# JOURNAL OF THE AMERICAN COLLEGE

# OF

# DENTISTS

VOL. 8 .

# MARCH, 1941

No. 1

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Published quarterly at 99 South Van Ness Avenue, San Francisco, California By THE AMERICAN COLLEGE OF DENTISTS Office of Publication: 350 Post Street, San Francisco, California

Subscription Price: \$2.00 per Volume

Entered as Second Class Matter July 13, 1940, at the Post Office at San Francisco under the Act of March 3, 1879 Copyright, 1941, by the American College of Dentists Made in United States of America

#### AMERICAN COLLEGE OF DENTISTS

Convocations have been held on this schedule (since organization in Boston, Aug. 20 and 22, '20): (1) Chicago, Jan. 26, '21; (2) Milwaukee, Aug. 13 and 18, '21; (3) Montreal, Jan. 25, '22; (4) Los Angeles, July 16 and 19, '22; (5) Omaha, Jan. 23, '23; (6) Cleveland, Sep. 12, '23; (7) Chicago, Mar. 5, '24; (8) Dallas, Nov. 12, '24; (9) Louisville, Sep. 22, '25; (10) Philadelphia, Aug. 22, '26; (11) Chicago, Jan. 26, '27; (12) Detroit, Oct. 23, '27; (13) Minneapolis, Aug. 19, '28; (14) Chicago, Mar. 24, '29; (15) Washington, D. C., Oct. 6, '29; (16) Denver, July 20, '30; (17) Memphis, Oct. 18, '31; (18) Buffalo, Sep. 11, '32; (19) Chicago, Aug. 6, '33; (20) St. Paul, Aug. 5, '34; (21) New Orleans, Nov. 3, '35; (22) San Francisco, July 12, '36; (23) Atlantic City, July 11, '37; (24) St. Louis, Oct. 23, '38; (25) Milwaukee, July 16, '39; (26) Baltimore, March 17, '40; (27) Cleveland, Sep. 8, 1940. [Next Convocation, Houston, Texas, Sunday, October 26, 1941.]

(4) New York City: Dec. 13, '40. (5) Minnesota: Feb. 24, Apr. 15, '41. (6) New England: Dec. 10, '40. (7) Wisconsin: Mar. 24, '41. (8) Colorado: (9) Pittsburgh: (10) Iowa: May 5, '41. (11) Illinois: Dec. 9, '40; Feb. 16, '41. (12) St. Louis: (13) Oregon: (14) Texas: Apr. 20, '41. (15) Florida: Nov. 11, '40. (16) Indiana: (17) Southewestern: (18) Washington, D. C.: (19) New Jersey: Dec. 19, '40.

Objects: The American College of Dentists "was established to promote the ideals of the dental profession; to advance the standards and 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.

Classes of members (each member receives the title of Fellow—"F.A.C.D."): (1) "The active members consist of dentists and others who have made notable contributions to dentistry, or who have done graduate, scientific, literary, or educational work approved by the College." (2) "Any person who, through eminent service, has promoted the advancement of dentistry, or furthered its public appreciation, may be elected to honorary membership."—Constitution, Article II.

Forfeiture of membership. "Membership in the College shall be automatically forfeited by members who (a) give courses of instruction in dentistry, for remuneration, under any condition other than those of an appointed teacher serving publicly under the auspices of a dental school, dental society, hospital, or other accredited professional or educational agency; or (b) give courses of instruction in dentistry in a privately owned undergraduate or postgraduate dental school; or in a school that is associated with an independent hospital or dispensary but is not an organic part of it; or (c) exact exorbitant fees for courses of instruction in dentistry under any auspices."...—Constitution, Article II.

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# IS THE M.D. DEGREE A PREREQUISITE FOR EFFECTIVE RESEARCH IN DENTISTRY?

#### WILLIAM J. GIES, Ph.D. New York, N. Y.

On January 24, 1941, the New York Times, in a lengthy "special from Cambridge, Mass., January 23," included the following comment—some of it by "Dr. James B. Conant, President of Harvard University, in his annual report to the Board of Overseers:"

"Among the major developments of the university reported by Dr. Conant was a new School of Dental Medicine, opening next Fall. This will replace the Harvard Dental School. Under the new plan students will obtain both the M.D. and the D.M.D. degrees at the end of a five-year [under?]graduate course. Of this school, President Conant said:

"'The best chance of improving the dental health of the country in the years ahead is to intensify the study of dental disease, of its causes, and of methods for its prevention. In this direction alone there seems to be real promise of aid for the 80 per cent of the population who now receive inadequate dental treatment or no dental care of any sort."

This quotation from President Conant's comment accords with the present writer's recent statement of "outstanding assurances in behalf of the new dental program at Harvard," one of which was worded as follows:<sup>1</sup>

"(d) The proposed new dental program at Harvard, by requiring the students to take three and one-half ( $\frac{7}{8}$ ) of the four years of the regular undergraduate courses in the Medical School, would give the graduates the *wider and deeper knowledge of medicine* required [it is said] for discovery by them of the causes, and development of means for the prevention, of dental diseases."

According to the foregoing statement in the *Times*, the School of Dental Medicine is currently intended, in the new dental program at Harvard, to "replace" the Dental School, which will not, as previously alleged, be "renamed" or "transformed" into the former. The said statement implies an assumption that education leading to

<sup>1</sup>Gies: J. Am. Col. Den., 7, 359; 1940, Dec.

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the award of the M.D. degree is a prerequisite for the quality and scope of dental research that will promptly solve all remaining problems of dental health-care, and which could not be accomplished by graduates of any existing dental school—including the one at Harvard—nor by a better alternative in educational procedure. The quoted comment also seems to assume that current cooperation by medical faculties, in the instruction of dental students in the related scientific and clinical aspects of medicine, is ineffective and could not be made adequate. The Committee that formulated the new dental program at Harvard—a Committee consisting chiefly of physicians, under the chairmanship of the Dean of the Medical School—stated all this in these definite terms:

"Modern dentistry has not been as successful in advancing understanding of causes and prevention of dental disease, or in training dentists capable of solving these problems, as it could be under a different [sic] plan of education. . . . Dental education . . . has remained relatively stagnant in understanding of causes and prevention of dental disease and in training of dentists capable of solving these problems." Dental education needs "drastic reorganization" to "train highly qualified men in fundamental principles of medicine and dentistry . . . to go out as teachers, investigators, and broadly trained clinical specialists who will be prepared to attack pressing and manifold problems of dental medicine. . . . Addition of basic medical training to the dental curriculum is so important that a certain sacrifice in . . . [the] technical training is justified" . . . as in medical education which, unlike dental education, "does not attempt to equip its [under]graduates in general with complete technical proficiency," but postpones this for "experience" after graduation, as in "preparation for practice of surgery, of ophthalmology, of roentgenology, and of other fields."

An official "release," by the Harvard University News Office on June 17, 1940, contained these related statements:

The new dental program aims, on the foundation of medical education (M.D. degree), to attack "the great public health problem of dental disease at its source, through advancement of study of causes of such disease and of its prevention" and to extend, through discovery in more effective research, "the scope of adequate dental protection . . . to large numbers of our people [80 per cent] for whom dental attention is not now available."

The above quotations from Harvard records seem to say, in effect, that by acquiring a medical education (M.D. degree), the

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students will thereby be enabled as graduates to do in dental research what others without medical education (M.D. degree) cannot accomplish; namely, promptly to ascertain the causes of dental diseases, and devise means to prevent them. In this assumption, the M.D. degree is the master-key that presumably opens all the doors to discovery in dental research. What a boon to mankind, if this were true.

It seems incredible that the distinguished physicians who formulated the new dental program at Harvard did not include in their declarations, for the guidance of all concerned, a statement responsive to this prospective related inquiry: If medical education (M.D. degree) will enable those who receive it to discover promptly how to prevent disorders of the teeth, why does the same education (M.D. degree) fail to give physicians knowledge and wisdom sufficient to prevent such common diseases as those-to refer only to nearby locations-of the throat, nose, ear, eye, and scalp? Even physicians who have received not only the M.D. degree but also the degree of Doctor of Ophthalmology-after additional closely applied specialist education and experience-have not yet learned how to prevent some common ailments of the eyes. The medical education that physicians receive leaves them powerless in these and many other relations. This regrettable condition is beyond present human control; but fortunately it stimulates endeavor to ascertain causes and to achieve prevention. In the light of these impressive realities, what is the factual basis for the assurance at Harvard that education for the M.D. (7/8) degree, supplemented by education for the D.M.D. (3/8) degree-by providing more details of medical knowledge and less of dental understanding than that afforded by current dental education-will automatically promote prompt discoveries of the causes, and development of means for prevention, of disorders of the teeth; will thereby convert dental health-care mainly, soon wholly, into successful advisory preventive service easily obtainable by 100 per cent of the population; and, as a consequence, will quickly eliminate the need for technical skill and mechanical treatment in dental practice? And all this beneficence

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will flow from "courses for the M.D. degree," in an era when glasses are worn by a larger proportion of the population than ever—when the common cold at one extreme and many degenerative diseases at the other are among the increasing perplexities that baffle the most competent and faithful medical care. What, in brief, is the justification for the *assurance*—by Harvard physicians to dentists—that if dentists will take the courses that physicians have to pass, and thus become as efficient as physicians, dentists will then be competent to prevent completely all dental disorders, and thus promptly to give 100 percent of the population perfectly protective dental health-care?

In this realistic allusion to actual conditions, the comment should not be misinterpreted. The present writer has long been an advocate of the principle that "medical education" should be extended to its most useful proportion in, and application to, the professional education of dentists. He has repeatedly expressed the opinion, also, that the failures in medicine and dentistry, to prevent diseases, are due—not to a superior reason in one profession, and to an inferior reason in the other—but *honorably* to the same reason: to inherent difficulties that the most competent, devoted, and ingenious efforts have *not yet* been able to surmount.

In a former discussion of a phase of the unwarranted assumption underlying the new dental program at Harvard, this comment was included (*loc. cit.*, p. 361):

"Although the M.D. degree is required for admission to dental practice in some parts of Europe, there is no evidence that dental research by physician-dentists is more advanced there than in this country. If knowledge of elementary undergraduate medical details would assure early discovery of causes of dental diseases and prompt development of methods for their prevention, why were not these very desirable discoveries made long ago by European physician-dentists?"

This comment was succeeded by the statement (p. 362) that, on the program of the annual meeting of the International Association for Dental Research in March, 1940, there were 84 listed reports of research at five half-day sessions, and that the following degrees were among those held by the workers scheduled to present these

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reports: M.D., 20; Ph.D., 28; both M.D. and Ph.D. (per author), 2; Sc.D., 2; total number of degrees in medicine or "medical sciences," 52. These data were followed in that discussion, by a number of questions, including these:

"Does this large proportion of *doctors of medicine* among the authors of these reports indicate that current dental research is deficient because those engaged in it have not acquired the elementary knowledge imparted by courses for the M.D. degree? Are the doctors of philosophy and doctors of science in the above summary—*nearly all of whom received these degrees as experts in 'medical sciences'*—also medical illiterates? Does not this striking situation suggest that instruction in the details of conventional, elementary, undergraduate, medical knowledge—upon which the new program at Harvard is based—cannot be expected to furnish automatically the keys to the problems of prevention of dental disorders?"

That courses for the M.D. degree will not automatically accomplish this desirable purpose is the obviously correct answer to the last question. Further evidence in support of this conclusion is available in the realities of current conditions in the "medical sciences" and medicine.

The Federation of American Societies for Experimental Biology, which holds annual meetings, consists of the five autonomous societies in medicine and medical sciences listed below, where the names are followed successively by numerals for the respective years of establishment, and for the total number of living members listed in the "Federation Yearbook" for 1940-41:

American Physiological Society: 1887; 726

American Society of Biological Chemists: 1906; 560

American Society for Pharmacology and Experimental Therapeutics: 1908; 233

American Society for Experimental Pathology: 1913; 269

American Institute of Nutrition: 1933; 240

The total membership, "by societies," is 2028. The total number of persons in the membership, after deduction of 389 "duplicate memberships," is 1639.

These societies and their membership constitute a representative group of the personnel in research in "scientific medicine." The "Federation Yearbook" lists the name of each member of each

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society, and gives additional data including the degrees that indicate his professional training and status. If the assumption underlying the new dental program at Harvard were valid, then all or nearly all of those who are actively promoting *medical* research, and have been establishing causes and means for prevention of diseases, received the education ("took the courses") leading to the M.D. degree. If this were not true, how—according to the aforesaid Harvard assumption—could these men conduct competent medical research? Data that appear annually in the "Federation Yearbook" are summarized in the accompanying table. The import of these data (*Table 1*) should be well known to the eminent physicians who

#### TABLE I

### Actual and percentage distributions of indicated degrees of the total number of members (1639) in the Federation of American Societies for Experimental Biology: 1940-41

		Persons in the Membership	
Degrees in Medicine or "Medical Sciences"		Number	Percent of Total
(a)	Do not have M.D	878	54
(b)	Have Ph.D. or Sc.D.; not M.D	841	51
(c)	Have Ph.D.; not M.D	811	49
(d)	Have M.D.; not Ph.D	608	37
(e)	Have both Ph.D. and M.D.	153	9
	Ph.D. first; <i>M.D. second</i>	95	6
	M.D. first; Ph.D. second	58	4
(f)	Have neither Ph.D. nor M.D.	67	4
	Of these: have Sc.D	30	2

formulated the "Harvard plan," some of whom are members of the Federation. The data show that less than half the whole number of persons (608 + 153 = 761) in the membership of the Federation received the M.D. degree; and that of the number who have that degree, one-fifth (153) also received the graduate education leading to award of the Ph.D. degree. Of the number who received both M.D. and Ph.D. degrees (153), nearly two-thirds (95) were primarily "Ph.D. men." Some of the latter received honorary awards of the M.D. degree, in medical recognition of the medical import of the research they accomplished on the basis of their Ph.D. education. One of these "Ph.D. men" who recently

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received an honorary M.D. degree is now Vice-president of a leading University, officially "in charge of *medical* affairs."

The data in *Table 1* indicate clearly that very much, probably most, of the important research for the advancement of medicine is being accomplished by men who have not taken "courses for the M.D. degree," and that *the M.D. degree is not a prerequisite for effective research in either medicine or dentistry*. The many who, although not graduates of medical schools, conduct competent research in medicine, are successful for broad reasons: they acquire fundamental medical knowledge in their own individual ways as *continuing students*, without taking "courses for the M.D. degree;" and they achieve success, in this as in any field of research, not by reliance upon superficial, conventional, elementary knowledge—like that in "courses for the M.D. degree"—but instead by applications of new procedures in unconventional ways in intensive study deeply of particular problems.

In a previous discussion of the import of the new dental program at Harvard, attention was drawn to the fact-among many that might have been cited as direct illustrations-that "Pasteur, a chemist, founded bacteriology, and made some of the most fundamental medical discoveries, not by taking courses leading to an M.D. degree, but instead by attending to possibilities and probabilities that were not included in medical courses, yet which intensive and independent inquiry into unexplored regions along new avenues revealed to his perception" (loc. cit., p. 361). In the same discussion it was suggested (p. 362) that "insight developed by intensive, advanced, special, graduate efforts in medico-dental understanding-rather than by extensive, elementary, general, superficial medical courses [in the new dental program at Harvard]-would be more promising" for the promotion of achievement in dental research, the improvement of dental service, and the betterment of the public health. The data in Table 1 support the belief that for the alleged purpose, at Harvard, the proposed substitutional undergraduate extension will not be as effective as would be a supplemental graduate program for "intensive, advanced, special, graduate efforts in medico-

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dental understanding," by the small number of persons who—on the new dental program—are expected individually to elect such opportunities for leadership. On this alternative *supplemental* graduate program—a conventional educational procedure—opportunity would be offered, to dentists and to physicians, to elect advanced work in medicine or dentistry, or both, and thus to acquire the highest attainable education in any aspect of oral and dental specialization, including research and teaching, leading to the Ph.D. or other graduate degrees. This *supplemental* graduate alternative would neither aim, nor help, to convert a preferred portion of dentistry into a specialty of medical practice. It would not dismember or degrade the dental profession. It would not "replace" the Harvard Dental School. It would not prevent that School from continuing to be the oldest of the dental schools which, from the dates of their establishment, have been integral parts of universities.

# NATIONAL DEFENSE FROM THE DENTAL VIEWPOINT<sup>1</sup>

### JOSEPH D. EBY, D.D.S., New York, N. Y.<sup>2</sup>

The extent to which this subject will be of practical value, I do not know, but I shall endeavor to present some material in a sequence which may be interesting, or useful, or which may have some bearing on the future. To say the least, the subject should be vital to each of us, for it concerns our country and our people, and most of all our profession, since we may be of definite service in the preparations for, or in the event of, a national emergency.

Upon the entrance of the United States into the last World War, authorization was made for a Dental Reserve Corps of 5000 officers, to be called to duty as rapidly as mobilization required their services. These men expected to remain first lieutenants for the duration of their service, there being no provision for promotion at that time. On October 6, 1917, Congress enacted a law giving to the Dental Corps rank and privileges equal to those of the Medical Corps, with the same rules for promotion. In the fall of 1917, a short course on maxillo-facial surgery was given at the Washington University Medical School and the Barnes Hospital, St. Louis, Missouri. This was attended by fifteen medical officers and fifteen dental officers, who were ordered there as students. They were supposed to be joined by fifteen medical officers who at the same time were taking a course on cranial surgery, here at the Rockefeller Institute. These men were to make up fifteen "head teams," which were to be sent to France for duty in the intermediate hospital zone, for the treatment of wounds of the face and head during their early stages. The rapidly changing type of warfare seems to have been one answer to the question as to why these teams were never brought together. It was a notable fact that soldiers began to sustain an increasing proportion of multiple wounds. The only explanation I have ever

<sup>&</sup>lt;sup>1</sup>Read at a meeting of the New York Section of the American College of Dentists, Town Hall Club, New York City, December 13, 1940.

