild.

He was essentially a surgeon and his fame rests upon this practice. His travels on the continent in the service of royalty and his study of the ancient and contemporary authors, whom he frequently quotes in his writings, broadened his knowledge. He is regarded as the perfectionist in the operation for fistula-in-ano. He was a pioneer in the technique of surgery, for he taught healing without suppuration, non-irritating applications to wounds and the infrequent use of dressings.

Arderne wrote treatises upon surgery in Latin (1376–7), but after his death they were translated into English during the fifteenth century. Rare copies are in the possession of the British Museum. His writings exerted a great influence upon British surgery.

Although he was ahead of his time in surgery, in medicine he fell a victim to the tenor of the times. His medical (and dental) treatments were copied from the medieval Saxon leechbooks; treatments by spells and incantations were accepted as remedial for all sorts of ailments although there was a rational use of some herbs.

Perhaps the best source of reference to his treatment of dental disorders is found in his *De Arte Phisicali et de Cirurgia*. The original manuscript may be found in the Royal Library of Stockholm, Sweden. It was written some years after the death of Arderne by a Latin copyist. The original is composed of twelve skins of vellum which are sewn together to make a scroll. The material is presented in three written columns profusely illustrated by colored pictures; the date 1412 was added by a later hand. Portions of this work have been reported in the medical literature, such as in the writings of Alin (Stockholm, 1899), Ingerslev (Copenhagen, 1909), Sudhoff (Leipsig, 1908) and Frank

(Chicago, 1920).

This is the first time that the portion dealing with dentistry has been presented in dental literature. The dentistry of John Arderne is the reflection of the knowledge of the Middle Ages. It is mainly concerned with the treatment of such disorders as toothache, bleeding of the gums, and loose teeth and with the non-surgical removal of teeth. There is no mention of any other phase of dentistry. It is interesting to note that he often quotes treatments advocated by early Byzantine and Arabian physicians, such as Alexander of Tralles (525–605), Lanfranchi (thirteenth century), Avicenna (980–1037), and Serapion (tenth century).

The following are the treatments Arderne advised. They are quoted from the translation of D'Arcy Power reported in the *Research Studies in Medical History No. 1* of the Wellcome Historical Museum, London, 1922:

Non-surgical removal of the teeth:

Let the tooth you want to remove be rubbed with the gum of Ivy and it will immediately fall out or even if it be only applied to the tooth. But be careful not to touch the other teeth. Symphytum, i.e., henbane, does the same first steeped in vinegar and then cautiously applied round the tooth.

Rubbing the tooth with hazel bark does the same.

Cleaning the teeth:

Mastich whitens and cleans the teeth.

Soothing teeth and gums:

Rx. Aloes iv ounces; mastiche; filic. agrestris i ounce. Let them be tempered with cabbage juice and let six or eight be given according to age, complexion and time. For the toothache:

Rx. Stavesacre i ounce; pellitory root ii ounces; sage leaves, hyssop leaves and origanum of each iii ounces; betony ii ounces; ginger selected; galls; black pepper; (resin of) larch [turpentine] $\frac{1}{2}$ ounce; mustard seeds iv ounces. Then mix:—Galangal [cyperus or *juncus quadratus*, an old name for southernwood]; cubebs of each ii ounces ... (undecipherable) $\frac{1}{2}$ ounces; liquorice powder i ounce.

Let them be rubbed together and preserved until they are wanted; then let them be moistened with i ounce of vinegar, mixed and infused awhile. Let the whole be filtered and put into a clean vessel. Let three spoonfuls as hot as can well be borne be taken into the mouth and well rinsed round the palate by the tongue. Let it all be spat out and another dose be taken, as has just been described, and let the mouth afterwards be well washed with white wine in which is decoct. hyssop, or with aqua hyssopi.

For bleeding from the mouth:

(1) Rx. Hypoquistidis [the juice of the holly rose dried in the sun: an astringent]; acacia; balaustines [wild pomegranate flowers: an astringent]; psyllium [fleawort]; white coral and red coral powdered; hematite; plantain seeds; ... quince seeds; bole armoric; terra sigillata; dragon's blood [the resin obtained from the fruit of *calamus draco*]; juice of green mint; juice of roses and of sumach of each xv ounces.

Make a syrup with three pounds of sugar and make the syrup with rain water or rosewater. (2) Rx. Of confection the sediment (magma) of long and round pepper; balm of Gilead of each iii ounces; ginger and florentine orris $\frac{1}{2}$ ounce; opium; agarick and eastern aloes of each iii ounces; cinnamon bark, peony, lily root, white pepper, dittany, and cleaster epithem [a moist and soft external application not an ointment or salve]... aristolochia longa of each xii drams; myrrh 10 drams; squills; asafoetida; celtic nard; sweet smelling juncus; chestnuts and goldilocks. Spikenard, gum arabic, acacia of each 8 drams; sugar and cinquefoil of each vi ounces; peony, rhubarb, calamint, turpentine, yellow gentian, aniseed, cinnamon, carpobalsam, tragacanth; cardamon seeds; meadow saxifrage; gum arabic; storax...smallage; calamint; elecampane; galls; cypress; laurel berries and flowers, &c. asphalte; galbanum; St. John's wort...savory and silphium and cyperus of each 4 ounces; opoponax three ounces, ammoniac three ounces. Two to three drams may be given to an adult according his strength. Give it to him hot whilst he has the flux on him but cold for others.

How well it may be then for the patient to repeat with the surgeon the following prayer:

O God, Who hath wonderfully created mankind and hast more wonderfully reformed him, who hath given medicines to govern the health of men's bodies, of Thy great goodness look down from Heaven and give Thy blessing to This antidote *or* electuary *or* potion, &c., that the bodies of those whom it shall enter may be worthy to receive health of mind and body through Christ our Lord. Amen.

II. THE DENTAL ART OF ANCIENT SCYTHIA (FOURTH CENTURY B.C.)

This study is an attempt to correct a gross error in regard to the dental art of ancient Scythia which has been included in the history of dentistry. The fact that a dental art could have existed in the land of the Scythians of the fourth century B.C. was brought to the attention of American dental historians by W. H. Eames in 1886 (1). Eames stated that his facts were gleaned from a report—which he fails to identify correctly—of the South Kensington Museum, London, England. The writer has identified this as the work of Maskell in 1884 (2). Eames quotes Maskell as follows:

One of the earliest records of dental operation is found upon a Scythian vase discovered in an immense tumulus or burial mound, situated about four miles to the westward of Kertch, a small town on the Crimean peninsula, at the entrance of the straits which join the Black Sea with the Sea of Azov.

Upon [this] vase are four groups in exquisite repoussé work, giving incidents in the life of the same person. The king is clad in the Scythian costume, a tunic belted at the waist, and full trousers tucked in his boots, which is almost identical with the Russian costume of today. In the first group he is listening to the report of a warrior kneeling before him, in another he is bending a bow, in the third his wounded leg is being dressed by an attendant, and the last, as before stated, is one of the earliest known representations of an operation in dentistry. The king is half sitting, half kneeling, while the Scythian dentist is evidently "fixing" or extracting a tooth from the left side of the jaw. It is reasonable to suppose that this represents an actual incident in the life of the skeleton found in this tomb. In the skull, now deposited in the museum at Kertch, the first and second left lower molars are missing, and the third molar is badly decayed. The presence of an alveolar abscess connected with these lost teeth at some period of life, is shown by the condition of the alveolar process in this region.

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Eames is in error since (a) he has taken Maskell literally and perhaps did not realize that this author was describing the vase from an artistic point of view, (b) the person doing the examination was not a Scythian dentist—for there was no such classification in existence at the time and (c) it is incongruous to associate the figure represented on the vase with the skeleton.

This item is reported also by Cigrand in 1893 (3), who assigns the vase to the Phoenicians. This identification is repeated by Guerini (4). Weinberger (5) in 1926 continued these inaccuracies by quoting Eames verbatim. Garrison, in the 1929 edition of his *History of Medicine* (6), calls attention to this vase in his discussion of Russian medicine:

In Russia, medicine was originally in the hands of the *volkhava* or wolf-men, who, like the Druids and wise women, culled medicinal herbs and resorted to charms and spells. The earliest relic of Russian medicine is a vase of Greek pattern excavated at Koul-Oba, representing a Scythian chieftain in consultation with a *volkhava*, a Scythian warrior examining another's teeth and a surgeon bandaging an injured leg. The unique vase epitomizes medieval medicine and surgery up to the time of the School of Salerno.

