BULLETIN
of The History of Dentistry

Volume 19, No. 1
June, 1971

Special Issue On
The Teaching of Dental History

Official Publication of
American Academy of the History of Dentistry
BULLETIN OF THE
HISTORY OF DENTISTRY
Official Publication of the American
Academy of the History of Dentistry

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SUBSCRIPTIONS
Active and honorary members of the American Academy of the History of Dentistry receive the Bulletin as a consequence of their membership. The subscription price for all others, domestic and foreign, is $5.00 per year. Subscriptions should be sent to the Editor, Bulletin of the History of Dentistry, 4 Bank Street, Batavia, New York, 14020.

Published Semi-Annually in June and December.
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An Editorial and a Tribute

Two years ago the Bulletin of the History of Dentistry was in imminent danger of discontinuing publication. The financial resources of the American Academy of the History of Dentistry were inadequate to meet the costs of printing the journal, costs which had been steadily rising. In the nick of time, one of our most honored members, Mr. Robert J. Rothstein, who is now the Historian of the Academy, came forth with financial support which allowed continuance of publication of the Bulletin, the only periodical in the English-speaking world devoted to the history of the profession of dentistry. His generosity was noted in the December 1969 issue, and that issue was dedicated to him, with the citation reading in part: "The cost of producing our Academy's Bulletin had become too great for our organization to bear. Mr. Rothstein was approached and the situation was explained to him, and in his typically generous fashion, he presented to our Academy a cash gift sufficient to insure publication of this issue of the Bulletin. We trust that Mr. Rothstein's exemplary gift will stimulate others interested in furthering the study of the history of dentistry to contribute in like fashion, so that our publication will be published uninterruptedly."

This statement caught the eye of one of the subscribers to the Bulletin, Dr. George W. Paffenbarger, an internationally renowned dental research scientist with the National Bureau of Standards. Dr. Paffenbarger, who is President of the William J. Gies Foundation for the Advancement of Dentistry, Inc., was stirred by our appeal, and proceeded to see what could be done. Fortunately for all of us, he was successful! After lengthy communication between the officers of our Academy and the Gies Foundation relative to the costs of producing the Bulletin, as well as the financial assets of the Academy, aid to the Academy was voted by the directors of the Gies Foundation.

One of the members of the Board of Directors of the Gies Foundation to whom Dr. Paffenbarger presented the problem of funds for the Bulletin was Dr. Isidore Teich, the Executive Secretary of the First District (N.Y.) Dental Society, the largest component society in the American Dental Association. The First District Society has an endowed fund also, the Henry J. Spenadel Fund, which is similarly interested in supporting endeavors of proven worth to the dental profession. So, Dr. Teich went back to his organization to seek support for us. The movement to provide aid was then launched in that organization by Dr. Joseph J. Blinderman, a long-time member of the Academy of the History of Dentistry, and President-elect of the First District Society. With support from
such loyal supporters, the much-needed aid was voted by this group also. Our publication, at least for the near-future, was assured. The dental profession and all interested scholars can now be sure of a source of information and knowledge concerning the history and background of one of the most important branches of the healing arts.

It is thus in tribute to the far-seeing members of these two fine organizations and their inspired leadership that we dedicate this issue of the Bulletin of the History of Dentistry. And we feel it only fitting that we reproduce the letter which brought to the Academy the good news!

THE WILLIAM J. GIES FOUNDATION
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Dr. Milton B. Asbell
Secretary-Treasurer
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25 Haddon Avenue
Camden, New Jersey 08103

Subject: Joint Contribution of the Henry Spenadel Fund for the Advancement of Education in Dentistry and the William J. Gies Foundation for the Advancement of Dentistry to sponsor the publication of the Bulletin of the American Academy of the History of Dentistry

Dear Doctor Asbell:

The Board of Directors of the William J. Gies Foundation has authorized me to inform you that the Foundation will support the publication of the Bulletin of the American Academy of the History of Dentistry for the next five years at the rate of $750 annually.

I have directed the Treasurer, Dr. Theodore Agins, 227 West 40th Street, New York, N. Y. 10018, to forward you a check for 1971. You will also receive a check from the Henry Spenadel Fund for the Advancement of Education in Dentistry for the same amount.

I believe that the Academy is primarily indebted to Dr. Isidore Taich who arranged for the contribution from the Henry Spenadel Fund, so you will hear from him directly.

Sincerely,

George C. Faffenbanger, D.D.S.
President
The Symposium—The Teaching of Dental History

Moderator: DR. HENRY A. SWANSON

THE PURPOSE OF THE SYMPOSIUM

The American Academy of the History of Dentistry is concerned with the status of dental history as a subject in our dental schools and this symposium has been arranged to try and find answers and to bring to the attention of dental schools, dental organizations and the dental profession in general, the significant role that dental history has played and will play in the future. It is hoped that we might develop a strong justification for the maintenance or the placement of dental history in the curriculum of all dental schools.

Ever since I became a member of this Academy there have been statements made in papers that have been presented at meetings, which leave the impression that dental history has not been accorded proper recognition by our educational institutions or by the dental profession. Let me quote a statement made by Dr. J. Ben Robinson in his Presidential Address at the first annual meeting of the Academy in St. Louis, Mo., September 6, 1952.

"It is a fact beyond question that dental history has been one of the most neglected of the several categories of dental knowledge. The unfavorable position it occupies as a subject of instruction in the curriculum of our colleges and the lack of active interest shown toward it by members of the dental profession have been influenced largely by a false estimate placed on its worth by those who have informally compared its practical values with those of other dental subjects. Because it seems to lack practical application to immediate problems of dental practice, dental history has been accorded a place low in the scale of relative importance among the subjects included in the dental curriculum, and has been relegated to a position of comparative obscurity in the esteem of the rank and file of the dental profession."

Again quoting Dr. H. Martin Deranian in his Presidential Address in the New York meeting of the Academy in October, 1969:

"Regrettably, some dental schools are downgrading the teaching of dental history. The mantle of concern for meeting this trend falls on the shoulder of this Academy."

Now, if this is true today, this Academy has a formidable task ahead of it, if it hopes to meet one of its stated objectives: "To stimulate interest, study and research in the history of dentistry."

VALUE OF HISTORY IN APPROACHING THE FUTURE

Yesterday stretches endlessly into the past, a roadway that has
been traveled to reach the present summit. Today is visualized as
the period in which we are presently living and operating. Tomor-
row is the open sesame into the unknown. Any educational pro-
gram should take cognizance of these three factors, the past, the
present and the future. This holds true whether we are concerned
with world or national affairs, with cultural development or with
science in all of its many ramifications. Dentistry is in no way
exempt. To again quote Dr. J. Ben Robinson:

A clear understanding of the true philosophy of dentistry and dental
education depends entirely upon a thorough knowledge of the basic
factors that have been involved in shaping dentistry’s course and in
bringing it to its present level of social usefulness.

To reach this understanding, it would seem that stimulation of
student interest would be the most logical approach, so our dental
schools have the responsibility of providing the opportunity for the
students’ acquisition of this knowledge.

STATUS OF DENTAL HISTORY TEACHING TODAY

What is the status of this subject in dental schools? In 1954, a
Survey Committee of the Academy, with Dr. J. Ben Robinson as
Chairman and with Drs. George B. Denton and John E. Gurley as
members, did a survey on this matter and made a report to the
Academy at the annual meeting that year. Let me quote from that
report:

Of 45 schools in the United States and Canada replying to the ques-
questionnaire, 39 reported a required course in the History of Dentistry
and six no course in that subject. 28 reported the course was taught
independent of other subjects.

The number of hours ranged from 5 to 66 with a median of 12
and the arithmetic mean of 15.3.

All the schools used the lecture method although only 10 depended
on the lecture solely. 11 reported no tests for the students.

5 schools reported the course to be taught by a person other than
a dentist, 24 claiming the instructor to be well informed in general
history. 16 of the instructors are members of the Academy.

In the recommendation of the Survey Committee in 1954, the
following statement appears:

"The Committee on the Survey on the Teaching of Dental His-
tory finds much to commend in the present condition of dental
history teaching in most of the dental schools of the country. On
the other hand, it notes with concern a lack of interest in the
subject in some schools, and a wide range of approach to the plan
of organization and the methods of teaching among the dental
schools."

In 1968, I reviewed the catalogues of fifty dental schools to
ascertain the number of dental schools listing history as a course,
either singly or combined with other subjects, and the hours devoted
to the teaching of the subject. 41 listed courses in dental history,
but most of them had combined the subject with other courses
such as Ethics, Jurisprudence, Orientation and one with a Library
and Literature Course. The hours devoted varied from 1 to 47 hours.

Later surveys have been done on this same subject and our
speakers will, no doubt, make mention of them.

What about the present? This morning's program has been devised to develop what we hope will be a justification for the teaching of dental history in our professional schools. Our speakers are historians and educators, knowledgeable in the value of history for a profession. I have the honor of moderating this symposium and introducing the distinguished members of the panel.

(DR. SWANSON, the current President of the American Academy of the History of Dentistry, was the chairman of the Program Committee of the Nineteenth Annual Meeting.)
Boston, Massachusetts is often referred to as "the Athens of America" in recognition of its position as a center of culture and enlightenment. Recently, in walking along Copley Square in the shadow of the statue erected to the memory of the eminent theologian, Phillips Brooks, I noted in the window of the office of "The Community Church of Boston," a large poster listing the future topics of sermons and forum discussions. What immediately captured my attention was that the Rev. F. Jackson Zylman was scheduled to speak on "Why Does Everybody Want to Cancel History?" Rev. Zylman, I believe, will respond to the philosophy of many young people today that only the present moment matters and that history is pretty much irrelevant. Poor history; even the word itself is being challenged today. Time Magazine reports that a Women's Liberation advocate, Varda Murrell, is writing a new Dictionary of Sexism and with perfect seriousness is advocating the substitution of herstory for history. All of this brings to mind the time when Mark Twain's Huckleberry Finn had his religious education taken in hand by the Widow and Miss Watson. His impressionable mind was at first strongly affected and in his own words, he was "all in a sweat," on hearing the story of Moses. Later, his interest in Moses cooled off, and so did his body, because Miss Watson let it be known that Moses had been dead a considerable time, and Huckleberry Finn, speaking also for some of his contemporary counterparts, took no stock in dead men nor in their deeds from the past.

Like it nor not, the young people entering the professions will be increasingly echoing this view and, in response, it demands the concerted attention of this Academy and indeed of all of the professions. This is why I feel that Dr. Swanson's choice of this topic "The Value of History to the Professions" is prophetically important at this particular time and presented a challenge to me which I found impossible to refuse, especially in view of my belief that reflection upon the past of an individual or of a profession is a sign of maturity.

WHAT IS A "PROFESSIONAL"?

Since our frame of reference is "the professions", it is well to begin this discussion with the very basic question: How may one
define a professional person? Dr. Harry Lyons has very skillfully described a "professional gentleman as one who is educated beyond the general level of his community. He professes that he has special knowledge and skills. He professes his dedication to the public welfare over his own. He professes that he gives more than he receives, willingly and by design. He professes his indebtedness to his predecessors from whom he inherited the knowledge, the skills and the tradition of his profession". Thus, in the very basic definition of a professional person, is inherent an historical tradition and an indebtedness to those men and events from the past that have preceded him. It is impossible to separate a profession from its history and tradition. They are its soul. The exalted Hippocrates in defining the role of the healer noted: "The physician should know what the physician before him has known, if he does not wish to defraud himself and others." What is especially meaningful is that Hippocrates speaks of the physician defrauding himself first by neglecting the past. Or as John Mason Brown paraphrased it in contemporary times: "It is a cheated life that cannot discover unexpected things in the past. It is a poor house that has room only for the present."

Thus an intimate knowledge of the history, and a reverence for the tradition, of his calling is the very hallmark of the professional man. In dentistry, it is one of the things that distinguishes our profession from a trade or a business.

**THE IDENTITY CRISIS**

This matter of identity or self knowledge is, to me, the primary value of history to the professions. Socrates dictum was: "Know Thyself". To truly know what kind of a man he is, a member of a profession must study and know the just actions of men who formed his particular culture or profession.

Collingwood, in his book on * Essays n the Philosophy of History*, has stated briefly and clearly in a single paragraph his answer to the question: What is the value of history?

My answer is that history is "for" human self-knowledge. It is generally thought to be of importance to man that he should know himself: where knowing himself means knowing not his merely personal peculiarities, the things that distinguish him from other men, but his nature as man. Knowing yourself means knowing, first, what it is to be a man; secondly, knowing what it is to be the kind of man you are; and thirdly, knowing what it is to be the man you are and nobody else is. Knowing yourself means knowing what you can do; and since nobody knows what he can do until he tries, the only clue to what man can do is what man has done. The value of history, then, is that it teaches us what man has done and thus what man is.

Professor George Batterson has expounded on this human value of history and has suggested that "... by studious examination of the basic character and personal qualities of great dental, medical and science leaders, the dental student will at least become more skillful in self-sensitivity or self-analysis and appreciate more the social qualities of others." 'Dental History' courses should be entitled 'Dental Sociology and History' signifying the content to em-
phasise the human side. The qualities of personality, temperament, and philosophical idealism that may be observed in the total life of a great personage are as important, if not more so, than the very fact of a notable great achievement."

It has been my personal observation that there exists in dentistry an identity crisis of major proportion. We don’t know, nor care, who we really are either professionally or personally and we have never really bothered to find out. Witness the lack of research on dental history, or the revelation that history is the most disliked subject in the curriculum! Yet, what could be more important? The prophetic words of Dr. J. Ben Robinson come to mind: "The dental profession will continue to flounder, or perpetuate its handicaps and to fail its true purpose as long as it lacks an intelligent understanding of its historical background."

VALUES DERIVED FROM A STUDY OF HISTORY

A sense of history is paramount to a pride in one’s profession. Professor Gardner P. H. Foley has spoken of "... a prideful appreciation of the values of the contributions made throughout the centuries by both the major and minor participants in the promotion of progress in the art and science of dentistry."

In addition to a sense of identity and pride, I feel that history teaches us perception; by that I mean a sense of awareness and understanding, or insight. History is perception raised to its highest power. Professor Batterson in A Guide for Teaching Dental History points out the danger of the lack of perception: "A profession that forgets its history is likely to forget and misunderstand its present status in society and jeopardize its future."

History stresses the truth, a quality highly valued in any professional person. Cicero gave what has remained the first law of the historian: "To dread uttering a falsehood: the next not to fear stating the truth." Accuracy and impartiality were the qualities that appealed to and were stressed by Cervantes; history was the mother of truth, the witness of things past and the advertiser of things to come; and hence, he said, historians "... should be very precise, true, and unpassionate... and neither profit nor fear, rancour nor affection, should make them stray away from the truth." Lord Bryce, the British historian and statesman, has declared that the highest kind of historical work demands the special gifts of "... unwearied diligence in investigation, a penetrating judgement which can fasten on the more essential points, an imagination which can vivify the past, and that power over language which we call Style." "To be a really good historian," Macauley observed, "is perhaps the rarest of intellectual distinctions." What more valuable qualities could there be for a professional man, especially one oriented toward research and the discovery of truth.

The history of a profession is not an isolated entity unto itself; it is a part of general history and a part of the cultural and social development of mankind. I see a sense of history as an essential part of the mind of a cultured professional man, for in no-
thing else is the degree of cultivation of a man more clearly revealed. A former President of the Massachusetts Dental Society, Dr. Robert Andrews, in 1876 admonished his colleagues: "We should be so cultured that people could not tell our work from our conversation, because a narrow education gives one knowledge of nothing but one's work." William J. Gies saw broad nonprofessional values in the study of the liberal arts, such as history: "The perspective of cultural study," he said, "guards the mind and the spirit against the relatively narrowing influences of a professional training, and yet adjusts them to its exactions." The British Statesman, Lord Brougham recommended Dante as a textbook to an enquiring student of law. "The dental profession has so concentrated on techniques that there exists an imbalance," Dr. Don Gullett, past President of the American College of Dentists has said. "If dentistry would concentrate for the next ten years on the other activities which make a true profession, the profession would prosper beyond any possible anticipation." Among those activities which make ours and others a truer profession is a profound understanding of a profession's history and tradition.

The study of history can also create or re-create an enthusiasm or motivation for one's profession. Goethe noted that "The best thing which we derive from history is the enthusiasm that it raises in us." Drawing on my own experiences, I feel that I am far more enthusiastic about my profession and more motivated toward clinical perfection since I studied dentistry's rich professional heritage. Many professional people lose motivation in mid-life, and some tragically even earlier. It occurs to me that courses in history designed to create enthusiasm and motivation might well be a part of continuing education programs. I shall never forget the very intelligent patient who once told me that she preferred to be treated by professional people who have developed an interest in the history of their profession, since she felt it was a mark of a skilled practitioner. Dr. Walter C. Alvarez in his book The Incurable Physician wrote: "I am convinced that any man who hopes to be not only a leader in his specialty, but a good and interesting teacher, lecturer, and perhaps editor should know well the history of his profession's development." Just as the love of history is an expression of the love of life, so too, I believe, the study of the history of a profession is an expression of concern and affection for that profession.

PRACTICAL ASPECTS OF A KNOWLEDGE OF HISTORY

History can also be instructive and intensely interesting and absorbing. Carlyle in his Essays said: "History, after all, is the true poetry." Thomas W. Evans, the 19th century dentist to the Royalty of Europe noted at the Paris Exposition of 1876: "Few branches of science have offered in their development a more curious and instructive spectacle than that presented by the history of dentistry." One very practical value of the knowledge of the history of his profession is the ability to answer intelligently questions from patients and from the community at large; these are often posed to a
professional person, who is expected to have such knowledge. This is precisely what prompted Bremner to write his book, *The Story of Dentistry*.

History makes a direct contribution towards the appreciation of literature on the part of the professional man. In general, he finds little occasion to study and appreciate the style of famous writers. However, the clarity of style of some of the great physicians and dentists of the past rarely fail to impress the modern reader. Though written in 1728, Fauchard's book *Le Chirurgien Dentiste* remains even today a model of clear expository writing.

We often overlook another value of history, namely that it can be a source of enjoyment. Dr. Sydney Levine of the University of Sydney, Australia writes: "If for no other reason, it is a lot of fun to learn something of the way in which our predecessors treated dental disease and faced up to many of the kinds of problems in practice that we still have to meet today."

It should be stated emphatically that the history of the professions is not without its practical values. A systematic study of the history of any profession reveals a number of theories, practices, techniques, and items of equipment that had been in use long before their contemporary "discovery". "Sit-down dentistry" is enjoying a popularity which was begun long ago. In the 18th century, Josiah Flagg was offering: "The poor ye have always with you. They are cheerfully promised assistance gratis." Recognizing the theory of historical cycles, prompted Francis Bacon to comment on the science of medicine: "Its labour has been more in a circle than in a progression." An appeal to the wisdom of history is perhaps the best guarantee against dangerous innovations, an idea postulated by Rousseau. It tempers extremes and emphasises truths that have withstood the test of time. It helps put things in proper perspective. History allows us to relive the past of a profession. We may be at Fauchard's elbow as he is writing his *Le Chirurgien Dentiste* or we may perceive with Hayden and Harris the vision of dental education or we may feel with Wells and Morton the glory and tragedy that touched their lives. In this is history's variety and excitement. History allows us to peer beyond the limits imposed by our private experiences and by our time and makes us contemporary with another time. Thus all history is contemporary history, which is the paradox of Croce.

Conversely, the great men of the past live on only because we remember them in our lifetime: Sigerist in his book, *The Great Doctors* points out: "Bach and Mozart would be dead forever, were it not for the living artists who are perpetually reviewing their melodies. Pasteur and Koch would have lived in vain but for the everyday practitioneers through whose activities their teachings are made effective."

The study of history is a wellspring of inspiration and dignity to the professional man. It was also Sigerist who observed: "The historical experience is the collective remembrance that elevates every man beyond the pettiness of his instincts and passions toward
the lofty heights of unselfishness."

History lifts our horizons. We forfeit the chief source of inspiration if we do not cultivate the lives of those who have left their mark on the professions. They serve as a much needed model after which to pattern our lives.

History, as defined by the 11th Edition of the Encyclopaedia Britannica is "... that limitless subject which includes all the phenomena that stand the warp and stress of change." I feel that history can bring to the professions the insight that change is inevitable and that complacency is dangerous and deadly. Perhaps Shelley in his Sonnet Ozymandias best captured this lack of permanency that history illustrates:

I met a traveller from an antique land
Who said: Two vast and trunkless legs of stone
Stand in the desert. Near them, on the sand,
Half sunk, a shattered visage lies,
And on the pedestal these words appear:
"My name is Ozymandias, King of kings:
Look on my works, ye Mighty, and despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare
The lone and level sands stretch far away.

IF NOT WE, THEN WHO?

The professions did not spring, Minerva-like, from the brain of Jove but are the composite product of an evolutionary process, to which many men have contributed. Thoughtful men, in every generation, have taken upon themselves the mantle of concern for their professions. If we do not emphasise history to the novitiates of a profession, who will be prepared to shoulder this mantle of concern in the future?

Janus, the Roman god of mythology and son of Apollo is pictured with two faces, one looking backward to the origin of things and the other looking forward to the future of events. I see this as the mark of a true historian, to be a "prophet looking backward."

Winston Churchill addressing the Royal College of Surgeons in 1944 noted: "The longer you can look back, the farther you can look forward."