<sup>&</sup>lt;sup>2</sup>Former Lieutenant Colonel, Dental Reserve Corps, United States Army.

heard concerning this was the comment that the type of warfare was changed from the dug-in trench type, to the open-field or running type.

Shortly after our declaration of war, the Medical Department established a Medical Officers' Training Camp, at Chickamauga Park, Georgia, known as Camp Greenleaf. It consisted of ten battalions of medical officers. It was not until February, 1918, that a dental battalion was authorized, and the first class reported there March 15. These classes in the dental battalion received one month's basic military training, which was very satisfactory and something that every reserve officer in the Medical Department definitely requires. They also received a second month of professional training in the dental school, in which they were like the medical battalions who had training in all kinds of medical, surgical and laboratory schools. There was a dental teaching staff of ten men for both the practical and the theoretical work, and all the subjects authorized to be taught were dental in nature. One of the subjects, of course, was oral surgery, under which some of the principles of first-aid and splinting were taught. It was possible occasionally to get two or three exchange lectures from one of the surgical schools, but it was not a definitely established part of the plan. The fact that this school taught mainly, undergraduate dentistry, should have been precluded by the fact that no reserve officer should be allowed to receive a commission who could not pass a dental examination equal to or more advanced than that taught in the Army Dental School. It could not be called a refresher course designed to meet advanced Army requirements.

Of the 5000 commissioned dental officers, 1700, approximately, one-third of the Corps, went through the School. In the meantime, our combat divisions, headquarters, hospitals, and other personnel who were sent to the A.E.F., were manned principally by dental reserve officers who had had no training to speak of except such casual experience as they might have gained in camp. These men were headed by some division dental officers who were regulars, but there were some divisions in which the entire personnel of twentyeight or thirty men were reserve officers. The word came back as far as

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Camp Greenleaf (through Washington) from these front-line dental officers urging field and first aid training. To my knowledge this request was never fulfilled. As everyone realizes, a dental officer should be prepared in each of three distinct phases: (x) as a dentist, (z) as a soldier, and (3) as an auxiliary surgeon. He should be a dentist before he is given his commission; he should be trained in the school of the soldier, and finally, in auxiliary medical subjects. A dental section was established at the sanitary school, at Langes, France. A study of the history of that school is very interesting. For the six or eight classes which were conducted there, the changes in the schedule show that the men were getting more alert to Army requirements than to "routine" dentistry. This was only a short course, engaging but a few men in each class, and many of these were ordered back to their organizations before finishing, when their divisions were moved up to the front.

No transportation was arranged for the dental officer or his equipment. He had to make his way along as best he could. In the advance zone the nature of his work was not fully defined, as was shown by the wide variance in the use of dental officers in the various divisions. Division surgeons and division dental surgeons generally had the dental officers distributed at aid stations, supervising the collection of casualties, rendering first aid to the injured, and caring for their evacuation. In looking back it seems a grave mistake to send these dental officers who haven't received the best of first aid training, up to the front. In their school work this instruction must be given by medical officers.

At the present time the picture is extremely different. In the first place, the Regular Army Dental Corps is entirely different. We have quite a number of former officers, who are still active, who went through the experiences of the last war, and we can profit by their accomplishments. In the present selective service plan, it will be necessary to have some 3000 dental officers on active duty by April 1, 1941, for one year's service, to be divided into service with troops, service in clinical dispensaries, and in hospitals. On a fiveyear program this means that there will be returned to civil life several thousand dental officers with reserve commissions who would be available as a trained nucleus in case of general mobilization. All of

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these men will be more or less military-minded and, with a "refresher course," could join in with older men, who at such a time would be selected for certain special duties. In the event of a general mobilization, wherein a Dental Corps of 8,000 to 10,000 men might be required, the plans for their training have been far advanced over those of the last war. The chances are that the Medical Department would establish several training centers, and the instructors on the dental staffs would have previously received uniform instructions themselves, so that officers who would subsequently serve together could be given, at different centers, the same basic instruction. Routine dentistry would be excluded from this training, and the school of the soldier and particularly that of the auxiliary medical surgeon would be emphasized. The dental officer and his equipment is now definitely established in the Tables of Organization of the Army, and his baggage rendered so much more compact and efficient that there is no comparison. In this way we can follow the dental officer from the time he is ordered to active duty until he is up in the front line with the troops, or the hospital organization to which he is assigned, and the forces of combat are ready to begin.

Thus we find an extremely different picture as relates to our personnel, equipment, and training-one in which our profession and our country can feel a great sense of satisfaction. Traumatic wounds and injuries received in combat have to be protected and provided for in several different stages and evacuation zones. The treatment necessary can be divided into first-aid, emergency, septic, definitive, and reconstructive. At the first-aid period, the recognized principles of proper bandaging have been greatly improved. The provisions for the prevention and practical treatment of shock, hemorrhage, maintenance of airway, and postural positions to prevent difficulties in transit, have all been decidedly improved for the advanced theater of war. For early treatment in field and evacuation hospitals, chemo-therapy will make new contributions. Blood substitutes are taking on a different form, and blood serum with the red corpuscles extracted can reach the front both in powdered and liquid form, so that the need for a reserve force of donors for

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blood typing will no longer be required. Improvements, such as intravenous anesthesia will cut down the need of bringing up heavy equipment, and will release many men from that severe task for other life-saving duties on a broader scale. Through these stages the dental officer will find himself hand in hand with the medical officer, accomplishing as much as the others around him, and he must be prepared to take command of any emergency which might confront him.

In the intermediate zones-far enough behind the lines so that heavy equipment can be brought forward with reasonable safetywounds will be evacuated where they will receive regular treatment against sepsis and where, through definite treatment-planning of each case, the definitive treatment can be started. In each of these units, which will be made up largely of general and evacuation hospitals taken out of our leading universities, there will be a wellequipped dental laboratory and other facilities to meet any form of dental or maxillo-facial requirement. The great improvements which have been made in principles of intermaxillary wiring and splint anchorage and design will play an important role at this stage. Those who had actual experience with the maxillo-facial wounds which were returned to the United States for their final treatment felt it was only too obvious that the preventive value of treatment, properly administered during this septic period, had a direct bearing on the prevention of troubles later, and on the extent of work necessary in reconstruction. Passing along into the period of reconstruction, great improvements and advances will also be found there. The improvement in casting materials for splints and dentures, the colloid impression materials, the acrylic resins, and other things, will greatly facilitate the construction of the final splints for bonegrafting and the final surgical prosthetic restorations.

With the aid of a few slides let us now take the dental officer back to the front line and place him there in combat. From then on we will follow him and his wounded comrades back through the lines of evacuation, and the various stages of healing, until both have reached their ultimate destination in the zone of the interior.

[Interesting and instructive slides concluded the presentation.]

# THE CYCLOTRON AND ITS RELATIONSHIP TO BIOLOGY AND MEDICINE<sup>1</sup>

## SHERWOOD MOORE, M.D., St. Louis, Mo.<sup>2</sup>

This subject might be more advisedly presented by a nuclear physicist or by a biophysicist or chemist than by a clinical radiologist. There are some more or less valid reasons, however, why the clinical radiologist is justified in dealing with such a complex topic. One of these is that the clinical radiologist knows only too well the deficiencies, particularly in the treatment of malignant disease, of the natural radioactive substances and the roentgen rays. Another reason is that the cyclotron<sup>3</sup> is a natural, logical development of the vacuum tube. If one bears in mind the fact that the cyclotron is a vacuum tube, though an extremely complex one, comprehension of this apparatus will be made simpler.

Although the cyclotron has engaged the attention of the writer for three years in the raising of funds and the actual construction of the apparatus, there has been no personal experience in its use either in the field of research or application in the treatment of disease. Therapeutically the cyclotron has been employed only at the Radiation Laboratory of the University of California in conjunction with the School of Medicine.<sup>4</sup> Products of the cyclotron have been employed more widely than has the cyclotron itself. Practically all the cyclotrons, some fifteen or twenty, constructed or in the process of construction in this country, are in physical laboratories. The Washington University School of Medicine is the first to embark on the construction and operation of a cyclotron purely for medical and biological application, both in the therapeutic field and for research.

Reason tells us that when changes are produced in cells following the application of roentgen or radium rays, the metabolism of the

<sup>1</sup>Address delivered at the Cleveland Convocation, Cleveland, Ohio, Sunday evening, Sep. 8, 1940.

<sup>2</sup>Professor of Radiology, Washington University School of Medicine, and Director of the Edward Mallinckrodt Institute of Radiology.

<sup>3</sup>Mann, W. B.: The Cyclotron, New York Chemical Publishing Company, 1940. <sup>4</sup>Lawrence, E. O.: *Radiology*, 29, 313-322; 1937.

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cell is altered. However, in the present state of our knowledge, rays from these sources leave us in the dark as to the precise nature of these physical changes in the cells. It is hoped that further on it will be indicated that synthetic radioactive substances produced by the cyclotron may extend our knowledge of cellular activity both in normal and in pathological tissues. There is the hope that the enigma of the metabolism of the malignant cell may be solved and that with this knowledge we may be led to a more rational and better management of the terrible scourge of cancer.

It is always dangerous to state that the research possibilities of any particular agency have been exhausted, but it does seem that in the field of roentgen and radium irradiation, we are, and have been at a stand-still, and for that reason new modalities are needed in the field of irradiation. The most promising of these seems to be the cyclotron. In the therapeutic radiation, rays of voltages of 1,000,000 or more have been employed, but the ratio of results is not comparable to the increase in voltage. It still has to be proved that therapeutic applications of 1,000,000 volts of roentgen ray, or of those of the radium bomb (regardless of its size) produce better results than are obtained by roentgen rays generated at far lower voltages. Synthetic radioactive substances can be produced by the action of the alpha particle from radium, the voltage "doubler" from the Van de Graff generator,<sup>5</sup> and by the cyclotron. There is far greater promise from the last named than from the two other sources.

The transmutation of elements by artificial means has engaged the attention of scholars of all ages. The quest for the fabled philosopher's stone was for centuries pursued by the ancient alchemists and their followers, who sought vainly to convert the baser metals into the gold and silver which would make them rich. However, modern physical science, impelled by a far more altruistic motive, has finally solved the problem of transmutation with complete success, primarily in consequence of its revelations concerning atomic structure and the interrelationship of the components of the atom.

<sup>5</sup>Solomon, A. K.: Why Smash Atoms? Cambridge, Harvard University Press, 1940.

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By an odd coincidence, almost simultaneously with the discovery by Roentgen in 1895 of the rays which bear his name, Rutherford<sup>6</sup> propounded the theory of the nucleus atom, on which all nuclear and atomic physics has since been established. The atom, which had for generations been conceived as a basic, indivisible particle of matter, was found to resemble a tiny universe, with a nucleus as the center of a sort of miniature solar system, surrounded somewhat in the manner of planets by electrons. It was shown also that the differences in physical and chemical properties of the ninety-two known elements were due to variations in the number of electrons revolving around the nucleus. This number is called the atomic number. Thus, hydrogen, lightest of these elements, possesses one electron, and uranium, the heaviest, ninety-two electrons, their atomic numbers being therefore I and 92 respectively. Subsequent researches indicated that the electrons could be removed from the atom without modifying its essential character, hence it was concluded that the nucleus itself must consist of still smaller particles, which were in turn demonstrated to exist and were called protons and neutrons.

Although the separation of electrons from the atom involved a comparatively simple procedure, the release from the nucleus of its protons and neutrons, the ultimate source of atomic power, proved much more difficult. Since it was generally conceded that only an atom could be employed to "smash" another atom, investigators labored to construct an apparatus capable of the production of charged particles called deuterons with the tremendous energy required to penetrate to the nucleus of the atom.

Of the several devices contrived for the purpose, the cyclotron designed in 1929 by Ernest O. Lawrence<sup>7</sup> is now accepted universally as the ideal type of "atom smasher." The cyclotron consists of two insulated, semicircular, hollow electrodes, or "dees" as they are called in allusion to their shape, supported in a flat, cylindrical vacuum chamber, with their radial planes coplanar and their open diametral edges parallel with a narrow separation. The vacuum chamber,

<sup>6</sup>Rutherford, Lord Ernest: The Newer Alchemy, New York, Macmillan Company, 1937.

<sup>7</sup>Lawrence, E. O., loc. cit.

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whose flat, circular ends are of steel, is itself supported horizontally between the pole pieces of a powerful electro-magnet, the magnetic intensity thus acting in a direction normal to the radial plane of the "dees." The two "dees" are connected through an inductance so as to form a capacity in an oscillatory circuit of high frequency. To this circuit a high-frequency voltage is applied so that an alternating voltage is operative between the two "dees." Accordingly, the resultant lines of electric force are concentrated within the diametral gap between the two "dees," with a comparatively field-free region between the latter. A positive ion in the gap between the two "dees" is accelerated from one to the other and passes into the electric fieldfree region inside one of the "dees." However, under the influence of the magnetic field, the ion traverses a semicircular path within the "dee," eventually emerging again into the space between the two "dees." If the time which the ion has spent inside the "dee" equals exactly half the time period of oscillation of the high-frequency circuit, on its emergence into the gap between the "dees," the electric field is reversed, and the ion is accelerated once more into the electric field-free region within the opposite "dee."

From the foregoing brief description it will be perceived that the cyclotron renders possible the production of high-speed ions of hydrogen and helium by successive accelerations of the same ions with the same moderate voltage, on the principle that an ion circling in a plane perpendicular to a magnetic field traverses the circuit in the same time, irrespective of its linear velocity, the angular velocity being constant. For example, an ion circulating in such a field may be accelerated repeatedly by successive applications of about forty thousand volts from a radio oscillator with which the ion remains in resonance. In this manner a potential speed equivalent to that obtainable from an application of seven and a half million volts has been imparted to heavy hydrogen ions.

Preliminary experiments with the original model of the cyclotron demonstrated at once the validity of the fundamental concept on which it was based and the possibility of its practical utilization for the actual transmutation of elements. In fact, during subsequent tests of the apparatus, sodium, with an atomic number of 11, when

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bombarded by a deuteron, or heavy hydrogen nucleus, incorporated a neutron therefrom and was converted into magnesium, with an atomic number of 12. Aluminum, with an atomic number of 13, by absorbing an electrified particle of helium, became phosphorus, with an atomic number of 15, and nitrogen, with an atomic number of 7, on losing a nucleus of helium, became boron, with an atomic number of 5. Other examples of more complex transmutations were noted.

Furthermore, and perhaps most important of all for biology and medicine, it was found that on bombardment by projectiles from the cyclotron the lighter of the elements were rendered radioactive, and acquired the property of the emission of rays possessed in nature by radium alone. The artificial radioactivity thus imparted to these elements results from the fact that, when an atom is "smashed", the protons and neutrons in its nucleus are rearranged. For instance, the nucleus of an atom of boron may be represented as a circle containing ten minute spheres, five protons and five neutrons, and the deuteron which serves as the projectile as a circle containing two tiny spheres, a proton and a neutron. When the atom is hit in the cyclotron, the boron and the deuteron combine, and the six protons and six neutrons produce carbon, by transmutation of one substance into another. Thereupon, in an effort to recover its stability, the newlycreated hot carbon immediately expels one neutron, and for some time continues thus to rid itself of the excess particles. This process accounts for the observed radioactivity which varies with the different elements, certain ones of which cast off these particles at once, while others emit them only gradually over periods of minutes, hours, or even years.

In 1932 Chadwick<sup>8</sup> demonstrated that atoms of beryllium, when subjected to bombardment in the cyclotron, yield neutrons which exert a direct effect analogous to that of roentgen rays or the gamma rays of radium. The discovery of the neutrons which were thus produced suggested the necessity for an investigation of their biological action. Initial experiments conducted by Zirkle and Aeber-

<sup>8</sup>Chadwick, J.: Nature, Lond., 142, 630-634; 1938.

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sold<sup>®</sup> in 1936 on the relative effectiveness of x-rays and fast neutrons in retarding growth of wheat seedlings showed that the effectiveness of a roentgen unit of neutrons is twenty times as great as that of a roentgen unit of x-rays, while in tissue the effectiveness of a given amount of ionization by neutrons proved as great as that of ten times as much ionization by x-rays.

The biological effect of neutron rays on the blood-picture of the rat was in the same year studied by John and Ernest Lawrence.<sup>10</sup> The results of their experiments revealed that with respect to irradiation in terms of roentgens, neutron rays were approximately ten times as effective biologically as x-rays, and five times as effective biologically per unit of ionization. In connection with these experiments it is interesting to record that precisely as in the leukopenia produced by exposure of rats to x-rays, in the leukopenia induced by exposure to neutrons the lymphocytes were affected to a greater extent than the other white cells.

A somewhat more elaborate series of researches on the relative biological effectiveness of fast neutrons and x-rays per unit of ionization, upon different organisms was undertaken by Zirkle, Aebersold, and Dempster in 1937.<sup>11</sup> Drosophila eggs, wheat seedlings, and fern spores were utilized as objects of experimentation. These investigators found that the ratios of effectiveness of neutrons relatively to x-rays were 2.1, 5.0, and 2.5, respectively, for the three organisms in question. In experiments of a similar character Ernest Lawrence verified the results obtained by Zirkle and his associates, and in addition established ratios of 5.1 and 3.8, respectively, for mammary carcinoma in the mouse and lethal power upon normal mice.