However, it seems that little attention was paid to foreign literature, since a report was published by Ouvaroff (of Russia) in French in 1854 (7). There was also one by Heitz (of France) in 1901 (8), in which he reports upon the Greco-Scythian vase:

Dans le premier groupe (plance LXXII, A) on voit un grand barbare, de forte structure, à longue chevelure et à barbe puissante le front peu élevé, le nez droit et un peu long. Il a posé la main gauche sur la tête du patient, et de l'index droit, il examine délicatement et avec une attention soutenue la mâchoire de ce dernier. S'agit-il d'une blessure recue à la chasse ou à la guerre, ou simplement d'un vulgaire mal de dents? Question difficile! Mais il faut admirer le réalisme de la scène, l'expression de visage du malade, si expressive de douleur, le geste de la main gauche qui s'appuie nerveusement sur son genou, et le mouvement involontaire de défense par lequel il arrête la main qui, tout en cherchant à le guérir, ravive atrocement sa douleur.

The history of these Scythians before the sixth century B.C. is one of a nomadic, warlike band of Iranian tribes with Mongolians. By the end of that century they ruled the whole region of the Southern Russian steppes as far east as present-day Hungary, but only after they had become consolidated into a centralized state. At this time there began the infiltration of Greek (Ionian) colonists who were soon established and were acceptable, since they brought with them their arts and crafts, commerce and industry. By the fifth century B.C. the Ionians were working for the Scythian market. Their craftsmen were proficient in the goldsmith's and silversmith's arts, and such techniques as polychromatic inlaying were established. However, in the next century the Grecian artists no longer exhibited Ionian influences but portrayed Scythian scenes of religious, economic, social and military life. It was such a Grecian artist who fashioned the so-called 'Kul-Oba' vase that figures so prominently in this report. Archeological evidences of this period have shown Scythian tombs to be full of works of superb art in gold, silver, jewels and precious stones. Rostovtzeff (9), in 1922, reported as follows:

The warlike activity of the ruling class was a favorite subject with the artists who worked for the Scythians. Battle scenes were common everywhere; fights between Scythians and their enemies, Scythians of other tribes, Thracians, Maetoians; enough to cite the Solokha comb and the gorytus from the same grave. Hunting no less frequently seen ... a usual sport. More interesting are the scenes on two spherical vases; one of silver from Voronezh [Fig. 1], the other electrum, from Kul-Oba [Fig. 2]. The scene on the Voronezh vase is a peaceful one; Scythian warriors in conference, an old warrior instructing a youth in the use of the bow [Fig. 1, top], the principal weapon of the Scythians' and a Scythian camp on the eve of an expedition [Fig. 1, middle and bottom]. The Kul-Oba vase shows the same camp after the battle: the king receiving a report from a messenger [Fig. 2, upper right], wounded warriors attended by their comrades—a leg-wound being dressed [Fig. 2, lower right and left] and an operation for a mouth wound [Fig. 2, upper left]. Both vases are interesting for their style and their inspiration.

The artist of these two and the famous Chertomlyk vase (showing a Scythian camp on eve of battle) must have been thoroughly acquainted with the Russian steppes and studied life in a Scythian camp.

The Kul-Oba vase was discovered in 1831 and was exhumed from a tumulus (burial mound) in the cemetery of Panticapaeum, a Greek colony founded in the sixth century B.C. about four miles west of the city of Kertch, which contained the body of a Crimean prince of Scythian blood. This and the Voronezh vase are in the Hermitage Museum, Leningrad, Russia.

Let us examine the evidence. The approach to this question can not be upon dental historical grounds, but, rather, upon evidence produced by archeological and historical research. Therefore, the foundation of the fact that the dental art was practiced in ancient Scythia was a report by Eames who had quoted (without proper reference to the source) a catalogue of art objects wherein was described a vase of Grecian workmanship depicting a scene in the life of a royal Scythian. This source (Maskell) contends that a "Scythian dentist is evidently 'fixing' or extracting a tooth from the left side of the jaw" of a king. Garrison, on the other hand, states that the base represents a Scythian warrior examining another's teeth; Rostovtzeff holds the same opinion. Heitz contends that it is a "grand barbare" who is examining a patient's jaw. It would, therefore, be the writer's opinion by the weighing of this evidence that the representation is that of a Scythian warrior (of the royal class) examining and not a 'dentist'.

What type of dental operation, if any, is depicted? We must rely upon facts and not fancy; and by fancy is meant the imagination an author might possess which will cause him to make conclusions to suit his purpose. Eames, therefore, quite naturally would accept the view that the scene depicted the extraction of a tooth; Guerini and, until recently, Weinberger were of the same opinion. Heitz was quite honest when he remarked: "Question difficile!", for he is drawn to make two queries: whether it be a wound received in battle or just a simple toothache. Rostovtzeff holds the view that it depicts a wound received in battle, while Garrison states that it is a mere examination. A close examination of the photograph [Fig. 2, upper left] shows that it represents a major episode in the life of a royal personage so important that it was caused to be recorded upon this vase, and it represents a Scythian examining, or rather attempting to examine, the jaw (or mouth) of one who had been wounded. Note that the 'patient' is so apprehensive that he is grasping the 'operator's' right hand. Therefore, it would seem evident that the scene shows an attempt at an examination of a mouth or jaw wound.

In conclusion, the evidence examined showing the results of archeological and historical research indicates that in no way does it appear that the ancient Scythian civilization practiced the art of dentistry. Reports of dental authors are biased in that they have attempted to *read into* the evidence presented and concluded that there was a dental art because of the fact that a Scythian, having received a mouth or jaw injury, was examined: *ergo*, some practice of the dental art. However, the statements of non-dental authors, authorities in the field of archeological and ancient historical work, point out that this episode in the life of a Scythian prince was important enough to be recorded pictorially upon a vase in the sense that it was a representation only, similar to scenes showing other episodes in the social, religious and military lives of these people.

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FIG. 1. SILVER BOWL FROM VORONEZH IV Cent. B.C. Hermitage, Petrograd From a Drawing by M. V. Farmakovsky

From: Rostovtzeff, Mikhail I., Iranians and Greeks in South Russia, Oxford (Clarendon Press), 1922.

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FIG. 2. ELECTRUM VASE FROM THE 'KUL-OBA' TUMULUS, NEAR KERTCH IV-III Cent. B. C. Hermitage, Petrograd From: Rostovtzeff, Mikhail I., Iranians and Greeks in South Russia, Oxford (Clarenden Press), 1922.

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EDITORIALLY EXPRESSED

Our boasted twentieth century civilization needs to pause in its self-applause until it finds a way to bring the benefits of the dental art and science we now possess to the relief of the 79 per cent of our 125,000,000 people who regularly receive no dental care in any given year. That is an economic problem first and a professional problem second. The responsibility for bridging the gap between what we are equipped to do and what we ought to do in dentistry rests first upon society and second upon the profession. In the mercy of God and in the light of true dental science the lowest, meanest human sufferer is entitled to all that can be done for him. We ought to have ingenuity enough to accomplish this noble. end without destroying the relationship which exists between individual dentist and individual patient and without asking dentists to bear burdens which society in general should assume. A like problem exists in all professions which are instituted to serve humanity. The problem in all its economic and professional aspects is in many ways the most far-reaching and serious issue before the American people today. The challenge of it gives zest and promise to the dentistry of the coming years .- Harlan H. Horner, Proceedings of the American Association of Dental Schools, 1935, pp. 72-73.

For many years there has been a growing interest on the part of both the profession and the public in an enlargement and a more even distribution of oral health care for the American people. Health has come to be regarded as a basic necessity and the conviction grows that social and economic conditions should be so adjusted as to ensure adequate oral health care for all the needs of all the people. If this objective is to be achieved, those responsible for planning dental health programs must be on the alert to guard zealously the high quality of oral health care now available to the American people, while extending the quantity of dental care to include all the population as its beneficiaries.