It is on this note of the value of history as a guide to the future that I would conclude my remarks. Patrick Henry, the fiery American patriot and orator, though a "radical" for his time, appreciated well the value of history in this regard when he confessed: "I have but one lamp by which my feet are guided and that is the lamp of experience. I have no way of judging the future but by the past." History provides a trustworthy lamp to help illuminate the unknown and inevitable changes that are on the uncharted horizon of the professions.

DR. DERANIAN who is a lecturer in Dental History at Tufts University, is a past-president of the American Academy of the History of Dentistry. His address is 340 Main St., Worcester, Mass. 01608.

(Presented at the Nineteenth Annual Meeting of the American Academy of the History of Dentistry at Las Vegas, Nev. on November 6, 1970.)
Discussion of Dr. Deranian's Paper

by FRANK W. EVANS, JR., D.D.S.

By way of introducing his subject "The Value of History to the Professions", Dr. Deranian observes that the tendency of many today is to take little stock in the deeds of the past and view history as pretty much irrelevant as to its value now and in the future.

Dr. Deranian further introduces the subject by discussing the meaning of "profession". He reminds us that history is the very soul of the professional man and is an essential contributing factor to his identity. Dr. Deranian personally feels that "...this matter of identity or self-knowledge is the primary value of history to the Professions."

In discussing the human value of history, he recalls Professor Batterson's suggestion that dental history courses be titled "Dental Sociology and History." Helpfully, this would imply to the dental student the human side and the human value of history now and in the future. However, my feeling is that the words "Dental Sociology" tend to "dilute" the true impact that history should have on the student. I would rather suggest consideration that dental history courses be titled "Dynamics of Dental History". This presents to the student a non-static image of history which has pragmatic appeal.

In his presentation, Dr. Deranian systematically considers other value factors such as "identity" value, "need" value, "self-generating" value and the oft overlooked value that history can be a source of enjoyment and inspiration. I would like to repeat Dr. Deranian's concluding remarks on the value of the History to the Professions: "History is a guide to the future that illuminates the unknown and inevitable changes that are on the uncharted horizon of the Professions."

(DR. EVANS is Vice-President of the American Academy of the History of Dentistry.)
Dental History in the Curriculum

KENNETH V. RANDOLPH, D.D.S.

In recent years, there has been increased ferment among dental educators regarding the format for the dental curriculum of the future. Primarily responsible for the need to re-evaluate the approach to dental education are such things as the increased demand for professional care, the threat of insufficient personnel to provide optimal service for the rapidly increasing population, the development of new techniques, equipment and materials, the increased depth and breadth of scientific knowledge, the new concepts of dental care delivery, third party payment programs, the changing role of dental auxiliaries and the increased concern for the dental care of all sociologic and economic groups. These and many other factors have called attention to the importance of in-depth studies of the traditional dental school curriculum. In fact, there is considerable furor over the identity of the future dentist and this identity is important to any curricular design. Present trends and thinking suggest that the future dentist will be some sort of a super diagnostician and treatment planner and will delegate the majority of traditional intra-oral services to auxiliary staff. It has been said, perhaps facetiously, that he will also need to direct traffic in the operatory and become a business management expert. Only the future can tell the impact of these factors on the curriculum, but certainly educators and specialists in all subject areas should be concerned. A re-assessment of the place of dental history in the curriculum is germane to this era and must be regarded as a very critical issue for dental historians.

HOW IS DENTAL HISTORY TAUGHT NOW?

The most recent report on a clock hour analysis of various subjects taught in all American dental schools was prepared in 1969 and was based upon statistical information from the 1967-68 academic year. An examination of this report reveals reasonably current information pertinent to the status of Dental History in most of the dental schools. During 1967-68, there were 49 dental schools in full operation; i.e., all four classes were enrolled. Of the 49 schools, 44 filed a report with the American Dental Association which included details on the time allocated to each subject, the year or years in which it was taught and the distribution of instruction hours among lecture, laboratory, seminar, clinic and hospital types of contact.

Although much interesting information could be derived from the report, the most significant to this paper is that on Dental History.
Nine of the 44 schools, over twenty per cent, reported zero (0) hours allotted to dental history in the total curriculum; nine reported less than ten (10) hours; six reported exactly ten (10) hours; and twenty schools reported more than ten (10) hours. Of those including lectures in dental history, the smallest number of hours was four (4) and this distinction was shared by two schools. Two schools also shared the largest number of hours reported and this figure was eighteen. The average for those schools specifying any time for dental history was twelve (12) hours and average percentage of total curriculum time was .21 one hundredths of one percent. It was interesting to note that the maximum percentage allowed at any school was .5 and that school reported 17 hours of lecture time.

As previously indicated, five schools in full operation were not included in the statistical summary. Recent catalogs of these schools were examined to make the evaluation of the current status as complete as possible. Sometimes these catalogs are difficult to interpret accurately but as best as could be determined all five devoted between eleven and twenty hours to dental history. The twenty hour allocation was the highest reported in either source examined.

**HOW WAS IT TAUGHT IN THE PAST?**

For a better appreciation of what is happening to dental history in the educational program, a comparison between the current status and that of selected periods in the past is appropriate. Unfortunately, several courses have been traditionally grouped together for statistical information. In this respect, dental history has been listed with ethics, jurisprudence, practice administration and technical writing. The total curriculum time allotted to the group at selected periods follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1934</td>
<td>3.16%</td>
</tr>
<tr>
<td>1941-42</td>
<td>2.87%</td>
</tr>
<tr>
<td>1958-59</td>
<td>1.32%</td>
</tr>
<tr>
<td>1967-68</td>
<td>1.27%</td>
</tr>
</tbody>
</table>

In 1967-68 dental history received approximately one-sixth of this combined curriculum time. On the assumption that an equal proportion was available during the respective periods there would be a gradual reduction in percentage time from .53 in 1934 to .21 in 1967-68. Realizing there is no means of accurately reaching this conclusion, there is still reason for alarm because without any doubt the appreciation of dental history as an important part of the dental curriculum is dwindling.

**THE THREAT TO DENTAL HISTORY**

In the Report of the Historian-Archivist (The Alma Mater, Spring, 1970, page 52), Gardner P. H. Foley states, “It is regrettable that two traditional subjects of the School's curriculum have been or are about to be eliminated: the Thesis and Dental History.” He further adds, “The traditional course in Dental History is in the process of being dropped from the curriculum. So, as the result of
the whim of the Head of the Department of Community Dentistry, the oldest dental school in the world will no longer teach a subject that it, as an example to all other dental schools, should adamantly retain and preserve with paternal pride and responsibility." Perhaps Mr. Foley's sincere concern may call for a re-examination of the appropriation of time to history in the dental curriculum of the Baltimore College of Dental Surgery, Dental School, University of Maryland. In any event, it should be a reminder to all dental school administrators of their responsibility to see that the heritage of the profession of dentistry is preserved through formal instruction.

WHEN SHOULD IT BE TAUGHT?

Any discussion of a subject in an over-all curriculum should include some thought about the most appropriate time for presentation with consideration being given both to the academic year or years and the academic sessions within a given year. There have been no specific guidelines relative to the assigned time and individual schools have had full authority to plan the course with local convenience foremost. The Annual Report on Dental Education indicated a total of 417 clock hours of instruction in dental history for 44 schools. Of the total 262 hours (62.9%) were presented at the freshman level, 89 hours (21.3%) to sophomores and 66 hours (15.8%) to seniors. No school reported dental history in the junior year course of instruction. Among the five schools studied through recent catalogs, two presented history in the freshman year and one each for the other three years.

The most popular year for instruction is the first year of enrollment; other years in order of descending popularity are sophomore, senior and junior. Little has been said about student interest and learning capabilities in selecting the time for the subject of Dental History. Perhaps there is little difference but certainly the matter bears further consideration, particularly at a period when there is a growing struggle to maintain minimal attention to the subject. If all facts were available, it is quite likely that dental history has been fitted into any place convenient for scheduling. By the same token, the amount of time allocated has probably been assigned with more consideration to the number of weeks in an academic session than to the time necessary for adequate coverage of the subject material.

In an address presented at the Cleveland Convocation of the American College of Dentists in 1940, J. Ben Robinson identified five major difficulties related to granting the subject of dental history a place as an essential part of the dental curriculum. These difficulties were the lack of a suitable text, the lack of qualified teachers, the lack of student interest, the lack of library facilities and the lack of time in the curriculum. Since the early forties, there have been new books and revisions of others which alleviate the shortage of convenient resource material. Libraries have made tremendous improvements, including the area of dental history. Due to better resource material, teachers should be more capable but, all too frequently, the teaching responsibility is assigned to someone
who may have neither interest nor initiative for the subject. The other two difficulties, student interest and curriculum time, remain as problems of major consequence. Students have regarded history as one of the least liked subjects and the curriculum time has steadily declined.

WHY THE POOR EMPHASIS ON HISTORY?

One might ask the question, what progress has been made in the relationship of dental history to the curriculum during the past thirty years? An honest answer would probably be very little. This must not be regarded with any disrespect to the American Academy of the History of Dentistry or to the many dedicated teachers. History has been developed through research and history is constantly in the making, but rarely have these developments made an adequate impact upon students, educators and administrators. Perhaps the Academy has not asserted itself in a way to be heard clearly at all educational institutions, but those who recognize the importance of learning from the past and preserving information on all the stages in the development of dentistry must be heard "loud and clear."

After having examined the current status of history in the dental curriculum and after having made some comparisons with similar studies covering the previous four decades, perhaps it would be fitting to direct some thoughts to the future. Quite obviously, there has been a considerable decline in the importance attached to dental history and a resulting decline in the appropriated time for the subject. Is the heritage of dentistry less important today than it was in 1934? Is the amount of subject material reduced or is the proficiency of the teachers so much improved that less time is necessary?

IS THE STUDY OF HISTORY REALLY NECESSARY?

No doubt, all dental historians and perhaps most dental school administrators will endorse the continued importance of making all dental students fully aware of the development of dentistry as a profession. The fullest appreciation of the profession comes with an understanding of all the perils, problems, and sacrifices of those who diligently sought to give dentistry stature. The descriptive terms, service, achievement, satisfaction and reward, so commonly used when speaking of the practice of dentistry have not come easily and, if they are to be preserved for the future, dentists must respect and appreciate the contributions which made them possible. If one fails to understand the past or fails to take advantage of the experience of those who precede him, mistakes will be repeated and will be expensive.

Dental history deserves an important place in the curriculum because it broadens the student’s educational background and takes him into a field away from the strictly practice-oriented or scientifically-based subjects. Dental history has a cultural significance and, when properly presented, gives the learner a greater appreciation for the humanities. Philosophies, social attitudes, public respect, patient
appreciation, etc., when analyzed through history, provide an understanding sufficient to predict—yes, even to direct—future relationships for the profession. Trends can be observed and paths can be plotted through an observation of human reactions. It is indeed unfortunate that many dentists have become so obsessed with the delivery of dental care that they have neglected the opportunity to understand the past, appreciate the present and give future direction for their profession.

The volume of material important to a course in dental history has increased significantly in the last forty years and researchers continue to uncover pertinent information. Furthermore, the observing dental educator will see history being made in the present period of development. If one were to consider continuing education alone, volumes could be written about developments over the past five years. In fact, when the history of dental education for this era is written, continuing education will probably hold the most prominent place. Surely there is no justification for reducing the time allocated to history because of any lack of resource material. With all respect to teachers of dental history, it is quite unlikely that their proficiency has improved so much as to warrant any reduction in time.

With appreciation for the pressures on dental school administrators, one of the many problems is the appropriation of time in the curriculum for various subjects. (Incidentally, one should recognize the historical significance of problems facing college administrators today. Certainly, volumes could be written and, hopefully, some lessons for the future could be preserved.) Deans are constantly plagued for more time. Appeals are made because of a need to introduce new knowledge, but less frequently do teachers want to delete antiquated information. True, curriculum time must be balanced and subject material made current, but it is doubtful that dental history has held its own.

THE "CATCH-ALL" DEPARTMENTS

Some few years ago the concept of "Social Dentistry" was presented to the profession as a different approach to the dental curriculum. This idea was not exactly new because many educators were already aware of categorizing selected subjects under the encompassing title of social relations. The idea did receive a new impetus and many schools adopted curriculum changes which placed many unrelated subjects in a "catch-all" department and under a single head. The subject area receiving greatest emphasis seemed to be public health dentistry, yet dental history and others were also included. In most instances, the department chairman was selected from those who had advanced education in public health. Under these circumstances, it seems feasible that a subject such as dental history might receive lesser attention or perhaps it could even be eliminated in favor of subjects more directly related to growing sociologic influences. There does not seem to be any real logical reason to include dental history in such a broad umbrella-like
coverage. Certainly the historian should be an equally qualified candidate for department chairman and if selected no doubt dental history would maintain a better position in the curriculum.

WHAT OF THE FUTURE?

Through a careful analysis, several conclusions can be reached; it is important to maintain dental history in the dental curriculum; there is more than enough material from the archives of dentistry and the careful observer will see history being made almost daily; the available time is diminishing and the subject identification is in danger of being totally lost; and, the interest of educators and administrators is indeed questionable. Obviously, something needs to be done, but the question is what? An organization such as the American Academy of the History of Dentistry perhaps can become even more active in giving assurance that dental history will be adequately preserved. If it has not been done before, there should be merit in developing a position statement to be sent to all dental school deans expressing the concern of this Academy about the future of dental history in the curriculum. A resolution supporting a fair share of the curriculum time may provide deans with an incentive to set aside the necessary time and remind them of their responsibility in preserving our professional heritage.

Student interest in dental subjects not directly related to clinical requirements and ultimately to the production of income will no doubt always be a problem except for isolated cases. Progressive teachers attempt to plan their courses to stimulate student interest but many fail in this endeavor. The Academy has made many contributions toward improved teaching in dental history but no doubt the best ideas are yet to be found. Perhaps there could be a concentrated effort to seek and develop unique approaches to teaching and to the method of incorporating dental history in the curriculum. There is one thought which may have considerable merit and which, to the best of my knowledge, has not been fully tested. It would deviate from the traditional pattern for dental history and would provide greater flexibility for the student. The plan calls for the preparation of materials sufficient for auto-tutorial learning. These materials would include slides, tapes and combinations as appropriate. There would be no formal lectures but the student would be expected to enroll for a given year. Seminars would be scheduled with the responsible faculty members available for question and answers about the prepared materials. Students would basically teach themselves and be held responsible for an examination to give evidence of proper attention. This idea would be a unique approach to the coverage in the curriculum but might also be regarded as a method of teaching.

Another popular approach to independent study is through programmed instruction. This approach may have been used for history in some schools already and it has proven its value in other selected courses. Both the auto-tutorial and programmed instruction plans are different from the customary method of presentation and
each has potential for off-setting the interest lag.

At the risk of encroaching upon the subject assigned to my fellow panelist, there is one idea about teaching dental history which to the best of my knowledge has not been sufficiently tested. Reference is made to the teaching of history by relating it to current concepts, problems and practices. Most often there is a chronological development of the subject starting with the earliest reference to dentistry and followed by successive periods and stages of development. Perhaps interest could be stimulated and strengthened by starting with information on a subject about which the student has some current appreciation. Then, with a reverse chronological approach, he could be made aware of the early stages of development. A typical subject might be anesthesia. Through the student's understanding of the current status, he might incur a better appreciation for the incorporation of historical facts. If this idea were used, the senior year would no doubt be the logical time to present the course.

To the average dental educator, the subject of dental history leaves a large void but to the historian it remains paramount. It is doubtful that any dentist would be willing to cut out all the historical facts accumulated to date but most do not want to be bothered with the responsibility of maintaining these facts or even learning them. The voices of the past have much to tell us and we must be willing to listen. Errors in judgment must not be repeated and trends of development must be recognized. An appreciation of the efforts of our professional ancestors provides a challenge for the present. If anything, the place of history in the dental curriculum and the amount of time allowed for it should be improving rather than regressing. The Academy has a challenge and we, as its members, have a responsibility.

REFERENCES


DR. RANDOLPH is the Dean of Baylor University College of Dentistry, Dallas, Texas.

(Presented at the 19th annual meeting of the American Academy of the History of Dentistry at Las Vegas, Nev., Nov. 6, 1970.)
Discussion of Dr. Randolph’s Paper

by GEORGE W. TEUSCHER, D.D.S.

I congratulate Dr. Randolph on his excellent presentation and thank him and the Academy for the opportunity of reading his paper and participating in the program. I recognize the fact that all of us are inclined to interpret the displacement of a subject such as Dental History from the curriculum by subject areas that relate more directly to the immediate needs of the student, as an indication that the interest of the dental profession and of dental educators in the history of our profession is waning. This is not necessarily true.

I believe that we could, with profit, spend a few minutes talking about some of the current problems in dental education and in the area of dental curriculum. I am sure that you are all aware that instead of thinking about increasing the time devoted to the program in dental education, the pressures and demands on dental educators are for programs that will permit students to finish the course in dentistry in a time substantially less than four years. If we add to these pressures the fact that there has been a tremendous increase in the amount of material and in the number of sophisticated skills which the dental student is expected to know, we are faced with a situation in which we must constantly whittle away subject matter which cannot be supported as relevant to the practice of dentistry; and much as we have learned to dislike the word relevancy, it has become in some respect a philosophy.

We are inclined to neglect a basic concept of learning. It states simply that we cannot force people to learn. As educators and teachers we can only expose or subject the student to learning experiences or to experiences which will promote learning. Students today refuse to accept poorly taught courses or courses which as nearly as they can determine do not lend themselves to helping the student gain his objectives. When dental educators can convince students that a knowledge of, and an understanding of, dental history contribute to their stature as professional persons, they will be eager to attend courses in the subject. In the meantime, those of us responsible for the design and administration of dental curriculums should look for qualified teachers and suitable textbooks in the area of Dental History; and in addition provide adequate library facilities for students and faculty.

In closing, I add one final suggestion by saying that Dental History should be taught because of its pragmatic values and not because a few of us have an emotional attachment to the past.

(Dr. TEUSCHER is Professor of Pedodontics and Dean, School of Dentistry, Northwestern University, Chicago, Ill.)
The Teaching Process of Dental History

—J. HENRY CLARKE, B.S., D.M.D.,
Portland, Oregon

In July of this year, as chairman of the Teaching Committee of the A.A.H.D., I sent the following letter to the deans of the sixty dental schools in the U.S. and Canada:

The American Academy of the History of Dentistry would like to see the history of dentistry taught in such a way as to help future dentists acquire pride in the profession and a broad perspective of the role of dentistry in society: past, present, and future. We want this subject to be made fascinating and worthwhile.

A comment from you stating whether the history course at present is accomplishing these goals, what future changes would improve it, and any changes you are presently planning would be of great value to us in evaluating and updating the teaching of dental history. Unless you prefer otherwise, we would like to use this information during a dental history teaching workshop at our November 6, 1970 meeting.

Please feel free to make your reply as brief or as lengthy as you wish.

Up to the present time, I have received thirty-four replies—twenty-eight from the U.S. and six from Canada—fifty-six per cent of the U.S. schools and sixty per cent of the Canadian schools, covering a wide variety of general comments, specific suggestions, and complaints relevant to the teaching of the history of dentistry. The purpose of this paper is to present the essence of these responses and some comments on some of the points raised by them.

PRESENT STATUS OF DENTAL HISTORY COURSES

Almost every dean stated that he agreed with our basic opinion that an understanding of dental history is a very valuable asset to dental students and dental practitioners. Only one implied that he did not consider it very important; he simply stated that his school had no dental history course because their curriculum was too crowded.

The following is a breakdown of the deans’ opinions toward their dental history courses at the present time:

<table>
<thead>
<tr>
<th>Status</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Excellent</td>
<td>14</td>
</tr>
<tr>
<td>Good</td>
<td>10</td>
</tr>
<tr>
<td>Poor</td>
<td>4</td>
</tr>
<tr>
<td>No Separate course</td>
<td>5</td>
</tr>
<tr>
<td>Total replying</td>
<td>34</td>
</tr>
<tr>
<td>No reply</td>
<td>26</td>
</tr>
</tbody>
</table>
I think it is safe to assume that the twenty-six who did not reply would probably add some weight to the negative end of this score; so while there are a lot of excellent and good courses, there are some problems.

Of the five who had no separate course, four said it was the responsibility of each department to cover the history or background of its own field. I believe this is not much better (and maybe worse) than not teaching any history at all. One of the most common positive suggestions I received referred to the importance of having a teacher who is "fascinated with the subject, well acquainted with the social significance of major historic events and the inter-relationships between dentistry and other segments of our society and culture—one who can broaden students culturally and socially." You may occasionally find someone who is a specialist in operative dentistry or oral surgery, who also has that kind of broad interest and talent in teaching it—but very rarely. What you usually get in this kind of arrangement is just what ruins history: a teacher who isn't interested in, nor prepared to teach, this part of his course, performing the "duty" of reciting what somebody considers the essential background facts while the class either fidgets or sleeps.

Three of these deans said that they were aware of the deficiencies of this arrangement and would like to have a separate course but were unable to obtain a qualified teacher. I don't have any quick answers to this problem, but it seems to me to be something our society should try to help solve!