According to Cockcroft,<sup>12</sup> the marked difference in the reaction of neutrons with matter, as compared with roentgen and gamma rays, is explained by the fact that when neutrons pass through matter, they project nuclei of atoms but not electrons. These projected nuclei thereupon produce ionization along their paths which is several times

<sup>&</sup>lt;sup>9</sup>Zirkle, R. E., and Aebersold, P. C.: Proc. Nat. Acad. Sc., 22, 134-138; 1936.

<sup>&</sup>lt;sup>10</sup>Lawrence, J. H., and Lawrence, E. O.: *Proc. Nat. Acad. Sc.*, 22, 124-133; 1936. <sup>11</sup>Zirkle, R. E., Aebersold, P. C., and Dempster, E. R.: *Am. J. Cancer*, 29, 556-562; 1937.

<sup>&</sup>lt;sup>12</sup>Cockcroft, J. D.: Brit. Med. J., 1, 81; 1939.

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denser than ionization along the paths of electrons. One important difference in the effect of neutrons which has been observed is that although a certain minimum exposure to roentgen rays is necessary to inhibit cell division, no such minimum occurs in connection with radiation by neutrons.

Even prior to the development of the cyclotron by Ernest Lawrence and his colleagues, many investigators had succeeded in inducing radioactivity artificially in small amounts of elements, chiefly by means of the bombardment of these elements with the alpha particles of radium or with neutrons from a radium-beryllium source. However, the discovery of deuterons, or heavy hydrogen nuclei, and the evolution of the cyclotron, enabled them to manufacture larger quantities of these radioactive elements. In the cyclotron as it is at present constructed and operated, the deuterons are ordinarily accelerated to speeds equivalent to five million volts or more, and are directed against targets of various elements which are thus rendered radioactive. As John Lawrence<sup>18</sup> has shown, radium and its relatives and derivatives emit one or more alpha particles (helium nuclei), beta rays (electrons), and gamma rays, all of them ionizing radiations which produce biological effects presumably secondary to ionization within the tissues. On the contrary, elements in which radioactivity is induced artificially emit similar particles, but differ from their natural counterparts in remaining active for only comparatively brief periods. This characteristic, in conjunction with the fact that radioactive isotopes possess the same chemical properties as their stable relatives, suggested their use as so-called "labelled" or "marked" indicators or, as they are usually entitled, "tracers" of the metabolism of the various elements within the organism. Because of their radiations, these radioactive elements can be detected and quantitated with the aid of an electroscope or the counter designed by Geiger and Rutherford.

Common sodium was the first element which was rendered radioactive by bombardment with deuterons in the cyclotron. The injection into mice of small amounts of a normal saline solution prepared

<sup>13</sup>Lawrence, J. H.: Yale J. Biol. & Med., 9, 428-434; 1936-37.

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from radio-sodium produced a slight leukopenia, and thus afforded an indication for the administration of this substance to patients with leukemia. During a trial of this method of therapy, Hamilton and Stone<sup>14</sup> reported no clinical or hematological improvement from small doses but were able to quantitate the amounts of the radioactive salt in blood, serum, urine, perspiration, and feces. Hamilton subsequently gave small amounts of radio-sodium chloride by mouth to three young adults. With the Geiger counter as a detector, the rapid onset of absorption was revealed by the appearance of the salt in the hand at the end of two minutes.

Chiewitz and Hevesy<sup>15</sup> observed that radio-phosphorus when fed to rats was excreted in approximately equal amounts in the urine and feces. In one rat killed twenty-two days after having been fed radioactive phosphorus, the organs were analyzed for the presence of radio-phosphorus. It was found that the bones contained the largest amounts, and that the teeth in particular had very actively absorbed the phosphorus. However, on calculation of the content of phosphorus per gram of dried tissue, the spleen, kidneys, and brain exhibited the higher content. Radio-phosphorus manufactured in the cyclotron was fed to young growing chickens by Scott and Cook,16 who confirmed the data adduced by Chiewitz and Hevesy relative to the excretion and distribution of phosphorus. But the much larger quantities which were fed to the chickens produced a definite effect upon the blood-picture. A neutropenia resulted instead of the lymphopenia which usually follows irradiation of the entire body with radium or roentgen rays. This phenomenon was ascribed to the more or less selective absorption of phosphorus in bone, the marrow thus receiving selected irradiation, with consequent destruction of the granulocytes.

Radioactive iron and its metabolism in anemia of dogs has been studied by Hahn, Bale, Lawrence, and Whipple.<sup>17</sup> Five dogs were maintained on a diet low in iron and rendered anemic by frequent

<sup>&</sup>lt;sup>14</sup>Hamilton, J. G., and Stone, R. S.: Radiology, 28, 178-188; 1937.

<sup>&</sup>lt;sup>15</sup>Chiewitz, O., and Hevesy, G.: Nature, Lond., 136, 754; 1935.

<sup>&</sup>lt;sup>16</sup>Scott, K. G., and Cook, S. F.: Proc. Nat. Acad. Sc., 23, 265; 1937.

<sup>&</sup>lt;sup>17</sup>Hahn, P. F., Bale, W. F., Lawrence, E. O., and Whipple, G. H.: J. A. M. A., 111, 2285-2286; 1938.

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bleeding, a procedure known to deplete stores of iron. They were then on repeated occasions fed iron which contained the radioactive isotope, and the absorption of iron was followed by analysis of the circulating blood fractions. In three experiments the dogs were killed with ether after careful viviperfusion to remove all the circulating blood from the viscera. In another series of experiments, radioactive iron was fed to three normal dogs with abundant stores of iron resulting from previous feeding of soluble iron salts and intravenous injections of neutral colloidal iron. It was immediately observed that the non-anemic animals absorbed very little of the ingested iron. Since some of the anemic animals were not perfused, so as to permit of protracted studies of excretion, no values for the iron content of the viscera were obtained, but the rapid appearance of the isotope in the plasma and red blood cells was in marked contrast to the evidence in all the viscera and blood of the normal animals which were examined.

Quite recently Manly and Bale<sup>18</sup> investigated the metabolism of inorganic phosphorus of the bones and teeth of rats as indicated by the radioactive isotope. The animals received a single dose of sodium phosphate containing radioactive phosphorus and the percentages of marked phosphorus were determined from four hours to twenty days after its administration. A rapid deposition of blood phosphorus was observed to occur in the bones, the epiphyses having acquired approximately twice as much marked phosphorus per gram of inorganic tissue as the diaphyses during the first day. However, the diaphyses exhibited greater retention of acquired phosphorus following a sharp reduction of the amount of marked phosphorus in the blood. The results differed when radioactive phosphorus was injected as phospholipid instead of being fed in the form of sodium phosphate. In this instance the bones acquired similar amounts of the marked phosphorus during the first eight hours, but about twice as much at the end of thirty hours. Here the deposition of phosphate apparently indicated a definite hydrolysis of injected phospholipid which occurred no more rapidly than phosphate absorption. The incisor teeth

<sup>18</sup>Manly, M. L., and Bale, W. F.: J. Biol. Chem., 129, 125-134; 1939.

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revealed increasing amounts of marked phosphorus from tip through middle and root portions, the relative amounts varying as the marked phosphorus moved toward the tip as a result of extrusive growth of the tooth. In general the incisors continued to increase in content of marked phosphorus throughout the experimental period, suggesting that the high root values were attributable not to replacement but to incorporation of the marked phosphorus in new calcified tissue. It was noted that a gradual but appreciable turnover of phosphorus occurred in inorganic portions of the molar teeth.

The use of radioactive isotopes of iodine as indicators for the study of the distribution of iodine has been reported by Hertz, Roberts, Means, and Evans.<sup>19</sup> The object of their experiments was the investigation of the collection of iodine by normal and hyperplastic thyroid glands, in order to establish normal and pathological behavior toward iodine under various circumstances, and to determine conditions under which it might be possible to employ radioactive iodine to administer internal irradiation of the thyroid. Following the subcutaneous injection into rabbits of labelled silver iodide dissolved in sodium thiosulphate, the percentual collection from any given dose was found to attain a maximum within ten minutes, a value not greatly exceeded for periods of collection even of several days. While the normal thyroid collected as much as eighty times the quantity expected from uniform diffusion into tissues of the body in general, the hyperplastic thyroid collected several hundred times the quantity expected from uniform diffusion. The variation of this concentration with the injected dosage and the functional state of the gland were determined, and the effect of pretreatment of the thvroid with iodine in various functional states on the collection of a subsequent dose of labelled iodine was measured. In certain experiments several differently labelled iodine injections were used on the same animal by employing different radioactive isotopes, so as to determine the result from individual doses. From the data thus obtained, Hertz and his associates calculated the strength of samples

<sup>19</sup>Hertz, S., Roberts, A., Means, J. H., and Evans, R. D.: Am. J. Physiol., 128, 565-576; 1939-40.

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of radioactive iodine which it is hoped will render possible the administration of internal irradiation to the thyroid for therapeutic purposes.

Practical applications of the cyclotron and its products have thus far been restricted almost exclusively to the realms of physics, chemistry, and biology. Therefore, scant consideration has been accorded to the possible effect of the employment of these products for the cure of diseases. The accidental discovery of the influence exerted by radio-phosphorus upon the blood-picture of animals naturally suggested the propriety of its use in the therapy of leukemia. But, despite the evident experimental indication, with the exception of the afore-described attempt by Hamilton and Stone, only one other instance of the administration of radio-phosphorus for the treatment of leukemia and polycythemia has been recorded. In 1939 John Lawrence<sup>20</sup> presented a preliminary report of his experience with seven patients, five suffering from chronic myelogenous and chronic lymphatic leukemia (four with the former and one with the latter condition), and two from polycythemia vera. Oral administration to the first five patients of radio-phosphorus in the form of sodium phosphate elicited responses similar to those usually noted following roentgen or radium therapy. In the other two patients a decline in hemoglobin and red blood cells, preceded by a decrease in the reticulocyte counts, followed two oral doses of radio-phosphorus in the form of sodium phosphate.

At this time it would be hazardous to venture a prediction concerning the probable applications of the products of the cyclotron in general medical practice or to speculate upon the possibility that therapeutic irradiation with roentgen rays and radium will ultimately be extended or even superseded by the utilization of such products as substitutes. However, it is believed that the sound progress which has marked the evolution of the cyclotron and the demonstration of its potentialities as an agent of physical, chemical and biological research may be interpreted as an auspicious omen of its future service to medicine.<sup>21</sup>

<sup>20</sup>Lawrence, J. H.: *Radiology*, 35, 51-60; 1940. <sup>21</sup>Schuler, L. A.: *Scient. Am.*, 163, 68-72; 1940.

# AMERICAN COLLEGE OF DENTISTS

PROCEEDINGS OF THE CLEVELAND CONVOCATION, SEP. 8, 1940 REPORTS OF COMMITTEES<sup>1</sup>

#### I. CENTENNIAL CELEBRATION COMMITTEE HAROLD S. SMITH, D.D.S., Chairman<sup>2</sup> Chicago, Ill.

The work of your Committee reached its conclusion at the time of the Centennary Celebration of Dentistry in Baltimore, March 17-20, 1940, at which time a special convocation of the College was held.

The following organizations co-operated in making this meeting a success:

American Dental Association

Canadian Dental Association

American Association of Dental Editors

O.K.U.

National Association of Dental Examiners

International Association of Dental Research

American Association of Dental Schools

American Association for the Advancement of Science.

Your Committee wishes to commend most highly the members of the Maryland State Dental Society on the manner in which they planned and carried out this Centennary Celebration of Dentistry as a profession, in which the College was indeed happy to co-operate.

 DENTAL HISTORY AS A SUBJECT OF UNDERGRADUATE INSTRUCTION W. N. HODGKIN, D.D.S., Chairman<sup>3</sup>

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Whether dental history should be included in the curriculum of the school is a natural and pertinent question. The answer may be

<sup>1</sup>For reports of Committees on Education and Necrology, see J. Am. Col. Den., 7, 311 and 285; 1940, Dec.

<sup>2</sup>The other members of this Committee are (1939-40): Harry Bear, W. H. Mork, D. F. Lynch, J. H. Ferguson.

<sup>8</sup>The other members of this Committee are (1939-40): W. H. Archer, H. L. Banzhaf, E. E. Haverstick, J. B. Robinson.

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found in the proved interest of two groups of the profession; the leaders of the past and the present dental student. Omitting the rich evidence, we know that the greatest figures in American dentistry were most keenly interested in dental history and it is shown in all their writings and activities. This is but natural, for to quote a similar observation by Dr. Henry E. Sigerist, of medical leaders: "this attitude of medical leaders is not to be wondered at. Men who actually made history were always interested in historical developments, and they became leaders because they were not merely technicians but highly-cultured personalities". And is not the latter one of the true aims of dental education?

What is the opinion of the present undergraduate dental student? The survey makes clear the fact that "students *are* interested", though one response indicates student interest as "dependent on instructor". This is obvious. As further evidence of student interest, is the experience of one school giving first a required course, and later an elective course in the subject. Ninety per cent are reported as electing to take the second course.

The results of the survey appear to indicate a fortunate and healthful recognition by the deans of dental schools, of the tremendous value of dental history in the orientation of the individual. As might be supposed, and as before noted, the interest in dental history among students, and the development of courses thereon in the various schools, is dependent upon the availability of capable and interested instructors. The supply of instructors is somewhat fortuitous and its lack appears to hamper many schools genuinely desirous of instituting more comprehensive and satisfactory courses.

The next most frequently reported difficulty in presenting the course is the lack of adequate text. The "History of Dentistry," by Dr. Arthur W. Lufkin, seemingly approximates the need of many instructors at the present, yet is not the comprehensive text generally desired in the field. The production of a more comprehensive text would likely enliven interest and implement the desires of far-sighted deans more than any single accomplishment.

#### PROCEEDINGS OF CLEVELAND CONVOCATION

Questionnaires were sent the deans of 38 dental schools and the courtesy of 36 in response is hereby gratefully acknowledged.<sup>4</sup>

The questions submitted were: 1. Is a course of dental history given in your school? 2. Give name and rank of lecturer. 3. How many lecture hours are devoted to the subject? 4. To what class is the course offered? 5. Is course required or elective? 6. Are students given final examinations? 7. What text, if any, is used? 8. If no text is

<sup>4</sup>Of the responding schools, 27, or approximately 75 per cent, are giving courses in dental history, and information from other sources indicates that at least one more offers such course. The remaining eight have no formal course but include some dental history either in that of orientation or incidental to various subjects. Time devoted to the subject ranges from 4 to 64 hours, with an average of about 16. The course is required in all schools wherein offered, save for one extended elective course. Twenty-three schools require final examination in the subject.

The classes to which instruction is given is as follows:

Freshman Class	5 schools
Freshman and Sophomore Class	I school
Sophomore Class	I school
Junior Class	2 schools
Senior Class I	8 schools

The texts used disclose perhaps the widest variety of any phase of instruction and are reported as follows, with some using several texts:

Lufkin	schools
Taylor 5	schools
Guerini 4	schools
Koch 2	schools
Great Doctors (Sigerist) I	school
No text-assigned reading, syllabus of instructor, etc16	schools

The proportion of time devoted to the three periods of dental history—pre-American, American prior to 1840 and American 1840 to date—are so varying as to make attempt at percentages scarcely intelligible or helpful. Probably it will answer all needs to state that generally more time is devoted to the American periods, with particular emphasis on the period since 1840.

Twenty-three schools report adequate libraries with at least five known to have made outstanding accomplishment in development. The remainder report limited libraries or adequate in some phases only.

Of particular interest and commendable foresight is the requirement of the College of Physicians and Surgeons of San Francisco, that each student write the life history of some dentist who practiced in California. This experiment would seem to serve the double purpose of possible development of interest and aptitude of the student and of furnishing valuable material for those who undertake a history of dentistry in the state. Such advances presage rich results. used, is a bibliography made available for student use? 9. What proportion of time is given to (a) Dentistry in the pre-American period, (b) Dentistry in America prior to 1840 and (c) Dentistry in America from 1840 to 1940. 10. What is the opinion (a) of your faculty or (b) personal opinion of respondent to questionnaire, as to the approximate proportion of attention to the history prior to 1840. and since 1840, which should be given in a course? 11. What is your major difficulty in presenting to students an adequate course on dental history (e.g. lack of interest of students, lack of time in curriculum, lack of a trained instructor in this subject, lack of satisfactory textbook, or other reason?) 12. Have you library facilities for research in dental history? 13. Is any dental history club or society connected with your school or in existence in your community? (Please give name of such society and address of secretary or other active officer of such a group.) 14. Please give names and addresses of any individuals in your state known to have particular interest in dental history, or interested in collecting dental literature or museum pieces.

> 3. HOSPITAL DENTAL SERVICE HOWARD C. MILLER, D.D.S., Chairman<sup>5</sup> Chicago, Ill.

The Committee has been in touch with various activities relating to the study and development of Hospital Dental Service and has, so far as possible, aided in and contributed to the further advancement of such service.

At a meeting of the Regents of the College, held in New York City in December, 1939, Brigadier General Leigh C. Fairbank, Commanding Officer of the United States Army Dental Corps, submitted for approval a plan for the establishment of dental interneships in the Army General Hospitals. The Regents requested that General Fairbank be asked to submit the plan to this Committee for its consideration, which was done. The outline of this plan, together with explanatory correspondence, forms a part of this report.