During the years from 1840 to 1940, the main objectives of dental education in the United States were to extend the cultural background of the student, to equip him with a knowledge of the sciences upon which the art of dental practice rests, and to improve and to rationalize the skills that characterize the specialty. The results of these efforts were to broaden materially the base of dental practice, to advance greatly the scientific preparation of the dentist and to improve continuously the quality of the health service which dentists were prepared to render. Oral diagnosis, restorative dentistry, orthodontics, oral surgery, periodontic treatment and all other therapeutic procedures common to the dental art have been thoughtfully, carefully and capably advanced in the interest of the total health of the patient. The knowledge and skills growing out of study and experiment, supported by the compelling natural urge to achieve the highest possible level of quality in human endeavor, have produced in the United States a dental profession whose members are today the undisputed leaders of the world in their capacities for service to the oral health needs of society.

This active idealism has produced a very high standard of dental care which is fundamental to the maintenance of the health of all the people of the United States. But the quantity of the product up to this time has been limited to the degree that the main purpose of oral health care, namely, that of serving completely the oral health needs of all members of society, has not been fully realized. The quality of oral health care available to the public is highly important and its maintenance must continue to be a prime objective of those engaged in its distribution; but the quantity of oral health care must be increased to the point where all who need it may enjoy its benefits. There can be no question that the basic purpose of those practicing the dental art should be to serve competently all the oral health needs of all the people.

The dental profession in the United States is actively engaged in expanding the scope of dental care to include all the people. It has been concerned for many years with the problem and has laid the groundwork for the consummation of its objective. In every state and in practically all urban communities some effort has been made, through the establishment of dental clinics in the schools, to make oral health care available to all children. In almost all the states and in many large cities, state and municipal dental health programs are being administered for the benefit of school children under the direction of dentists who are health officers in the state, county, or municipal health de-

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partments. There has been a steady growth in these health centers during the past thirty years to the point that in the aggregate they now form a substantial base for establishing programs of dental care for the total school population. In several larger cities and in some states dental health programs offer opportunities for complete coverage of the elementary school enrollments. The growth in these activities has been so steady and persistent that the dental profession is encouraged to expect these basic activities, when further extended, ultimately to provide needed dental health care for the total school population.

There is today a vast need for dental care among the adult population. This condition represents, in large measure, the results of personal neglect stemming from indifference, ignorance and to some degree inability to pay the costs of dental care. The present situation is of such magnitude that there is little hope for its total correction by any means that may be immediately resorted to. Certainly the recruitment of sufficient dental manpower to correct promptly the existing backlog of dental defects, is wholly impossible. It appears that the only sure way for the American people finally to achieve universal dental health is to accept the long-range program, in which the people will voluntarily cooperate, one that begins with the pre-school child and carries each successive age level on to adulthood in sound oral health. Under such a plan total dental health care for the future citizens of the United States can be reasonably assured.

Interest in the problem of universal health care for the American people received great impetus during World War II because of the impression made on the public imagination by the large number of our youth who were denied military service because of disabling physical defects. Many extreme liberals appeared on the horizon, even before the outbreak of war, who sought to provide for the health needs of the people through a system of compulsory health insurance, and the findings of Selective Service added to their numbers and their persistence. And so the natural course which the dental profession had taken to solve eventually its dental health problem according to the democratic process was challenged by a group who held to the theory that regimentation and compulsion would do a better health job for the American people than freedom and voluntary action. Today we are confronted with the task of meeting our social responsibilities either through the voluntary efforts of free men or through the coercive dicta of a government that moves farther and farther away from true democracy.

There are two fundamental principles which must be observed in effecting a wider distribution of oral health care. First, the present high quality of oral health care, which the American public insists upon having, must not only be preserved but must be perpetually advanced as a guarantee of progress in professional enterprise and as a sure protection to the future health of the people. Second, our democratic way of life must not be violated in attempting short cuts to fancied desirable ends. It would profit the American people little if they should gain a desirable immediate objective but by so doing lose their freedom or any part of it, a freedom which has served to make this country a great nation. And nothing should be allowed to infringe on professional responsibility or to reduce self-reliance and self-determination which depend, in large measure, on competitive enterprise, or to take from the dentist in his relationship to his patient any of those incentives which provoke and sustain his best efforts.

There are many sound objections to compulsory health insurance in a democratic order. Among them is the threat to our democratic institutions. Compulsory health insurance introduces coercion into a situation in such a way as to involve the freedom and self-determination of both the patient and the dentist. It forces the individual to pay for a service wholly out of proportion to its basic costs and requires him to submit to bureaucratic regulations that hamper his opportunities for prompt service; it compels the dentist to participate in a program which robs him of his individuality, subordinates him to lay authority, enslaves him in endless red tape and deadens his initiative. In these respects a compulsory health insurance plan is a challenge to freedom and a menace to the traditional American way of life. The argument that such a plan provides oral health security for the American people is a snare and a delusion. Security is not something that governments provide for the people; security in a democratic society is the guarantee of opportunity for everyone to secure free and unhampered, in his own way, under his own power and in voluntary cooperation with his fellows, the necessities and the comforts of life. The dental profession in the United States is strongly opposed to the principle of compulsory health insurance. It is convinced that all the oral health needs of all the people can be provided for on a voluntary basis in complete harmony with the democratic process.

The long-range policies adopted by the American Dental Association for the achievement of oral health care for all the needs of all the people are sound, practicable and consonant with the democratic ideal; and they are well on their way toward universal success. In short, the Association proposes that voluntary cooperative effort is desirable in the quest for complete oral health care for all the needs of all the people; it holds that the responsibility for attaining the objective is first with the family, then the community, then the state, and, finally, if necessary, the Federal government. It insists that the use of tax moneys for health programs shall be limited to certain broad purposes such as research, education and prevention on a community basis. These funds may include support of community health programs for school children and support of the medically indigent and the marginal economic groups whose social handi-

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caps may restrict their personal efforts in securing essential health care. It believes that the community and state programs, now in process of growth, will finally provide the quality and quantity of oral health care that the public should expect. It believes that the health problems of the American people can be solved permanently and more effectively through the individual's assuming a personal responsibility for satisfying his own wants; it looks to the people to plan for their personal needs and it is opposed to the suggestion that the Federal government take over an authority for dental health programs that community and state agencies can and should assume. It is opposed to the implication that government by directive can be substituted satisfactorily for self-government; it believes that men cannot delegate their personal responsibilities to the state without loss of their freedom.

Progress is being made in the achievement of the purposes of the Association to ensure finally complete oral health coverage for the American people. The attitude of the Association is supported overwhelmingly by the great majority of American dentists and the American people. It is obliged to combat the selfishness of a few egoists and the hallucinations of a few visionaries who fail to recognize the realities of the problems involved and their ultimate consequences. Its present leadership has proceeded thoughtfully, intelligently and courageously to meet its responsibilities to society and to the profession. The officers, the Board of Trustees and the members of the House of Delegates of the American Dental Association are to be commended for the success they have so far achieved toward a final solution of this very important problem.

ROUND-TABLE DISCUSSION

TWENTY-SECOND ANNUAL CONVOCATION THE AMERICAN COLLEGE OF DENTISTS Sunday, August 3, 1947

SUBJECT: DENTAL EDUCATION

PRESIDENT HODGKIN: As a feature of this morning's program there has been arranged a discussion of a timely theme in what we believe will be an attractive form. The theme is "Dental Education."

The discussion will be in the form of a round-table discussion with Dr. Harlan H. Horner, Secretary of the Council on Dental Education of the American Dental Association, as Moderator; Dr. Shailer Peterson, Director of Educational Measurements of the Council on Dental Education; Dr. G. D. Timmons, Dean of the Temple University Dental School, Philadelphia. Unfortunately, Dr. Paul Jeserich of the University of Michigan is not able to be present; Dr. John T. O'Rourke, of the Tufts College Dental School, has kindly consented to substitute for him. The other participants are Dr. Thomas J. Hill, Western Reserve University; Dr. Phillip E. Blackerby of the Kellogg Foundation; Dr. Arthur H. Merritt of New York; and Dr. S. E. Davenport, Jr., of New York.