A few deans thought "fascinating" was a little too much to expect from a dental history course, but the fourteen who have excellent courses said that their courses were just that, "fascinating and worthwhile." It is my conviction that a dental history course not only can be, but must be fascinating and enjoyable to the students if it is to be remembered and consequently be of value to them! A course in Oral Diagnosis may not require this kind of imagination and effort to arrest the students' interest, neither does Operative Dentistry or Oral Surgery. The immediate need for that "practical" information is obvious to the student. When I was a dental student, I remember one of my classmates who used to drink two cups of coffee before certain classes and then sit in the front row and ask the people around him to jab him if he started to doze off. Sometimes I thought that I had cracked one of his ribs, but after class he would thank me! If a history class is that dull, they just sit in the back and sleep (or don't come at all).

**HOW TO MAKE THE COURSE INTERESTING**

The question then is: "How do you make the course fascinating?" Here are the suggestions of some deans and successful teachers, and after making specific suggestions, many of the deans asked dental history teachers, whom they considered very successful, to add their comments. Some did not make specific suggestions, but just a general comment or request for help, so the largest number
to repeat one specific suggestion was sixteen.

The following is a list of suggestions together with the number of responses which made the same suggestion:

1. TEACHER: Must be dynamic, enthusiastic, master of the subject, have charisma for the students and have a keen sense of what interests (or bores) his students. (16)

2. SELECTION OF MATERIAL: Select only the "meatiest" material. Skip all dull details, no matter how much they fascinate you personally. Cover the highlights, important changes, general trends, and interesting personalities. (15)

3. BROAD PERSPECTIVE: History of Dentistry is not a separate entity. It is part of the History of Science, the History of Medicine, and the History of Civilization. (15)

4. ORGANIZATION: Use course outlines, syllabi, handout material and anything else to enhance clarity of the organization of the subject. Clear, logical organization itself enhances interest. (13)

5. RELEVANCE: Emphasize the present and future. Show how the past relates to the present and future. Use the "flashback" method. (8)

6. MEDIA: Use every available variety of teaching media: color slides, exhibits, artifacts, movies, tapes, T.V., museum, etc. (8)

7. A.A.H.D. MATERIALS: Are now using, and recommend the A.A.H.D. guidelines. (3)

Would like to have more materials from A.A.H.D. (7)

8. A NEW TEXT IS NEEDED—and more and better biographies. (4)

9. VISITING LECTURERS: Especially on current problems, add interest and variety. (3)

10. STUDENT PARTICIPATION: Papers, talks, discussions, and group projects are more valuable then examinations. (3)

11. ELIMINATE PRESSURE AND COMPETITION: One way is by making full use of student participation, with less emphasis on examinations and memorization of facts. (3)

12. COORDINATE WITH REST OF CURRICULUM: Especially the other socially oriented courses, and show the course as a link in the whole chain of dental studies and not an isolated entity. (2)

13. INCLUDE CONTRIBUTIONS OF BLACK DENTISTS AND SCIENTISTS: (and other minorities) especially if there is a particular interest in your student body or section of the country. (1)

14. BREMNER AWARD: Should be available to all students—not just Seniors. (1)

15. STUDENTS SHOULD BE MADE AWARE OF A.A.H.D. AND ITS ACTIVITIES. (1)

16. THE AVAILABLE MOVIES ARE NOT VERY GOOD: We need some better ones. (1)

Now, I will comment on the three most frequently mentioned suggestions: The Teacher, The Selection of Material, and A Broad Perspective; this is not to say, however, that the others are not as
important. Some of the suggestions which may have occurred in only one or two letters are extremely important and deserve our serious consideration. All of them are valuable, but time permits me to comment on only a few of them:

THE TEACHER OF DENTAL HISTORY

Almost every letter that offered specific comments mentioned the tremendous importance of the teacher's personality and ability. Here are three excerpts:

"'One of our real problems was to find a dynamic individual who could present dentistry in relation to social changes and developments in an interesting fashion.'"

"'The course is doomed from the beginning if the assignment is made to an individual who is not interested, enthusiastic, and master of the subject.'"

"'I am well aware that boredom sets in where the teacher fails to project a pleasing personality, enthusiasm for the subject, and charisma for the students.'"

I believe that a teacher should have the same sensitive perception that a good entertainer has, so that he is aware when he is holding an audience and when he is losing it. Let me hasten to point out that I am not saying that teaching is, or should be, a form of entertainment. In entertainment, capturing and holding the attention of an audience for a while is an end in itself. In teaching it is only a means to an end. Teaching is an intellectual process; and unless some information, insight, or understanding has been acquired by the student, or his curiosity aroused to a point of action, nothing has been accomplished from a teaching standpoint. But you can't achieve any of these goals without the attention of the students, and I am saying that a good teacher and a good entertainer do have this one thing in common: a high degree of sensitivity toward their audiences as to what holds their interest and what falls flat.

One of the comments I received stated "'the teacher must be a good lecturer.'" I agree that if one lectures, he must be a good lecturer. But there are some teachers whose talent lies in their ability to organize a class around group discussions, self-dependent studies, projects, movies, guest lecturers, etc. Whatever teaching approach the dental history teacher takes, he should be highly sensitive to whether or not it is being received by the students—and quick to alter as needed to maintain interest.

THE SELECTION OF MATERIAL

My father was a singer, and as a boy I was fascinated with the radio station he was affiliated with, especially the news room. There were three teletypes from the wire services clicking away, and paper was strewn all over the room. The place was an organized mess! But when it got close to air time, out of that mountain of paper would appear the essence of it all in a neat little stack in front of the microphone and a man with an engaging personality would go
on the air and present contemporary history. I consider this to be one of my first exposures to good history teaching. That station's slogan is "What you want to know comes first." In dental history, we can't cover all of it. So why not select out the most interesting and relevant material and that which presents the clearest most concise overall view? I like the old show business rule "Always leave them wanting more!"

One of the correspondents put this very well:

"I feel that a limited objective is a realistic goal, one which will establish some rapport with Freshmen, put them at ease, give a broad overview of dentistry's development within the framework of medical history and the history of civilization, and hopefully, whet their appetites for a deeper appreciation and involvement in history after graduation. And each year I revise the material presented, as obvious overemphasis in certain areas becomes apparent."

Several deans and teachers mentioned this approach, emphasizing a broad overview, social significance, and the avoidance of all uninteresting listing of facts. The length of the course varies all the way from three lectures in some schools to three full semesters in another. I think it is good that there is variation in the length of the course because I believe that rather than trying to standardize it, the general principle should be followed that the course should be as long as it needs to be to be made fascinating and worthwhile. It should be no shorter and no longer than that.

One reply which I received stated that they have found a course consisting of three lectures and an examination to be very unsatisfactory. They asked the students for their suggestions. Following the student critique, they decided to lengthen the course to at least six lectures to allow more time for assimilation of the material, replace the examination with a written report on some aspect of history by each student, and move the course from the freshman to the junior year.

The schools which reported excellent courses tend to have the most time allotted. The mode is a full term, either a quarter or a semester. Some of the most highly praised courses have one introductory class for freshmen and a more 'in-depth' course for juniors or seniors. The 'in-depth' course is elective in one school, but apparently very well received.

NECESSITY OF A BROAD PERSPECTIVE

Last year, a friend of mine, another dentist, said to me "You know Henry, it is too bad but, whereas the physicians' history seems to be a great legacy, ours is a humiliation." I have run into this before, and I think it is an extremely unfortunate attitude because it is false and comes from a narrow and limited exposure to dental history. For some reason, even in some dental history books, I see a great deal of emphasis and space devoted to the ages of advertising and unorganized fragmentation, with non-professionals such as tooth-pullers presented as if they were the early dentists (which they were not), and very little attention given to the broad pictures of both clinical and scientific dentistry. The first time I
read Guerini’s *History of Dentistry* it seemed to me that he was spending a lot of time writing about great physicians and surgeons and scientists, such as Hippocrates, Celsus, Abulcasis, Eustachius, Ambrois Pare, and Vesalius. At first it seemed to me that these men were not dentists, but just dabbled in dentistry. Then it occurred to me that dentistry was part of medicine and the biological sciences. Maybe those of us who live in a country where dentistry was separated as a profession by itself in 1840, and know it as a separate profession, have the disadvantage of thinking of it in narrow terms. Guerini didn’t suffer from this narrowness.

In my first lecture I point out that dentistry is, and always has been by definition, a branch of medicine and in whatever form it takes, it is concerned with the prevention and treatment of the diseases and maladies of one area of the human organism for the benefit of the whole organism.

The following is a chart I use to illustrate the major changes in the development of clinical dentistry from antiquity to the present. Two essential parts of dentistry have always been dental medicine and dental surgery.

<table>
<thead>
<tr>
<th>Period</th>
<th>Basic Forms of Clinical Dentistry</th>
<th>Practitioners</th>
</tr>
</thead>
<tbody>
<tr>
<td>BABYLONIAN</td>
<td>Part of Sacerdotal Medicine</td>
<td>Priest-Physicians</td>
</tr>
<tr>
<td>EGYPTIAN</td>
<td>Specialty of Sacerdotal Medicine</td>
<td>Priest-Physician-Dentists</td>
</tr>
<tr>
<td>GREEK AND ROMAN</td>
<td>Part of Medicine with some Specialization</td>
<td>Physicians and Physikan-Dentists</td>
</tr>
<tr>
<td>ARABIAN AND EARLY MEDIEAL EUROPEAN</td>
<td>Dental Medicine - (Part of Medicine)</td>
<td>Physicians</td>
</tr>
<tr>
<td></td>
<td>Dental Surgery - (Part of Surgery)</td>
<td>Surgeons</td>
</tr>
<tr>
<td>LATE MEDIEVAL AND RENAISSANCE EUROPE</td>
<td>Fragmentation</td>
<td>Physicians Apothecaries</td>
</tr>
<tr>
<td></td>
<td>Dental Medicine - (Part of Medicine)</td>
<td>Surgeons Barber Surgeons Operators for the Teeth Tooth Pullers</td>
</tr>
<tr>
<td></td>
<td>Dental Surgery - (Part of Surgery)</td>
<td>Surgeons Barber Surgeons Operators for the Teeth Tooth Pullers</td>
</tr>
<tr>
<td>18th Century French</td>
<td>Beginning of Organization of Dental Knowledge and Uniting of Dental Medicine and Dental Surgery as a Specialty of Surgery</td>
<td>Surgeon-Dentists</td>
</tr>
<tr>
<td>19th and 20th Century U.S., CANADA, ISRAEL</td>
<td>Autonomous Profession</td>
<td>Doctors of Dental Medicine and Surgery</td>
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<td>19th and 20th Century England, BELGIUM, GREECE</td>
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<td>DENTAL SURGEONS</td>
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<td>19th and 20th Century ITALY, SPAIN, PORTUGAL</td>
<td>Specialty of Medicine</td>
<td>M.D.-STOMATOLOGIST</td>
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* During much of the history of dentistry, another branch of dentistry, the prosthetic art, was apparently practiced primarily by artisans.*
As far back as we can trace it, in Babylonia and Egypt, dentistry was a part of medicine. Later, it became a specialty of medicine, as witness the fact that Hesi-re was a highly respected sacerdotal physician-dentist of Egypt. In the Greek and Roman civilizations, it also existed as a part of medicine, and to a lesser extent, as a specialty of medicine.

During medieval times and the Renaissance, there was a period of unorganized fragmentation—rather than true specialization—and many non-professional people performed some specific part of the healing arts. There were midwives, barbers, toothpullers, magicians, artisans, and apothecaries all dispensing some portion of medicine and surgery directly to the public.

In 1699, dentistry was recognized in France as a specialized branch of surgery, giving rise to the surgeon-dentist.

In the U.S. in 1840, it separated from medicine and became an independent profession, while in other countries it became established as a specialty of medicine, with the stomatologist as the practitioner.

There was a long period of unorganized fragmentation in both medicine and dentistry, but there were always physicians (qualified by the standards of their time) practicing dental medicine, prescribing ointments, medicines and fumigations. At the same time there were surgeons practicing dental and oral surgery. The fact that medicine and dentistry went through this period of unorganized fragmentation does not make the barber who extracted teeth or the artisan who made dental bridges into dentists any more than delivering a baby makes a midwife or a taxi-cab driver an obstetrician. I don't mean to be disrespectful of the barbers and artisans, but I think that some articles and even books I have seen overlook the fact that during the period there were also noted physicians and surgeons, such as Abulcasis and Guy de Chauliac, practicing clinical dentistry.

This is just an outline of the evolution of clinical dentistry. What about evolution of the other sciences of dentistry? Recently, I attended a conference on "preventive dentistry" and spent a fascinating day with a microbiologist. He kept referring to us clinicians as biologists and to himself (a Ph.D.) as part of the dental profession. Incidentally, his presentation was interspersed with many quotations from van Leeuwenhoek, Pasteur, W.D. Miller, and G.V. Black. Dentistry is not just a collection of techniques and never has been, and to illustrate this fact I am now in the process of making a new chart on the development of the dental sciences within the framework of the history of science.

Here are the comments of two deans and one other history teacher on this subject:

"In our course, a broad perspective of the role of dentistry is presented. This particular emphasis is more clearly indicated by amending the statement to read: the role of dentistry in the scientific society."

"The humanizing of great dentists of the past (and present) also helps, but we need more good dental biography to do this properly—probably something such as Paul de Kruif did for medicine."
"Ultimately, the course hopes to enhance the public's image of dentistry as reflected in the quality and social consciousness of each member of the profession."

All of these comments and suggestions are valuable and deserve thoughtful scrutiny.

**TO SUM UP**

I would like to comment on the extreme value of color slides and visual aids. This was mentioned in many of the letters I received. Some of my best slides come from Great Moments in Medicine, published by the Parke Davis Co.

When I first wrote this paper, I titled this section, "Positive Emphasis," and I ended by quoting the title of a song from another era, Accentuate the Positive, but a friend pointed out to me that this might be grossly misunderstood as an appeal for "slanting" or hiding our past deficiencies. In fact, I am asking the opposite—that for the sake of honesty, we include those positive facts seen in a broad view of Dental History as part of the History of Medicine, Surgery, Science, and Civilization. The profession and society both suffer whenever a dental school graduates a technician with a doctor's degree instead of a Doctor of Dental Medicine (or Surgery), with a broad view of the role of his profession in society and a personal philosophy of dentistry.

DR. CLARKE is Lecturer in Dental History, School of Dentistry, University of Oregon, Portland, Oregon.

(*Presented at the 19th annual meeting of the American Academy of the History of Dentistry at Las Vegas, Nev., Nov. 6, 1970.*)
Condensation of the Remarks of the Luncheon Speaker

DR. CHARLES T. SMITH, Dean,
School of Dentistry, Loma Linda University,
Loma Linda, California

Loma Linda University really feels there is a place for the history of dentistry in the student's curriculum for several reasons. The history of a profession dramatizes its relationship to the development and experience of the human race, and demonstrates the contributions made by the profession in any given period, in relation to other facets of experience. A knowledge of origins provides the essential orientation for understanding and evaluating contemporary developments and trends. Also, a knowledge of the history of his profession tends to make the dentist at once both critical and tolerant of past and current directions in the development of his profession.

Dr. Keld Reynolds, our retired vice president for academic affairs, a historian, has spent hours putting together information which he feels would be helpful to the student. We have attempted to relate much of this to what is currently going on in dentistry so it would be of interest to the students. We have thus prepared three 50 minute tapes and three boxes of carousel slides which is our formal presentation in history. In addition to this, we anticipate that each student's presentation in class will relate the history of different material to the present.

We have completed one set of tapes which we are editing and improving. We have sent for some new materials for Dr. Reynolds to review, and I am sure we will be constantly refining our tapes. Using video tape is inexpensive, it can be erased, it can be spliced and it is a very effective method of communication. Those working in the program say 2 to 5 minutes of program time is equivalent to a 50 minute lecture.

We are interested in the presentation of the previous speakers and we would gladly exchange materials so that we could take advantage of the very diligent and substantial work which has been done in improving their programs.
Summation of the Symposium

Remarks of Dr. Henry A. Swanson, Chairman, Program Committee for the Nineteenth Annual Meeting of the American Academy of the History of Dentistry.

The speakers and the discussors have given us most scholarly dissertations and I extend my congratulations and thanks.

I would like to quote here a portion of an editorial by Dr. George Rosen, Editor of the Journal of History of Medicine and allied Sciences:

"History is one of the most powerful driving forces in human development. Every situation that man has faced and every problem that he has had to solve have been the products of historical developments and processes. Furthermore, the way in which we act is, in a large measure, determined by the mental image of the past that we have created. To understand our own society, to be capable of playing an intelligent role in shaping our own civilization, we must have knowledge of the actions of the past. But this is not enough. We must have knowledge of the mental struggles, the ideological and philosophical conflicts that preceded action.—Without sound historical knowledge, men act instinctively and emotionally, but not rationally.

I am sure we are in accord with this statement. What about those in our educational institutions and the great majority of dentists who consider history unimportant? Will they accept those reasons because we say so or must we communicate in a language that has not been devised in order to reach them? And what about the students who are somewhat rebellious of the old order and demand changes of one sort or another?

I hope we are not so naive as to think that this symposium, as excellent as it is, will suddenly convince the skeptics and the modern youth that dental history is important and essential. The Conference Session on the History of Dentistry which was conducted under the auspices of the American Association of Dental Schools in 1959, and whose program was very similar to our program this morning, created no perceptible change in the status of dental history in the curriculum of the dental schools.

Dr. Randolph posed the question “Is the heritage of dentistry less important today than it was in 1934?”, and said: “If one fails to understand the past, or fails to take advantage of those who preceded him, mistakes will be repeated.” I agree with him that dental history deserves an important place in the curriculum for it broadens the student’s education base and additionally gives the learner an appreciation of the humanities.

The changing look in dental education reported in the May 1970 Issue of the Journal of the American Dental Association presented
the newer thinking in curriculum planning; and the subject identity as we know it today will be lost in a maze of supposed broadening horizons. The curriculum would be organized around six major areas that cut across four years of school: Human Biology, Clinical Biology and Technology, Methods of Science, Professional and Social Perspective and Individualization.

Time will be at a greater premium than ever with these vast subject areas even though it is stated that with the new approach to learning methods, students who show unusual competence in any area will be permitted to accelerate into other areas. Under this system, electives are a possibility and maybe history or historical literature might be considered. Again under this system with no subject identity, what would be the status of Dental History?

Dr. Randolph also stated: "Perhaps the Academy has not made itself known in a way to be heard at all educational institutions. Those who recognize the importance of learning from the past and preserving all the steps in the development must be heard loud and clear."

Dr. Deranian in his Presidential address last year stated that one of the most important projects of the Academy is the proposed Workshop on the Teaching of Dental History. This subject has been under discussion for several years, in fact since it was originally suggested by the Advisory Committee to the Smithsonian Institution on the History of Dentistry Exhibits under the Chairmanship of Dr. C.W. Camalier. An effort was made at the time to procure funds for the Workshop and also to secure assurance from dental schools that it would be supported by a good representation of faculty members. Funds were not available so the matter was dropped. Since then, nothing has been done in that direction until the program for this meeting was planned. The program committee felt that a pilot approach might be undertaken and if a workshop was warranted, then it might be attempted.

From what has been presented today, it is questionable whether a workshop should be undertaken at this time, but rather than the Academy might well expend some effort in lobbying in the halls of education where dental history teaching is nil or at a minimum. There is a need to develop a constructive program with strong arguments for the maintenance or inclusion of the subject in all dental school curriculums.

The papers and the discussions are most valuable and should not be filed but should be the basis for a program by the Academy for the advancement of the teaching of dental history.

Again on behalf of the American Academy of the History of Dentistry, I extend to the participants our very sincere appreciation for their kindness in joining with us on this program.
The Place of Medical History in Undergraduate Education

—F.F. CARTWRIGHT, F.F.A., R.C.S.
King's College Hospital, London

It is necessary to ask the question: Of what use is a study of medical history to the student? To be frank, this is a difficult question to answer, for a student can undoubtedly make a good doctor without the slightest knowledge of history. We must therefore own that a study of medical history is not essential and we must content ourselves with consideration of the reasons which make such a study desirable. Indeed, there are some who hold that it is an entire waste of time, that the student's mind should be fixed upon the present and projected into the future. This purely utilitarian view is shortsighted for, if followed to its logical conclusion, it would make the doctor into little better than a technician. Herein lies a danger. Insistence upon the purely scientific or technical aspects of medicine will inevitably lead a number of medical men to regard medicine as a job, and to seek their interests outside their profession. A worker who spends his days tightening one nut on to one bolt at the assembly line has, at first sight, no life in the factory; he must express or fulfill himself outside, in the home, on the football field, in the public house. Yet, if only he could be given the basic knowledge and the intelligence to understand, that worker could find a whole life-time of intellectual experience in his one nut and bolt; the cutting of the thread, the transformation from iron to steel, the mining of the ore and of the coal, the primeval forests which laid down the coal beds and the geological convulsions which formed the ore. If this is true of the unskilled worker, how much truer it must be of the medical student. In the immense scope of medicine there can be no need for either the student or the qualified man to seek relaxation outside his subject. It is almost true to say that the teacher, and the teacher of history in particular, should acknowledge defeat on every occasion that a doctor, tired by the grinding routine of out-patients or the general practitioner's surgery, finds his escape by unselective watching of the television screen. If we can persuade our students that medicine has behind it a long and enthralling history, we may also persuade them to read deeply and to widen their knowledge until medicine itself provides its own cultural escape and background.