The Committee, in January, 1940, unanimously endorsed the

<sup>5</sup>The other members of this Committee are (1939-40): R. W. Bunting, E. A. Charbonnel, Leo Stern, C. W. Stuart.

plan and recommended to the Secretary of the College that it be approved by the Regents. It was the opinion of the Committee that the program outlined was a definite advancement in hospital dental service and in the establishment of dental interneships; that it would assist in setting up methods of procedure; and encourage hospitals of all types to establish such a service.

The list of hospitals approved for training internes, issued by the Council on Medical Education and Hospitals of the American Medical Association under date of June 1, 1940, lists the hospitals according to state, location, control, capacity, total patients treated, type of interneship, number of internes, length of service, and other pertinent data. Those hospitals employing dental internes are so designated. It is noted that 146 of the 736 hospitals qualified for educational purposes employ approximately 230 dental internes. No doubt many others of the 6226 hospitals now registered by the American Medical Association have some form of dental service although a dental interne may not be employed. It is an interesting fact that in these hospitals approved for the training of internes, dentistry has become a part of such training in approximately 20 per cent of the institutions. These figures show that an increasing number of hospitals now recognize dental service as a part of hospital organization, and also that its importance is recognized by the American Medical Association.

The 1939 report of this Committee referred to the activity of the American Hospital Association which, through a committee on Dental Care and Interneships, was preparing a manual<sup>6</sup> to be used as the official standard for the formation, equipping, administration and direction of dental service in the member hospitals of the Association in the United States and Canada. The committee, working in co-operation with a committee from the American Dental Association and one from the Canadian Dental Association, has completed a draft for a manual on Dental Care and Interneships in hospitals, which has been submitted to various groups for suggestions, revisions and additions.

<sup>6</sup>See Report of Committee on Oral Surgery, p. 36, this issue.

The suggested Table of Contents follows:

Value of the Dental Department.

Standards for Hospital Dental Services.

Classification of Dental Services for Hospital Patients.

Staff Organization.

Location of Service.

Routine Procedures.

Inter-relationship of Departments.

Relationship of Dental Staff to Medical and Dental Faculties.

Dental Internes and Interneships.

Records; Research; Formulary; Supplement.

The adoption of a manual of this type by the American Hospital Association will establish a uniform plan for dental services in hospitals, and will set up a standard of requirements, regardless of the size or location of the hospital.

> 4. YEARS OF ACHIEVEMENT J. CANNON BLACK, D.D.S., Chairman<sup>7</sup> Chicago, Ill.

The "worthwhile and great" in life are products of slow growth. The greater the struggle, the slower the growth, but the more positive and enduring the success. Often heroic courage is needed to face apparently fruitless effort, to meet the future, and to continue on the way. But what appears to be failure is frequently the real success, and may be the very foundation of new and undreamed-of achievement.

Dental Journalism must be looked upon as an investment of untold possibilities—a profession, the resources of which can only be realized by exploring the past, correlating it with the present and shaping a pattern for the future. It must ever seek to surpass itself, and by moving in a uniform line of progress, demonstrate strength in all its parts.

In America the founders of the first professionally controlled

<sup>7</sup>The other members of this Committee are (1939-40): G. M. Anderson, W. B. Dunning, Walter Hyde, T. F. McBride, E. G. Meisel, E. B. Spaulding, R. C. Willett, Harold J. Noyes. (Dr. Noyes resigned March 5, 1940.)

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dental journal were men whose confidence never lagged although their thinking lay along new and untrodden paths. They are to us constant reminders of courage and unfaltering faith.

One hundred years ahead of their time, they recognized the value of ideals in the great task of educating and unifying their confreres. Their prophetic insight into the problems and difficulties of their times remains an inspiration to the dental profession. Their example has been an impetus to every development in professional progress. For decades their plans and dreams were smothered by the mass of poorly trained, unthinking, and unorganized dentists who lived with, and practiced on, the horde of westward moving, continent settling, emigrant population. Through these years commercialism dominated publications and but few authentic professional journals lived to champion the cause of professional control.

Commercialism influenced practically all enterprises. Its advocates were shrewd in discerning where both public and profession might be turned into financial gain by participation in dental education, dental journalism, patents and nostrums. During this period the advertising dentist thrived on flamboyant claims of superior materials and secret formulas.

Finally dental organization spanned the continent and the profession slowly became aware of its obligation. It fought process patents, expelled commercial control of dental institutions, and organized a Bureau of Chemistry to check nostrums and drugs. In the realm of legislation national and state legislative committees worked diligently to improve dental laws. Only proprietary journalism remained intrenched.

A few prominent men in the profession, imbued with the same high ideals as the organizers of the earlier professional periodicals, by spoken word and printed article, deplored the apparent onward march of commercialism and awoke others to its dangers. For a long time progress was slow. There was no organized effort to place dental publications on a true professional basis until, at a Convocation of the American College of Dentists in 1928, a resolution was presented and approved providing "that the American College of Dentists create a commission whose function shall be to survey the present situation in dental journalism and report to the College, in one year, in particular respect to:

(A) The total amount of dental literature published per annum.

(B) The proportion of that literature published in periodicals under the auspices or control of the dental profession.

(C) Measures which may be effective in terminating the nonprofessional publication of dental literature.

(D) Measures which may be undertaken to develop a journalism having sufficient capacity to publish all the worthwhile contemporary dental literature."<sup>8</sup>

The work assigned to the Commission was not completed until 1932 when their report, *Status of Dental Journalism in the United States*, was presented to the Fellows of the College in printed form. This was the first complete survey of professional periodicals by either the dental or medical profession.

In order to appraise the status of dental journalism this subject must be examined in relation to all frontiers where professional control has advanced. Progress in one direction calls attention to deficiencies in another. After the profession became conscious of its responsibility and removed commercial control from dental education it then became necessary to place professional supervision over its journalism.

Formal dental education did not exist in the United States before 1840. However with increase in population came increase in demand for dentists. This demand found dental organizations at a low ebb and the field of dental education dominated by those activated by the desire for profit. At the turn of the century there were others who recognized that if the profession were to exercise its rights as a part of the healing art a higher standard of teaching technique must be created; entrance requirements advanced; and

<sup>8</sup>Palmer, B. B.: Status of Dental Journalism in the U. S., 1928-1931, p. 2. Published by the American College of Dentists.

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the length of courses increased with constant thought toward a uniform curriculum. This desired objective could not be reached while the dental schools were dominated by the profit motive. The obligation to assume the responsibility of controlling and administering its educational institutions belonged to the profession. An appraisal and classification of all schools was undertaken which resulted in the publication, in 1926, of the Carnegie Foundations' Bulletin No. 19, on Dental Education. This formed the basis upon which dental schools were placed under the supervision of accredited universities.

Again the change came gradually. Some schools cooperated wholeheartedly with the profession in its momentous effort, but, because of much misunderstanding by the uninformed members of the profession, others gave only lip service and sought by subterfuge to evade the issue. As the years passed higher standards were set and generally accepted until finally the rank and file of the profession, and the public as well, learned to differentiate between the two and looked with disfavor upon those institutions which did not recognize such standards.

Proof that dental educational institutions have emerged triumphant, was given when the dental schools' organization itself, after scrutinizing and criticizing its own work, published the Curriculum Survey which opened the pathway of advance. When the Supreme Court declared that dentistry was legally a profession, that position had already been won by far-seeing idealists. It would make an interesting study to record how closely advance in legal status, control of licensure, and the elimination of advertising practitioners has followed the change in dental education, from commercial to university affiliation.

To follow in the footsteps of dental education and to achieve in dental journalism the elimination of proprietary control, the Commission made among others, these recommendations: (1) an increase in the publishing capacity of non-proprietary journals; (2) the amalgamation of existing non-proprietary journals having small circulation; (3) the conversion of historically important trade-house publications into non-proprietary journals by appropriate negotiations between owners of such periodicals and representatives of responsible professional organizations; (4) the creation of separate journals devoted to the advancement of dental specialties; (5) a monthly periodical to be distributed gratis to every dentist in the United States; and (6) the organization of the editors of non-proprietary dental periodicals. Other recommendations had to do with the type of dental literature published, acceptable advertisements, recognition of such therapeutic agents only as have been approved by the Council on Dental Therapeutics of the American Dental Association, and

"that the dental profession declare a doctrine of independence that will contain

- "(a) An expression of cordiality toward the dental trade-houses in their proper cooperative sphere, and an appreciation of their scientific and artistic developments of dental materials, appliances, instruments and supplies.
- "(b) A declaration of the capability and inclination of dentistry to con-

duct all its professional affairs without trade-house interference. "And we further suggest that this recommendation be disseminated throughout the organizations of the profession, and that its import be effectively emphasized and reiterated."<sup>9</sup>

To those members of the College who are not cognizant of this report in its entirety we would recommend its perusal and thoughtful analysis, for this report of the Commission on Journalism bears the same relation to professional dental journalism as did the Carnegie Report to professional dental education. It will ever remain an historic record of the struggle to elevate the status of professional dental literature.

From the interest manifested it was evident that the report on journalism was timely. Commendatory editorials and communications from readers appeared in many of the professionally controlled journals. It is well to point out that the profession sought to follow the same policy in changing control in dental journalism

<sup>9</sup>Idem, p. 56.
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as was followed in dental education, and the same arguments were offered in defense of proprietary journals as were offered in defense of commercial schools. The commercial<sup>10</sup> journals were forced to defend themselves and endeavored editorially to justify their right to continue.

It was not the intention of the Commission on Dental Journalism that proprietary journals should be destroyed but that the publishers of such journals might recognize the right of the profession to control the publication of its literature. In fact the Commission would have welcomed the conversion of the better journals to professional supervision.

Many of the commercial journals have been discontinued and others, placed under professional ownership. Some have expressed a desire to become professionally controlled publications. The Commission regrets that failure followed negotiations in the transfer of the most important of these publications, and a valuable journal was lost to the profession — *The Dental Cosmos*.

Some of the dental specialty organizations, recognizing the need of a periodical controlled by them, are making every effort to establish publications of their own, while one of the leading specialties is still permitting its official proceedings to be recorded in a publication which is not under the complete professional control of its membership.

The American Association of Dental Editors was duly incorporated and held its first meeting in Chicago on January 18, 1932. At this session, Dr. Bissel B. Palmer,<sup>11</sup> chairman of the Commission, indicated "that the American Association of Dental Editors had been chartered to promote, in a broad *constructive* way, the cause of *non-proprietary* dental journalism, and *to facilitate cooperation among the editors of these journals for the advancement of the professional ideals of dentistry.*" He further stated "that the Commission, acting as the initiating factor only, would cease to have any

<sup>10</sup>The terms "professionally controlled," "proprietary" and "commercial" are used synonymously throughout this report.

<sup>11</sup>Loc. cit., p. 200.

relationship with the Association after the adjournment of this meeting." Created at a time when the profession was undergoing radical change, the Association has held unswervingly to its original concepts and today many of the important innovations in professional dental literature are due to its untiring effort.

We are entering the new century—a learned profession responsible not only to its members but to the public. In accepting this responsibility the profession should hasten any action which is necessary to consolidate and make secure the control of its activities. In the profession's responsibility to the public there must be a clear comprehension of national trends and plans formulated to meet arising conditions. That the public and the profession may be best served, no journals except those directly responsible to the profession should speak for dentistry in the years which are ahead.

## 5. ORAL SURGERY MALCOLM W. CARR, D.D.S., Chairman<sup>12</sup> New York

It is both interesting and encouraging to report that the activities of the Committee on Oral Surgery during the past year have extended in the direction of co-operation with other committees which have sought advice or information on matters relative to either oral surgery or hospital dental service. The Committee through its Chairman has therefore been acting in a semi-official capacity in co-operating with important work that was being carried on by other organizations. Not only is this implied recognition of the work of the Committee on Oral Surgery gratifying, but it is encouraging to feel that cognizance is being taken of some of the earlier work of the Committee and that gradually some of this work is now being successfully co-ordinated. Continued effort is being directed toward future co-ordination and co-operation is readily given whenever solicited.

As in the past, it has been found that the work of the Committee on Oral Surgery and the activities of the Committee on Hospital

<sup>12</sup>The other members of this Committee are (1939-40): E. R. Bryant, J. R. Cameron, C. W. Freeman, W. I. McFarlane.

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Dental Service overlapped, and it is also most gratifying to report that the cordial co-operation of these two Committees has shown favorable results in stimulating the work of other groups who have been interested in similar studies.

During the past year the Committee on Oral Surgery has been in close touch with the work being carried on by the Committee on Dental Care and Internships in hospitals of the American Hospital Association. Original manuscript and preliminary draft for the manual on "Dental Care and Internships in Hospitals" has been reviewed and criticized during the various stages of its preparation. It is interesting to note that much of the material utilized in this manuscript has been taken from the original monograph on "The Oral Surgical Service as an Integral Part of Modern Hospital Orreport published in the March-June issue of the JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS.<sup>14</sup>

The Committee has also been co-operating with the Hospital Co-ordinating Committee of the Dental Society of the State of New York and a close contact has been maintained with the Committee on Community Dental Service of the New York Tuberculosis and Health Association. Doctor Howard C. Miller alluded in his last report, to the report of the Sub-Committee on Dental Standards and Services in Hospitals and Institutions, of the Committee on Community Dental Service, including that report as an appendix to his report published in the March-June issue of the JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS.<sup>14</sup>

During the past year your Chairman has also been actively engaged in co-operating with Doctor John Oppie McCall in the formation of the Greater New York Conference on Hospital Dental Services. The creation of this Conference is largely due to the interest and enthusiasm of Doctor McCall and as a direct outgrowth of the original work done by the Sub-Committee of the Committee

14See J. Am. Col. Den., 7, 45; 1940, March-June.

<sup>&</sup>lt;sup>13</sup>Carr, M. W.: Oral Surgical Service as an Integral Part of Modern Hospital Organization: A Systematic Plan of Management; J. Am. Col. Den., 2, 203; 1935, Dec.

on Community Dental Service, alluded to above. The object of this Conference is to provide a means for securing greater recognition of dental service in hospitals; for extension and development of adequate dental service in hospitals; for improvement in organization of dental services in hospitals through development of educational programs for attending staff, house staff (including medical house staff), nursing staff and student nurses; to promote dental service as an integral part of hospital organization, its objective being maximum contribution to the welfare of the hospital patient; to integrate the dental program with the program of the medical social service for the hospital patient and other appropriate objectives.

The membership in this Conference consists of the dental chief in each hospital within the metropolitan district of New York. It is therefore believed that as this Conference completes its organization, it will serve as a very useful and influential body of experienced dental and oral surgeons who have demonstrated interest and ability in administrative problems of hospital service as well as in the technical problems of oral surgery. We therefore look forward to the growth and expansion of this Conference and will watch with interest the developments of the ensuing year.

Your Chairman has also served as an advisory member of the Committee on Hospital Dental Service of the Second District Dental Society and continues as Chairman of the Dental Advisory Counsel of the Department of Hospitals of the City of New York. There are two essential reasons for mentioning these various activities in this report. First, to indicate the marked and rapid increase of interest that has been elicited in hospital dental service and in oral surgery as a specialty of dentistry, and secondly, that all the activities alluded to above can be directly traced to original work initiated by either the Committee on Hospital Dental Service or the Committee on Oral Surgery of the American College of Dentists.

Although the major part of the work of the Committee on Oral Surgery during the past year has been in co-operation with other committees and with other organizations in order to make effective

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some of the preliminary work done in previous years the Committee has continued its effort to initiate new work and to follow through with work already started. In this regard the Committee can report progress.

The Committee believes that interest should be continued toward the ultimate establishment of a *Journal of Oral Surgery*, and that we should not be discouraged at the lack of accomplishment in this direction thus far. The same may be said of certification for the specialty. To accomplish this purpose, as pointed out in previous reports, requires frequent discussion, careful co-ordination, enthusiastic co-operation in order to crystallize a rational plan of procedure. Although during the past year frequent discussions have been held in this regard, there still appears to be a number of intrinsic problems that make it inadvisable at this time to present a formal program, but your Committee wishes to emphasize that it believes certification of specialists in oral surgery should receive the most serious consideration and that effort be directed toward its accomplishment.

At the present time when mobilization is being considered as a vital part of national defense, it is already recognized that the Army and the Navy shall not only require but are anxious to know of men who are particularly trained in any of the specialized fields, and of these, oral surgery seems to be the most important. It occupies a pivotal position. Therefore, intensive effort should be directed during the course of the next few months to co-ordinate the work of all committees that are now considering the problem of certification of specialists.

The Committee also intends to pursue the study of the educational laws of each of the forty-eight States, particularly as the law applies to the practice of oral surgery as a specialty in dentistry. It will continue its effort in the direction of a study of court decisions relative to malpractice suits in which the dentist or oral surgeon has been named as defendant and in the compilation of a file of medicallegal abstracts in this regard with the viewpoint of establishing sometime in the future a bureau of legal dentistry and legislation. Although this report is essentially a report of progress, your Committee feels satisfied that progress is actually being made. This is more definitely demonstrated in an accumulative way each successive year. Therefore, your Committee looks forward to a continuation of its work and with anticipation of further expansion in usefulness and service in the future.

## AMERICAN COLLEGE OF DENTISTS

Ad-Interim Activities of the Board of Regents 1940-1941, Series No. 1

### O. W. BRANDHORST, D.D.S., Secretary

St. Louis, Mo.