If Dr. Horner, as Moderator, and his participants will step forward, we shall now turn the session over to them.

APTITUDE TESTING

THE MODERATOR: As we all know, we have an unprecedented situation in the United States today. We have an unusual surplus of applicants for admission to our dental schools. Nobody really knows how many different persons are actually seeking admission to dental schools this fall. There has been some statistical confusion because of the interpretation of applications as representing individuals. Those of us who are familiar with the situation know very well that many applicants file more than one application. The Council on Dental Education is now engaged in trying to discover how many different persons in the United States, state by state, have actually filed credentials with dental schools seeking admission this fall. That information will be disseminated as soon as it can be secured.

The aptitude testing program, inaugurated by the Council on Dental Education with the cooperation of the American Association of Dental Schools last year, comes, apparently, at a very opportune time, when all the schools are seeking means and methods by which they may choose the best qualified students out of the large number who are seeking admission.

I am going to ask Dr. Peterson, the Director of Educational Measurements

of the Council on Dental Education, to tell us first what qualities and aptitudes the Council is seeking to discover in its testing program.

DR. PETERSON: Mr. Moderator, we have a competent committee to consider a wide number of abilities and aptitudes that we think will probably provide pretty good measurements for predicting how well the students will do in their dental school training. It would be impossible, of course, to investigate or to try to investigate all of these aptitudes at one time; therefore, we have to give certain priorities to them.

Among this group of aptitudes or achievements that we think are the most important are visual comprehension; actual mechanical ability—that is, manual dexterity; the ability to use English efficiently and effectively; reading ability in the field of sciences; vocabulary, particularly with regard to the physical and biological sciences; special word dexterity; and proficiency in general reading. In this particular group we think we have covered probably the most effectively productive group of abilities that we can measure.

Of course, we have some other media in mind. We would like to gather some data and information relative to the actual physical stamina of the individuals before they enter school We also have in mind personality tests, personality inventories and interest inventories.

THE MODERATOR: What hopeful signs have you thus far discovered in the first year's experience?

DR. PETERSON: The Tests that we administered were given last fall; and so far we have discovered from our investigations that the tests used are more highly predictive than the grade-point averages of the students, a factor used in most other studies. Of all information available, grade-point averages are about the only factor that most schools have as a basis for admission. Therefore, we feel very gratified that the tests are as predictive as they are.

THE MODERATOR: Have you had any opportunity to compare the results with any national norm? Can you give us some ideas as to how our dental students compare with those who are entering other activities?

DR. PETERSON: Yes. We had two objectives in this whole program. One was the aptitude phase, the phase of predicting achievement in the dental schools; the other was to determine for the first time the relative status of our present dental freshman class. In other words, we wished to find out for once just what kind of students we were getting in the dental schools. We found, much to our liking of course, that in mental ability, the upper half of our entering dental freshman class is equivalent to the upper quarter of freshmen commonly entering four-year colleges and universities. Our top quarter—in other words, the top twenty-five percent of our freshmen this year—compares with the top eight percent entering science and liberal arts colleges. Now that is a very, very good sign. However, remember that these standards, or norms, are in terms of freshmen. The sophomores are, as a group, better students than the freshmen, and the juniors are a better group of students than the sophomores, not because they increase in their ability of intelligence, but because of the weeding-out process. All of our freshmen have had two years of college, and a large number of them have had three to four years. Consequently we expect them to stand higher than freshmen in the science and arts colleges. But we are getting a very fine selection.

THE MODERATOR: Does the Council contemplate the possibility of recommending partial use of these tests as a condition of admission to dental study?

DR. PETERSON: Yes. I think the Council has had that possibility in mind all the time. Ultimately, if we are successful in our program of finding useful measures for prediction, we would allow the schools on their own volition to use these tests. We have already had requests from schools to use them this year. We feel, however, that we do not have sufficient evidence to enable us to tell a school that one test is most valuable, while another has only half that value. Consequently we are asking the schools to hold off from using these tests to determine admission qualifications for possibly four or five years. By that time we shall know with more assurance the actual usability of these tests in predicting a student's progress.

THE MODERATOR: No wholesale claim is yet made for the validity of the prediction?

DR. PETERSON: By no means. It is understandable, however, that many schools would want to use these tests, because they are finding them helpful. They are discovering that the students who score the lowest on our tests are also receiving the lowest grades in the dental curriculum. Those who score the highest in our tests are receiving the highest grades. Consequently, the schools are actually having an opportunity in these first years to observe at first hand the effectiveness of the tests for predictive purposes; so one can't blame them for being extremely eager to use them. But we want to hold off for another four or five years.

THE MODERATOR: Of course, there are areas of inquiry concerning the individual student which are yet, at least in our experience, beyond the field of objective tests, particularly those relating to the human equation.

DR. PETERSON: That is right.

THE MODERATOR: Dr. Timmons, I would like to ask you to outline for us what qualities and aptitudes are, from your point of view, as yet difficult to measure by objective tests.

DR. TIMMONS: Dr. Horner, I think we are all aware that we do not have, and probably never will have, a yardstick which can be used to measure accurately the ultimate success of the dental student. We are all familiar with the lack of success in the practice of dentistry experienced by some brilliant students. I feel that an appraisal of the intangible factors is as important as the determination of the student's capacity to acquire knowledge and skills.

I would hesitate to subject the educational achievement of most of the Deans of dental schools to such a yardstick, or to have their success in the field of dentistry predicted on the basis of the quality of their educational achievements. I believe it is important, after we have evaluated a boy's ability to learn, that we carefully survey his record in the practice of dentistry in an attempt to determine the values of the personality characteristics in meeting the peculiar demands that the practice of dentistry makes on him.

THE MODERATOR: Dr. Timmons, I think that the Panel would like to know how you deal with the prospective students who come into your office. How do you determine finally whether to accept them?

DR. TIMMONS: We have a rather complicated system of admission in Temple University. For instance, we are able to tell rather than to guess the number of applicants who apply for admission, since each application blank is serially numbered. A record is kept of the numbers of the blanks and the names and addresses of the boys to whom they are mailed. Application blanks are not distributed indiscriminately to anyone who asks for them.

When this application packet with the numbered application blank is sent to the prospect, it contains a very detailed letter of instructions, indicating five separate steps which the boy must take in order to complete the application properly. Also included in this application packet are three science recommendation blanks. One portion of the letter of instructions tells the boy to give one of these blanks to his biology teacher, one to his chemistry teacher, and one to his physics teacher, with the instructions that these blanks are to be completed by the science teachers and mailed directly to the school without having passed through the hands of the student.

On this application blank there are ten different areas in which the science teacher is asked to grade the applicant. In each of these areas he is marked as "Superior", "Good," or "Poor". We are interested in the reliability that he has shown in the pursuit of his laboratory studies in college science and we are interested in the way he has pursued his science courses in college; we ask these science teachers to report faithfully on the student's success in these areas.

The science teacher is asked to indicate whether the boy is "Very Desirable", "Fairly Desirable" or "Undesirable" for the study of dentistry. We have a further space on the blank in which we ask the science teacher to indicate the contact that he has had with the student, because we like to appraise the amount of time that the teacher has had to observe the student in order that we may have an idea as to whether he passed a snap judgment on the applicant.

We also require the boy to submit two copies of his college transcript. These, of course, are analyzed. The science subjects are separated from the balance of his college record, because we are particularly interested in the success he has had in the pursuit of his science courses. After this paper work has been completed, the Admissions Committee meets to discuss the qualifications of each applicant. With the above data before us, we have a clear picture of the applicant's total qualifications. From the application blank we have learned whether he has any family connections with the profession of dentistry. We then select those applicants whom we want to interview and schedule them in the order in which we shall interview them. Each selected applicant is then interviewed separately by the three members of the Admissions Committee.