There are two reasons why the provision of this cultural background within the subject is very necessary today. In both cases the need has arisen because of the very early specialization in sci-
entific subjects which the intending medical student has to face. We find an exact parallel when we consider the past history of the two main branches of our profession. A century and a half ago the essential difference between physician and surgeon lay in his education. The physician came to medicine comparatively late in life; he did not leave school until 18 or 19 and he then read for a university degree. The surgeon was apprenticed when 14 years old and thereafter was trained solely in his trade. Thus the physician was a man of wide education with a good cultural background; the surgeon, with a few honourable exceptions, was a craftsman and nothing else. The nineteenth century and the early years of the twentieth saw a change. The educational pattern of both physician and surgeon became similar. No candidate for a medical qualification left school until 18 or 19 and he did not specialize in medical subjects until he attended university or medical school. It was this system which gave us our profound thinkers, men of wide learning and fine intellect, men such as Osler, Trotter, Clifford Allbutt, D'Arcy Power, Harvey Cushing, among many others. Another product of the system was a crop of notable renegades: Somerset Maugham, Cronin, Francis Brett Young. It is of this period that G M Trevelyan (1968) has written 'the higher culture of nineteenth-century England was varied, solid, and widespread over a large proportion of the community. The world is not likely to see again so fine and broad a culture for many centuries to come.'

In recent years there has been a reversion to the early nineteenth century, but now the educational pattern is similar for all branches of the profession. A boy may not leave school until he is 18 or 19, but he starts to specialize in scientific or paramedical subjects when only 15 or 16 years of age. Thus his education ceases to be general and becomes specialized during those supremely important years when intellectual appreciation is entering its most formative phase. There is here a very real danger of insularity. Just as a restricted diet in youth can stunt physical growth, so over-specialization at too early an age can stunt and stifle intellectual development. Many of our students understand this fact and they seek to remedy the deficiency by a spare-time study of literature, art, or music. I have no desire to denigrate their efforts, but I repeat that medicine should and can provide its own culture. That culture is to be found in the history, biography, and mythology of medicine.

Such is the first of the reasons why we should encourage a study of medical history. My second point is one upon which I feel very strongly but with which, I am fully aware, not every one will agree. The most urgent danger facing medicine today is the inability of the majority of medical writers, especially the younger generation, to express themselves in plain, simple English. Let me remind you of the words of Sir Francis Walshe when making a plea for sound education, rather than a course of instruction, as part of pre-medical schooling: 'I submit, therefore, that a command of language, and its logical use, are vital preliminaries to any scientific training'. These words, true when Walshe spoke them as part of his presi-
ential oration to the Medical Society of London in 1945, are ten
times more true today.

Again, this inability to write simple and clear prose results from
our present educational system. But it has engendered another and
more sinister danger. Two hundred years ago much of medical writ-
ing had degenerated into something approaching abracadabra; the
language was Latin, but a Latin that almost defies translation. It
was a secret language purposely used to defeat the layman and, one
suspects, also purposely used to hide the writer’s ignorance. At the
end of the eighteenth century a number of medical men, chief
among them that forgotten genius Thomas Beddoes, saw the danger
and preached the need for simple language, readily understood. Their
success may be measured by reading any nineteenth-century Lancet.
The contributions are written in an English that is turgid by our
standards but is simple and, except for a few jargon terms, can be
easily understood by any intelligent layman. Turn to a modern
Lancet or, worse still, to a specialist journal and we see a very dif-
ferent picture. Jargon terms and obscurities have multiplied to such
an extent that many papers are incomprehensible, not only to the
layman, but to medical men outside the bounds of a single limited
specialty. I fully realize that this is a matter of personal opinion, a
bee in my bonnet if you like, but I must emphasize my belief that
we are faced with a quite appalling danger, the danger that pseudo-
scientific jargon will be used as a cloak for ignorance.

The problem is urgent and will become more urgent in the future
as we train more generations of ill-educated, barely literate students.
These are harsh words and we must be fair. The defect is one that
faces many professions, not medicine alone. But the fact that lack
of a general educational background is widespread must not permit
us to deplore any the less the deficiency which is under our own
eyes, nor must it deter us from making good that deficiency to the
best of our ability.

How does medical history enter into this? It is not medical history
but the medical historian. The historian has no need for jargon; in
all his writings he can express himself simply and in plain English.
Is it not then his duty to urge the virtue of simplicity and plainness
upon his students? I firmly believe that this is his most urgent and
most useful function; by example, by advice, by editing to show the
student that, despite the multiplicity of abstruse chemical formulae
and technicalities with which we are bedevilled, it is still possible
to write in a manner which is lucid and readily understandable by
both the reader and the author.

Such is the concept of history as forming a culture within our
increasingly technical and scientific subject. History may be ex-
tended to embrace and to draw into itself other cultures. This was,
o no doubt, in Sir StClair Thomson’s mind when he listed thirteen
reasons for a study of medical history in his Presidential Address
to this Section on October 4, 1933. His tenth reason is as follows:
‘To stimulate our general culture by reviving a closer kinship with
literature, art, music, poetry, and the adornments of life’. Here is
indeed a noble purpose, but we must not consider history solely as a culture. History, in its practical application, may be of great value to our students.

Arturo Castiglioni has written:

Every state of affairs at a given moment is in reality merely a phase of development, no matter how concise or static or how rigidly formed it may appear. . . . No one can comprehend the present accurately and profoundly, nor look intelligently into the future, who is not acquainted with the sources of knowledge nor able to follow the roads along which knowledge of the truth has reached us.

The historian must not claim too much. History does not provide us with an accurate forecast of the future; we cannot take the known facts of the past, plot them into a curve, and read an exact prognostication from the extension of our graph. The dialectic materialist claims to discern an inexorable sequence of events leading to that state which he regards as ultimately desirable, but no unbiased historian has yet been able to detect a definite pattern of advance in man's progress to his unknown goal. Perhaps the anonymous cynic who remarked that he 'would be happier if he thought that Man knew where he was going and why he wanted to arrive there' had the truth. We have all of us, in our own time, seen how an apparently outworn method or idea has prevailed or how a seemingly revolutionary discovery has come to nothing, despite all predictions to the contrary.

Yet, given these limitations, the past remains the only guide to the future. The student who neglects to study the past and who learns solely from his textbooks is in exactly the same position as the man who sets out on an unknown road, carrying an excellent map, but failing to note the names of the towns and villages through which he has passed. It is our duty to make the student understand this; we must be careful to take the lessons of the past, to apply them to the present and, so far as in us lies, to project them into the future. If we convince the student that this is the way to learn, we may also succeed in teaching him a most salutary lesson.

Let those of us who have retired, or who are within a few years of retirement, cast our minds back to our student days of forty years ago. How ignorant we were. We knew nothing of antibiotic or bacteriostatic drugs. The surgery of deafness did not exist. The science of blood chemistry had not yet entered its infancy. These are but random examples of our abysmal ignorance. But now let us look forward to AD 2000—only thirty-one years off. How ignorant are our students of today. They have no knowledge, not the slightest conception, of the great advances which will be made, the wonders that await them in this new age. If only we can bring that fact fully home to them, they may achieve the intellectual humility of the true scholar. Further, they may be brought to the understanding that there is no such thing as a new age, that they are living through only one transient phase of a continuous and continuing development which is shared, has been shared, and will be shared by every generation. This is the true meaning of history.

(This is an excerpt from a larger article which appeared in the October 1969 issue of the Proceedings of the Royal Society of Medicine.)
THE year 1971 marks the 20th Anniversary of the American Academy of the History of Dentistry. It was in 1951 that a small number of dental practitioners and educators banded together to form an organization dedicated to the advancement of knowledge in the field of the history of dentistry, and chose as their first president the eminent educator Dr. J. Ben Robinson.

Much has happened to the organization in the intervening twenty years. It has grown in size so that the membership now numbers in the hundreds, counting among its active members not only those in the United States but in many countries of Europe, Central and South America, as well as Australia.

Its official journal, which was launched as a 2-page mimeographed newsletter in March, 1953 by the late and great Dr. George B. Denton, has grown in size, content and format to the beautiful and valuable *Bulletin* which is now issued.

It has sponsored research into the teaching of dental history in the dental schools of this country and Canada, holding several symposia for the purpose, and it has issued the findings in the form of a valuable study guide for the teachers of the history of dentistry.

Taken together, the American Academy of the History of Dentistry has been in the forefront of the campaign to make not only the profession, but the lay public as well, aware of the great contributions made by the profession to mankind's well-being.

On October 8, 1971 the 20th Annual Meeting of the American Academy of the History of Dentistry will take place at Atlantic City, N.J. The theme of the meeting will be commemorative of the contributions of the Academy, and it promises to feature one of the finest programs ever presented.

FOR YOUR OWN SAKE MAKE EVERY EFFORT TO ATTEND!
Oddments in Dental History

—MALVIN E. RING, A.B. D.D.S., M.S.

Quacks and quackery, it seems, have been with us for as many years as have reputable practitioners in all of the branches of the healing arts. We in this country have had our fair share of them ranging from the flamboyant advertisers who snared unwary victims by means of their lurid claims or promises of cheaper costs, to the peddlers of the ineffectual nostrums touted to a gullible public by the sophisticated mass media of today.

In the late 1800's American dentists were prohibited by English law from practicing in the United Kingdom, and this stirred the wrath of many dentists of this country who felt that they were being unfairly deprived of an opportunity to practice their profession in England. To emphasize their claim, the American Dental Weekly of July 14, 1898, published in Atlanta, Georgia, printed the following account of a British trial of the time for malpractice, adding the comment "...What kind of a law is it that excludes all American dentists and yet permits such men as Mr. Stephens to practice?"

FLETCHER VS. GOODMAN.

"At the Cardiff County Court, on Thursday, May 5th, before his Honor Judge Owen, the plaintiff, Mrs. Marion Fletcher, of Glamorgan Street, Canton, sued Messrs. Goodman & Co., who advertised themselves as dentists, of 56 Queen Street, Cardiff, for 50 pounds as damages and compensation for personal injuries sustained by defendants' negligence. Mr. J. Sankey appeared for the plaintiff, and Mr. C. M. Bailhache for the defendants.

"Mr. Sankey—having opened the case, the plaintiff was called, and incidentally mentioned that the man who had operated upon her teeth at Goodman's was in court. Witness pointed him out.

"The person, who in answer to the judge said his name was Stephens, admitted that he was the individual referred to.

"Witness bore out counsel's opening statement, and continuing said that the man Stephens, after looking at her mouth, pronounced it to be in a very bad state, and said her mouth was of the shape which rendered a five-guinea set necessary. The following day she revisited the surgery. Stephens told her that he could cut the teeth off and fit new ones on to the top. In reply to a suggestion of a lady friend who was with her, he said he would certainly not think of extracting them. He then cut away all the top teeth except one, and all the other stumps he snapped off with something like a pincers, the bits flying all over the room. He then, the same afternoon, "dabbed" something into her mouth to take an impres-
"The Judge: What, immediately after?
"The Witness: Yes; and the next day (Saturday) I had the new set in.

Proceeding, the witness said the following Monday night she found she could not wear them. Her mouth got into a most offensive condition, her health began to suffer, and she eventually consulted Dr. Mullin and Mr. Quinlan.

Dr. Mullin, who was then called, deposed that when plaintiff came to consult him on the 22d of November he found her suffering from inflamed and lacerated gums, from which there was a discharge, and the teeth were broken off. She was also suffering from dyspeptic and gastric trouble as a result of not being able to masticate her food. The treatment to which she had been subjected was most improper from a medical and dental point of view.

Mr. Quinlan, dental surgeon, of Cowbridge Road, the next witness, said when he examined the plaintiff on the 23d of November he found that the remains of her teeth were bathed in matter, and that a number of sound teeth had been broken off. Her mouth was in a shocking condition, and it was the worst case he had ever seen. He eventually extracted twenty-two stumps for her. The treatment as described by witness was exceedingly improper.

The man Stephens, after being informed that he might give evidence if he pleased, but was not obliged to do so, took his place in the witness-box. In answer to Mr. Sankey he said he was only a dental mechanic, and not therefore a qualified dentist.

The Judge: What right have you to perform an operation?

Inquiring whether there was a medical society in Cardiff, and receiving an affirmative reply, his honor expressed the hope that they would take note of the case.

Witness admitted having performed the 'operation' on the plaintiff.

The Judge: Call it butchery.

Witness added that plaintiff was, however, afterwards seen by Mr. Morgan. It was not true that he splintered the teeth. He cut them off, at the plaintiff's express wish, with cutters, and not one of them so dealt with was sound. He never cut or removed a tooth unless a patient desired it.

The Judge: Did you take a model of the mouth immediately after?

Witness: Every dentist does that.

The Judge: And the gums were inflamed?

Witness: They were not inflamed.

In answer to further questions, he said the set put in was a 'temporary case. Mrs. Fletcher never made any complaint to them. The fee of a guinea was not meant to cover the cost of a complete set of teeth for the whole mouth, and this was made plain in their advertisement cards. He had not one of the cards with him. (Laughter.)

Charles Morgan, who had been described by the previous wit-
ness as the qualified dentist in attendance, next submitted to the ordeal of a cross-examination. He stated he was a registered dentist, and although his address was given in the professional register as of Wimbledon, he had been living in Cardiff for the last nine months.

"The Judge: I do not know what the Registrars would say to that.

"Continuing, witness said he did not see plaintiff until some time after the 'operation.' Her mouth was then in a filthy condition, but he attributed this to her want of care in keeping the plate clean. Witness was not one of the firm, but was only the manager in charge of the Cardiff business.

"He had been connected with the company for eighteen months, and his registered address at Wimbledon was explained by the fact that he had an interest in a practice there. He paid himself his salary out of the takings at Cardiff, remitting what remained after the defrayal of all expenses to the firm, of whom he believed Mr. Victor Goodman was a qualified dentist. He had heard of Messrs. Goodman having paid sums of money to compromise similar cases to this.

"Mr. Sankey: Is not this a correct statement of the case? You are a registered practitioner; you get what money you can, take a certain sum out of it, and remit the balance to unregistered practitioners.

"Witness: That is the sum total of it.

"Mr. Sankey: Is that not a case of covering?'

"Witness: No. Certainly not.

"This concluded the evidence.

"The judge said he hoped this case would be a serious warning to Cardiff people not to employ these advertising, unqualified practitioners. He knew of no more shocking case of maltreatment in this way of a poor, unfortunate woman, and he was only sorry he could not give judgment for a larger amount. He believed entirely the evidence of Dr. Mullin and Mr. Quinlan, and did not believe the man who had performed. He gave judgment for the full amount with costs.
Letters to the Editor

To the Editor:

Thank you very much for your kind letter and for the four issues of the Bulletin for 1969 and 1970.

As far as I know, the Bulletin is the only quality periodical dealing with the history of dentistry; and the Academy has no equivalent in this profession of ours.

My friend, Dr. Ake B. Lofgren, (an honorary member of the Academy) has during the last years kindly lent me his issues to read. Having now become a subscriber myself, I am very much looking forward to the issues to come.

I do hope in the future to write an article which will prove worthy of publication in the Bulletin.

With best wishes,
Sincerely yours,
Otto C. Francke

(Dr. Francke is one of Sweden's leading dental historians, having had many articles on dental history published in his country's journals as well as in those of other lands.)

To the Editor:

I have read the article on St. Apollonia (Vol. 18, No. 2) with a great deal of interest, and I am sure that you have had some very favorable responses to it. I was especially interested in the interdisciplinary approach, not just the painting and its interest to dentists, but the painting as a moment in the history of the theatre.

Sincerely,
Florence S. DaLuiso, Art Librarian
The University Libraries
State University of New York at Buffalo

To the Editor:

I am very much honored to have received the membership card in the American Academy of the History of Dentistry.

I have just received the latest Bulletin. Is it possible for you to send me the former issues since Volume I so that the Library of the 'Centre Francais de Documentation Odonto-Stomatologique' may possess as complete a collection as possible?

With my best thanks, sincerely yours,
Dr. Louis Verchere, Secretaire general
Sous comite d'Histoire de l'Art Dentaire,
Musee Pierre Fauchard
Paris, France.
To the Editor:

I wholeheartedly congratulate you on the current issue of the Bulletin (Vol. 18, No. 2, Dec. 1970) which is a rich storehouse of attractive historical information. Consequently, no reader can fail to be markedly impressed.

I do trust that the following two comments, on subjects which have frequently aroused confusion, will not tend to create even the slightest feeling of lack of appreciation. In fact, I hesitated to write, in view of Dr. Regine's extremely valuable contribution, Dentistry and the Encyclopaedia Britannica, which certainly deals with a most unusual subject.

Dr. John Smith delivered (1856) the first comprehensive course of lectures on dentistry in Scotland in the Medical School of the Royal College of Surgeons of Edinburgh (founded 1505), a body still independent of the University. (Dr. Regine stated that the lectures were given at the University of Edinburgh: Ed.)

William Hunter, M.D. was never knighted.

Best wishes. Yours sincerely
J. Menzies Campbell,
D.D.S., Hon. F.D.S. Eng., F.A.C.D.

(DR. J. MENZIES CAMPBELL, who is an honorary member of the American Academy of the History of Dentistry, delivered the John Smith Centenary Oration in 1956 at the Royal College of Surgeons in Edinburgh.)
**Book Review**

La Odontologia en el Mexico Prehispanico (Dentistry in Pre-Spanish Mexico). By Samuel Fastlicht. 124 pages. Index. The Author. Mexico City. 1971

On September 10, 1959 the members of the American Academy of the History of Dentistry, meeting in New York City, were fortunate to hear an address by Dr. Samuel Fastlicht of Mexico City entitled "Dental Inlays and Fillings Among the Ancient Mayas." Dr. Fastlicht, who is widely recognized as the world's leading authority on Pre-Colombian dentistry, outlined the results of his studies up to that time in the mutilation and adornment of teeth for apparently religious reasons. He described the various types of tooth modifications, noting that the Mexican "dentist" at the time of the Spanish conquest was known as Tlantzitziqualianite or he who saws someone else's teeth!

In addition to this study of tooth adornment using carefully fitted inlays of jade and hematite, as well as the filing of teeth, Dr. Fastlicht, who is also a member of the Academy, continued his studies into all facets of dental treatment, meager though it was, which was practiced in Mexico prior to the conquest.

The result is this new book which brings together all that is known of this fascinating field. Written entirely in Spanish, the work is an outstanding addition to the field of dental history. It abounds in photographs, both black and white and colored, the latter being of beautiful clarity and color, as well as line drawings, charts and maps. Some of the close-ups of the teeth and the cavities prepared to receive the jade inlays are exceptional.

The book consists of three parts. The first deals briefly with middle-American culture and a short history of Mexico up to the time of the Conquest. The second part deals extensively with the study of dental mutilations, tracing the history of the finds in such archaeological sites as Teotihuacan, as well as a description of the finds at the famous necropolis of Jaina in Campeche. Added to this is a study of the collection of mutilated teeth in the National Museum of Anthropology in Mexico, whose 682 specimens represent the world's greatest collection of this material.

One of the fascinating mysteries discussed by Dr. Fastlicht is the source of the jade used not only in the inlaid teeth, but in numerous objets d'art. The mystery consists of the fact that no jade or jadeite deposits have ever been discovered in Mexico! Nevertheless, in ancient Mexico, especially in the region of Mayan culture, jade was widely used, being regarded not only as a precious stone, but as a symbol of all that was valuable and divine.
The third portion of the book discusses other types of dental treatment as recorded by the early Spanish conquistadores, as well as an account of dental diseases and their treatment by the early Aztecs.

The bibliography supplied is very comprehensive, covering probably everything ever written on the subject. The only pity is that the book does not exist in English translation so that it could receive the wide distribution it merits.
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Contributions, which may deal with any aspect of dental history or bibliography, are invited. The maximum length for original articles is about 5,000 words. Manuscripts should be typewritten with double spacing and wide margins. The Editor reserves the right to make literary corrections. All references should contain name(s) and initial(s) of author(s) and full title of paper or work. Journal articles should also include name of journal, year, volume number and complete pagination, in that order. With books, the city of origin, publisher, date and full pagination should be given.

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The President’s Message

At our 1971 annual meeting, we celebrated the twentieth anniversary of the Academy. Throughout this year we should remain consciously aware of this anniversary. Perhaps then we shall see more clearly where we are now, appreciate more fully our past, and direct ourselves more effectively toward our future.

Since our Academy’s inception, I find one constant and dominant concern expressed in the annual message of each president. This concern is in regard to the trend of deemphasizing the teaching of dental history in dental schools.

Our 1970 Dental History Teaching Symposium resulted in justifying the validity of the need for dental history in the curriculum. The Academy further recognized its responsibility to reevaluate the objectives, content and methods of teaching, and the reintroduction of dental history into the curriculum in a manner that would satisfy today’s generation of faculties and students. Our 1971 afternoon meeting showed progress in this area.

I have recently appointed a new committee which will be concerned with resolutions and ultimately with the reestablishment of dental history as an essential subject in the curriculum of all dental schools.

Our founding president J. Ben Robinson has stated: “The dental profession will continue to flounder, to perpetuate its handicaps and to fail its true purpose as long as it lacks an intelligent understanding of its historical background.” In a personal note to me recently Dr. Robinson further stated: “The dental professions’ general knowledge of its history is little above the level of ignorance. It is not enough for one to know dental history; it is important that he understand it.”

There can be no greater contribution and justification for the American Academy of the History of Dentistry than its continued efforts toward the compilation of teaching resources and the establishment of dental history courses in our schools.