(Abbreviated)

First Session: Place—Stevens Hotel, Chicago, Ill., Feb. 16, 1941. 9:30 to 12:00. Present—nine. Minutes of sessions in Cleveland read and approved. Secretary's report on minutes approved.

*Reports of Officers:* Report of Treasurer, accepted; Secretary reported as to mail ballot on distribution of reprints "Trends in Dental Education," report accepted. The Secretary reported on present membership of 1058, consisting of 23 Honorary and 1035 active Fellows.

*Resignations:* The resignation of Dr. Hugh K. Kellogg, of Louisville, Ky., was accepted.

Assistant Secretary Gies reported on Committee and Section Activities. Report accepted.

*Report of Editor:* The Secretary presented a report for Editor Gurley, who could not attend the meeting. Report accepted.

*Reports of Committees:* Committee on Endowment Fund for the Journal of Dental Research. The Secretary read a report from Chairman Gurley, indicating the fund was now more than fifty per cent subscribed. Report received.

Baltimore Proceedings: Dr. Harry B. McCarthy presented a report, indicating that approximately 200 copies were still available, the sale of which would enable them to meet all their obligations. It was voted to urge American College of Dentists members to purchase copies at once.

Second Session—(2:00 to 6:00). This session was a joint meeting of Regents and Committee chairmen. Regents present—nine. Committee representatives present—ten.

The following questions were presented for discussion:

(1) What can be done to stimulate interest in your committee activities?

(2) How can the committee reports at our annual meeting be made more interesting?

(3) Is it desirable to combine some of our committee activities? If so, what committees should be combined?

(4) Do your committee activities overlap on others and how?

(5) What other activities should the College undertake at present and what new committees should be appointed?

The discussion indicated that the committee chairmen were fully cognizant of their responsibilities as well as their opportunities. Present projects were reviewed and new possibilities considered. Cooperation between committees was quite evident and progress in all directions noted.

MEETING OF REGENTS AND REPRESENTATIVES OF SECTIONS

Third Session: Place—Stevens Hotel, Chicago, Ill. Monday, Feb. 17. Present—Regents, eight; Section representatives, ten.

After a delightful luncheon under the auspices of the Illinois Section with Chairman Freeman presiding, the Regents' and Representatives' meeting convened for a discussion of problems of general interest.

President Wilson suggested the following subjects as a basis for discussion:

(I) Section activities;

(2) Ceremonial procedures;

(3) The annual meeting;

(4) Membership;

(5) Individual Section problems.

The discussion was most interesting. Sections were urged to carry ideals and objectives of the College into their respective communities as the chief purpose of the Sections. Many valuable suggestions were made relative to ceremonial procedures. The membership problem was fully discussed and much good should come from it. It was urged to change some of the procedures at the annual meeting, if possible, to prevent overlapping. It was urged that due con-

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sideration be given to the possibility and advisability of holding our annual meeting at a time other than the A.D.A. meeting. The Regents' and Representatives' meeting adjourned at 4:00 p. m.

Fourth Session—Monday, Feb. 17, 4:00 to 6:00 o'clock. Place— Stevens Hotel. Present—eight. President Wilson called an executive meeting of the Board of Regents immediately following the adjournment of the Regents' and Representatives' meeting at 4:00 o'clock.

The Secretary was instructed to summarize the matters discussed at the Representatives' meeting and submit to Regents for further consideration.

President Wilson appointed the following as the Publicity Committee for the Houston meeting, Drs. Hodgkin (Chairman), Black and Sloman.

The Secretary presented a request from Dr. Theodor Blum, relative to the Archives of Clinical Oral Pathology. After discussion it was voted that the American College of Dentists could not enter upon the proposed project.

The Board reviewed its previous action relative to financial support for publicity through lay publications. It was again voted that the College should not enter upon this project.

## AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE<sup>1</sup>

## PROCEEDINGS OF THE SUBSECTION ON DENTISTRY, SIXTH ANNUAL MEETING, PHILADELPHIA, PA., DEC. 28, 1940

Compiled by PAUL C. KITCHIN, D.D.S., M.S.<sup>2</sup> Secretary of the Subsection, Ohio State University, Columbus, Ohio

The subject of the symposium, to which the morning session of the one-day meeting was devoted, was "Periodontal Disease." Six papers were presented, one each on classification, pathology, nutritional relations, bacteriology, preventive treatment and curative treatment.

The symposium brought out the following: the classification of types of periodontal disease is in a confused state due to lack of agreement regarding causes.<sup>3</sup> A rational classification will be possible only when these causes are more clearly understood. These are now recognized as local or systemic in origin and the majority of cases are due to local causes.

The pathological condition of the periodontal tissues due to local causes, is obviously one of inflammation, and if untreated, proceeds to pocket formation and resorption of the supporting bone. Pathological change due to systemic conditions is not yet clearly understood.

There is evidence to indicate that dietary factors can influence the tissues supporting the teeth, but the present state of knowledge suggests a nutritional treatment of general optimum nature rather than specific emphasis on any single factor.

The bacteriology of periodontal disease needs much further research. It is apparently secondary to tissue damage from other causes. Individually, most of the bacteria present are harmless but the mixed

<sup>3</sup>See J. Periodont., 12, 16; 1941, Jan. Ed.

<sup>&</sup>lt;sup>1</sup>This meeting was reported in *Science*, 93, 136; 1941, Feb. 7. For previous reports of the Subsection, see *J. Am. Col. Den.*, 5, 73; 1938, March-June. *Ibid.*, Footnote No. 1: *Idem.*, 6, 56 and 184; 1939, March-June: *Idem.*, 7, 74; 1940, March-June.

<sup>&</sup>lt;sup>2</sup>The other members of this Committee are: J. L. T. Appleton, Chairman; Lester R. Cahn.

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flora is pathogenic, under favorable conditions. The important types seem to be anærobes, though some are difficult to cultivate for intensive study. Rational treatment will be improved with a better knowledge of bacteriology.

Early preventive treatment of local causes of inflammation, such as impinging deposits and fillings, and unequal forces operating on individual teeth, produce the best results. Stimulation of the blood supply of the periodontal tissues through natural exercise and the use of the tooth brush are very essential.

Proper vitamin and mineral content of the diet during development is the preventive treatment against some of the possible systemic causes of periodontal disease.

To date, curative treatment is almost wholly devoted to the elimination of local causes of tissue inflammation. Systemic causes are as yet too little known to be treated specifically. The older idea that the outstanding member of this group of periodontal diseases, "pyorrhea," was incurable is contradicted by a large body of evidence to the contrary, especially when the condition is diagnosed early and treated thoroughly.

The remainder of the program consisted of fourteen papers, one on physical properties of dental materials, the others being biological in nature.

Seventy-five persons registered at the meeting in Cadwalader Hall and forty attended the luncheon at the Belgravia Hotel. The 1941 meeting will be held in Dallas, Texas, and the Subsection recommended to the A.A.A.S. Council that Dr. Frederick W. Hinds be made Chairman of that meeting with Dr. Paul C. Kitchin continuing as Section Secretary.

The abstracts of all the papers presented at Philadelphia, December 28, 1940, will be found on the following pages.

1. THE CLINICAL CLASSIFICATION OF PERIODONTAL DISEASE. Edward H. Hatton, B.L., M.D., Northwestern University Dental School, Chicago, Illinois.

Useful clinical classifications of disease entities have their basis

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in etiology, or symptomatology, or both. A classification may be satisfactory to the scientist and at the same time misleading and unusable as far as it concerns clinicians. It would seem that the situation with respect to pyorrhea, to use the old term, is even more than chaotic and utterly confusing to clinicians, both medical and dental. All of the following words and phrases have been used to name this entity or some particular form of it: paradentitis, paradentosis, parodontitis, parodontosis, peridentitis, peridentoclasia, peridontitis, periodontoclasia, pericementitis, pericementoclasia, filth pyorrhea, i.e., pyorrhea due to uncleanliness, diffuse atrophy of the alveolar bone, gingivitis marginalis suppurativa, simplex periodontitis, primary paradentitis, paradentitis profunda, periodontal pocket, secondary peridentitis, secondary paradentosis, chronic suppurative pericementitis, alveolar atrophy, dystrophia diffusa, complex periodontitis, genuine paradentosis, etc., etc., and etc. The preceding list by no means exhausts the terms. Either there is no background of common knowledge at all, or there is a considerable group of facts upon which there is common agreement. If the first supposition holds, there is no basis for clinical classification other than a descriptive terminology based upon symptom complexes, and essentially empirical. If the second hypothesis is true, then it is high time something constructive be done about it.

It is believed that enough is known about this disease entity to clarify the situation for the clinician. Starting with the assumption, which seems capable of proof, that by far the greatest number of cases seen by the clinicians result from local etiological factors chiefly, a method of approach to clinical classification may be developed which will be found to be eminently satisfactory and not unduly complicated. This should be a challenge to the scientist in the field of periodontology.

## 2. AN ANALYSIS OF THE PATHOLOGY OF PERIODONTAL DISTURB-ANCES. Balint Orban, M.D., D.D.S., Professor of Oral Pathology and Research, Chicago College of Dental Surgery.

In analyzing the pathologic conditions of the supporting structures of the teeth, it is advisable to differentiate between the proc-

esses taking place in the gingivæ and those in the deeper regions of the periodontal membrane.

The marginal disturbances are obviously of the inflammatory type. Realizing that inflammation is only a tissue reaction due to some injurious effect, of local or generalized nature, we can distinguish between a gingival inflammation, due to local irritation, and a gingival inflammation influenced by a systemic disturbance. From the point of view of pathologists these inflammations might be acute or chronic and might be edematous, purulent, ulcerative, hypertrophic, etc., depending on the irritation and tissue reaction in general. This gingival inflammation or gingivitis might lead to some local disturbances such as pocket formation and alveolar bone resorption.

In contrast to these marginal inflammatory disturbances, there are pathologic conditions which develop in the deeper regions of the periodontal membrane. These pathologic conditions might also be of purely local or of systemic origin. As purely local conditions, consideration must be given to tissue changes due to traumatic influences. The periodontal membrane becomes compressed between tooth and bone; bleeding, thrombosis, necrosis and bone resorption take place. With the resorption of the bone and damaged tissues, a granulation tissue is formed and if trauma is relieved, a complete repair occurs. The ultimate tissue reactions taking place under these conditions have to be considered in a broader sense as of inflammatory nature.

The tissue changes in the periodontal membrane of systemic origin are difficult to classify because their etiology might be manifold and their pathology is not clearly defined. In these cases, we believe, a granulation tissue develops in the periodontal membrane causing resorption of the cementum and alveolar bone, thus leading to widening of the periodontal space. The developing granulation tissue will exert a pressure upon the root surface causing migration of the tooth in a direction away from the diseased area. The more the alveolar bone and cementum are resorbed, the looser the tooth becomes. Should the diseased area reach the alveolar margin and epithelial attachment, deep pockets will develop.

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# 3. NUTRITIONAL RELATIONS IN PERIODONTAL DISEASE. Dorothea Radusch, D.D.S., B.A., M.S., School of Dentistry, University of Minnesota.

Pertinent reports in dental and allied literature are reviewed, which indicate that dietary factors can influence the health and disease of dental investing tissues. Data are not yet available as to the exact amounts of minerals, vitamins, or functions which are necessary to protect these tissues and maintain their integrity. Nutritional study of large groups of people indicates that, for the most part, deficiencies of essential food factors are partial, irregular and multiple, rather than single. This creates confusion as to the role of these factors. Study of general nutrition and of nutritional deficiencies suggests the advisability of placing periodontia patients on dietary regimes which will provide optimal nutrition in so far as it is now understood by nutritionists, and without undue emphasis on any single factor.

4. THE BACTERIOLOGY OF PERIODONTAL DISEASE. Theodor Rosebury, D.D.S., Dept. of Bacteriology, School of Dental and Oral Surgery, Columbia University, N.Y.

The bacteriology of periodontal disease cannot be described except as a problem awaiting further research. Although periodontal disease is clinically distinctive, its infectious phase, involving the overproliferated normal bacteria of the mouth, is closely related to the infectious phases of a broad group of diseases of other body areas as well as the mouth. In all these diseases, ranging from simple gingivitis (inflammation of the gums) to pulmonary or genital gangrene, the characteristic infection is probably always secondary to tissue damage due to other causes. Such infection may nevertheless determine the severity of these diseases. The bacteriology of periodontal disease is therefore one aspect only of the general problem of the disease-producing capacity of the indigenous bacteria of mucous membranes, of which the mouth is typical. Most of these bacteria are harmless for animals as individual species, but the whole mixed flora is actively pathogenic under appropriate conditions, and pathogenic effects have been induced with deliberate mixtures of

pure cultures. The important bacterial types are apparently all anærobes. Some are very difficult to cultivate by available methods, and have therefore received inadequate study; the spirochetes and other motile Gram-negative anærobes (vibrios, spirilla, etc.) in particular have been neglected. Another group of Gram-negative anærobes, the bacteroides, some of which appear to be independent pathogens, have received little attention in relation to the mouth although they have been studied frequently in other relations; they seem, however, to be members of this flora. Solution of the problem of periodontal disease may have to await the development of more adequate knowledge of these microorganisms, as well as of the fusiform bacilli and the anærobic streptococci. Each of these groups requires further study in itself, and only a beginning has been made in the determination of their potentialities in various combinations.

# 5. The treatment of periodontal disease: preventive phase. John Oppie McCall, D.D.S., A.B., The Murry and Leonie Guggenheim Dental Clinic, New York, N.Y.

Treatment of periodontal disease, as of other diseases, is most direct in its action and satisfactory in its results if founded on an understanding of the etiology of the disease. The cause of periodontal disease is complex, combining certain local elements whose nature and action are well known, and systemic elements some of which are quite obscure as to their basis. Local and systemic causes vary in their proportionate potency in individual cases but in the majority of cases local causes seem to exert the dominant influence. Of the local factors, irritants acting on the gingival margin such as calculus and other impinging foreign matter and injurious agents such as traumatic occlusion acting on the periodontal membrane, claim chief attention. The systemic phases of periodontal etiology seem to center chiefly in disturbances of calcium metabolism that affect alveolar integrity and in vitamin deficiencies that affect the local circulatory mechanism. Infection of the gingiva and, later of the deep periodontal tissues, provides the dramatic feature of periodontal disease but is a late eventuality rather than a primary causative factor.

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Periodontal disease is commonly thought of as a disease of adult years, yet in many cases thus classified it is possible to trace the initial disturbance to damage wrought in childhood and symptoms of actual disease may often be found in the mouth of the young person if careful search is made. Preventive treatment unquestionably begins with the child, although it may often be highly successful with the adult.

The prevention of periodontal disease involves the building of sound, well-nourished periodontal tissues, the establishment and maintenance of normal occlusion, the establishment of food habits calculated to provide at once for proper vitamin and mineral intake and for adequate exercise of the teeth and jaws, the maintenance of cleanliness, and freedom from irritation of the gingival margin.

Chronologically the treatment of periodontal disease from the preventive aspect begins in childhood with attention directed toward proper nutrition and toward the normal development of the dental arches. Since evidence of periodontal disease, in an early stage, is often seen in childhood and adolescence, treatment in the strictly therapeutic sense may also be needed at that time. Emphasis in these cases is usually placed on stepping up the vitamin C intake in addition to caring for local factors. Orthodontic treatment is frequently needed.

The adult who shows signs of early periodontal disease usually exhibits an occlusion that is mutilated due to neglect of the dentition in childhood. Management of such cases must frequently start with orthodontic treatment. Throughout the years, attention should constantly be given to stimulation of the blood supply of the periodontium, both through natural exercise of the teeth and by such artificial means as seem suitable. Here the toothbrush clearly demonstrates its value in the oral health program.

Prophylactic treatment at suitable intervals, adequate diet and wholesome living habits round out the preventive program.

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## 6. THE TREATMENT OF PERIODONTAL DISEASE: CURATIVE PHASE. Isador Hirschfeld, D.D.S., School of Dental and Oral Surgery, Columbia University, New York.

This discussion is of necessity limited to the most common group of periodontal disease entities, the chronic types; namely, chronic marginal and hypertrophic gingivitis, and suppurative periodontitis, with special emphasis on the last of these.

In all of these, local treatment is essentially similar, and is characterized by simplicity of procedure and thoroughness of execution. Its main objectives are to reduce traumatization (mechanical, chemical and bacterial), and to improve local circulation. An important prerequisite is confidence—confidence of the operator in the positive prognosis and confidence of the patient so as to assure cooperation.

Surgery, electro-surgery, electro-coagulation, ultra-violet irradiation, oxygen-gas therapy, medication, etc., are not considered special methods of treatment but rather "adjuncts" which in the vast majority of cases are not indispensable, and very frequently are impracticable.

Systemic treatment, while obviously desirable where indicated, is not always practical and, indeed, sometimes difficult or even impossible.

On the other hand, the underlying systemic factors originally responsible for periodontal disease may no longer exist and therefore require no correction.

Finally, in view of the great amount of existing clinical proof that suppurative periodontitis (so-called pyorrhea) is "curable," it is time that general statements to the contrary by some dentists should be effectively discouraged by organized dentistry.

7. GRENZ RAY THERAPY IN PERIODONTAL DISEASE. Ralph Howard Brodsky, D.M.D., 205 West 57th Street, New York, N.Y.

Earlier studies of Grenz Ray therapy in the treatment of oral tuberculous lesions effectuated results which indicated the potential value this therapy might have in the treatment of other oral diseases. Hence, several years ago the author undertook a study of a group

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of fifty advanced periodontoclasias and subjected the patients to varying dosages of Grenz Ray on the gingivæ. Some patients received other treatments in conjunction with this therapy, while others received only the Grenz radiations. In all cases there was unquestionably a definite improvement of the periodontoclasias. In some, the mouths were not only rendered pus-free, but there was a resultant tightening of the teeth. Subsequent studies included much larger groups involving the simple as well as the more advanced periodontal lesions. Grenz Ray therapy has made it possible to save many teeth which otherwise would have been removed. The therapy is simple, painless, not time-consuming and is perfectly safe.