We have an interviewing chart on which there are eleven areas, with five gradations in each. The members of the Admissions Committee spend thirty minutes or more with each candidate. After the interview, the interviewing chart is marked in each of the fifty-five areas appearing on the chart. Opinions are given of the applicant's physical appearance, his neatness in dress, his voice quality, his enunciation, and then of his personal characteristics—that is, whether he is likable, fairly likable, objectionable, pleasant or not, etc. Next an appraisal is made of his emotional maturity, whether he is mature, immature, or somewhere between these planes.

We are concerned also with the length of time that he has been interested in the study of dentistry and with his sincerity of purpose in seeking to enter dental school; for example, we want to find out whether he is a frustrated medical student and has turned suddenly to opportunities in dentistry because he could not get into a medical school.

Then we judge his ability to express himself clearly and intelligently. We note if he converses well, fairly well, poorly, or in a hesitant and unintelligible manner.

Finally we score his fitness for admission on a basis of excellent, good, acceptable, poor, or very poor.

After marking his chart in these fifty-five spots, the interviewer makes his over-all recommendation: he recommends without reservation, he recommends highly, he recommends, he hesitates to recommend, or he does not recommend.

After this scoring by each member, the Admissions Committee meets for final disposition of the cases. None has seen the interviewing charts of the other members. The charts are compared, the applicants are discussed thoroughly, and a final decision is reached as to whether the applicant shall be admitted.

THE MODERATOR: Dr. Timmons, what is your opinion as to the value of the objective tests discussed by Dr. Peterson as supplementary to your program?

DR. TIMMONS: I think they are extremely valuable. I believe that Dr. Peterson made the statement that it will take four or five years for him and his committee to make a thorough study of the prediction values of the several tests. I can say that in our school for this past year, the results of the aptitude

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tests have shown a high correlation to student achievement. Our faculty is not apprised of the results of the aptitude tests in advance because we do not want the members of the faculty to be placed in a position where they may prejudge the student. When the final grades for the year are recorded, the students are placed in numerical order in class according to achievement; this listing is compared with the listing in the aptitude test results. It was astounding to note the high correlation of these results. The boys that were dropped because of their inability to proceed were the boys who, according to the aptitude tests—both in the written and in the digital dexterity tests, were expected to fail.

TEACHING IN DENTAL SCHOOLS

THE MODERATOR: Dr. Davenport, you have already given us a splendid presentation of the views of your Committee concerning the training of dental teachers. Perhaps we can amplify what you have said in our discussion. I should like to ask you particularly for your own view of the adequacy of the teaching in the dental schools. Will you amplify to some extent what you have already said in a general way?

DR. DAVENPORT: Mr. Moderator, I must confess that some of my remarks will necessarily duplicate the statements made in my report; but in defense I would like to say that if any other one of this group had just read a report as I did, I think that he, too, would have duplications in what he must necessarily say in answer to your questions.

I think that the dental teaching is often inadequate. In my opinion the dental education in any school should be planned and carried out with the idea not only of preparing students to pass State Boards and practice clinical dentistry, but with a view toward grounding them more thoroughly in the biologic sciences in order that they will be qualified fundamentally and also hastening the happy day when there will be a widespread and deserved recognition of dentists as the cultural and scientific equals of their medical confreres. To my mind education holds the key to the attainment of this ideal.

Often the dental students have not had adequate preliminary education, and frequently the biologic sciences have been taught to them, let us say, carelessly. Many times the teachers have taught with something less than meticulous care or preparation, because their students were "only dental students." Consequently, a reasonable integration of the faculties of the medical and dental schools of universities would seem to be desirable. In that way certain subjects would be taught by the finest teachers and instructors of both schools, and where possible, without having those teachers and instructors know who are dental students and who are medical students. I believe the results would be beneficial to all.

Now, in regard to the clinical teachings: George Bernard Shaw once said,

"He who can, does; he who cannot, teaches." Obviously in many instances this is a very unfair statement, but taken by and large it is probably correct to a considerable extent.

In the report of our Committee on Education we quoted figures on dental teachers as presented by Dr. Horner to the American Association of Dental Schools in 1943. I shall not give the full details, as I have in my report, but let me say briefly that at that time Dr. Horner showed that 1033 teachers of clinical subjects out of a total of 1669 in 38 departmental schools were devoting less than half time to teaching, that only 28 percent were making teaching their full-time vocation; and that 1146 of the total had received degrees from the schools in which they were teaching, that 1406 had had no teacher training or experience outside of their own schools, that the majority of the new employees of the respective teaching staffs had been recruited annually from recent graduates—again with no special training and in many instances with no serious attempt to assemble and determine their qualifications.

I think we all agree that teachers of clinical subjects should be leading men in their respective professions who have been successful in practice and who have shown themselves qualified to teach.

THE MODERATOR: Well, Dr. Davenport, how can we attract more men to the career of teaching?

DR. DAVENPORT: There are a good many reasons for the existence of the conditions that have been outlined; and there are a number of ways by which we could change conditions in order to attract more men. In the biologic sciences many dental schools have not considered dental students worthy of the finest professors and teachers, partly because usually the preliminary education and entrance standards for the students were not equal to the requirements of their medical confreres. Consequently, the average dental student is not the intellectual equal of the average medical student. This condition is gradually being corrected, but it continues to be an important question.

Then in the clinical subjects the opportunities for the training of teachers are very limited. That is an extremely important question. The usual salaries for half-time and full-time teachers are very small, necessarily because of inadequate budgets. Most dental schools have very small endowments or no endowments at all. The tenure of appointment on various staffs is insecure; and there is little or no opportunity given to teachers for advanced study and research. Fundamentally it is natural for dental teachers to feel that they should be able to maintain themselves and their families in a manner which will invite the respect of their neighbors and friends in the communities in which they live; if they can't be sure of proper remuneration in their teaching positions, they will very naturally try to build and continue private practices and regard teaching as an auxiliary activity.

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A STUDY OF THE DENTAL CURRICULUM

DR. HORNER: In 1935 the American Association of Dental Schools concluded an exhaustive survey of the dental curriculum. It was a very significant undertaking, rivaled, I think, by that of no other professional agency in the history of professional education. Ten years have now elapsed since that report was issued. I shall ask Dr. O'Rourke whether he feels that the time has arrived for further study and possible revision of the curriculum which was so exhaustively studied ten years ago.

DR. O'ROURKE: Yes, I do think that the time has arrived for a re-study of the dental curriculum. The Survey Committee appointed in 1930 did not assume to do a complete job. In fact it lacked sufficient funds to do so. Since publication of the Survey Committee's report in 1935 a tremendous amount of worthwhile knowledge has accumulated which ought to find its way into dental practice. In my judgment, the gap between the known and what should be applied in dental practice is now wider than at any time in the history of dentistry. We know more about dental needs; we know more about nutrition and about malnutrition; we know something of geriodontics, which is a new subject. The need for child dental care is now much more generally recognized. The need for teaching the prevention and the control of dental diseases certainly is regarded by most people as more pressing than it was in 1930. There is greater need for detailed instruction in the basic sciences, and greater need for correlation of those sciences with the clinical courses. There is increased appreciation for the significance of diagnosis and more is known regarding the connections between oral and systemic conditions in health and disease than in 1930.

DR. HORNER: Is there ever any such thing as a complete or a final curriculum?

DR. O'ROURKE: Emphatically no. The opinion that a curriculum is permanent is one of the dangers in schools where thinking becomes complacent. They have curriculums with which they are satisfied and everything is set for eternity. There is much comfort in this feeling of security, but it is not in the interest of public health or professional education for knowledge useful to humanity to be gathering dust on the library shelves.

On the point of whether there is such a thing as a final curriculum, I would like to quote Howard Mumford Jones: "One difficulty with educational programs is that they are never built for time but are always built for eternity. Each pedagogical reformer, convinced that he has found at last a changeless and enduring way of educating human nature, announces his program as a series of timeless absolutes. Every curriculum has an air of being built upon the impregnable rock of holy scripture; and since academic institutions are highly conservative, the new curriculum, once alive and vital, when it becomes moribund, either changes slowly or changes not at all."

That is as true of medical curriculums as it is of dental curriculums. It is a dangerous state of mind to assume that a curriculum can ever be final or complete.