W. Frank Evans, Jr., D.D.S., President
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The Pioneers in the Study of Carcinogenesis

—WILLIAM B. WESCOTT, D.M.D., M.S.
Portland, Oregon

Probably the oldest evidence of cancerous growths appear to have been sarcomas which were found among the bones of prehistoric animals and two cases of osteosarcoma of the head of the humerus which were found in human remains in the cemetery of the Gizeh Pyramids. The ancient Egyptians may not have understood cancer as we know it; however, they described conditions which surely must have been of this disease. Among them were nonhealing ulcerations of the skin which were resistant to all treatment and undoubtedly correspond to our present-day skin cancers. The Edwin Smith Surgical Papyrus written between 3000 and 2500 B.C. and published in 1930 records eight cases of "tumors or ulcers in the breast" which were treated by cauterization with the firedrill although it was stated that no cure was known. The Ebers Papyrus written about 1500 B.C. also describes a tumor, apparently a cancer, which must not be touched, lest treatment prove fatal.

The word "carcinoma" is derived from the Greek "karkinos" meaning a crab and credit for first using the term cancer goes to the Father of Medicine, Hippocrates, and one can only speculate on the reason for his choice of this word. Perhaps it was the great similarity in appearance between cancerous tissue and the flesh of a crab or the gross pattern produced by the spread of the cancer along the lymphatics; or possibly this may have been the beginning of the fantastic superstition that there is a connection between cancer, the sign of the Zodiac, and cancer, the disease, for some people still believe that those born under that sign are predestined to die of cancer. Physicians of the Fourth Century B.C. were familiar with the clinical appearance of many malignancies and even though they recognized the signs and symptoms of the disease, they had no knowledge of the cause of cancer.

Approximately 600 years later, Galen attributed the development of cancer to the accumulation of "black bile" in the tissues and since cancer was an "internal disease," he felt that it must be treated internally with purgatives. It is interesting that a relationship between bile and cancer was suggested almost 2000 years ago since one of our most powerful carcinogens, methylcholanthrene, is a derivative of bile acids.

Sixteen hundred years passed with little added knowledge, as progress in the treatment of cancer was retarded by his doctrine
of the "four humours". This bizarre genius, who was regarded as infallible during his lifetime, continued to influence and paralyze all original thought even from his grave. No fundamental ideas relative to the etiology or to the true nature of cancer were proposed during this time.

In 1757, Le Dran rejected Galen's humoral doctrine and suggested that cancer started as a local lesion which spread along lymphatics to the regional lymph nodes. This lymphatic theory naturally followed Harvey's discovery of the circulation of the blood and Rudbeck's description of the lymph vessels. The year 1775 was an important one in the story of cancer since it was at this time that the first experimental investigation of the cancer problem was described. The French Academy of Sciences and Letters offered a prize for the best essay on the causes, nature and prevention of cancer. Among the entries was a paper written by a Frenchman, Peyrilhe, describing the transfer of cancerous tumor from a human to a dog. This experimental investigation was declared the winner of the contest as the result of an honest mistake since as we know from later experience, human cancer had not been transferred. Instead, secondary invaders of the tumor, the suppurative bacteria, were transferred, and as might be expected, severely infected the transfer wound site leading the investigators to the erroneous conclusion that cancer had been transplanted. The true nature of the lesion could not be determined since microbiologic and histopathologic techniques were not known. Obviously, this was not the appropriate date in time for experimental cancer research and many erroneous conclusions resulted from the relatively crude methods employed and the rather critical lack of knowledge of the problem and its associated ramifications.

Also in 1775, Sir Percival Pott reported the first case of an occupational cancer. Young boys, usually five to ten years old, were used to remove the thick, sooty layer from London chimneys. After a lag period of ten to fifteen years, they often developed ulcerations of the scrotum which Pott recognized as cancer and further connected the sooty-tars as being the cause.

The acute mind of Xavier Bichat in the early 1800's allowed him to correlate his extensive gross anatomic findings and formulate his concept that the organs were related and that all react in a similar way in health and disease. This replaced the earlier idea that organs were wholly detached and entirely independent. He felt that cancer was merely an accidental abnormal formation of tissue. The amazing feature of his work is that without a microscope he realized the existence of the cellular structure of tissue which paved the way for many later discoveries.

THE EMBRYONAL HYPOTHESIS OF CARCINOGENESIS

The early beginning of the embryonal theory of cancer development started with the publications of Lobstein and Recamier in 1829 in which they attribute the origin of tumors to the prolifera-
tion of embryonal cells that persist into adulthood. When we con-
sider the lesions that may develop from embryonal rests and
remnants of odontogenic epithelium in the oral tissues, we realize
the great merit of these early observations. Many men favored the
embryonal hypothesis, gave it their enthusiastic support and con-
tributed their own views which greatly expanded our knowledge
of neoplastic processes. Pathologists could accept this theory since
their microscopic sections of cancers often showed embryonal
cells with large numbers of mitotic figures.

IRRITATION WIDELY BLAMED AS THE
CAUSATIVE FACTOR

Rudolph Virchow proposed the theory in 1837 that the different
cancers were caused by and were related to various local irritants.
This was published in the first issue of the famous Archiv founded
by him at the age of 26 and which bears his name. This irritation
theory, that nonspecific factors were responsible for cancer, re-
sulted from his extensive background in anatomical pathology and
his vast clinical experience. Many scientists joined with his thinking
and supported the idea since they had seen malignant tumors de-
veloping from chronic irritation. This concept later resulted in
thousands of research projects.

Many cancers seemed to be related to chronic irritation as
evidenced by Pott who had already pointed out cancer of the scro-
tum and its relation to soot-tar sixty years before. Also noted was
an occupational cancer which occurred in cotton spinners and was
related to lubricating oils thrown from the machines. In time,
cancer of the skin developed in the areas saturated with these oils,
often the skin of the scrotum. Other malignancies were seen in the
skin around chronic ulcerations, such as sinus tracts and fistulae
which acted as areas of chronic irritation; cancer of the lip was
seen in pipe smokers at the site where excessive heat developed
where the stem of a clay pipe was held. So-called "sailor's and
farmer's skin" were known to be prone to cancer as a result of
long continued chronic irritation from sun and windburn. Skin can-
cer was also known to occur in scars at the site of previous burns.
An interesting example of this is the cancer which occurs in the
abdominal skin of the natives of Kashmir who carry an earthenware
pot, the Kangri, filled with leaves and glowing coals under their
robes for warmth. Cancers of the mucuous membranes of the mouth
were seen among those who chewed betel nut. Cancers of the gall-
bladder were found in association with the chronic irritation of
gall-stones. Liver cancers were often found to be associated with
cirrhosis of the liver, which again confirmed their theory, since
cirrhosis is certainly the end result of long standing chronic irrita-
tion. Chronic irritation was related to many other cancers including
lesions in animals such as the mouth cancer seen in horses where
the bit rests and cancers of their skin where the harness rubs.
For many years, the irritation theory of Virchow dominated the
scene since so many clinical examples could be demonstrated.

Virchow later published his three-volume work, "The Pathology of Tumors", 1863-67, in which he expanded his theory and also presented his concept of the connective tissue origin of cancer. This was almost immediately disproved by Thiersch and later by Waldeyer-Hartz who contended that carcinoma was of epithelial origin. Many still supported the embryonal theory; however, they had difficulty since they could find many more embryonal rests than tumors, and it became obvious that not all embryonal rests were destined to become cancers. After their well-planned experiments failed, it became only too obvious to them that a single factor such as trauma acting alone or the mere presence of embryonal rests alone was not the answer. Julius Cohnheim was a strong advocate of the embryonal theory and attempted to further support it by adding irritation, but to no avail.

DISAPPOINTMENTS IN INDUCING CANCERS

Most of the experimental effort was disappointing and discouraging as evidenced by the work of Martin in 1882-83 when he injected oils intravenously as an irritative stimulus with no tumors resulting. Brosch in 1885 injured the skin of his experimental animals and treated the wounds with paraffin dissolved in xylene. After two or three months of repeated exposures, atypical epithelial proliferation occurred without any evidence of cancer. Preparations of gas and coal tar were painted upon the scrotum of white rats and of the skin of dogs in another experiment which failed to produce cancer. Hanau failed in 1889 to reproduce the skin cancer of paraffin workers by painting rats with raw paraffin; however, he was the first to successfully transplant cancer in rats. Jensen perfected this technique and in 1903 succeeded in carrying a mouse cancer through nineteen generations of grafts without any microscopic variation.

WERE MICROBES THE CAUSE?

At about this same period in time and closely following the monumental contribution of Louis Pasteur, disease after disease was linked to a specific microbe. It was only natural for physicians of the time to believe that cancer must also be caused by a specific infection with bacteria, fungi, algae or protozoa. Cultures were obtained from cancers and if a specific organism could be recovered on repeated cultures, it seemed obvious that it must be the cause. In many cases, the microorganisms were injected into animals and the resulting reaction and infections produced were erroneously interpreted as cancer.

In 1896, Rappin announced that he had isolated a diplococcus from cancer. He proceeded to inoculate rabbits and produced infectious lesions, but none were neoplastic. For years, he devoted his experiments to proving that the organism isolated was indeed the etiologic factor of cancer. Bitter disappointment was his net
result for forty years of effort.

A new era in cancer research resulted from the experiments of the Russian, Iwanowski, in 1892 when he showed that mosaic disease of tobacco plants was caused by an agent which was not removed by filters known to remove all bacteria. This finding corroborated Pasteur's statement made ten years earlier when he was experimenting with rabies, that submicroscopic organisms existed which were capable of causing disease.

One of the first direct relationships between a tumor and a virus was reported in Uruguay by Sanarelli in 1898 when he reported on an epidemic disease fatal to rabbits which developed multiple "colloid" tumors caused by a myxomatous virus. This may possibly be the same virus described by Shope much later in 1932.

A few investigators continued experiments based on the parasitic theory and Borrell published a great number of papers between 1903 and 1909 relating to the problem of "etiologie" with particular reference to the role of the Acarides, the mites and ticks, to cancer. Borrell was firmly convinced that cancer was due to a virus and that the mite or parasite merely inoculated the virus into the host. He further believed that any cells might be involved with the virus and were subject to cancerous change. This brilliant hypothesis was ahead of its time and therefore fell on deaf ears, for it lacked scientific foundation. As a matter of fact, the idea of a carcinogenic virus was absolute fantasy at this time since no experimental evidence had been demonstrated. The early studies of Borrell foreshadow the later experimental demonstration of viral agents in cancer by Rous and others.

RADIATION—A TRUE CARCINOGEN

Within one year after the discovery of X-rays in 1895, a case of radiodermatitis was reported. The men working with the tubes were completely unaware of the dangers and often exposed their own hands to the rays. In 1902, Freiben published the first instance of a cancer produced by exposure to X-rays in a 33-year-old man who had been using his hand for a test object for four years. Many documented cases of cancer were reported since no one at the time realized that the rays were powerful carcinogens.

Once the danger was realized, investigators began to experimentally test the cancer producing potential and in 1910, Pierre Clunet produced a sarcoma at the site of repeated exposures in one rat after nine months and another after two years. One sarcoma was transplanted in rats and maintained for several generations. Clunet's work was overlooked for many years, possibly because it was a very limited experiment which was done as a thesis requirement by an obscure investigator without an academic podium.

For many years, the workers in the Schneeberg mines in Germany were known to die from a progressively destructive lung disease which resulted in cachexia and death. This so-called "min-
er’s disease” (Bergkrankheit) was shown to be lung cancer in 1879 by Harting and Hesse who blamed the arsenic dust as the causative agent. A short time later, it was realized that arsenic must not be the causative agent since the miners in Bohemian mines died from the same disease and yet no arsenic was present in the ore. Many years passed before it was realized that it was not the arsenic dust but the inhalation of radioactive material that caused the cancer. In 1896, Becquerel proved that the salts of uranium emit a radiation similar to X-rays. At about this same time, Madame Curie reported that salts of thorium had similar properties and is credited with using the term “radioactive” to describe this active emission of rays. The Curies soon extracted the new element radium, with properties resembling X-rays, and realizing the dangers present took great precautions with these new found radioactive substances.

Many experimental studies were conducted and all resulted in one conclusion - that all radioactive substances are carcinogenic and even though they do not show the same intensity or potency, they are dangerous.

**HEREDITY AND CANCERS**

Mention should be made of the early observations of some investigators, that heredity might play a role in the occurrence of tumors. The extensive works of Maud Slye beginning in 1913 showed unquestionable evidence that heredity plays a role in producing tumors of various types and in different tissues, and that selective breeding will produce mice and rats which are more susceptible to tumors.

At about this same time, in 1908, a number of investigators inoculated themselves with cancer in an attempt to transfer carcinoma cells from human to human, but all failed; however, Hahn and Cornil did succeed in transferring breast cancer in a patient to other sites in the same patient.

**THE SEARCH FOR THE ELUSIVE COCKROACH**

Johannes Fibiger found large tumor-like masses in the forestomach of three rats which he assumed was an infectious process. He, therefore, inoculated some of the tissue into one rat, fed some to another and placed a third in the cage previously occupied by the rats with the neoplasms. None of the animals developed the tumor. After considerable study of microscopic serial sections of the tumor, a small nematode worm was found to be present in association with the neoplasm. Fibiger immediately set out to find more rats with this nematode and in eleven hundred wild rats captured and examined, he could not find one with the same nematode as the original three rats. He traced the source of his original animals only to find that the dealer had retired and could not be found. Many men would have given up at this point, but not Fibiger. He reasoned that the larval form could be in
another intermediate host and after an exhaustive search of the literature found one paper which mentioned a similar parasite in the stomach of rats which had a larval form in the common European cockroach. Armed with this information, Fibiger again went after rats in the old bakeries of Copenhagen since they harbored both rats and roaches. Once again, disappointment followed since there were no tumors in the rats and no nematodes present. He was almost to the point of giving up when he heard about an abundance of rats and cockroaches in a sugar refinery just out of Copenhagen. The first rats trapped had the elusive nematodes in their stomachs and nine out of forty that were infested also had tumors with some carcinomas. The intermediate host was the cockroach, not the European but the American type that had been imported on sugar cane. More rats and cockroaches were needed to set up a controlled experiment. Fibiger gathered his equipment and went to the sugar refinery only to find that it had gone up in flames killing all of the rats and cockroaches. Fortunately, he had kept a few of the rats and roaches alive and managed to infect other rats and later mice with the larvae which these roaches had in their muscles. Fifty-four of 102 rats experimentally infested developed tumors which became malignant, invaded the deeper layers and metastasized to other areas. A few animals also developed carcinomas of the tongue.

So after years of overcoming obstacles that would have made most men give up in despair, Figiber published his material in 1914.

His work brought new hope to many since those who believed in the chronic irritation theory concluded that it was the irritation created by the nematode and its toxic products; it gave hope to those still holding to the parasitic theory; it fit well with the thinking of those who believed that embryonal defects were stimulated. It even further convinced Borrell that a virus was responsible and was carried in on infected nematodes which might explain why only selected animals developed the malignancies.

Fibiger published other papers on the subject and was highly acclaimed by the scientific world. The greatest recognition tendered him was the Nobel Prize in 1926. Ironically, Fibiger developed cancer of the stomach and was forced to give up his work. However, many others continued along the same lines, but for unknown reasons their results never equalled his original work. Although extensively investigated for years, some unknown factors were apparently never duplicated.

A latent period exists in the development of cancer and it seems that a similar latent period occurs in cancer research since 140 years elapsed between Pott’s paper and the experimental demonstration of cancer in animals as a result of applications of tar.

WHERE PATIENCE PAID OFF

The investigations of Katsusaboro Yamagiwa and Koichi Ichikawa
reported in Japanese in 1915 and in English in 1918 are classics in cancer research. In 1892, the Japanese Government sent one of their promising young associate professors, Yamagiwa, to Berlin to study with Rudolph Virchow, where he remained until 1894. This experience influenced his research since he followed in the pattern of others who attempted to produce cancer by using chronic irritation. The meticulous persistence of these Japanese paid-off, for after coal tar was applied to the ears of rabbits every two or three days for 360 days there were seven fully developed carcinomas and two animals with metastases to lymph nodes. For the first time, an indisputable cancer had been produced by a chemical irritant. Yamagiwa jotted down a Japanese sonnet which expressed his emotion and which translates to English as

"Cancer was produced!
Proudly I walk a few steps"

His simple method of inducing carcinoma by painting with tar was used by his pupil, Tsutsui, to induce carcinoma in mice and rats with up to 100% success in some strains of mice. As it turned out in later experiments, rabbits were not as susceptible and had it not been for Yamagiwa's patience and tenacity in combination with the right chemical agent, his experiments probably would have failed like so many before him. Tar is an extremely complex mixture and its carcinogenic potency varies considerably depending on whether it is prepared in a vertical or horizontal retort and further is greatly influenced by the amount of oxygen present as well as the temperature used. Deelman published a number of reports between 1921 and 1924 on the subject.

Yamagiwa's success and Tsutsui's modification set off a flurry of experiments with tar and tar painting and as a result of his great work, Aschoff proposed Yamagiwa for the Nobel Prize in Medicine in 1925. This was the same year that Fibiger was being considered for his work in stomach cancer in rats and even though Fibiger won the Nobel Prize many felt that the prize should have been shared. Folke Henschen of the Karolinska Institute quotes a comment made by Dustin in 1933 which seems very relevant: "The man who solves the enigma of cancer does not need a Nobel Prize." Yamagiwa's discovery was of the same importance and academic prizes cannot increase the scientific value of the work.

**THE CASE OF THE LUMINOUS DIAL**

The story of the dial painters who developed cancer after ingesting radium has always been of special significance to the history of occupational cancers. The ingestion of radioactive material was responsible for a tragedy among New Jersey women who were employed to paint luminous dials on watches in the early 1920's. At the time, the dangers associated with radium were not known and some patent preparations containing radium salts were then used
as tonics. Factories which made luminous dials used a mixture of radium, mesothorium and zinc sulfide to coat the numbers and hands of watches and clocks. The workers, usually women, were taught to point the brush with their lips and, consequently, they swallowed some of the mixture. No one realized the hazard since they assumed that the material would be eliminated without any effect to the body. A case of osteomyelitis first reported by a dentist, Theodore Blum, in 1924 was similar to phosphorus necrosis and was termed “radium jaw” by him. The first changes were gingivitis and periodontitis, followed by extensive destruction of the bone with perforation of the palate, osteomyelitis and sinus involvement. The condition was extremely painful and often terminated in death from overwhelming infection. The earlier deaths were due to anemia and jaw necrosis, while the later ones were found to have osteogenic sarcoma after a latent period of four to thirteen years. Martland reported that as little as one-hundredth of a milligram of radium bromide distributed throughout the skeletal system was enough to elicit an osteosarcoma. Looney’s investigations showed that bone tumors and skeletal changes sometimes occur fifteen to thirty years after ingestion of radioactive material. Many of the dial painters and those who drank radium water as a tonic experienced an unusually high number of tooth extractions, some had spontaneous fractures with no sign of neoplasm at the fracture site, others osteogenic sarcomas or tumors of the paranasal sinuses.

Roentgenographic studies of a person exposed to radium may show generalized demineralization of bones and a sclerotic appearance of the epiphyseal ends of the long bones. The unwitting contribution of the dial painters has greatly increased our knowledge of the effects of radium ingestion.

UNLOCKING THE CHEMISTRY OF CARCINOGENS

Ernest Kennaway and his colleagues showed extensive evidence of the relationship of carcinogenic power of tar to its chemistry. In 1924, he showed that isoprene, a compound containing only carbon and hydrogen, when heated at 800° with hydrogen produced a more potent carcinogenic tar than coal tar. A year later, he found a similar potent tar produced from acetylene heated to 700°. During these same years, Kennaway also found that certain non-carcinogenic biologic materials such as hair, skin, yeast and cholesterol became carcinogenic when heated in sealed containers. Findings such as these have led some to ask if there are endogenous substances which may become carcinogenic under the right circumstances.

In 1929, Clar reported the synthesis of 1,2:5,6-dibenzanthracene which turned out to be the first synthetic chemical compound to be shown to be a carcinogen. Other more powerful carcinogens such as 3,4-benzopyrene and methylcholanthrene were synthesized in later years.

Very limited experimental oral carcinogenesis occurred prior to
1950 and only a few papers were reported before 1930. Bonne in 1927 noted the development of squamous cell carcinomas of the palatal mucosa in three out of fifty mice tarred orally for fifty weeks. A year later, Krebs reported the production of squamous cell carcinoma in the buccal mucosa in two out of ten mice treated with 50% alcohol. Voronoff and Alexandrescu in 1929 reported the production of a papilloma of the tongue in one group of rats fed a mixture of tar, aniline oil toluenediamine and hydrous wool fat. In recent years, many investigations on oral cancer have employed chemical carcinogens.

TRANSMISSION BY SERUM FILTRATES

In 1908, two Danes, Ellerman and Bang, transmitted the erythro-myeloblastic leukemia of fowl using a cell-free filtrate of blood and tissue fluids from infected birds. Solid tumor transmission soon followed in 1910-11 by Peyton Rous when he reported the transmission of a sarcoma in chickens. Fujinama and Inamoto also reported transmitting a myxosarcoma in fowl by cell-free extracts. Two years later, Rous and co-workers found another transmissible fowl tumor; this time an osteosarcoma.

Frantic and enthusiastic work was begun in many laboratories, with Rous and his co-workers in the lead, with some forty tumors being studied. Of these, three were regarded as distinct and due to different viral agents. Unfortunately, not all tumors were found to be filterable and no really new ones were discovered for almost twenty years; however, much of the knowledge was refined and new modifying factors uncovered. Some of them make Rous' original success with transmission even more incredible. For it was found that the age, season of year, sex and host species could greatly affect the outcome of filtrate inoculation.