8. CLINICIAN: THE IMPORTANT LINK IN DENTAL RESEARCH. James L. Zemsky, D.D.S., New York, N.Y.

There are a large number of full-time workers engaged in carrying on numerous research problems. These scientists in various specialized fields are continuously experimenting in laboratories well equipped for their particular purposes. In addition there are institutions which offer opportunities for clinical investigation, as for example, Rockefeller Institute for Medical Research. In spite of this, many perplexing problems remain unsolved. An excellent illustration is the present chaos with respect to focal infection. At no time has this theory been more widely discussed. Only a short time ago, the *American Medical Association Journal* carried an article devoted to a critical appraisal of focal infection and systemic disease, followed by editorials in other publications.

It would appear, from various criticisms, that the intensive laboratory work in connection with focal infection has not succeeded in proving its validity and that the clinic thus far has also failed to clarify the subject. The cause of this failure is readily apparent after some thought. It is impossible for laboratory workers, even if aided by a few clinicians, to determine all the truth of this or any other theory presenting the ramifications naturally inherent in any study of the physical organism. The problem can only be solved if a tremendously large number of investigators are engaged in its study and an overwhelming number of clinical cases are studied.

Until this is possible, the theory of focal infection will remain in the indefinite realm of unsettled questions.

9. DEGREE OF KERATINIZATION OF THE GINGIVAE FACIALLY AND INTERPROXIMALLY: A PRELIMINARY REPORT. Lieut. Carl A. Schlack, D.D.S., Dental Corps, U. S. Navy, and Lieut. (jg) Merrill G. Wheatcroft, D.D.S., Dental Corps, U. S. Navy, and Lieut. (jg) George Owen Stead, D.D.S., Dental Corps, U. S. Navy. U. S. Naval Dental School.

One hundred seventy-eight tissue smears were taken from the gingival margins of 89 patients ranging in age from 19 to 53 years, and stained for keratin. The gingival margin regions from which scrapings were procured were distributed as follows: 53 smears from the buccal and 53 from the mesial aspects about the right first maxillary permanent molar; 10 smears buccally and 10 mesially about the right first maxillary premolar; 26 from the labial and 26 from the mesial aspect of the right first mandibular permanent incisor. Comparisons between the degree of keratinization buccally (labially) and mesially showed: in 56.6% of the cases more keratinization buccally than mesially, in 20.8% equal keratinization, 11.3% more keratinization mesially than buccally, 11.3% could not be evaluated in studies about the gingival margins of the first molar. The studies concerned with the premolar showed a greater keratinization on the buccal in all cases. The gingival marginal studies about the first mandibular incisor showed in 69.2% of the cases greater keratinization labially, in 15.4% equal degree of keratinization and in 15.4% evaluations could not be made.

A resume of all 89 cases showed in 65.2% of the cases, a greater degree of keratinization of the gingival margin buccally (labially) than mesially, in 16.8% an equal degree of keratinization on both areas, in 6.7% a greater degree of keratinization mesially than buccally, and in 11.2% evaluations could not be made.

Although methods used in this work for determination of degree of keratinization of epithelial tissue are not new, the comparisons between the degree of keratinization of the regions studied have not previously been made.

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# 10. METHODS OF DETERMINING FATIGUE PROPERTIES OF DENTURE MATERIALS. Walter S. Crowell, B.S., S. S. White Co., Philadelphia, Pa., and R. C. Angell, B.S.

The fatigue properties of denture materials were investigated, using two types of testing machines, one described in the literature, the other designed by the authors. The results on the two machines failed to correlate. A third machine was designed, built, and tests made on it. In the third machine the stress on the specimen was produced by a dead load. Tests on it agreed with those obtained on the authors' machine.

It is believed that moving parts in the other machine introduced unknown stresses in the specimens under test which accounts for the lack of correlation.

Fatigue strengths deduced from the authors' results are as follows:

Base plate rubber 3200-3600 p.s.i.

Vinyl denture resin 1600 p.s.i.

11. BACTERIOLOGIC AND CHEMICAL STUDIES ON HUMAN SALIVA. Martin Deakins,<sup>3</sup> B.S., M.S., D.D.S., Ph.D., School of Dentistry, University of Pennsylvania, Philadelphia, Pa.

Eleven bacteriological and biochemical studies were made on twenty different samples of saliva under uniform conditions. The variation of each constituent was found to be as great, or greater, when calculated on the rate-of-flow basis as when calculated on an amount-per-cc basis.

When grouped according to rate of flow into "fast" and "slow" groups and the constituents calculated on a rate-of-flow basis, there was a significant difference for 9 of the 11 constituents, but when this grouping was calculated on an amount-per-cc basis, there were no statistically significant differences. Furthermore, when divided into two groups by age, 5 of the 9 previously significant differences

<sup>8</sup>The author was assisted in this work by B. G. Bibby, Ph.D., D.M.D., V. D. Cheney, A.B., D.D.S., Ph.D., and M. Van Kesteran, M.S.

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were still significant. That is, some constituents of the salivas could be correlated both with rate of flow and with age.

These results seem to cast doubt on the value of correlating salivary "factors" especially with dental caries, using the customary small groups of subjects (25 or less).

## 12. SOLUTION OF PULP TISSUE BY CHEMICAL AGENTS. L. I. Grossman, D.S.S., Medical Arts Building, Philadelphia, Pa., and B. W. Meiman, D.D.S., Philadelphia, Pa.

In root canal work, elimination of necrotic tissue from the canal is important. The purpose of this study was to determine which chemical agent is most effective in dissolving pulp tissue.

*Method*: I cc. of each chemical solution was placed in a small test tube. Equal amounts of pulp tissue were added, the tubes were placed in an incubator at 37-40 C. and examined after 0.5, I, 2, 3, 6, 24, 48 and 72 hours. "Blindfold testing" method was used in evaluating results.

*Conclusions:* Liquor sodæ chlorinatæ U.S.P. IX, double strength solution, was found to be the most effective of eight solutions examined.

## 13. HEREDITARY ECTODERMAL DYSPLASIA. F. W. Sunderman, D.D.S., and T. J. Cook, D.D.S., University of Pennsylvania, Philadelphia, Pa.

Studies were made on three cases of hereditary ectodermal dysplasia of the anhidrotic type occurring in the same family. About 40 cases of this unusual condition have been reported in the literature. The salient features of this congenital defect are the absence of sweat glands and occasionally lachrymal glands; the total absence or incomplete development of the teeth; the growth of scanty, fine lanugo type of hair; and the presence of a chronic rhinitis frequently associated with loss of the sense of smell.

In the three patients (male) studied the following was found: P, aged 22, had two canines and two molars in the maxilla while the mandible was edentulous. J, aged 20, had two canines, two molars in the maxilla and two molars in the mandible, while A, aged 5,

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had two deciduous incisors in the maxilla while the x-ray disclosed two unerupted permanent teeth that appeared to be canines and two deciduous molars with two permanent molars unerupted, while in the mandible there were two deciduous molars and the x-ray disclosed two unerupted molars. In the two older patients, P and J, there were present 12 out of a possible 64 teeth, while in the youngest, A, there were 6 out of a possible 20 deciduous teeth.

The effects produced by exposure to a hot environmental temperature for 30 minutes were studied in two individuals suffering with this condition and were compared with those produced in two control subjects. Our studies emphasize the importance of sweat glands in providing a mechanism for the dissipation of heat when the demands of the body require greater elimination of heat than is needed in the normal resting state.

14. OBSERVATIONS ON THE RADIOPHOSPHORUS METABOLISM OF TEETH AND BONES OF EXPERIMENTAL ANIMALS. J. F. Volker, A.B., M.S., D.D.S., R. F. Sognnaes, L.D.S., and B. G. Bibby, Ph.D, D.M.D., School of Medicine and Dentistry, University of Rochester, Rochester, N. Y.

Radiophosphorus ( $P^{s2}$ ) exchange in the teeth and bones of cats, guinea pigs, normal and rachitic rats and a monkey has been studied. Of the experimental animals investigated, guinea pigs showed the greatest accumulation of  $P^{s2}$  in the teeth. A greater radiophosphorus uptake was observed in the teeth and bones of rachitic rats than in their normal litter mate controls. Nine cats, sacrificed from I to 9 days after the administration of marked phosphorus, had approximately .04% of the total dose in their complete dentition. A similar concentration of radiophosphorus was observed in the teeth of a monkey who lived for 6 days following the feeding of a dose of  $P^{s2}$ . In general coronal dentin contained less marked phosphorus than root dentin and maxillary bone greater concentrations of radiophosphorus than mandibular bone. Glycol ash extraction of the  $P^{s2}$ containing calcified tissue removed only a small fraction of the total concentration of the isotope.

15. THE EXCHANGE OF RADIOPHOSPHORUS IN THE VARIOUS PARTS OF THE ENAMEL. R. F. Sognnaes, L.D.S., and J. F. Volker, A.B., M.S., D.D.S., School of Medicine and Dentistry, University of Rochester, Rochester, N. Y.

Radiophosphorus  $(P^{32})$  was detected in the enamel of fully formed teeth of 9 cats, 5 dogs and 1 monkey from 4 hours to 9 days following the administration of the radioactive isotope. The relatively greatest radioactivity was recorded in the surface layer and the high density fraction of the enamel. This relationship was reversed when the teeth were covered and salivary secretion excluded from the tooth surfaces.

The enamel of unerupted, actively calcifying monkey teeth showed isotope concentration 30 times greater than the enamel from fully erupted teeth of the same animal. Freshly extracted human teeth showed a marked activity in the surface enamel after having been in contact with saliva containing radiophosphorus. Our findings indicate that the enamel is subject to mineral exchange, partly through the blood supply of the teeth and partly through contact between the enamel surface and the oral secretions.

16. A BACTERIOLOGICAL APPRAISAL OF SOME MATERIALS USED IN ROOT CANAL THERAPY. Henry A. Bartels, B.S., D.D.S., School of Oral and Dental Surgery, Columbia University.

Cotton points moistened with suitable medicaments were brought in contact with 50 per cent serum broth and were then placed on the surface of 10 per cent serum agar which was seeded with staphylococcus aureus or fresh saliva. This method appraised (a) the efficiency of small amounts of antiseptics and (b) whether or not the presence of serum acted as a deterrent. The results obtained were:

(1) Formocresol restrained bacterial proliferation to a larger degree than any of the other medicaments tested. It apparently was not affected by the presence of serum.

(2) Oil of cinnamon also produced a large zone of inhibition. This area, however, was definitely smaller than that caused by the formocresol. (3) Eugenol inhibited bacterial growth in a zone about one-half that formed by the oil of cinnamon.

(4) Beechwood creosote restrained bacterial proliferation in an area about equal to that of eugenol.

(5) Zonite and Chloramine T gave little if any inhibition. Since these substances are rapidly disintegrated (possibly ten minutes) in the presence of organic matter, this method is no true appraisal of their value.

Guttapercha points and silver points were also tested. One manufacturer's guttapercha points were found to be bacteriostatic toward certain gram positive organisms. Great variation, however, occurred in different lots from this source.

Silver points apparently have no antibacterial effect when in contact with a serum agar surface.

## 17. THE PENETRATION OF PHENOL IN TOOTH STRUCTURES. B. O. A. Thomas, B.A., D.D.S., M.S., School of Dental and Oral Surgery, Columbia University, New York.

The object of the investigation was: (I) to determine whether phenol is self-limiting in its action on tooth structure; (2) to study the effect of phenol (when used in cavity sterilization) on the dental tissues.

In vitro experiments, utilizing the bromine water test, and with eosin Y as a tracing agent, proved that phenol will penetrate from the pulp cavity to the surface of the tooth in less than 24 hours. In vivo and in vitro experiments, also utilizing eosin Y, showed that phenol will penetrate from a cavity to the pulp.

Histologic evidence was obtained which indicates that phenol will irritate the pulp and cause an inflammatory reaction. This reaction includes the migration of leukocytes<sup>4</sup> into the dentinal tubules of the calcified dentin as well as the dentinoid tissue. Control cases are presented to show that the reaction of the pulp is not due to the cavity preparation.

Metamorphosed dentin is impermeable to phenol, as shown in this study.

<sup>4</sup>In his presentation the author questioned this point.

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Concentrated phenol will coagulate organic matter. It is conceivable that the dental lymph in permeable dentin will dilute the phenol so that it acts as an irritant rather than an escharotic when it reaches the pulp. This irritation usually stimulates the pulp to protective measures.

18. The DISPARITY BETWEEN DENTAL NEED AND DENTAL CARE IN school children.<sup>5</sup> Henry Klein, D.D.S., Sc.D., Dental Officer, and Carroll E. Palmer, M.D., Ph.D., Past Assistant Surgeon, United States Public Health Service.

The present report is concerned with a quantitative description of the dental status of a group of over 6000 grade and high school children, ages 6 through 19 years, residing in Hagerstown, Maryland, and environs. In this school population, caries proceeds at an average rate of approximately 1.77 permanent tooth surfaces per child per year, and dental care in the form of fillings is supplied at an average rate of 0.37 permanent tooth surfaces filled per child per year. Thus, the permanent tooth surfaces are attacked at a rate nearly five times greater than the rate at which surfaces are filled. This large disparity between caries attack and provision of dental care results each year in a steadily accumulating residuum of untreated carious tooth surfaces. The average rate at which these untreated carious tooth surfaces accumulate can be seen to be of the order of 1.4 surfaces per child per year. On the average, of each 100 surfaces attacked by caries each year (over the interval from 6 through 19 years of age), 20 surfaces are filled and 80 surfaces remain untreated. Of these 80 untreated surfaces, 60 are extracted or are indicated for extraction each year, while only 20 each year remain in such condition that they warrant treatment by fillings. Expressed in other terms, more than three-fourths of the permanent tooth surfaces attacked by caries each year remain without fillings and of these latter, approximately three-fourths have extended to a point where therapeusis by fillings can not be recommended, thus they are indicated for extraction and/or are extracted.

<sup>5</sup>From the Division of Public Health Methods, National Institute of Health, Bethesda, Md.

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These average yearly rates represent the way in which various phases of the dental problem of school children arise. The dental status of the children may be expressed also in terms of the average accumulated number of surfaces attacked by caries filled, indicated for extraction and extracted over the period, 6 through 19 years. Thus, during this broad age interval each 100 children show an average of 810 permanent tooth surfaces attacked by caries, of which 207 are filled and 603 show no evidence of fillings. Of these last, 303 surfaces are in such condition as to require extraction or the teeth have been extracted, and 300 surfaces are in a condition warranting fillings. Expressed in other terms, of each 100 permanent tooth surfaces attacked by caries during the school attendance period, approximately 25 are found filled and 75 are untreated. Of these latter, about one-half are extracted or indicated for extraction, and one-half await treatment by fillings. Accordingly, the average school child, over a period covered by the ages 6 through 19 years, shows a current untreated need for fillings in about 3 permanent tooth surfaces, of the order of 3 surfaces lost, and a little more than 2 surfaces filled.

19. THE EFFECT OF SYNTHETIC DETERGENTS ON THE METABOLISM OF BACTERIA. Zelma Baker, B.S., Ph.D., R. W. Harrison, B.A., M.S., B. F. Miller, B.S., Ch.E., M.D., and Walter G. Zoller Memorial Clinic, University of Chicago.

Inhibition of bacterial respiration and acid production of bacteria by a number of synthetic detergents has been investigated. Cationic detergents such as lauryl pyridinium iodide inhibit gram-positive and gram-negative organisms at concentrations of 1:3000 and lower. Anionic detergents such as sodium lauryl sulphate inhibit the metabolism of gram-positive organisms only. In general, the cationic detergents are more active than the anionic. Both types are markedly influenced by the hydrogen-ion concentration of the medium.

It has been observed that a number of detergents stimulate bacterial metabolism. The practical importance of this finding will be considered.

The germicidal effects of the detergents has been determined and compared with the inhibition of metabolism.

## 20. PATHOGENESIS OF HYPOPLASIA OF HUMAN ENAMEL FROM THE EARLIEST STAGES. Seymour Kreshover, B.A., D.D.S., Pathology Department, Yale Medical School, New Haven, Conn.

Histologic studies were made of the developing teeth of eleven infants and human fetuses. Definite changes were observed in the ameloblasts and organic enamel matrix of the deciduous and permanent teeth in five of the cases. From the material studied, the writer believes it possible to trace the histogenesis of enamel hypoplasia from its earliest manifestations to the end result of clinically demonstrable defects.

The earliest changes are marked by an abnormal formation or secretion of enamel substance subjacent to and within the cytoplasm of ameloblasts. There is little or no further evidence of cell change. It is likely that this stage is reversible, the cells retaining an ability to return to normal function. A prominent incremental line would be the only subsequent indication of such temporary dysfunction.

A later and more severe stage is recognized by the beginning of cystic change in the ameloblasts. Vacuolization begins first in the portion of the cell proximating the stratum intermedium and gradually progresses inferiorly to involve a larger part of the cell structure. Streaks and globules of enamel-like material project inferiorly from such injured cells and are continuous with the abnormal enamel layer.