DR. HORNER: Dr. O'Rourke, what are the implications of a possible revision of the curriculum as regards the general promotion of public health, in which all dentistry is interested today?

DR. O'ROURKE: I feel that we have had a good deal of lip service on this question of training students for dentistry as a health service. I think that many of us have accepted the theory of focal infection as a frontier. This concept has resulted in the continued emphasis on surgery and prosthesis and in the extraction of millions and millions of teeth. Certainly it has not served to emphasize the need for the prevention and control of dental diseases.

What I have in mind is that we should bring into the curriculum all the knowledge that time will permit—knowledge in public health, in diagnosis, in nutrition, child care, geriodontics—bring in *all* health conditions and not stop, certainly, with the theory of focal infection on the assumption that other knowledge regarding health relationships is more or less incidental.

If we can include in the curriculum all of this accumulated knowledge in the health field, and should apply it effectively in the interest of better oral health we would have something like Dr. Gies suggested in 1929. He suggested, you may recall, that we attempt to develop dentistry as the equivalent of an oral specialty of the practice of medicine. When we do that, diagnosis becomes a health activity. We teach nutrition as a health activity; we teach public health as seriously as we teach prosthesis or operative dentistry; we give as much attention to child dental care as we do to oral surgery; and we bring the curriculum into balance from a health point of view, because dentistry definitely is a field of health service.

THE MODERATOR: Dr. Davenport has already spoken of the possible closer relationship between teaching in medicine and in dentistry. Dr. O'Rourke, what are the implications, in your opinion, as related to coordination of teaching in medicine and dentistry?

DR. O'ROURKE: I think that a revision of the curriculum would bring closer those relationships already established in the university. I think the dental school will need better teaching in the basic sciences; it will need to utilize the facilities of the medical school and to draw upon its faculty to a greater extent. But if the University does not have a medical school and does not provide those facilities, I can conceive that where the basic sciences are being taught by the dental school itself and where qualified medical teachers are on the staff, good teaching can be done. It is a question of quality of teaching and not of administrative organization. There are administrative conveniences and a lowering of teaching costs in those universities where the basic science facilities are utilized by both the medical and dental schools. But this situation does not mean that a dental school cannot do a good job in teaching its own basic sciences, and in teaching its own medical courses.

THE MODERATOR: Would you care to say a word about your conception of what we often hear referred to as autonomy in administration?

DR. O'ROURKE: Yes, I would be very glad to. I think that dental schools can make more rapid and more effective progress on the basis of administrative autonomy equal to that of other university schools. There is no point in assuming that any profit would be gained by placing dental education under medical education. Again I think that is a matter of quality of teaching.

I can see why, if a dental school is doing a bad job in science teaching and in regard to health relationships, the university authorities may get impatient and place that school under medical domination. On the other hand, I don't think that anyone has yet shown that a dental school with sound objectives and a good staff cannot do as well in teaching dentistry as a health service as can be done under the authority of a medical school.

POSTGRADUATE EDUCATION

THE MODERATOR: We are all very sorry that Dr. Jeserich could not be here this morning. Dr. O'Rourke, in your capacity as Director of Graduate Studies at Tufts College, what types of advance training do you discover that dentists are now seeking?

DR. O'ROURKE: Dentists, as far as I am able to learn, are seeking good material that can be read and understood. I think that is one phase of continuation education that has been neglected. They want available printed material from which they can quickly draw knowledge and put it into practice.

In the second place it is often necessary to bring courses directly to the dentist. These courses, beginning, perhaps, at 1:30 in the afternoon, would allow the dentist to continue his practice in the morning. There are no travel difficulties and no great interruption of private practice. Extension courses of this type are convenient for the dentist and can be taken at a comparatively low net cost.

Another type of course is the short refresher course of one or two or three days per week for a certain number of weeks. This type seems to be, at least in Boston, the most popular. One day a week has been the most popular in the metropolitan district.

Then there are the courses of one week, two weeks, three weeks—up to sixteen weeks; and the postgraduate course of one year.

All of those, it seems to me, are good; but in Massachusetts, at least, the

one or two days a week course for six or twelve weeks has been by far the most popular; and I think it will continue to be, because it makes very little inroad on the practice of the dentist. There are not many dentists who can afford to leave their practices for six, eight, ten or twelve weeks at a time.

THE MODERATOR: Do you think that in the nation as a whole we are meeting the demands of dentists for advanced training along the lines you suggest?

DR. O'ROURKE: My impression is that we are not. I think that the deficiency isn't altogether due to there not being enough institutions offering refresher and postgraduate courses. I don't think we have trained our undergraduate students in the habits of study sufficiently to motivate them to seek postgraduate training. A postgraduate course should not be viewed as a stopgap for the deficiencies of the undergraduate course. If we create good study habits and an interest in continuing education, the demand for graduate and postgraduate training will be much greater than it is at present.

THE MODERATOR: Will you discuss briefly the possible usefulness of graduate courses of a formal character for teachers and for research workers?

DR. O'ROURKE: As Dr. Davenport pointed out, we need teachers; and this need naturally serves to emphasize the need for graduate courses. We also need formal graduate courses for the training of persons who have interest in research. Without adequate opportunities for graduate study, it is quite obvious that both dental education and dental research will be severely handicapped.

THE MODERATOR: Do any members of the Panel wish to ask any questions of Dr. O'Rourke, concerning either the curriculum or the graduate program?

DR. DAVENPORT: I would like to ask Dr. O'Rourke whether he thinks that it will be feasible to initiate courses for the purpose of teaching teachers how to teach?

DR. O'ROURKE: I don't know the answer to that question. I have thought about it for a good many years; but I don't know how you can teach one to learn how to teach. I think methods can be taught; however teaching is more than method. Something might be done in the way of teachers' institutes. Excellent work has been done at the annual meetings of the American Association of Dental Schools; but as for setting up courses for the training of dental teachers, I am not sure that it would be possible, or desirable.

THE MODERATOR: It is my observation, Dr. Davenport, after many years in the field of education, that the will and the desire to teach are the first essentials. The individual who just can't be happy without teaching is going to acquire some capacity himself without formal procedures and direction.

DR. PETERSON: Doctor O'Rourke, in the curriculum survey that you were speaking about, wouldn't you also have a survey of teaching methods?

Wouldn't that lead directly to what Dr. Davenport mentioned? By knowing something about the teaching methods used in different schools you would have a basis for conducting short courses within the institutions or regional workshops.

DR. O'ROURKE: Yes, I agree with the suggestion if that is what Dr. Davenport had in mind.

DR. DAVENPORT: That is one thing I had in mind.

TEACHING AND RESEARCH

The MODERATOR: At the recent Chicago meeting of the American Association of Dental Schools held in connection with the annual meeting of the International Association of Dental Research—an organization which I have watched with great interest during recent years—I was agreeably surprised at the interest displayed in the problems of dental research. It is a very encouraging indication that dental schools throughout the country are deeply interested in basic research. We are fortunate in having on our Panel this morning a distinguished research expert, particularly in the field of pathology, in the person of Dr. Hill from Western Reserve University. Dr. Hill, won't you tell us how you define research in dentistry?

DR. HILL: I should like to do so by giving my conception of the meaning of the word "research." To me research means any careful, systematic study which contributes to our fund of knowledge and possibly the re-interpretation of known facts. If that definition be accepted, then we might say that research in dentistry is any careful study—no matter how it is conducted, either through clinical investigation or laboratory work or through the library—which contributes to a better understanding of dental disease, its diagnosis, treatment and prevention.

THE MODERATOR: Well, what would you urge as the values, both tangible and intangible, in research, particularly for teachers?

DR. HILL: I think that the tangible values are quite evident. Research contributes to our general understanding of disease, the methods of treatment, and the methods of prevention. Perhaps also, we might add, it is one of the valuable contributors to our dental literature.

The intangible values are a little harder to put one's finger on, but they are perhaps quite as important. First I would like to think of the intangible values to the man that does it. It is a discipline or an exercise for orderly thought and teaching. That, of course, makes him a better teacher. It makes him a more interesting teacher. From the standpoint of the student, it vitalizes the subject; it makes it a fine, living, growing thing which interests the student to a greater extent. Again, as an intangible value, we can think of research as being perhaps the greatest stimulation we have to reading, especially the reading of dental literature. One cannot be interested in research

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unless he becomes familiar with the literature. That in itself is a potent factor in broadening the whole horizon of the dental profession.