In 1926, in Fujinami's laboratory, the first cross species tumor induction was successful between a chicken and a duck. Rous then repeated this with his sarcoma. Interestingly, it was found that once the tumorigenic virus had been passed through ducks, it then became infectious for pigeons and quail. It was then realized that tumor viruses could undergo mutation.

We have seen how three major theories on the causes of cancer evolved which still persist today. First, the irritation theory which includes physical irritation, irradiation, chemical and thermal stimuli. Second, the embryonic theory which in a broad sense includes heredity and immunologic aspects and, third, the parasitic theory which includes the viruses. The idea of cocarcinogenesis finally developed and simply combined all of the theories into one. Simply stated - If the age, sex and hereditary background of an organism are in order, the addition of any irritating factor, either natural or artificial would be enough to produce a neoplasm in that organism. Under this hypothesis, a virus could be an inoffensive cellular parasite until it was aroused by some factor which would awaken the tumorigenic potential of the virus, providing
that the cells' genetic mechanisms were receptive. It would not matter whether the exciting factor was a chemical, sunlight or trauma.

In conclusion, it is hoped that this all too brief panorama of the beginning of our knowledge of cancer and carcinogenesis - these landmarks of progress in our battle against an ugly, deadly disease - will help to stimulate an interest and understanding of the work of these pioneers, their joys and their disappointments.

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The History of Dental Malpractice Litigation in America

—PETER C. AMOROSI, B.A., M.S.P.H.
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The risk of incurring a malpractice charge has plagued practitioners of the healing arts since the very beginnings of recorded history. The Code of Hammurabi written over four thousand years ago prescribed severe penalties for unsuccessful medical treatment, stating that if a surgeon caused a man's death or the loss of an eye, then the surgeon's hand should be cut off; but if the surgeon caused the death of a slave, he need only provide a new slave. In ancient India the “Laws of Mannu” prescribed that, “all physicians who treat their patients wrongly shall pay a fine.” Since that time malpractice litigations have become a common legal entity. Today the incidence of malpractice suits against American dentists averages about .02 suits per dentist per year, or to put it in more general terms, in a lifetime dental practice of fifty years a dentist has a fifty-fifty chance of having one claim brought against him.

Malpractice may be generally defined as bad or unskillful practice on the part of a dentist resulting in injury to the patient; or as the failure of a dentist to exercise the required degree of care, skill, and diligence; or as the treatment by a dentist in a manner contrary to accepted rules and with injuries resulting to the patient. This current legal definition of malpractice developed as the result of early American malpractice litigations.

Malpractice suits were almost unheard of in the early history of America, and for the first fifty years after America gained its independence only ten malpractice suits were recorded, these being against physicians. The very first of these cases was reported in 1794. In that case, (Cross v. Gunthrey, 2 Root 90 (Conn. 1794) ), a husband sued a doctor for the death of his wife. The physician was found guilty of negligence in performing an operation that resulted in the woman’s death.

Thus, the very first guidelines of American common law concerning malpractice were the result of litigations against physicians. At that time, however, it was common practice for physicians to treat dental problems. This was probably the basis for firmly establishing that the rules and standards applicable to dentists substantially correspond to the rules and regulations applicable to physicians. The case of Harris v. Exon, [Kansas 170 Pac. 2d, 827.] makes this point clear. In that case the court ruled that “...a dentist is a dental surgeon, therefore the rules of law imposed upon physicians and surgeons apply to him.”
A search of early American legal citations reveals a conspicuous lack of malpractice litigations against dentists until the latter half of the nineteenth century. This may be due to the fact that it was not until about this time that dentistry became an organized profession in America. The medical profession, on the other hand, began having its malpractice problems from the very beginning of the same century, as has already been cited. The dental profession, meanwhile, was enjoying almost complete immunity from this type of legal litigation. This was so obvious that in 1874 it prompted an editorial in the leading dental publication of that time voicing the opinion that a few malpractice cases against dentists would be good for boosting the status of the profession. The editorial read as follows:

To apply these principles of judgement to the practice of dentistry would not only be disastrous to the fame of many in the profession, but if the community were educated to the proper appreciation of the value of a tooth, suits at law for malpractice in dentistry would result in damages which would do much toward ELEVATING THE PROFESSION. It is high time that certain operations and practices should be abandoned: such as the premature extraction of the deciduous teeth, causing irregularity of the permanent set; the treatment of sensitive dentine with arsenic, resulting in dead pulps and discolored teeth; the rash extraction of lateral or cuspid teeth to correct irregularity; the sacrifice of sound and useful teeth to make uniform substitutes practicable; the administration of anaesthetics in ignorance of their properties and of the treatment of threatening conditions resulting. It is high time that operations like these should be declared malpractice, and that such exemplary damages should be awarded as would teach their authors that which they have otherwise failed to learn.

It is unlikely that this editorial represented the feelings of the majority of the dental practitioners, however. Interestingly enough, seven years previous to this, an article appeared in the same journal warning the dental profession of the impending threat of dental malpractice litigations, based on the experiences that the medical profession was having at that time.

As predicted, the tide of malpractice litigations slowly caught up with the dental profession. Among the earliest cases involving malpractice charges against an American dentist was the case of Simonds v. Henry in 1855. This case was actually an action by a dentist to recover a fee for a set of false teeth. The defendant refused to pay for the teeth claiming that they were so poorly constructed that he could not wear them. In effect he was counter-charging the dentist with malpractice. The court found in favor of the dentist, and made the defendant pay for the teeth, stating that the highest degree of skill is not to be expected, nor can it be reasonably required of all dentists.

The next dental malpractice case occurred in Pennsylvania in 1863. In this case the plaintiff, Mr. Bagle, sought the services of a dentist after being kicked in the mouth by a horse. During the course of the treatment the dentist administered chloroform as a
general anesthetic. Although the plaintiff walked home after the extractions, he complained of dizziness, and subsequently partial paralysis developed, which he claimed was causally related to the chloroform. The jury, however, again found in favor of the dentist stating that "... a dentist who uses chloroform as an anesthetic is required to anticipate only the natural and probable effects, and cannot be required to anticipate unusual effects resulting from some peculiar condition or temperament of the patient of which he had no knowledge." The above case was among the first of many malpractice cases brought against dentists that involved the use of general anesthetics. The cases are so numerous and complicated that they cannot be dealt with here. Suffice it to say that not all court decisions involving general anesthesia were as favorable to the dentist as the preceding one. Only three years later, in 1866, a similar case resulted in the prosecution of a dentist for malpractice, again involving the use of chloroform. The novel experience of having a dentist found guilty of malpractice prompted the following response from the profession:

... We must suggest that it will be necessary to make a formal provision against such incidents... We must go about armed with parchments, and combine the instruments of the law with those of medicine. The pocket case must have another pocket added to it; and there we must carry forms of indemnity and legal contracts ready for signature.

Not all malpractice suits were taken so seriously, however, as evidenced by the following comments on an early case.

An action against a dentist for pulling the wrong teeth came before a court in New Hampshire the other day. The plaintiff, being unavoidably absent by reason of having died, her interests were represented by her husband, who asserted that his wife gave the dentist special instructions to pull certain teeth, and not to molest certain other teeth; but he made a clean sweep of one jaw, and was rapidly harvesting the crop in the other, when the patient recovered from the anesthetic and shut her mouth. The suit was for $5000 damages, but the jury considering that it might have been a mere misunderstanding on the dentist's part, and that the plaintiff was dead, thought $20 about right.

By the end of the nineteenth century dental malpractice cases were becoming quite frequent. Some of the more important early litigations are cited below:

**Texas (1895)** Wilkins v. Ferrell 30 S.W. 450 — A dentist was charged with malpractice for allowing his assistant to extract a tooth which resulted in fracture of the plaintiff's lower jaw from the hinge to the center of the chin. The verdict was for the patient.

**North Carolina (1898)** McCraken v. Smathers 122 N.C. 799, 29 S.E. 354 — The dentist was charged with malpractice for filling a tooth upon a live nerve without proper packing and for unnecessarily boring through the jawbone. The verdict was for the patient.

**California (1904)** Mernin v. Cory 1945 Cal. 573, 79 Pac. 174 — The charge was that the dentist in the course of extracting a lower
molar, caught hold of the jawbone with his instrument and inflicted permanent injury upon it. The verdict was again for the patient.

**Massachusetts (1906)** Bates v. Dr. King Co. 191 Mass. 585, 77 N.E. 1154 — In this case the plaintiff charged that she contracted syphilis as a result of having her teeth cleaned with an unsterile brush. The court agreed.

**California (1906)** McGehee v. Shiffman 4 Cal. App. 50, 87 Pac. 290 — The defendant dentist extracted seven of the plaintiff’s teeth under general anesthesia. One tooth slipped from the forceps and fell into the trachea causing a lung abscess. The decision was in favor of the plaintiff.

**New York (1910)** McCarthy v. Harvard Dental Parlors 121 N.Y.S. 343 - It was claimed that negligence in extracting a tooth resulted in injuries and infection of the jaw, necessitating surgical treatment. The verdict was in favor of the dentist.

From these early cases, and from the hundreds which were to follow, developed the present day legal policies and guidelines pertaining to dental malpractice litigations. Today it is not uncommon for a dental practitioner to become involved in a malpractice suit. The malpractice cases that have been tried in the past have set the legal precedents for future litigation. The subject of dental malpractice is, therefore, one which is closely linked to and dependent upon the events of history.

Although, as has been cited, the incidence of malpractice suits against dentists got off to a slow start, it was not long before such litigations achieved their current popularity in the courts. One New York insurance firm that specializes in providing malpractice insurance for dentists estimates that as many as seventy per cent of office mishaps result in court mediated settlements. This same firm further states that nearly one in every ten of their clients is threatened with a malpractice suit during the course of a year.

Accompanying the growth in the number of dental malpractice suits has been a corresponding and alarming increase in the size of monetary settlements. The Southern California Dental Association group liability program reported $984,056 in losses over a recent eighteen month period. And incredibly, in both California and New York, recent separate settlements amounted to more than $300,000 each. This is in stark contrast to the twenty dollar settlement reached back in the year 1874. Rising settlements have of course been reflected in increasing malpractice insurance premiums. Today’s premium rates, depending on the risks involved, may vary anywhere from $65 to $1000 per year for basic $15,000 liability coverage. Unfortunately, if a practitioner has had the misfortune of having a successful suit brought against him in the past, he may not be able to purchase insurance at all.

It is obvious then, that the threat of a malpractice suit is a matter of great concern to all practicing dentists. From its humble beginnings the phenomena of the dental malpractice suit has mushroomed into a problem of considerable magnitude for the dental
profession. Each time a dentist undertakes the treatment of a patient, the events of legal history dictate that he exercise the utmost degree of care, skill, and diligence, not only for the sake of the patient, but also for his own legal protection.

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Capping of the Living Pulp:
From Philip Pfaff to John Wessler

—OTTO C. FRANCKE
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In endodontia of to-day capping of the living pulp is not a common treatment. Pronounced favorable circumstances are necessary to maintain the vitality of a pulp purposely or unintentionally exposed. During the latter part of the nineteenth century, however, this kind of treatment generated a great deal of interest in odontological circles.

EARLY PRACTICE OF PULP-CAPPING

It is indisputable that the first who claimed to have performed such an intricate operation is the German Philip Pfaff. In his book Abhandlung von den Zähnen (1756) he simply says that when a tooth is aching and the pulp is exposed, he cuts out a piece of gold or lead of such a shape that it fits into the opening. The interesting thing is that Pfaff gave the piece of metal "... die Figur einer halben Hülse von einer Erbse, deren unterster Theil eine Vertiefung haben soll." ("... the shape of half a pea-pod, so that the lower surface should have a concavity.") In that way the metal would be prevented from contacting the living and therefore sensible pulp. The metal caps used in the future had the same design on the pulpal surface.

At the end of the eighteenth century the well-known German dentist Frederick Hirsch recommended the following procedure:

The tooth that provokes pain on percussion is the diseased tooth. It should be perforated at the neck and a red-hot probe pushed into the pulp several times. The cavity then is filled with lead and the tooth is cured.

In 1828 the German-American Leonard Koecker, having some years before left London to practice in Philadelphia, stated that he only slightly touched the exposed pulp with a glowing needle and covered it with a piece of lead. The cavity then was filled with gold. As a matter of curiosity it might be mentioned that Koecker used his patient as an assistant, having him hold a candle, thus providing the necessary light.

Jacob Calmann Linderer, Germany, in 1837, together with his son Joseph who was then still a dental student, published a manual in which it was recommended first to make the pulp insensible by means of essential, or narcotic oils and then to cover it with a filling
of wax or stopping. After a period of several days, a permanent filling was most cautiously to be put in its proper position.

Joseph Linderer in his book *Handbuch der Zahnheilkunde* in 1848 described how to protect the pulp, especially of molars, by means of a plano-convex gold plate, which in order not to encroach on the space left for the filling had to be quite thin. (Fig. 1)

![Fig. 1. Metal cap being conveyed to the site of a pulp exposure.](image)

It seems obvious that during those days there was an over-confidence in the ability of a piece of gold to produce a suitable barrier between the pulp cavity and the mouth.

A striking example is to be found in *The British Quarterly Journal of Dental Surgery* in 1843 — the very first British dental journal to appear. In the first issue there is an article by James Robinson called "A Treatise on Mechanical Dentistry." The author concludes his description of the making of a pivot crown by recommending that the operator place a gold-tin plate between the crown and the surface of the root, and thus, says Robinson, "... the fluids of the mouth may be wholly excluded.''

The American Jonathan Taft, sixteen years later in his manual *Operative Dentistry*, in 1858, introduced a new approach to the pulp, considerably different from what the literature had hitherto been able to offer. Taft was professor of Operative Dentistry in the Ohio College of Dental Surgery.

He defended a controversial opinion about the importance of the pulp against some of his fellow-dentists, who claimed that after the development and formation of the tooth, the pulp was no longer of any use and that it could be dispensed with without causing any damage. Others had gone so far as to declare that when the pulp was destroyed, the tooth was no longer of any value. Taft's way of looking at the matter has a teleological tough, but he stated that "... the pulp is valuable in the economy, or nature would dispensed with it." Another argument presented by Taft was that "... living dentine possesses more resistance to decay than the dead one." He believed that under certain circumstances an attempt might be made to keep a pulp alive in spite of its being exposed. To be considered was the condition of the patient, the extent of the damage, the length of time which had passed since it had occurred and, above all, the capacity of the pulp to produce what Taft
called a “bony deposit,” that is, secondary dentine. Even where a 
pulpitis partialis acuta existed, Taft considered it permissible for 
a skillful operator to try to perform an overcapping. For more 
serious inflammation of the pulp, Taft advised extirpation or de-
struction by arsenic.

Taft referred to the previous methods used to protect the ex-
posed pulp. He seemed in principle to have accepted the metal 
caps and he emphasized the importance of forming an arch over 
the point of exposure, and recommended a convex punch to be 
used in order to get the necessary concavity. He talked about the 
preparation of a little groove of sufficient depth to hold the cap 
and to prevent it from being displaced when the filling was intro-
duced. Taft seemed to prefer lead to gold since lead was a less 
perfect conductor of heat, and also was capable of being formed 
more easily.

Taft had noticed that the space between the pulp and the cap 
sometimes became filled with lymphatic liquid which in his opinion 
obstructed the formation of “bony deposit”. Irritation of the pulp 
by its contact with the sharp edge of the dentine at the orifice of 
the cavity he claimed to be one of the reasons for the death of 
The pulp. He therefore recommended the exposed pulp be covered 
by a few drops of collodium or gutta-percha dissolved in ether or 
chloroform. This dressing could be pencilled on the pulpal surface 
without producing any pressure, and irritation of the pulp could be 
reduced to a minimum. Just before the surface got sticky a gold 
inlay was placed covering the aperture, and resting upon the sur-
rounding sound, not decayed, dentine.

It must be remembered that the use of nitrous oxide after 
Horace Wells’ discovery did not become common until the middle 
of the eighteen sixties, and a capping procedure must have been 
quite painful for the patient.

The differential diagnosis between the various states of illness 
of the pulp had earlier been rather crude. Since ancient times one 
could distinguish between a living and a dead pulp, but the im-
portant difference between states of inflammation of the pulp were 
not very well known.

DEVELOPMENT OF DIAGNOSTIC CLASSIFICATIONS

Joseph Linderer, in 1851, limited himself to saying that tooth-
ache was quite difficult to cure, that it could be provoked or sub-
dued by cold water, that it appeared during day-time or in the night 
and so forth.

The German Adolph Witzel, whose name is particularly linked 
to the antiseptic treatment of the pulp, also dealt with capping. In 
a manual in 1879 he recommended the following procedure: after 
removal of decayed material, cold water was to be put into the 
cavity. If that caused acute, but transitory pain, the pulp was to 
be considered as not injured and capping justified. If, on the other 
hand, pain remained, the diagnosis of pulpitis partialis was to be 
made. And if the pain was severe and continuous then Witzel
claimed that *pulpitis totalis* had ensued. In the two latter cases overcapping would be considered useless.

Otto Walkhoff of Germany, in 1888 presented his so called "Thermometrie." Although at that time he was only 28 years old, he was to become one of the leading men in European dentistry. The very fact that in his book *Lehrbuch der konservierenden Zahnheilkunde* in 1921 — five years before his death — he still refers to his method proves its value.

The basis of Walkhoff’s method is the fact that the temperature of the normal pulp is 37° Centigrade (98° Fahrenheit.) His instruments were quite plain: a water syringe and a bath thermometer calibrated from 10 to 50 degrees Centigrade (13 to 122 degrees Fahrenheit.) He considered it to be possible, by means of the patient’s reaction to diagnose the condition of the pulp, and advised the use of ten drops of water as a suitable amount for the investigation.

His finds were as follows: in pulp gangrene a water temperature of 41°-43° C. (106°-109° F.) produced a strong pain while the normal pulp reacted only slightly up to 50° C. (122° F.). In *pulpitis totalis* severe pain was registered at 34° C. (93° F.). In *pulpitis partialis* water at 32°-34° C. (90°-93° F.) gave a momentary and at 32°-28° C. (90°-82° F.) a strong and prolonged pain. According to Walkhoff’s schedule normal pulp could be subjected to water as low as 15° C. (59° F.) with the patient reporting only a normal feeling of coolness. Later Walkhoff attached the thermometer directly to the water syringe.

**ANTISEPSIS IN THE TREATMENT OF EXPOSED PULPS**

In 1867 Leber and Rottenstein proved the existence of a parasite, called *Leptothrix buccalis*, both on the surface of the tooth and in the decayed cavity. The parasite could be stained violet by iodine, and was also to be found in the dentinal tubuli. From that time on it was stated that decay could cause gangrene of the pulp. At the same time, in 1867, Joseph Lister published his experiences with the use of carbolic acid in surgery and it seems quite natural that attempts were made to transfer Lister’s antiseptic treatment of wounds into pulp treatment. The investigations of Louis Pasteur concerning living microbes in the air were also well known. In addition the damage to the periapical tissues caused by arsenic pastes — through the apex or through leakage from imperfect temporary closures — also stimulated efforts to keep alive an exposed pulp.

The new road chosen resulted in the adding to the capping covers of antiseptic substances of different kinds. Examples are Underwood’s tannin, Atkinson’s zincoxy cement and Fletcher’s basic zinc sulphate. Julius Parreidt, for some years editor of *Deutsche Monatsschrift fur Zahnheilkunde*, recommended in 1879 his composition called “Carbolgypse”. It was a 5% water solution of carbolic acid mixed with plaster. Parreidt removed the decayed dentine with sharp excavators dipped into 5% carbolic acid. When the pulp
was exposed he protected the opening with a cotton pledget im-
pregnated with the same antiseptic. In this precautionary measure
one can trace the influence of both Lister and Pasteur. In the mean-
time the antiseptic plaster was mixed and applied, without pro-
ducing any pressure on the pulp tissue.

Walkhoff, too, attached great importance to the retention of a
vital pulp, and listed the following requirements for a good capping
substance: it should not irritate the pulp; it should be antiseptic
and if possible also disinfecting; it should be a poor thermal con-
ductor, have a good adhesion to surrounding tissues and finally be
easy to apply. Walkhoff, who during the years had tried out many
of the remedies available on the market, finally adopted iodoform
paste as being the most appropriate one. Witzel was of the same
opinion, but he had to deny himself its use, because he couldn't
stand the iodoform smell.

AN ATTEMPT AT PROVIDING A PROGNOSIS

Witzel's manual which was reissued in 1886 in a revised and
enlarged edition also emphasized the importance of correct diagnosis
as being closely connected with prognosis. Not only the extent
of the pulpal lesion but also its localization had to be taken into
consideration. If only a pulp horn had become exposed, the prog-
nosis was far better than in those cases where damage occurred
in the coronal part of the pulp near the root system. According to
Witzel, prognosis was extremely bad if the operator had happened
to enter the pulp cavity while preparing the starting point for a
cohesive gold filling. A strong hemorrhage combined with pain
then resulted in a contraindication for overcapping.

W. D. Miller in his textbook Lehrbuch der conservierenden
Zahnheilkunde in 1896 is quite brief concerning pulp capping. Miller
stated that even the most superficial inflammation of the pulp
might make the prognosis for a capping procedure so uncertain as
to recommend sacrificing the pulp. Miller preferred Flatscher's
"Artificial Dentine," that is, zincoxy sulphate.