Complete cystic destruction of ameloblasts marks the final stage in the pathogenesis of enamel defects. Such cells can no longer function in amelogenesis and clinical hypoplasia results.

It is apparent that abnormal enamel formation is nonspecific in nature and cannot, in the presented material, be definitely associated with a particular disease process or injury. That a variety of disturbances may be the causative agent in such abnormalities is accepted. Any of these, dependent upon their severity and the degree of cell injury, may result in the so-called hypoplastic enamel defects.

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## DENTISTRY AND ORGANIZED SCIENCE IN AMERICA

The American Dental Association is the formal general representative of "organized dentistry" in the United States. The American Association for the Advancement of Science (A.A.A.S.) bears the same relation to "organized science" in America. Dentistry, since 1932, has been well represented, in independent scientific sessions, at the annual winter meetings of the A.A.A.S. The dental programs at these meetings, in 1932, 1933 and 1934, were conducted by the American College of Dentists, with the cooperation of members of the International Association for Dental Research, the American Dental Association and the American Association of Dental Schools. In 1931 and 1932, the A.C.D., A.A.D.S., and A.D.A. were admitted, in this sequence, to the "associate" relationship with the A.A.A.S. In April, 1935, the A.A.A.S. admitted the American Division of the I.A.D.R. to the affiliate relationship; gave this dental affiliate a representative in the Council; and created in Section N (Medical Sciences) the Subsection on Dentistry, to consist of the official representatives of the said four dental organizations and all other dental members of the A.A.A.S.

A record of the publication of the proceedings of the three dental meetings under the leadership of the A.C.D. follows: (a) Atlantic City, N. J., Dec. 30, 1932: J. Den. Res., 1933, 13, 135-172. (b) Boston, Mass., Dec. 29, 1933: J. Am. Col. Den., 1934, 1, 44-62. (c) Pittsburgh, Pa., Dec. 29, 1934: J. Am. Col. Den., 1935, 2, 106-120. (1) The fourth consecutive annual meeting in this series, and the first meeting of the Subsection on Dentistry: St. Louis, Mo., Jan. 4, 1936: J. Am. Col. Den., 1936, 3, 79-95. (2) Atlantic City, N. J., Dec. 28, 1936: J. Am. Den. Assoc. and D. Cos., 1937, 24, 1130-38. (3) Indianapolis, Ind., Dec. 27, 1937: J. Am. Col. Den., 1938, 5, 73-77. (4) Richmond, Va., Dec. 28, 1938: J. Am. Col. Den., 1939, 6, 56-70, 184-187. (5) Columbus, O., Dec. 30, 1939: J. Am. Col. Den., 1940, 7, 74-87.

Since 1931, dentists desirous of participating in the work of the A.A.A.S. have been eligible for election to membership. Dentists elected to general membership have been assigned also to membership in the "Dental Section," the Executive Committee of which has been free annually to nominate members for advancement to Fellowship. The members of the Executive Committee of the "Dental Section" for 1939-40 were Drs. J. L. T. Appleton, Chairman, Paul C. Kitchin, Secretary, and Lester R. Cahn; for 1940-41, the members are Drs. Frederick W. Hinds, Chairman, Paul C. Kitchin, Secretary, and H. B. G. Robinson. The next meeting of the "Dental Section" will be held (on a date to be selected) during the progress of the winter meeting of the A.A.A.S., in Dallas, Texas, Dec. 29, 1941, to Jan. 3, 1942, inclusive. Below are appended two lists: (1) Names of dentists who have been made Fellows of the A.A.A.S.; and (2) names of additional dentists who are members of the A.A.A.S .- both compiled by Secretary Kitchin, at the writer's request, from the official volume of membership (pages 1109) "as of July 1, 1940", and including the elections at the meeting in Philadelphia, Pa., on December 28, 1940:

(1) List of Dental (D.D.S. or D.M.D.) Members Who Were Advanced to Fellowship

(Abbreviations: M-Member. F-Fellow. L-Life member. Numerals-last two in numerals for years of election to designated relationship.)

Applebaum, Edmund: M36, F38 Appleton, J. L. T.: M22, F33 Bartels, H. A.: M29, F29 Bear, Harry: M38, F39 Blayney, James R.: M33, F33 Blum, Theodor: M17, F33 Bodecker, C. F.: M29, F38 Brady, Ewing P.: M33, F38 Brandhorst, Otto W.: M36, F39 Broadbent, B. Holly: M27, F39 Brodie, Allan G.: M36, F40 Bryan, Alvin W.: M33, F39 Bunting, Russell W .: M24, F33 Cahn, Lester R.: M35, F38 Carr, Malcolm W.: M34, F39 Churchill, H. R.: M37, F38

Coolidge, Edgar D.: M33, F39 Dean, Henry T.: M34, F38 Grossman, Louis I.: M36, F39 Hellman, Milo: M24, F31 Hill, Thomas J.: M36, F36 Hinds, Frederick, W.: M41, F41 Howe, Percy R.: M35, F35 Jay, Philip: M31, F38 Kitchin, Paul C.: M28, F39 Lischer, Benno E.: Mo3, F32 Loeb, Virgil: M29, F33 McCall, John O.: M33, F33 Merritt, A. H.: M32, F39, L40 Millberry, Guy S.: M13, F15 Miner, L. M. S.: M34, F39 Moore, George R.: M31, F38

Noyes, Frederick B.: M30, F39	Sloman, E. G.: M40, F41
Noyes, Harold J.: M38, F40	Stallard, Harvey: M28, F33
Potts, Herbert A.: M24, F27	Ward, Marcus L: M24, F33
Prinz, Hermann: Mo8, F33	Waugh, Leuman M.: M33, F39
Robinson, H. B. G.: M38, F38	Weinberger, B. W.: M19, F25
Rosebury, Theodor: M37, F38	Wright, Walter H.: M33, F40
Schour, Isaac: M34, F34	

# (2) LIST OF ADDITIONAL DENTAL (D.D.S. OR D.M.D.) MEMBERS

(The numerals in parentheses are last two in numerals for years of election.)

Adams, J. William (41)	Ernst, Herbert (41)	Jozefczyk, A. M. (40)
Agnew, R. G. (39)	Ferguson, R. Andrew (41)	Kaletsky, Theodor (38)
Aiguier, J. E. (40)	Fernandez, Antonio (40)	Katz, Solomon L. (40)
Aldecoa, Eladio R. (40)	Fitz Gibbon, J. T. (40)	Keller, William C. (40)
Arnim, S. S. (40)	Fladeland, Robert H. (40)	Kelly, Oather A. (36)
Bagnall, J. S. (36)	Fontaine, S. B. (40)	Kelsey, H. E. (32)
Banzhaf, H. L. (33)	Foster, C. S. (40)	Kemper, John (41)
Barnard, F. P. (40)	Friesell, F. C. (27)	King, T. B. (36)
Barrett, Leland (32)	Gabel, A. B. (33)	Lasby, W. F. (40)
Bennett, Paul H. (40)	GaNun, C. Fred (41)	Lawton, H. C. (40)
Beube, F. E. (38)	Gardner, W. M. (39)	Lefkowitz, W. (38)
Black, J. Cannon (41)	Garrett, W. A. (40)	Leonard, H. J. (37)
Broadhurst, G. B. (40)	Garrison, Monte (41)	Lewis, Samuel (36)
Brock, David W. (41)	Gibson, Kenneth R. (40)	Lieban, E. Alan (33)
Burkhart, H. J. (40)	Giffen, R. B. (14)	Lindsay, Ashley W. (32)
Byrnes, Ralph R. (32)	Gilchrist, H. A. (40)	Lineberger, H. O. (32)
Campbell, D. K. (33)	Goodsell, J. O. (36)	Litten, Arthur S. (33, L37)
Caraballo, Cristobal (40)	Grace, James D. (40)	Logan, W. H. G. (38)
Cart, Jacob F. (40)	Gurley, John E. (32)	Loop, Jack (41)
Clark, S. W. (36)	Hall, J. F. (39)	Lowery, P. C. (32)
Collins, Martin L. (40)	Hardgrove, T. A. (40)	Luckie, S. Blair (36)
Conner, M. I. (40)	Hardy, Charles S. (33)	Lundquist, G. R. (32)
Cooper, Herbert C. (40)	Harpole, H. J. (40)	Lyons, D. C. (35)
Cottrell, Ivan R. (41)	Harris, Samuel D. (40)	MacMillan, H. W. (32)
Coy, H. D. (40)	Haynes, G. F. (40)	Mauer, John (40)
Desmond, John W. (40)	Hemley, Samuel (36)	McFarlane, William A. (41)
Devitt, Oliver H. (41)	Hertz, John D. (41)	Meisel, E. C. (32)
Dingle, Edmund W. (40)	Hillenbrand, Harold (38)	Merchant, Henry A. (38)
Dixon, Russell A. (41)	Hodgkin, William N. (40)	Mershon, John V. (41)
Dodds, Neal (39)	Hoffman, M. M. (40)	Midgley, A. L. (32)
Douglass, George C. (40)	Hollenback, G. M. (36)	Moen, Obed H. (41)
Dubeau, Eudore (36)	Holliday, Garland W. (39)	Moore, Norman A. (40)
Dunn, Lawrence J. (41)	Holliday, Houghton (35)	Myers, Lester E. (40)
Dunning, W. B. (29)	Huff, M. D. (35)	Nevin, Mendel (41)
Easlick, K. A. (40)	Ivory, James (41)	O'Farrell, James D. (41)
Ellington, Elza (41)	Ivy, R. H. (33)	Orban, Balint (41)
Elliot, F. C. (35)	James, Frederic (37)	Peters, John L. (18)
Ellis, George R. (33)	Johnson, L. R. (40)	Postle, W. D. (40)

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Price, W. A. V. (99) Tanchester, David (33) Sharp, G. C. (29, L32) Sheffer, W. G. (40) Tolmach, Samuel (40) Prime, J. M. (34) Pritchard, G. P. J. (41) Shuman, Harry B. (40) Van Valey, Edwin G. (32) Proctor, C. M. (33) Vinsant, R. S. (40) Siegel, C. (33) Reichman, F. J. (40) Smith, C. M. (40) Voyles, John S. (36) Reock, Ernest C. (40) Smith, E. H. (41) Wach, E. C. (39) Ricardo, Salazar S. (36) Smith, T. Sidney (32) Walker, Alfred (32) Rich, Celia (28) Sommers, H. F. (40) Walsh, A. L. (40) Rider, T. T. (40) Sorrin, Sidney (35) Walsh, J. R. (33) Riesner, Sidney E. (40) Sprinkel, A. Hume (40) Weinmann, Joseph P. (41) Rinehart, R. J. (34) Starr, Frank C. (41) Wiethoff, C. A. (40) Robinson, J. Ben (41) Stein, M. R. (34) Willett, R. C. (36) Rosoff, Meyer L. (34) Steiner, John (41) Williams, J. H. (36) Wilson, G. W. (40) Rossman, Louis (40) Stephan, R. M. (36) Rudolph, C. E. (40) Stillson, W. C. (40) Woods, P. W. (40) Stillwell, Edward C. (40) Sager, Louis E. (41) Yando, Com. Arthur H. (41) Salzmann, J.A. (36) Sullivan, J. C. (33) Yost, Howard (40) Samuel, James H. (41) Sved, Alexander (33) Zemsky, J. L. (40) Schiff, David C. (07) Swinehart, Earl W. (36) Zugsmith, Robert (32) Schmid, Adolph R. (40) Taber, L. B. (17) Schroff, Joseph (36) Thurston, Fredus A. (21) 

Summary: Number of Fellows, 45; number of additional members, 175; total 220.

Dentists wishing to learn about the functions of the A.A.A.S., and the ways in which dentists animated by the spirit of scientific progress in dentistry can participate in the activities and professional benefits of "organized science" in America, would receive related information by addressing inquiries to the Secretary of the "Dental Section"—and its representative in the Council of the A.A.A.S.— Dr. Paul C. Kitchin, College of Dentistry, Ohio State University, Columbus, Ohio. The scientific proceedings of the Philadelphia meeting of the "Dental Section" (1940) are indicated on pages 44-61, inclusive, of this issue.—W. J. G.

## CLINICAL RESEARCH

There is an earnest desire in the hearts of many dentists to conduct simple projects in research. One frequently encounters this query, from individual dentists and from study groups: "What little problem can we work on this winter?" The prevalence of this desire is well known, but it needs translation into action. In addition to the wish to conduct research, there is also needed the will, the training, and above all the inquisitiveness, to proceed. Possibly the

condition most frequently missing is the training. Training, imparted or acquired, is essential for the most difficult research, yet some of the most important researches were conducted by observers who lacked special training. Then, too, there are many simple problems for the solution of which formal training in research is not a prerequisite. Therefore any competent practitioner can proceed hopefully in valuable research, if he so decides.

What are some of the problems upon which he could work? Consider only one small field-silicate cement-to illustrate the type of information needed and which could be supplied by the practitioner. Such questions as these arise in this relation: How many silicate-cement fillings are placed annually? How long do they last? Is there a seasonal effect-do the fillings placed in the winter months last longer than those inserted in the summer? Are teeth devitalized more frequently by silicate cements than by amalgams, gold inlays, etc.? What percentage of teeth, in which silicate-cement fillings have been placed, become devital? How soon do silicatecement fillings discolor? Is the darkening only on the surface or does it extend into the interior? Does the darkening occur in the dentin, causing the filling to appear off-shade; or does a combination of several of these factors produce unsightly change in color? What are the clinical effects of variations in the mixingand-packing technic?

Much information on the clinical behavior of silicate cements, in additional relationships, is needed. A manufacturer has stated that the silicate cement of his particular make does not shrink, and that for this reason the so-called brown margin, often seen in silicatecement fillings, does not appear. This claim has been reiterated in advertisements over a period of years, yet where in dental literature may one find any confirmation that it is true or proof that it is not? Could any one establish the truth in such relations more effectively than individual practicing dentists?

There has been a deplorable deficiency of published clinical reports on nearly all of the therapeutic agents that are unique in dentistry. This conclusion may seem dogmatic, but the skeptic can test it in the field of silicate cements by trying to find the answers

in dental literature to the foregoing simple questions. In many other dental fields clinical information is seriously deficient. Why should not such gaps in dental knowledge soon be closed?—G. C. P.

## HOKUM ABOUT ACRYLIC RESINS

A surprising fellow is the postman. Scarcely a day goes by on which he does not present a prize package or message of some sort. A few weeks ago he delivered an imposing announcement (in three colors, too) of "A sensational achievement in Acrylics"—"That will be Welcomed and Prized by your patients." The sensation—a transparent acrylic resin "sparkling with pure 22-K gold." One was advised to buy because ". . . as gold has a higher intrinsic value to patients, better fees are made possible." Undoubtedly there are far too many dentists to whom such a sales-promotion appeal is effective and who actually use such "sales talk" to patients.

But in addition to all this there appeared the statement: "Possesses 18 per cent Greater Strength." Of course it didn't say "greater than what"? Nor did it say what kind of strength was involved. Such things are usually left to the imagination of the prospective buyer. But it did say 18 per cent stronger, certainly a significant amount, meaning in fact no less than 17.5 per cent nor more than 18.5 per cent. This implies that, by using the resin "sparkling with 22-K pure gold," one could make dentures about one-fifth thinner. These dentures would allow more tongue room and would weigh less—each a manifest advantage. So far, so good; but now the story takes an abrupt turn in the wrong direction. On questioning a representative of the firm, it was learned that no measurements of the strength were made and that after all the 18 per cent was only an extravagant and fanciful "figure of speech."—G. C. P.

## JONATHAN TAFT-1820-1903

At the Convocation in Cleveland the name of Jonathan Taft was inscribed upon the Mace of the College. He began practice in 1843, after a præceptorship, and in 1850, the Ohio College of Dental Surgery conferred the degree of D.D.S. upon him. Dr. Taft was active in the Mississippi Valley Association of Dental Surgeons, serving as President in 1852, and holding a membership

for 54 years. He was one of the organizers of the American Dental Convention in 1855 and president in 1863; he was one of 24 organizers of the American Dental Association in 1859 and secretary for the first nine years, becoming president in 1868; he was one of the organizers of the Ohio State Dental Society in 1867 and later was its president; he was a member of 70 professional organizations, attending from 15 to 30 meetings a year; he was professor of Operative Dentistry in the Ohio College of Dental Surgery for a period of 25 years, beginning in 1854, and for 15 of those years he was dean of the school; he organized the College of Dental Surgery at the University of Michigan in 1865, serving as dean and professor of Operative Dentistry for 28 years until his death; he received the honorary degree of M.D. from the University of Michigan in 1881.

He was a contributor to dental literature, beginning with an article in the Dental Register of the West, in 1848, of which he was editor for 44 years, from 1856. He was author of a text book on operative dentistry in 1859, which was later translated into German and other foreign languages. He suggested the first dental law in Ohio in 1868, serving upon the Board of Dental Examiners for many years. He was influential in the organization of the National Association of Dental Examiners, aiming at uniformity in dental licensure and was president of this organization during its first four years.

In the organization of the College of Dental Surgery in the University of Michigan, he was able to demonstrate a type of dental education according to his ideals and thus the school became the pattern for later schools in universities. As a teacher his influence extended far beyond the schools with which he had been associated. He was one of the founders of the American Institute of Pedagogics and the National Association of Dental Faculties in 1884, of which he was president in 1899.