Perhaps one more thought might be added: namely, that it is through research that the profession has its greatest opportunity to raise itself in prestige and public esteem, which has both egotistical effects and financial values.

THE MODERATOR: Dr. Hill, will you distinguish between the values of research by groups of experts and those of research by individuals?

DR. HILL: I don't believe there is necessarily any difference in the values. Certain problems lend themselves to group research; that is, the problem may become so diversified that it will require the participation of men that are experts in various fields. Some problems can be accomplished much better by team research than by individual research. The kind of activity doesn't necessarily affect the value, but it might affect the quantity of production that might come out of the research.

THE MODERATOR: How can we promote more largely in our dental schools the type of research which you envision?

DR. HILL: I think there are various things that could be done. The first requirement, of course, is a financial program which insures continuity. One of the chief difficulties we have in research is the fact that much of it is done by the younger men; as soon as an effort is made to raise a research man into the higher financial brackets, it seems to be necessary that he also assume an increasing load of either teaching or administrative responsibility, and that added burden takes him away from his research.

Another thing that we need is a change in some administration policies. Research should become an integral and necessary part of the activities of the dental school. We need more and better research men. We have some difficulty in the selection of men who can be both research men and good teachers. One might be a good teacher in a clinical subject but of little value in research, or the reverse might be true.

THE MODERATOR: Does any member of the Panel have a question for Dr. Hill?

DR. BLACKERBY: Dr. Hill, it seems apparent that more funds are going to become available for research in dentistry in the near future; and I am wondering if you think we should make a deliberate effort to encourage other fields, related fields such as medicine, to take a more active interest and a more active part in research in dentistry and in the problems related to dentistry?

DR. HILL: No, Dr. Blackerby, I don't think that is going to be necessary, because that already exists. There is now a growing interest being taken by the medical profession and by medical schools in dental research.

AUXILIARY DENTAL PERSONNEL

THE MODERATOR: Very much of our attention now is being devoted to the

various auxiliary agencies of dental practice. The American Association of Dental Hygienists, in connection with the meeting of the American Dental Association, is now in session, as is the vigorous American Association of Dental Assistants. Recently at Chicago the Prosthetic Dental Service Committee of the A.D.A. held a conference on the much discussed question of the laboratory assistant and the dental technician.

Dr. Blackerby, what is your view concerning the place where dental technicians, dental hygienists, and dental assistants should be trained? Should the dental schools assume this broad obligation?

DR. BLACKERBY: It seems to me that the answer to the question is yes, that the dental schools should assume the responsibility for the training of auxiliary personnel in dentistry. The intimate working relationships which exist among the dentist, the dental assistant and the dental hygienist, and the relationship which should exist between the practicing dentist and the dental technician, indicate clearly that those relationships should be established during the undergraduate period, in order that the dental student, during his years of undergraduate training, may have an opportunity to learn how to use the auxiliary personnel intelligently, and the auxiliary worker may learn something about the professional and health significance of the duties that he performs and develop a greater appreciation of the responsibilities which the dentist faces in his daily practice. The dental school is already set up as an institution which can be very readily adapted to the training of auxiliary personnel, and it seems to be the logical place for the training of such personnel.

THE MODERATOR: We now have, I think, twelve courses in dental hygiene under the direct supervision of dental schools. We have two courses in the field of dental technology in operation—or shall have this fall—under the direction of dental schools. There are situations, Dr. Blackerby, where the dental school is not in a position to offer the work in either hygiene or technology. What would be your view of the possibility of recognizing certain other educational agencies, responsible agencies I mean, of a non-profit character, beyond the high school level, for the training of hygienists and for the training of technicians?

DR. BLACKERBY: I think that would be a matter of second choice. If it becomes necessary to train any types of auxiliary dental personnel in institutions other than dental schools, definite provision must be made for bringing the dental profession into the picture in order that these personnel may have the training which will best qualify them for the special services they are going to perform under the direct supervision of the dentist. If a vocational school or a dental clinic, as has been the case in the past, is in a position to set up courses for dental hygienists or dental assistants, in an area where it is not possible for dental schools to undertake that training, I believe that a satisfactory training program might be worked out in cooperation with the dentists practicing in that area. Where a dental school is available for this purpose, however, I believe that the program should be developed there.

THE MODERATOR: I asked the question because in certain sections that movement is already under way. In the State of New York, for instance, through instrumentality of the State Education Department, a series of technical institutes have been inaugurated, and a two-year course in dental technology has already been established; also three courses, one already in operation, are to be established in dental hygiene under the direction, management and control of the State Education Department, a responsible and dependable educational agency. The Council on Dental Education feels that it should consider very seriously the possibility of amending its regulations so as to consider for accreditment that type of institution. Another of a like character in dental technology is being planned in California under the Division of Extension Education of the University of California, to be conducted in Los Angeles. It will not be under the direction of the University. Do you think it possible that such types of institutions may qualify for recognition?

DR. BLACKERBY: It is probable that those types of institutions may serve reasonably well for the purpose of training the auxiliary worker; but I think one of the most important considerations in this connection is the one mentioned earlier, namely, that the dental student of today has a very definite need for association with auxiliary personnel during his undergraduate experience in order that he may learn to use assistants, hygienists and technicians intelligently. The dental schools have an obligation to provide this type of experience for their students, and when they have done so, then I can see no particular objection to certain other qualified educational institutions' assuming responsibility for the training of additional auxiliary personnel, if and when they are needed.

THE MODERATOR: As you know, Dr. Blackerby, the question of the relations of the laboratory and the technicians was much discussed at the Chicago meeting of the Prosthetic Dental Service Committee. Since that time I have completed an inquiry among the schools and laboratories, and I have found that throughout the nation there are now more than two thousand students engaged in the study of dental technology in proprietary schools and some five thousand, on an apprenticeship basis of training, in laboratories. Would you comment upon the place that the apprenticeship training may have in the fitting of technicians for their work in the commercial laboratories?

DR. BLACKERBY: The apprentice method of training is well established, and there is little reason to expect that this system could be changed readily even if such a change were shown to be necessary. In fact, I am inclined to believe that apprenticeship training, properly organized to achieve the desired objectives, may be the best approach to the preparation of technicians for the commercial laboratories. The basic weakness in the present plan of training

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dental laboratory technicians is the complete lack of professional supervision and guidance. The technician, during his period of training, has no opportunity to learn anything, actually, about the professional responsibilities of the dentist, or the biological or the health significance of the technical services which the laboratory worker performs. Ideally, the technician should be trained in the dental school for employment in the private dental office under the direct supervision and guidance of the dentist himself. Under the existing system of commercial laboratory practice, however, the handicap of physical separation between the dentist and the laboratory technician can be overcome. at least partially, by providing professional supervision for the training of technicians and for the operation of the laboratories. The apprenticeship training system can be adapted readily to meet this requirement, so that the dentist and the laboratory ultimately may have a common ground for understanding and more effective cooperation. In the long run, I hope, the dental profession will come to accept the use of dental technicians in the dental officeand their training in dental schools for this purpose.

THE MODERATOR: Dr. Blackerby, would you say that in the fields of hygiene and technology particularly we are in need of a job analysis, of knowing more specifically what we ought to teach, what we are aiming at?

DR. BLACKERBY: I would think so. One of the obvious reasons is the variation in the hygienest curriculums of the dental schools and other institutions that are training dental hygienists. This discrepancy suggests that we have not yet arrived at a definite understanding as to the purpose for which we are training dental hygienists. Many of the state laws governing the licensure and practice of dental hygienists define rather specifically the functions and limitations of the hygienist in the respective states; but at the same time I think we all agree that the variation in the training programs for hygienists is almost amazing. They range all the way from an extremely narrow program in which the student is trained only for the purpose of doing oral prophylaxis, to a very broad program for the training of hygienists who are expected to do health education, assisting, bookkeeping, typing, first aid, radiography, charting and laboratory technics, in addition to prophylaxis.