PULP CAPPING IN GREAT BRITAIN

In 1883, Dr. W. E. Harding read a paper at the annual meeting
of the Midland Branch of the British Dental Association in Shrews-
bury, called "A few practical observations on the Treatment of
the Pulp". By way of introduction he said that in "... the good
old days, the treatment of an exposed pulp was the extraction of
the tooth, but that mode of procedure has long been exploded by
the progress of Dental Science."

Harding then went on to say that the first question the dental
surgeon of to-day has to ask is not "Can I save the root?", but
"Can I save the pulp?" and he continued as follows:

We all know how easily and successfully cases of accidental exposure
can be treated. My usual plan is to swab out the cavity with carbolic
acid, which will arrest the bleeding, and then to place over the point
of exposure a small piece of blotting paper coated with carbolized resin, and finally cover this with a layer of Fletscher's artificial dentine. The reason these cases are so easily dealt with is that the pulp is quite healthy, and if covered at once, so as to exclude the germs of micro-organisms, it will heal by first intention. But in those cases where the exposure results from caries the difficulties are vastly greater, as the pulp is almost sure to be inflamed.

At about the same time celluloid caps were brought out by a leading British dental supplier to take the place of the metal pulp caps. The non-conductive nature of the plastic was held to be superior, and the transparency of the caps was said to aid the operator in placing the cap correctly over the exposure. (Fig. 2)

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**PULP CAPping IN SWEDEN**

John Wessler is renowned as the man who put together the Apollonia Collection, now deposited in the library of the Stockholm Dental School. Wessler displayed a keen interest in history of dentistry, in particular Swedish history, but he was also a distinguished practitioner. During the annual meeting of the Swedish Dental Society in 1894 he presented his contribution to the great variety of capping remedies, 'Pulpol.'

Wessler had been experimenting with several kinds of metal caps and had found them to be extremely trying and time-wasting. In 1881 he had already started to look for a cement that could replace the caps, one which was not irritating to the pulp and at the same time having an antiseptic effect. The essential constituent in his 'Pulpol' is oil of cloves, containing 80 to 90% of eugenol, the powder being zinc oxide. Brought together, these two elements formed a soft paste that could easily be put upon the pulp tissue. Wessler soon found out that the eugenol also had a pain-relieving effect on the pulp. To Wessler's great satisfaction, Walkhoff favored 'Pulpol' with his acknowledgement.
Green Vardiman Black in his *Special Dental Pathology* in 1915 presented a list of indications and contraindications for capping. The indications for pulp capping he listed as:
1) During the childhood period, previous to the time of complete formation of root, while the apical foramen is large, whether the exposure is by caries or by excavating and
2) Slight exposures with hand excavators in fully formed teeth.

The contraindications he listed as:
1) Never to be performed in fully formed teeth if exposed by caries, and
2) Never if the exposure is made by a bur.

Black, after having historically reviewed the subject, also said:

Other writings as extraordinary as this may be found, scattered through our literature. Happily they have had very small influence in inducing men to accept and practice such procedures, and I think it is now generally understood by the dental profession that such treatments are pernicious.

I started this paper by saying that capping of the pulp is a rare event. I recently asked the professor of endodontia at one of the Dental Schools in Sweden whether his students were taught pulp capping and he replied in the negative. However, he added that he was looking forward to the day when biochemical research had formed a satisfactory foundation for such treatment, and that then he would be only too glad to add this treatment to the curriculum of his department.

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Oddments in Dental History

—MALVIN E. RING, D.D.S., M.S.

The nineteenth century was marked by the continuing strife between different groups in the dental profession over which materials to use in restorations and which to discard, or even more drastically, to forbid. The "Amalgam War" in the 1840's, which sought unsuccessfully to ban the use of this plastic material as deleterious to the patient's health, led to the demise of the first national dental organization. Later years saw the conflict wax hot between the supporters of gold foil and the softer gold restorative materials. Gutta-percha had its adherents who saw in this the answer to the dentist's yearning for a simple material to use, urging those who still used metals to give up those "outmoded" fillings in favor of this new panacea, and Hill's Stopping was proclaimed throughout the land as the ultimate in filling material. In the 1880's a group of dentists began preaching what they styled as the "New Departure" whose creed proclaimed that that material was best to use which best answered the needs of the particular case and the particular patient, and which worked best in the hands of that particular dentist.

All of this "sturm und drang" was very cleverly summed up by a Dr. C. W. Munson in the Nashville, Tennessee Dental Headlight for January, 1882:

In those days came the dentist into the land, and possessed the earth. Verily, he came very numerously, and put out his shingle in many villages and cities of the land, and the people fled before his face and were sore afraid lest he should destroy them.

But he saith, verily, I come not to destroy, but to save. Open thou thy mouth that may bless thee, that may pour out my blessings on thy molars; and more especially thy incisors, and lo, the people heard his voice and ceased to flee away, and they came near and were made glad, because of the things the dentist could do. Behold, he saith, I would teach thy children and thy children's children that the days of man are few and full of trouble, because of the evil spirit that goeth about to see whose teeth he may devour.

Behold, I come to cast out the evil spirit of pain and suffering, disease and death, to heal the sick (teeth), bind up the broken (teeth), and make glad the sons of men.

And the people rejoiced and were glad. Then came after them a great host of the dentists of Baal, and said, lo, we are with you always. Thou has three decayed teeth, and one aches. Behold we will pull them all, and make for thee some teeth that will not ache, and thou shalt be happy. And all this we will do for ten pieces of silver, yea, verily, sometimes for five pieces.

Then was war in the camp of the dental hosts, tooth to tooth, and the strife waxeth hot even to this day, and the dentists of Baal won a great victory, for there fell in those days a great multitude (of sound teeth), more than the sands of the sea in number.

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And lo, the dentists of Israel shall be called to account, for they departed from the teachings of their fathers, and worshipped golden idols, and the dentists of Baal got the best of them (on cheap teeth), and the people were sore afflicted.

And war broke out in the camp of Israel and the ten tribes departed and worshipped the (hard) golden calf, and the other two tribes remained with the (soft) gold idols of other days.

And, behold, while these things were so there came a new prophet into the land, and his name was Plastic, and he was known as the prophet of the new departure. And all Israel was wrought up to a very high pitch, and the Pharisees and Sadducees sought to kill him, for he came to save them that are lost, and did not teach the traditions of the elders. But the sick (teeth) flocked unto him and were healed, and the dead (almost) raised to life, and the people blessed him.

Israel would not accept him, and Baal did not care a fig for him and his enemies sought to destroy him. And the people questioned, is he a false prophet? And the priests of Israel said yea, verily, he is teaching false doctrines and should be put to death, (professionally). Behold, the strife waxeth warm between Baal and Israel and the New Departure, and no man can tell what the end shall be.
In Memoriam:
Dr. Major B. Varnado

On July 12, 1971 the American Academy of the History of Dentistry suffered the loss of one of its illustrious members. Dr. Major B. Varnado died in New Orleans at the age of 89. He had fallen on July 9th and broken his hip, and complications, coupled with his advanced age resulted in his death three days later.

Dr. Varnado had the good fortune to have been associated in practice with the great Dr. C. Edmund Kells, the pioneer in the field of dental radiography. Having been graduated from Vanderbilt University School of Dentistry in 1904, Dr. Varnado returned to his home town of Osyka, Mississippi to establish his dental practice. In 1918 he moved to New Orleans to begin his association with Dr. Kells, a relationship which lasted for 10 years until Kells' sad death in 1928. Dr. Varnado continued the practice for the next 43 years, until his recent death. All told, he practiced dentistry continuously for 67 years!

Dr. Varnado garnered many honors in his lifetime: Fellow of the International College of Dentists; President of the Mississippi Dental Association; President of the New Orleans Dental Association; Life-member of the American Dental Association.

However, his close association with Dr. Kells put him in the unique position of securing to posterity most of the equipment designed and used by Kells. Much of it he found stashed away, neglected, in a store-room under Tulane University stadium, and this he arranged to send to the Smithsonian Institution. It is this material which forms the basis of the Kells' exhibition in the Museum of History and Technology of the Smithsonian.

Dr. Varnado's last public appearance was as the guest speaker before the Eastern Dental Radiology Workshop sponsored by the Academy of Dental Radiology at the Monteleone Hotel in New Orleans on June 25, 1971. At that meeting he read the paper "The Life and Works of Dr. C. Edmund Kells" which is published for the first time in this issue of the Bulletin. In it the love and affection which Varnado had for his illustrious associate shine through, and give a unique quality to the recounting of the life of one long to be honored by international dentistry.

—The Editor
Dr. C. Edmund Kells:  
As I Remember Him

—MAJOR B. VARNADO, D.D.S.  
New Orleans, Louisiana

Charles Edmund Kells, Jr., D.D.S., F.A.C.D., L.L.D., son of Charles Edmund Kells, Sr., and Achsah Cook Kells, both of prominent old Colonial New England lines of English origin, was born at the Kells home on Canal Street in New Orleans, Louisiana, October 21, 1856. Seventy-two years later, May 7, 1928, his death occurred in his office not a stone's throw from his birthplace. He had but two other offices during his fifty years of practice and they too were but the proverbial stone's throw away. Thus, Dr. Kells lived much of his life and practiced all of his life within the radius of half a city block.

It was at the Kells home that the boy, Eddie, spent his childhood, and in front of the home on Canal Street was his principal playground. This locality is now the very heart of the retail and commercial center of a city of some 900,000 people; certainly not a children's playground any longer.

But, as related by Dr. Kells, it presented an alluring picture during his childhood. There were not the madding crowds, honking automobiles and busses of the present time. All was quiet and serene. There were numerous shade trees and inviting benches in their shade. It was here that Eddie-Kells took his pet white rabbit to graze on the luscious green grass and clover which withal made the street more an attractive park than the hustling and bustling center of the metropolitan city of today.

It was during this period and with this environment that Dr. Kells, Sr., Eddie's father, lived and practiced his profession. The tempo of the period must have been delightful! There was not in the New Orleans of that day the mad pace such as drives the present generation — at least, not in the New Orleans of a hundred and twenty-five years ago. Although Dr. Kells, Sr., enjoyed a heavy and lucrative practice — he was one of the most eminent dentists of his time — there seems to have been time for some of the joys of life even during office hours. Perhaps oxychloride of zinc cement played a part — there was no quick setting oxyphosphate cement yet — and instead of waiting around for half an hour for slow setting oxychloride fillings to dry, Dr. Kells, Sr., was likely to slip away to a wedding or other event at Christ Church Cathedral just across the street from the office. Old-time patients of his tell that if there were no wedding or other event he might slip
out to have a little drink. But what of that? It was the custom at
that time in New Orleans among both professional and business
men. No wonder the people of that day never heard of hypertension,
ulcers and ruptured blood vessels. What a wonderful place and
period in which to have lived!

But nothing like this for the junior Dr. Kells. He was a second-
splitter who preached, in season and out, the value of time, system
and punctuality. There was no lost time in his life.

Dr. Kells, Jr., received his early education in the public schools
of New Orleans but because of ill health he was sent to Keene,
New Hampshire, for his high school education. It was not his good
fortune to have received a formal college education. The Civil
War, which left the South prostrate and poverty-stricken, might have
been the reason. The Civil War ended when he was nine years old
and by the time he was in his teens the carpetbag despots were rul-
ing New Orleans and the entire Southland.

It is noted that young Kells’ health failed early in his life. He
was never a strong man and was slight of build, never weighing
much over a hundred pounds. He was always rejected by insurance
companies as too poor a risk. But he constantly boasted that he
would bury all of those who refused him life insurance, and he
did. He lived longer than the proverbial three score years and ten,
which is accepted generally as the allotted time for man’s sojourn
upon this earth. How prodigious were his accomplishments in his
allotment of time, while life expectancy experts were predicting
his doom!

All of the 72 years of Dr. Kells’ life were spent in New Orleans
except when he was away at school and college and during the
Civil War, when, as a child, he and his sister, (he had but one sis-
ter and no brothers) were taken by their mother to the plantation
home of friends when General Ben Butler and his Yankee soldiers
were marching to occupy New Orleans. “Of course”, he used to
say, “they knew that there was no telling what those ferocious
damn Yankees might do”. In all of the writer’s intimate association
with Dr. Kells, he was never heard to use a single word of prof-
anity, so chaste was he in his speech, no matter how great the
provocation. But so terrible were the times when New Orleans was
occupied by Ben Butler that no doubt he felt profanity was justi-
fied and “damn” was the vilest epithet which he could bring him-
self to use. Not only was he exemplary in his speech but in every
action of his life he was the perfect gentleman. Never could there
be recalled the slightest ungentlemanly act or even a single dis-
courteous word.

On graduation from the New York College of Dentistry in 1878,
Dr. Kells became associated in practice with his father, who had
also studied dentistry in New York, and had been apprenticed to
the Doctors Dodge, famous dentists in those days. But Dr. Kells,
Jr., had already had much experience in his father’s office before
entering dental college.
Dr. Kells, Sr., was said to have had no superior as a prosthodontist, or, mechanical dentist, as that branch of dentistry was called in that day. And in his practice was a large demand for gold dentures. Vulcanite was not yet available. From dental history it is learned, and Dr. Kells also tells, that an enormous amount of work and skill were involved in the construction of such restorations at that time. Dentistry's renowned Dr. Wm. H. Taggart, had not yet revolutionized dentistry by the introduction of his casting process. So there was much work for the young man in his father's laboratory. This work consisted in part in fusing twenty dollar gold pieces in a charcoal forge; (it is unlawful even to own a twenty dollar gold coin today) properly alloying it; casting it into ingots; rolling it into twenty gauge plate; making up 18, 20 and 22 karat solder; drawing round and triangular wire; soldering gum plate teeth to the gold dental plate; baking porcelain in continuous gum sets in a coke oven with its awful glare, and much other diverse laboratory work. This, of course, was before the advent of commercial dental laboratories that we have today — and it gives an idea of the preliminary, the pre-dental education of one of dentistry's most illustrious votaries.

During the 50 years of Dr. Kells' professional life he maintained an exclusive, lucrative and most extensive practice second to none in the entire South, numbering among his patients the city's and the country's leaders in the highest walks of life, both business and social. Only such an enviable practice could have been the good fortune of a man whose operative ability was not surpassed anywhere in the land. After these many years the writer still sees his beautiful gold foil restorations and other evidences of the master technician, which he was.

It was after Dr. Kells had lost his arm that the writer was in need of a filling that for certain reasons should be of gold foil. Several dental friends were appealed to but it was not possible to find anyone still doing foil work. On hearing this Dr. Kells remarked that "... it was sad that the art of gold foil was so nearly lost, and sadder still, that a poor one-armed dentist should have to make this filling but he'll do it," and he did! Foil, of all materials, inserted with one hand! Probably never such an operation under such a sad handicap.

While his life was so rich in unusual accomplishments within his profession, it was, in addition, so abundantly rich in remarkable accomplishments over and above his extensive professional activities, that one wonders whence the time to accomplish so much. It would seem that he could actually summon time to his aid on any occasion. However that may be, his varied accomplishments reveal multiple talents, any one of which would be enough to make his memory great.

That he did not confine his activities to dentistry alone is further evident when we glance at the long list of his numerous inventions, thirty of which were patented, which includes a thermostat, an electro-magnetic clutch and engine, an automobile jack, an auto-
matic window closer, a fire alarm and extinguisher, and particularly
the elevator starter and brake which we see in operation in every
building elevator throughout the world. His ability along various lines
of effort gives an idea of his versatility which hardly knew any
bounds. Truly his life was that of a genius.

Because he ventured so often into the new and untried he was
often called the torch bearer and the trailblazer. This accounts
for a long list of things which he was the first to do, but we can
barely mention a few of them here.

For instance, he was the first to use the diagnostic wire so
indispensable in endodontia; the first to transmit a dental radio-
graph by wireless; the first to use compressed air in dental opera-
tions; and most important, it was he who first brought central
station electricity into a dental office, having wired his office him-
self. One of his great firsts was his electric dental engine which he
himself constructed and operated by central station electricity. This
original electric dental engine is preserved in the Smithsonian In-
stitution in Washington, D.C., and its story is one of fascinating
interest in dental lore.

He was also the first dentist in the entire South with the cour-
age to employ a young lady in his office as assistant. Prior to this
only Negro boys were employed. His father, a gentleman of the
old South was aghast, dumbfounded by such a proposal. A woman
in the Kells office! The refined and cultured people of the city of
New Orleans would probably hesitate ever to enter the Kells office
again. Nevertheless, the junior member of the firm employed a
young lady as assistant and in time there were five young ladies
in the Kells office.

Another innovation, not dental however, was when he was the
first in New Orleans to use gas in his home for cooking but this
venture served to hale him into court. The New Orleans Gas Light-
ing company maintained that gas was for lighting and not for cook-
ing, whereas Dr. Kells insisted that gas was for any purpose for
which gas could be utilized. The case went to the Louisiana Courts
for final decision. It is needless to say who won the case.

In further consideration of his firsts it is noted that he was one
of the first exodontists and developed the Kells operation for the
removal of third molar impactions. Although he possessed great
skill in this field and in the field of extractions generally, he never-
theless did much in pleading for the conservation of the teeth, par-
ticularly pulpless teeth. He made an earnest plea for conservation in
an address before the American Dental Association at its convention
in New Orleans in 1919, when at that time it had become the
general practice to condemn pulpless teeth regardless of their con-
dition. His address was entitled "The Xray, the Crime of the Age"
and the ruthless extraction of teeth was the pivotal point of that
address.

"It is the duty," he said so eloquently, "of each and every
one of us to be satisfied with the limitations placed upon him by
nature and to make the very best of whatever talents he may pos-
sess, be they few or many; but right here and now I can but regret that nature had not been more generous and has not favored me with the oratorical gifts of an Ottolengui, the convincing powers of a Black, or the possibilities of accomplishment of a Hinman, for thus would I be such an inspirational factor in this gathering that I would awaken your souls to the realization of the harmful effects of this wholesale and indiscriminate mutilation of the human mouth."

In this crusade Dr. Kells stood almost alone for there were few in the dental profession and perhaps still fewer in the medical profession who raised a voice in defense of the pulpless tooth.

Would that Dr. Kells could know how completely right he was; could know that at last every effort is made to restore these pulpless teeth for which he pleaded so earnestly; could know that the colleges all over this land are teaching root-canal therapy; could know that it is no longer the practice to extract every pulpless tooth only because it is pulpless.

While it is not possible at this time even to refer to all of Dr. Kells' accomplishments, affiliations and general interests, a word about his honors which were many, should be appropriate. Numbers of testimonial dinners and complimentary banquets were tendered him. The most beautiful perhaps was the Testimonial Dinner in his honor given by the Odontographic Society of Chicago at the LaSalle Hotel. Another beautiful occasion was the presentation of the Jarvie Medal, by the New York Dental Society. However, the most outstanding was when in his own city he was given highest honors when Tulane University conferred upon him the degree of Doctor of Laws, and dedicated in his honor the Kells Memorial Library and Museum now in Washington, D.C. On this occasion there was such an outpouring of the city's highest ranking citizens, both men and women, from social, commercial and educational circles, that Tulane University Auditorium could not accommodate the large attendance. An event of this occasion was the eloquent tribute to Dr. Kells by the distinguished Dr. Rudolph Matas. This address was truly a masterpiece and although quite lengthy it was published unabridged in the New Orleans papers. However, Dr. Kells was of such a retiring disposition and so completely devoid of ostentation that no doubt he would have preferred little mention of his accomplishments.

In any event time must be taken to speak, though briefly, of Dr. Kells' bibliography which is very extensive. His contributions to dental journals, numbering in the hundreds, were published in a number of states and in England, Canada, New Zealand, Australia and other English speaking countries. He was the author of two voluminous books: The Dentist's Own Book and Three Score Years and Nine. Another book, Conservation of Natural Teeth, consisting of 293 pages and 118 illustrations, was finished at the time of his death but because of his death it was not published.

His affiliations consisted of membership in the old Southern Dental Association of which he was, perhaps, a charter member, the American, Louisiana, New Orleans Associations, the Academy of
Sciences and other dental and scientific societies. He was a charter member of the American College of Dentists and Delta Sigma Delta.

One phase of Dr. Kells' career to which thought must be given, is that phase concerning the X-ray which Dr. Kells introduced into dentistry immediately after its discovery. He at once cabled to Europe for equipment and soon the attic of his home was a veritable maze of wires and paraphernalia — the first dental X-ray laboratory in history — and here was made the first dental radiograph. So indispensable in dentistry is the X-ray that since the first dental radiograph literally millions of these pictures have been made throughout the world.

In Charlotte, North Carolina, in July, 1896, Dr. Kells gave the first dental X-ray clinic ever presented, only eight months after the X-ray was discovered. He said that it was next to impossible, however, to satisfactorily conduct his clinic because of the great number of people from the whole countryside who crowded in to see the wonder of the age, the machine which could look into and through you.

Dr. Kells reported also that his X-ray interfered with a ball in the hotel because everybody was eager to see that wonderful, but fearsome, machine; fearsome, because some of the ladies thought that their bodies would be exposed to public gaze when in the presence of this mysterious machine. Those of the Victorian era of which I am one, can readily understand the apprehension of these ladies, for ladies at that time dared not expose so much as an ankle! Now times have changed! At our country clubs, bathing beaches, hotel lobbies and practically everywhere, the X-ray could not possibly reveal today more of charming and bewitching feminine anatomy than fashion now reveals.