## CORRESPONDENCE AND COMMENT

HARVARD SCHOOL OF DENTAL MEDICINE

See an article by Dr. John W. Cooke in the January issue of the Harvard Dental Alumni Bulletin (replacing Harvard Dental Record), for the comment below on the "initial staff appointments and departmental organization" of the School of Dental Medicine, on the basis of three departments, as follows: (1) The department of clinical dentistry. (2) The department of orthodontics. (3) The department of oral and plastic surgery. [Page 27.]

"With the purpose in mind of creating a staff which comprises only the skeleton of a later more complete organization, thirteen appointments to the School of Dental Medicine have been presented and confirmed by the proper authorities. [Page 27.]

"Within the department of *clinical dentistry*, the following initial appointments have been made:

Dr. Paul E. Boyle, Assistant Professor of Clinical Dentistry.

Dr. J. W. Ferrebee, Assistant Professor of Dental Medicine.

Dr. Paul K. Losch, Instructor in Clinical Dentistry.

Dr. Arthur M. Maloney, Associate Professor of Clinical Dentistry.

Dr. David Weisberger, Instructor in Clinical Dentistry." [Page 28.]

"Within the department of *orthodontics*, three initial appointments have been made, as follows:

Dr. Fred R. Blumenthal, Assistant Professor of Orthodontics.

Dr. Alfred P. Rogers, Clinical Professor of Orthodontics.

Dr. Charles M. Waldo, Assistant Professor of Orthodontics." [Page 28.] "The department of *oral and plastic surgery* will have the following initial staff:

Dr. Bradford Cannon, Instructor in Plastic Surgery.

Dr. V. H. Kazanjian, Professor of Plastic Surgery.

Dr. Harold A. Kent, Assistant Professor of Oral Surgery.

Dr. Kurt H. Thoma, Professor of Oral Surgery." [Page 28.]

"The men just . . . [named], plus Dr. Leroy Miner, comprise the initial staff of the School of Dental Medicine. That Dr. Miner, as his duties as Dean of the Harvard Dental School will permit, should be associated with this project in dental education is to be expected and welcomed. His support, his wide experience, and his many contacts with dental educators everywhere will prove invaluable. "Acting as a subcommittee responsible to the committee on transition and instruction, a committee on dental curriculum has been appointed and is now at work. The membership of this committee is as follows: Dr. Raymond J. Nagle, Dr. Alfred P. Rogers, Dr. Kurt H. Thoma, Dr. G. Earl Thompson, Dr. Harry Trimble, Dr. David Weisberger and Dr. John W. Cooke, Chairman." [Page 28.]—(1)<sup>1</sup>

*Comment.* The statement about Dean Miner, in the next to the last paragraph, seems to indicate that the "Harvard Dental School" and the "Harvard School of Dental Medicine" are not merely different names for the same School; also that the one School will not be continued in the other, but that the Harvard Dental School will cease to exist with the graduation in 1944 of the Freshman class admitted in 1940. See the comment in this issue (J.A.C.D.), on page I.-[C. Ed. (I)].

STATED INTENT OF THE NEW DENTAL PROGRAM AT HARVARD

In the Cleveland symposium on "Trends in dental education" (J.A.C.D., 7, 320; 1940, Dec.), it was said (p. 363): "The present writer does not know that this design ['to convert a portion of dentistry into a medical specialty'] has been avowed in any public announcement." I have recently read again the article in the *Har*-vard Dental Record (1937, July 26) on "Dental medicine: a neglected field," by Dr. C. Sidney Burwell, Dean of the Harvard Medical School, and Chairman of the Committee which in 1939 formulated the new dental program at Harvard University, to be inaugurated in September, 1941. Perhaps the following comment in that article shows what this new program is intended mainly to accomplish:

"It is necessary, if dental investigation is to go ahead in the direction of prevention, to have a fruitful union between workers in dentistry and workers in medical and biological sciences. Practically speaking, this can be done only by creating first-rate university dental schools as parts of first-rate university medical schools. This opportunity exists at Harvard (p. 2). . . . Harvard University realizes both the need and the opportunity to establish dentistry as an integral branch of medicine (p. 3). . . This kind of a

<sup>1</sup>The terminal numerals in parenthesis are inserted for purposes of identification in the records of this *Journal*.
### CORRESPONDENCE AND COMMENT

dental school must develop as a part of the university and of a medical school, and with the active support of both." (pp. 3-4.) [Italic not in original.]—(2)

Comment. The foregoing quotations, and the whole of the indicated article by Dr. Burwell, foreshadowed in 1937 the report of the Committee which, in 1939, formulated the new dental program at Harvard. The intent of that program seems to be clearly indicated in the above quotations, although no public announcement of the purpose has been so explicit. Dr. Burwell's article agrees closely in import and phraseology with the said Committee's report. -[C. Ed. (2)].

WHAT'S IN A NAME: "GRADUATE" OR "POSTGRADUATE?"

The Carnegie Foundation's Bulletin on Dental Education in the United States and Canada (1926) employed "graduate," of several terms then in current use, to indicate consistently institutional educational after graduation from a professional school, and "undergraduate" to refer to such education before graduation. At that time "postgraduate" had already acquired a variety of undesirable implications, and discontinuance of its use was indicated. In the light of recent occurrences, a reconsideration of the use of these two terms is suggested.

(a) The term "postgraduate" appears in the *Requirements for* the approval of a dental school (1940), issued by the Council on Dental Education, American Dental Association; also in the *booklet* (1940), relating to certification of periodontists, issued by the American Board of Periodontology, Inc.

(b) The volume entitled *Graduate medical education in the U.S.* (1937-1940), issued by the Council on Medical Education and Hospitals, American Medical Association, rejects "postgraduate." The opening sentence in its Foreword states that "undergraduate and graduate education in the field of medicine differ radically." On page 210, a discussion of the "terminology in graduate medical education," includes the following comment:

"Unfortunately, a lack of uniformity prevails in the use of such terms as graduate medical education, postgraduate medical instruction and continuation study. Various organizations have attempted to formulate definitions applicable to the specific circumstances with which they were concerned. Since 1937 the Council on Medical Education and Hospitals has been engaged in a study of graduate medical education particularly as it applies to courses for practicing physicians. To facilitate this survey, an attempt is being made to formulate suitable terminology which may be acceptable to those interested.

"Graduate medical education in the broad sense covers all types of instruction which follow the award of the M.D. degree. In a more restricted sense, however, the term applies to well organized, systematic, scientific and clinical instruction planned for the benefit of the student under the supervision of a medical school, hospital or other educational institution. It may or may not lead to other academic degrees. Graduate education includes apprenticeships in the form of residencies and fellowships as well as other opportunities for graduate study with less dependence on clinical experience. . . This type of instruction is ordinarily designed to prepare the physician for practice of a specialty and is usually a requirement of the specialty boards.

"The term 'postgraduate' has been applied to short periods of study undertaken by the physician after licensure and after he has established himself in practice. Because abuses of the diploma privilege have given to this word an unsavory connotation, it may well be discarded." [Italic not in original.]—(3)

Comment. The Council on Medical Education has discarded "postgraduate." In a resolution adopted by the American Association of Dental Schools in 1934, and published on page 374 of the Report of the Curriculum Survey Committee, "graduate" was used and "postgraduate" was not. Would it not be desirable to permit "postgraduate" to pass into general disuse, because it has no accepted distinctive import, and tends to confuse every discussion into which it is introduced?—[C. Ed. (3)].

## NOTES

## Incomes of Philanthropic Foundations Decreasing

Public announcements indicate that in recent years (since 1936) the Carnegie Corporation, responding to appeals for the furtherance of dental education at Harvard, gave in instalments to that University a total of \$1,000,000, which will be used, with contributions from other foundations, in support of the new dental program. A very significant circular memorandum has been issued by the Carnegie Corporation, since October 17, 1940, to "institutions and agencies which have presented proposals" relating to prospective financial support. A copy follows:

## "The following report and recommendation of the Executive Committee of the Carnegie Corporation, dated October 4, 1940, was received and approved by the Board of Trustees of the Corporation at a meeting held on October 17, 1940.

"To the Board of Trustees of the Carnegie Corporation:

"The Executive Committee, since the April meeting of the Board, has held five special meetings at which the chief topic of discussion has been the responsibility of the Corporation in the present period of national emergency. The Committee is now recommending to the Board that, of the income available for appropriation in 1940-41, a substantial part, at least one-fourth, be reserved for the support of activities emergency in character and national in scope. The Committee realizes that a decision of this character taken in any fiscal year would seriously affect the regular program of the Corporation. Coming as it does in 1940-41, in the face of an operating deficit for 1939-40, and at a time when the rate of return on prudent investments is so low, the decision means in effect that the Corporation must limit its grants for other purposes to enterprises for which it has already assumed some degree of responsibility. Specifically, it renders it impossible for the Committee to recommend favorable action by the Board in the case of more than one hundred proposals now before it, all of which are of intrinsic merit, and many of which, in more normal times, the Corporation would be glad to support. The Committee presents this report with the greatest reluctance, and only after a careful canvass of all alternative possibilities. Since the decision will inevitably affect the budget plans of many of the institutions and agencies which have presented proposals, it is further recommended that the President be directed to send to all concerned letters of notification with copies of this report." [Italic not in original.]

The conditions indicated in the foregoing memorandum will increase attention to the manner in which special funds given by several foundations will be used at Harvard University, in the public interest, to bring about "reorganization" of dental education and the conversion of a portion of dentistry into a specialty of medical practice.—[C. Ed. (1)].

Deficiency in Dental Education of the Public

In an editorial in the Journal of Periodontology (12, 26; 1941, Jan.), entitled "Why the decrease in dental students," Dr. Arthur H. Merritt mentions some of the reasons that are commonly ascribed for what seems to be a diminishing interest in the prospective practice of dentistry. Among these reasons, as he stated them, are these: "... there is little in dentistry that appeals to the [public] imagination. The issues of life and death [health] are rarely joined in its practice." On the day we read Merritt's comment, we also saw the following editorial in the New York Sun (Feb. 21, 1941), entitled "Rejected for Service:"

"Dr. Leonard G. Rowntree, chief of the medical service of the Selective Service System, gave the National Conference of Medical Service figures on physical examinations of registrants which some Americans may find disquieting. Of every hundred registrants called for examination up to January 31 twenty were found unfit for any service, twelve were found fit for limited service only, eight were found fit for service by local board physicians but were rejected by Army physicians, and sixty were found fit for service by both local board and Army physicians.

"Defective teeth caused the most rejections, both by local board doctors and by Army doctors. More than one-sixth of those turned down by local board physicians and more than one-fifth of those turned down by Army physicians were rejected for this reason. Probably most of these defects are capable of correction, but it is not Army policy at this time to accept men who obviously need dental attention. The Army's physical standards are high in this respect as in others. The fact that 40 per cent of the registrants examined up to January 31 failed to measure up to one or another standard fixed by the Army is no indication that American men between 21 and 36 are in a deplorable physical condition. It is, rather, evidence that Uncle Sam, having to select fewer than a million men out of a group of more than six-

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teen million, can afford to maintain reasonably high physical standards." [Italic not in original.]

The foregoing editorial in the Sun reflects the current public view that the condition of the teeth, however deficient, (a) "is no indication that American men between 21 and 36 are in a deplorable physical condition," and (b) has little relation to present health or future disability. How long will organized dentistry be content to leave public dental education in charge chiefly of those who advertise the sale of dentifrices?—[C. Ed. (2)].

### BOOKS RECEIVED

Death and Dentistry by Martin H. Fischer, Doctor of Medicine, etc., and Professor of Physiology in the University of Cincinnati School of Medicine. 242 pages, 62 illustrations, \$5.00 postpaid. Published by Charles C. Thomas, Springfield, Ill. This recitation of the medical principles and of what is the relation of mouth infection to systematic disease, together with the author's indictment of modern surgical (particularly dental) practice, makes exciting reading. Every medical and surgical practitioner may turn to this volume for practical help.

Clinical Pathology of the Jaws (with A Histologic and Roentgen Study of Practical Cases), by Kurt H. Thoma, D.M.D., Charles A. Brackett, Professor of Oral Pathology in Harvard University, Oral Surgeon to the Brooks Hospital, Consulting Oral Surgeon to the New England Baptist Hospital, Consulting Oral Surgeon to the Tumor Clinic of the Beth Israel Hospital. A complete book on: Malformations of the Head, Face and Jaws, Fractures of the Jaws, Diseases and Neoplasms of the Jaws, All Types of Lesions of the Jaws. 643 pages, 171 case histories, 423 figures, 8 color plates, price: \$9.00 postpaid. Sent on approval in the United States and Canada. Published by Charles C. Thomas, Springfield, Ill.

# OUR ADVERTISEMENTS

## A policy intended to safeguard professional interests and to encourage the worthiest industrial endeavor

The basis and conditions of our policy relating to advertisements are set forth below (J. Am. Col. Den., 2, 199; 1935):

I. Advancement of the material aspects of civilization is largely dependent upon the expanding production and distribution of commodities, and their correlation with individual needs and desires. Successful practice of modern dentistry, on a broad scale, would be impossible without an abundance of the useful products of dental industries. Leading dental manufacturers and dealers have been providing invaluable merchandise for the dental practitioner. The business of supplying dental commodities has been effectually organized and, as an auxiliary to oral health-service, is more than sufficient to tax the greatest ingenuity and all the attention and integrity of each dental producer and distributor.

The American College of Dentists aims, in the public interest, to strengthen all wholesome relations and activities that facilitate the development of dentistry and advance the welfare of the dental profession. The College commends all worthy endeavors to promote useful dental industries, and regards honorable business in dental merchandise as a respected assistant of the dental profession. Our Board of Editors has formulated "minimum requirements" for the acceptance of commercial advertisements of useful dental commodities (J. Am. Col. Den., 2, 173; 1935). These "minimum requirements" are intended, by rigorous selection on a high level of business integrity and achievement, to create an accredited list of Class-A dental products and services, and include these specifications: Advertisements may state nothing that, by any reasonable interpretation, might mislead, deceive, or defraud the reader. Extravagant or inappropriate phraseology, disparagement, unfairness, triviality, and vulgarity must be excluded. Advertisements relating to drugs or cosmetics, foods, dental materials, education, finance-to any phase of interest or activitywill be accepted for only such commodities or services as merit the commendation, approval or acceptance of the National Bureau of Standards, American Dental Association, American Medical Association, Council on Dental Therapeutics, Dental Educational Council, Better Business Bureau, and other official bodies in their respective fields of authoritative pronouncement.

### ADVERTISEMENTS

The welfare of the consumer is our paramount consideration. In accordance with the recommendation of the American Association of Dental Editors, the placement of advertisements will be restricted to the advertising section.

II. An advertisement, to be accepted or repeated, not only must conform with the said "minimum requirements," but also *must meet the special test applied through a questionnaire* that will be repeatedly exchanged confidentially with numerous referees in all parts of the United States, and which contains the following inquiries:

Questionnaire for referees on acceptance of advertisements.—(I) Has \_\_\_\_\_\_\_ (person, company, service, etc.) always been honorable and fair in (his, their) dealing with you personally? (2) If not, indicate confidentially your experience to the contrary. (3) Has \_\_\_\_\_\_\_ (commodity, service, etc.) always been, in your use of it, what its advertisers claim for it? (4) If not, indicate claims that were unwarranted when made. (5) Would the accompanying (copy of a proposed) advertisement of \_\_\_\_\_\_\_ (commodity, service, etc.) be warranted, in your judgment, as a recognition and encouragement of useful dental commercialism? (6) If your answer to Question 5 is Yes, will you agree to test, *critically*, the above-named commodity (service, etc.) and to respond at intervals to our further inquiries as to whether all the claims published currently in its behalf, in advertisements *in the Journal of the American College of Dentists or elsewhere*, are justified?

III. The advertisers whose claims are published on the succeeding pages stand high in commercial character and on the recognized merits of their products (services, etc.). They are not among those who seek advantage from misrepresentation, and need no assistance from a prejudiced or insincere journalistic policy. They are above the temptation to try to control or influence any aspect of the conduct of this *Journal*, which in all its phases is completely independent, and fully representative of the professional ideals and the professional obligations of the American College of Dentists. We commend each advertiser in this issue to the patronage of all ethical dentists. ADVERTISEMENTS



С

### AMERICAN COLLEGE OF DENTISTS

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Prosthetic Service—W. H. Wright (43), chairman; W. H. Grant (41), C. A. Nelson (45), A. P. O'Hare (42), A. H. Paterson (44).

Relations—J. O. Goodsell (43), chairman; H. F. Hoffman (45), L. E. Kurth (41), T. E. Purcell (44), Nathan Sinai (45), Wilmer Souder (42), E. G. Van Valey (45).

*Research*—A. L. Midgley (42), *chairman*; L. E. Blauch (44), W. D. Cutter (43), J. E. Gurley (42), P. J. Hanzlik (45), P. C. Kitchin (43), A. B. Luckhardt (41), L. R. Main (44), L. M. S. Miner (41), Irvine McQuarrie (45), Fr. A. M. Schwitalla (44).

Socio-Economics—C. E. Rudolph (43), chairman; E. H. Bruening (44), W. R. Davis (41), Waldo H. Mork (43), B. B. Palmer (45), M. W. Prince (45), Maurice William (44), G. W. Wilson (42).

#### Announcements

Next Annual Convocation: Houston, Texas, Sunday, October 26, 1941.

Fellowships and awards in dental research. The American College of Dentists, at its annual meeting in 1937 [J. Am. Col. Den., 1937, 4; pp. 100 (Sep.) and 256 (Dec.)], 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." *I. Am. Col. Den.*, 5, 115; 1938, Sep.]

#### JOURNAL OF THE AMERICAN COLLEGE OF DENTISTS

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