The ordinary duties of a dental assistant, the duties of a dental technician, the presentation of health education programs in the public schools and many other tasks now carried on by dental hygienists, should be analyzed carefully to determine whether a two years' course of training is sufficient to produce an individual capable of performing all these functions in addition to oral prophylaxis. A job analysis or a curriculum survey, or, better still, a combination of the two, to determine just what we are training dental hygienists for and how we may best develop our program of training these important auxliary workers, seem s to be indicated in the immediate future.

ROUND-TABLE DISCUSSION

FINANCIAL SUPPORT FOR DENTAL EDUCATION

DR. HORNER: From this discussion we have observed that the progressive training suggested depends in part upon material support. My old chief, the former Commissioner of Education of the State of New York, used to say that appropriations should follow the flag. Twenty years or more ago, in his famous report on Dental Education in the United States and Canada, Dr. Gies pointed out very clearly that the reforms he advocated could not be realized without largely increased material support of dental education and research. I suspect he would say with equal force today that the progressive things we now envision await the more adequate financial support of dental education in all our institutions.

We have in our Panel a distinguished dentist, a past president of the A.D.A., Dr. Arthur H. Merritt. I am going to ask Dr. Merritt to give us his views concerning the important issue of adequate support of dental education.

DR. MERRITT: Mr. Moderator, I think no one will question the need of stronger financial support for dental education. Therefore, we need not, in the brief time we have at our disposal, consider that question. The question. rather, is: Why has such support not been forthcoming? When it is apparent that there is no division of health service upon which the public is more dependent than that of dentistry, it seems illogical that the public has not yet realized its responsibility to dental education and taken steps to meet it. When it is evident that the average individual may never have occasion in his life to go to the surgeon or require the services of any one of the several specialties of medical practice but that the same individual will need to go to the dentist all of his life, it must be quite obvious to any reasonable person that there are few divisions of health service that need his support more than that of dentistry. What, let us ask, are some of the reasons why this has not been forthcoming? First of all, dentistry is a young profession. We must not forget that. It is only a hundred years old, and compared with other professions it is only an infant. Therefore, I think we should not be discouraged because it has not already arrived at maturity-at least in the eyes of the public. It cannot, therefore, compete with the older professions, particularly medicine.

I was interested recently in looking over the financial report of Columbia University, which maintains, as you know, a medical school and a dental school, to note that twenty-three different contributions had been made to Columbia University Medical School, aggregating \$213,700. In the same period, not a single contribution had been made to the dental school in the same university.

Another reason is the public's estimation of dentistry. Dentistry is not regarded as a learned profession. We may not like that deprecatory concept;

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but I am quite sure that it is the general opinion of dentistry. It is thought of in general as consisting of the repair and replacement of teeth, not requiring, perhaps, a university degree. It is thought of rather as a vocational training. It is less appealing, as a rule, to the prospective student in choosing a profession. There is little in the practice of dentistry that may be regarded as dramatic as compared with medicine and surgery; therefore, its appeal is less than it might otherwise be.

Another reason is—I think we must admit this—the considerable amount of dissatisfaction with the service being rendered by the dental profession. One of my patients, a woman of wide experience and one in whose judgment I have confidence, said to me recently, "I am sorry to say this, but it is my observation that dentistry is not held in high esteem by the public." Now why that is so I do not know, but I am afraid it may be true. The important question is, How are we going to correct this situation? First of all, I think we shall agree that the first step is the education of the public to recognize its responsibilities. It must realize, if the fact is brought to its attention properly, that it is dependent upon dentistry. It needs and wants good dental care. It must have such care if it is going to preserve oral health; therefore, dentistry should have first call, one might almost say, upon the support of the public.

Another factor is that we should observe greater care in the selection of our students. Recently, while in Canada, I met a junior dental student in the University of Alberta at Edmonton. I said to him, "What encouraged you to take up dentistry? What seems to be the attitude of your classmates in taking up the study of dentistry?" He said, "To make money." Now a student who enters a dental school with that ideal in his mind is not generally the type of man we would expect to develop into a cultured, educated, high-minded, professional man. He is a business man in a profession.

We must also educate students to think of dentistry not in terms of technical procedures given over to the repair and replacement of lost teeth, but as a health service. That persuasion is not easily accomplished, since the students come from a public that has not yet adopted this point of view. Our students on entering school possess the idea which the public generally has toward dentistry, namely, that it is merely a problem involving technical procedures and little more than a vocational training is needed to equip the student for practice. Therefore, one of the things we must try to get over as dentists and teachers—and may I say this to the Deans of schools and the teachers is that dentistry does not begin and end with technical procedures. It is not merely the making of fillings and inlays and bridges and plates and the extraction of teeth; it is a health service. Let us get that over to our students, because they are going to be the dentists of the future.

Another consideration is that we must, as a profession, maintain an open-

mindedness toward experimentation in dental education. Perhaps you will say that we are already doing that. I hope we are. There are those, however, who are somewhat doubtful on this point. I saw recently in my office, a man who is associated with one of the large philanthropic foundations in New York City, a man who has at his disposal probably hundreds of thousands of dollars for educational purposes. In talking with him about our problem, I told him something of what I have told you today. He replied that dentistry can hardly expect financial support, at least not from this particular foundation, until dentists are more open-minded toward experimentation in dental education than they seem to be. I am saying this for your information. You may or may not agree with the statement as it was made. Nevertheless, I think we should remember the old adage: "Note what your critics have to say, for they may tell you the truth."

Another thing: in an effort to obtain contributions in support of dental education we need to have some specific objective. It is not enough to go to the public and ask for money for dental education. Go to them with some specific objective in mind; tell them that you want money for this, that and the other reason. If this course is taken, I think we are more likely to obtain support.

I believe that the public, the educated public, if the matter is brought clearly to their attention, will be willing to support dental education in this country.

THE MODERATOR: Does any member of the panel have a question he wishes to address to Dr. Merritt?

DR. O'ROURKE: Mr. Moderator, I would like to know if Dr. Merritt would agree with this statement: At the root of this problem of securing funds for dental education is the position which it occupies in the health field. The story has gone on for a good many years that human teeth have no value except, perhaps, from a cosmetic point of view and only some value in relation to speech. If that is true and if teeth can be removed as casually as they are oftentimes removed, and substitutes made which are assumed to be satisfactory, what is the answer? We are frequently told of individuals who have lived to be ninety and a hundred years of age without their natural teeth or with artificial dentures, and, according to what we hear, they got along well. Under such circumstances what kind of case does dentistry have compared to cancer, cardiology, mental hygiene, nutrition, and many other fields? I am afraid it isn't a very good case if we hold to the view that suggests that the masticatory function is not important and that people somehow can get along without their teeth. We don't have a case, except for prosthesis and surgery. The one thing we forget is that people don't get along well without their teeth. They live, but survival alone is not a good index to health and well-being. We have yet to make a good case for dentistry as a real health service, and until we do, adequate financial support for dental education will not be forthcoming.

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DR. MERRITT: I think you will all agree that that is a long question and one which cannot be answered offhand. I would say again, however, that it resolves itself into a question of education of the public. While the public may have the idea that the loss of teeth is a small matter and that their preservation is merely a matter of cosmetics or convenience, we may not expect a great deal of support from them. I think that Dr. O'Rourke's statement is one of the best arguments I have heard here today as to why we should set up a program for educating the public concerning the importance of oral health service.

THE MODERATOR: Do the members of the Panel have any further questions to address to Dr. Merritt? If not, I should like to say a concluding word on what I believe is an optimistic note. I have been observing dental education and dental practice for a good many years. Year by year, in my observation, we are recruiting better qualified students for the study of dentistry. Year by year we are interesting more good men in careers in dental teaching. And, Dr. Merritt, despite the truth of everything you said, year by year we are getting a little better support all along the line for dental education. My own observation is that, after all, we shall command in respect about what we deserve from the public. Our behavior, our accomplishments will determine the level of support that we secure.

My observation is that dentistry, dental education, and dental practice are on the ascending curve and that notwithstanding our many weaknesses, which have been mentioned here, we are making good progress toward the goal of a truly learned profession.



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