But it is sad to relate that Dr. Kells had to pay a costly tribute, as did every early Roentgenologist throughout the world, for his initiation into the mysteries of the X-ray. Only a few years after its discovery the effects of its destructive action appeared on his hand. Years followed in which his suffering was intense. Skin grafts, amputations, the hand gone, then the entire arm and shoulder; forty-two operations in all. Finally the heart and lungs were affected. This was the end and he knew it. Yet, even those nearest to him did not realize the depth of his agony.

Many of his best essays and two voluminous books were written during this period of great suffering when the sword of Damocles was hanging over his head, and yet throughout these extensive writings is the note of cheerfulness, optimism, kindliness, and particularly his abounding good humor which could never be suppressed. It was during these dark days that his delightful pen portraits graced the pages of Oral Hygiene under the general headings of "Little Journeys to the Fountain Heads of Science" and "Fact and Fancies Down in Dixie". They were delightful and cheerful stories, always with a valuable lesson and a good moral. And it was during this period of affliction that he was writing into his books
one of his favorite quotations:

If the day seems kinder gloomy
And your chances kinder slim,
And the situation's puzzlin'
And the prospect awful grim,
And perplexities keep pressin'
Till all hope is nearly gone,
Just bristle up and grit your teeth
And keep on keepin' on.

In recalling his suicide some might think that he faltered after all, but did he? Who can say in their hearts that the last act of his life on earth was not the highest courage, the deepest consideration of others, especially of his dear wife, of whom he spoke so tenderly in New York when physicians there told him that there was no hope.

When the saddest tragedy in dental radiography finally came, Dr. C. N. Johnson, dentistry's grand old man, wrote: "We admired him for his brain power, his genius, his intuition, his versatility, with all of which he was abundantly blessed; but best of all was the heart of him — his great luminous and loyal heart that never beat an unworthy stroke in all of his 72 years."

Oral Hygiene paid his memory a beautiful and touching tribute under the heading "Eddie Kells is dead. His pen gathers rust."

But Dr. Trim Houston wrote to Oral Hygiene:

Do you not know that a pen of such fine gold cannot rust — that it is as pure and clean today, and ever will be, as when wielded by the most lovable personality?

"When did it ever display any trace of an alloy in any form or fashion; any evidence of insincerity, envy, malice, or ill will; any lack of courage to say what was thought to be right and proper?"

"When did it ever show any but the most devoted regard for the profession and for those of whom it is composed?"

"If ever a pen was tried in the fiery furnace, was not his tried during his last several years, when he must have lived, day and night, in constant dread and fear of that dark hour that did finally come?"

"No, the pen of C. Edmund Kells has not gathered rust; and it will never gather rust, but it will ever shine as a beacon to us weaker mortals, leading us on to higher, purer and more noble efforts, that our lives may not have been altogether in vain."

Upon his profession and upon a vast field of human contact, C. Edmund Kells left the indelible imprint of his rare personality.

"... the two or three high souls, like those far stars that come in sight once in a century."
The Contributions of
Dr. C. Edmund Kells: A Bibliography

—OLAF E. LANGLAND, D.D.S., M.S.
A. PETER FORTIER, B.S., D.D.S.
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Dr. Kells’ contributions to scientific dental literature were enor-mous.
His publications included 200 articles on every phase of dentistry. He was truly a super dentist. Dr. Kells was author of three textbooks, The Dentist’s Own Book and Three Score Years and Nine. He also authored three chapters in Johnson’s Textbook of Operative Dentistry, a standard textbook at one time used by every dentist. His third and last textbook, Conservation of Natural Teeth, was never published. The manuscript for this book was completed the day he died.

Kells never hesitated to express his opinions on any subject related to dentistry, and he was an able debator in the defense of his convictions. However, in defending his belief, he had an open-mind and a sincerity and loyalty to the profession of dentistry. His simple, colloquial style of writing filled with human emotions strongly appealed to the practicing dentist. Kells’ writings were conservative in nature. Most often, however, he was ahead of his times. Two of his articles were classics, and should be read by every practicing dentist.

He was also an inventor. He completed countless inventions, and patented more than 30 of them. His inventions included an electric thermostat, a fire-extinguisher, an alarm clock, an electromagnetic clock, an automobile starter, a sanitary faucet, and a drinking water fountain. His most famous invention was a suction apparatus for the aspiration of fluids and the irrigation of cavities in the human body in surgical operations. It replaced the old technic of mopping the surgical wound with sponges. Dr. Rudolph Matas of New Orleans, one of the world’s most distinguished surgeons, and a contemporary of Kells said, “The suction apparatus is sufficient to immortalize the name of Dr. C. Edmund Kells. It has won the eternal gratitude of every working surgeon in the world.”

Kells wrote his last article in a New York hospital shortly before his death. He was dying of cancer caused by his early experimentation with x-radiation. This article gives the reader a clear insight into Kells’ philosophy of life during that period of his life. He stated, “Do I murmur at the rough deal the fates have dealt me? No, I can’t do that. When I think of the thousands of suf-
ferring patients who are benefited every day by the use of x-ray, I cannot complain. That a few should suffer for the benefits of the millions, is a law of nature. As now the clock in the steeple, not afar, strikes two, I will close my dear little Red Book, and with the faces of all dear friends fading away, I'll soon be in slumberland. Good night, dear boys, good night."

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1881 Dental chair crank
1884 Bottle stopper
1885 Electric bell
Electric thermostat
1887 Fire extinguisher and alarm
1890 Electric-magnetic clutch
1891 Electric-magnetic engine
1893 Electric pole changer
1899 Electric signalling apparatus
1912 Automobile jack
Lubricators
Sanitary faucets
Sanitary faucets
Sanitary faucets
Drinking fountains
1914 Automobile engine starter
Syringes
Methods of surgically cleansing wounds
Apparatus for surgically cleansing wounds
Apparatus for surgically cleansing wounds
Trocar
1916 Surgical cleansing apparatus
Surgical tips
1917 Air compressor
1921 Water still
Water still
1922 Water still
Water still
Dental appliance

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Tooth Mutilations — Old and New

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—HOWARD ROSOV, B.A., D.D.S.
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The student of anthropology is presented with this paradox: though many of the routine operations of dental surgery have been practiced sometime or somewhere in the world by primitive communities, they are commonly carried out, not for therapeutic purposes, but for reasons of ritual or cosmetic considerations.¹

In the human desire to satisfy personal vanity, man has resorted to various fashions of primitive self-disfigurement. His love for facial decorations was expressed by the manner in which he painted and stained his teeth or mutilated them. The most common forms of mutilation were the filing of the incisal border of the teeth or the removal of the incisal angle to represent some characteristic form of deity, or the insertion of foreign substances into artificially-created cavities.

Data indicate that these rituals revert as far back as the last ice age. They were practiced by the triglodyte Natufians of Mount Carmel who have been dated early in the Mesolithic period, and by some of the late Paleolithic Capsians of North Africa.

MUTILATIONS AMONG PRIMITIVE PEOPLES

In reviewing the records made by the various observers who have come in contact with natives in different parts of the world and among whom these customs are prevalent, we conjecture on the reasons for these practices. They include initiation ceremonies, tribal identification, ornamentation, mourning rites and some vague notions about the future welfare of the individual or the safety of his fellows.

Mutilation, as an important part of initiation into manhood, appeared to be centered in Australia. At the death of a chief or king in Hawaii, it was customary for an individual to have one or more teeth knocked out as a sign of mourning and grief. This custom was practiced by both men and women, more often, however, by men. In localized districts of China, before a daughter was given in marriage, the custom was to knock out two of her teeth with the thought of preventing damage to the husband's family.

The Niam-Niams, cannibals of Central Africa, pointed their teeth in an effort to increase their efficiency as natural weapons. With these pointed teeth they could more effectively pierce the flesh of their enemies in a fight.² Other native tribes considered it a mark
of beauty to have their teeth resemble those of certain animals. The warriors of Kroe, Benkulen (in Sumatra), desired to emulate the sharp teeth of the mouse. The Sibowans of Northern Borneo made them as sharp as the teeth of the shark. The Indians of Yucatan filed their teeth to resemble those of the swordfish. The Central African Wawira, among whom only the men deformed their teeth, pointed them exclusively for esthetic reasons. The Monganga women pointed their teeth so that when they laughed they resembled a beast of prey. To the Bawango-Mino of Central Africa, the pointing of teeth was a tribal distinction.

The Hausa-speaking Ibo, Munchi and Yoruba tribes also practiced mutilation of the teeth. Some Yorubas and Hausas had the central incisors extracted as tribal markings, but usually only the mesial corners of the upper central incisor teeth and lateral incisors were removed.

In certain parts of the world, the custom has gradually assumed a religious significance, and it is very characteristic that their idols, too, are represented with pointed teeth. Thus, the idol of Nias, a Dutch island west of Sumatra, has teeth of a triangular shape. The Bali of the hinterlands of Kameven have masks worn by the men during dances and mourning ceremonies, whose teeth are filed to points, in the same fashion as those of the warriors themselves.

MUTILATION PRACTICES IN THE SOUTHERN HEMISPHERE

In the southern hemisphere, we find these mutilations in almost every country from Argentina to Venezuela. From Costa Rica, the custom spread north through Central America into Mexico to the region occupied by the Zapotecs, Mayas, Huactecs, Totoancs and Mexicans.

There are still some Aztecs of pure blood who live in isolation and practice the old custom of dental deformation by pointing their teeth.

Daniel F. Rubin de la Borbolla has classified twenty-four known types of tooth mutilations found in Mexican explorations up to the present time. He conjectures that this work was performed on the living because, in many instances, he found traces of bone infection of the alveolar process as a result of mutilation.

Fig. 1. Incisal Tooth Mutilations (According to de la Borbolla)
The Guayme of Panama not only extracted their teeth but also filed them to sharp points. This practice was also carried on by Indians of Brazil and Peru.

The classical geographical location of dental mutilation, however, is the African continent where the broadest distribution is that section outlined by the Senegal and Niger Rivers and the coast. Here, the men of the Kader tribe submitted to having their teeth pointed immediately after their wedding.

The wounding, maiming and disfigurement of the body was almost a general practice among uncivilized peoples and was pursued by many entire races. These practices were classified as "Ethnic Mutilations", with their great value being in their sociologic and ethnologic relationship.

The general consensus of opinion indicates that dental mutilation practices, as such, were not in vogue among North American Indians. The rationale for this being that their concept of spirits was different. To them, spirits were personal, spiritual and had life-giving powers, and were a product of the intense and integral part of the Indians' nature.

BLACKENING OF THE TEETH

Another form of decorating the teeth was by coloring them, with black being the favorite color. Some Japanese have been reported to blacken their teeth as a symbol of the marital state. The women mutilated their teeth before the wedding to look less attractive to other men and to keep their husbands from being jealous.

Many of the Australian Papuans, as well as most of the people of the islands of New Britain, practiced the custom of blackening their teeth. Along the coast of German Guinea, the natives used a mixture of dark earth and the juice of the root of a nut tree to give their teeth a black, shiny appearance.

On the Asiatic Continent, the habit of blackening the teeth was practiced among the Anamese, the women of Burma and, occasionally, among the Tonkinese and Siamese.

INLAY MUTILATIONS

Inlay-type mutilations showed marked degrees of religious belief as they depicted god-form relationships in their carvings. This widespread custom of tooth decoration was intriguing, considering the difficulties encountered in its construction. Gold inlays were found in excavations in the province of Esmeraldas in North Ecuador; however, most inlays found were composed of small discs of hematite or iron pyrites, turquoise, jade, jadeite, rock crystal or Mother of Pearl. (Fig. 2)

Documentary evidence shows that the Filipinos decorated their teeth until recently.
KNOCKING OUT OF TEETH

The knocking out of teeth, although very painful and the crudest form of dental mutilation, is one of the most common types and is frequently encountered in mutilative customs. It was carried out by Africans and by Australian aborigines as a means of self-decor-ation, while the eastern Polynesians performed the operation as a sign of mourning. It was also practiced by the Asiatic Malays in the Indo-Chinese continent and was common among several tribes of the American Indians.

The natives of the Hebrides had the strange fashion of knocking out the upper front teeth of engaged or married women. The presence of the custom in Australia was found primarily as a puberty rite and had also been reported from Tasmania. This may prove that the custom is one of great antiquity and was in use by the original Australians and not a product of the later invasions.

In Africa, twenty-one tribes, principally in Northeast and Central Africa, practiced these customs. The fact that tooth-knocking out customs are reported on the Pacific coast may also support the theory of an Asiatic or Indonesian origin.

In European countries and among the Semitic nations, teeth were removed for other than medical purposes. It was used as a form of punishment and a means of escaping from military service. Extraction of teeth as a form of punishment has been recorded from the days of the Babylonians and Hebrews, the Egyptians, Hindus, as well as from medieval Germany and England.

Among the pre-Christian Egyptians, the extraction of teeth was considered one of the most disgraceful and degrading forms of punishment.
The Mongoloid nations practiced tooth-knocking-out as a marital and mourning custom. In some instances, the husband would knock out the wife's incisor teeth on their wedding night. Among the Asiatic Malayans, the habit was more common among the women than the men.

Modern day society has its own form of tooth mutilations. This is exemplified in a report of a boy who expressed his hostility toward society by self-inflicted oral mutilation; by intermittent finger pressure he extracted several teeth and fractured his mandible.⁸

MODERN MUTILATION AS A STATUS-SYMBOL

The use of the dentition as an ornament and as a symbol of social status still prevails today. There are many segments of the population that believe that a mark of affluence is the possession of gold upper anterior teeth. This symbolizes, to them, a social position that justifies this display of unesthetic forthrightness. In many Carribean Islands and the Bahamas as soon as native families can afford the dentistry, all female members of the family receive a gold crown with either an all gold facing or a precious gem set into the gold. In their culture, this is indicative of increased social status and a rise to affluence. This custom has many variations, with the four incisors spelling out words such as love, luck or their lover's name. Gems such as diamonds, emeralds and rubies, as well as carvings of hearts, stars and other patterns, have been seen in either crowned teeth or embedded in natural teeth. (Fig. 3)

Fig. 3. Star and Heart Forms Carved in Gold Crowns

In more industrialized areas, ethnic groups principally the Negroes, have preferred complete to open faced gold crowns and incisal inlays, highly polished. (Fig. 4) Dental laboratories, particularly in ghetto areas, have been requested to replace teeth in dentures with gold teeth.
Devitalization of healthy teeth has been resorted to in order to comply with the patient’s desire for unusual ornamental work.

Another form of commonly accepted modern mutilation is the jacket crown preparation. The enamel surfaces are reduced and the teeth tapered until there is ample space for replacement with porcelain, or acrylic, gold or combinations thereof. This procedure is frequently an elective one, for esthetic reasons, although it is usually mandated by extensive damage to the tooth as a result of caries or an accident.

How far has society departed from the tribal rituals of tooth preparation for color, esthetics, and ornamentation? In truth, the customs of our modern-day “jungle” are reminiscent of tribal societies, relived.

REFERENCES


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A Head from Ancient Corinth

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In ancient Greece Corinth held a preeminent position in the coroplastic industry. The excavations of the Corinthian workshops, the Potters' Quarter, during the early part of this century proved their fame well founded. A wealth of material was unearthed, including a great number of terracotta figurines. Over twenty-three hundred of them have been inventoried and an extensive report of the finds was published by Agnes Newhall Stillwell in 1952. In her opinion it is clear that vases and figurines were made in the same workshop. Many of the terracottas are representative of the finest work of the archaic period and considered without parallel elsewhere. There is a wide range of types represented. The significance of the figurines and the reasons for making certain types rather than others are, according to Stillwell, not always clear. They seem to have been made for the workman's own amusement or to exercise his ingenuity, rather than as objects for sale.

A large proportion of the figurines occurred in deposits which included vases and other material. Through these objects the archaeologists have been able to date the figurines with fair accuracy. They covered a period from the first half of the 7th century to about the third quarter of the 4th.

In the archeological museum at Corinth some examples of the figurines from the Potters' Quarter are on exhibition. The collection includes a grotesque head, representing a comic actor. On a recent visit to the museum one of my daughters noticed that the irregular features of this face resembled the general appearance of a person born with a cleft lip. On closer examination of the portrait this observation was easily confirmed (Figs. 1, 2) Stillwell gives a detailed description of this male head:

Fig. 1. Terracotta head of clown, 4th century B.C. Found at the Potters' Quarter in Ancient Corinth. Its smallness can be estimated from the author's hand.
Fig. 2. The two views of the head show the difference in nasal configuration between the normal and the cleft, left side.

"Brown clay. Head solid. Back handmade and too flat. Neck, small and tapering, forms projection which was doubtless inserted into socket in neck of figurine. Top of head slightly conical. Forehead marked by long wrinkles. Brows heavy, pulled up in points, and outlined with narrow grooves. Eyeball formed by raised boss with depression in center to indicate pupil. Line of strongly marked upper lid continued in wrinkle running from outer corner of eye to ear. Nose projects nearly at right angles to forehead and is bent to right. Wings of nose strongly marked and asymmetrical. Cheek bones and jaw muscles very prominent. Mouth wide open. Upper lip droops in center, Deep wrinkles from corners of nose to mouth. Ears rendered by large shallow depressions with projecting rims.

This is by far the finest grotesque figurine from the Potters' Quarter, excelled only by the mould No. 26, which represents a distinctly higher order of caricature. Of particular effectiveness is the breadth of the modelling and the use of large, simple forms with every non-essential detail omitted. In a general way we may connect the head with the actor moulds from Terracotta Factory deposits of about the third quarter of the 4th century. These also show the round eyes with wrinkles at the outer corners, the nose which makes a sharp angle with the forehead and which is bent to one side, the furrowed cheeks, and the wide, open mouth, but the breadth of conception and the skillful modelling set this head above most actor types."

OBSERVATIONS AND MEDICAL CONSIDERATIONS

In this description the observations on the shape of the nose would certainly have been associated with a cleft lip malformation,
had Stillwell been familiar with this congenital facial deformity. The sculptor of this head has in fact in spite of small dimensions been able to reproduce the characteristics of the nasal asymmetry in a complete unilateral cleft of the lip with an accuracy that is truly amazing. On a larger scale it would be equal to the cast of such a patient (Fig. 3).

Fig. 3. A man aged 55 years, born with a complete cleft of the lip on the right side. Repair was carried out in early childhood, apparently with considerable sacrifice of lip tissue but without interference with the nose. The persistent nasal deformity shows a striking similarity with the sculptured head from ancient Corinth.

The entire nose is deviated to the right, away from the side of the cleft. The two cartilages forming the tip of the nose are separated, which is indicated by a shallow furrow. On the affected side the nasal tip is flat and due to displacement of the lower nasal cartilage, the alar rim is drooping anteriorly. The abnormal attachment of the alar base, as well as buckling and outward rotation of the lower cartilage is also well demonstrated.

The configuration of the lip does not make the presence of an abnormality as obvious as the appearance of the nose. On closer examination of the area, particularly in a light which casts a shadow from the right, it is perfectly evident that the sculptor has moulded the classical features of a complete single cleft on the left side of the lip. The medial lip segment carries a philtrum and a well developed center portion of a Cupid's bow. It may be mentioned that this constant finding in the cleft lip deformity was overlooked by surgeons in their numerous designs for repair until late in our century. It is worthy of note that contemporary Greek sculptors rather accentuated the median lobule on the lower border of the upper lip. This characteristic is also seen in marble heads at the museum in Corinth. The lateral segment appears small because it is retracted towards the corner of the mouth in a clownish smile. The perfect reproduction of the anatomy justifies the conclusion that the malformation has remained unchanged since birth. Secondary deformity from scarring or tissue loss due to unsuccessful attempts at surgical repair would certainly not have escaped detection by the observant artist.

Since the actor is posed smiling and with his mouth open the cleft of the lip is presented at maximum width, exposing the alveolar processes and the anterior part of the palate quite extensively. Apparently the cleft did not affect the maxilla to any severe
degree in this case; at least alignment within the alveolar region is good and there is no obvious protrusion of the premaxilla. In the wide variation of clefts seen clinically, such absence of maxillary deformity is uncommon in complete clefts of the lip. It may be explained by the presence of a Simonart's band at the level of the floor of the nose where the modelling is not distinct enough for identification. The limited lateral displacement of the alar base adds verity to this assumption. Unfortunately the absence of the lower lip and chin, due to damage, does not allow an evaluation of the relationship between the upper and lower jaw.

Visible parts of the alveolar processes are edentulous. In the adult stage of a non-operated cleft displacement, malformation and caries of the teeth bordering the cleft often produce an unsightly and beastly appearance. For this reason removal of the teeth has long been considered most desirable. This seems especially indicated in a person whose profession is to amuse as a comedian.

It is a fairly recent observation that in clefts confined to the lip the entire maxilla is asymmetric due to underdevelopment of the affected side. As far as the wrinkled face and stylized modelling of the terracotta head permits an evaluation in this respect, the left cheek bone appears to be at a lower level and even smaller than on the right side.

According to Stillwell the head represents a conventional type of comic actor. They wore a short, long-sleeved tunic, long, tightly fitting trousers, a chlamys, and usually a pointed cap, and are characterized by a pointed beard, open grinning mouth, wrinkled cheeks and forehead, bulging eyes and sharply peaked eyebrows. With minor variation all are of this type. They can be dated about the middle of the 4th century and certainly cannot be later than the end of the third quarter of the century. This period of extreme popularity must occur just before the decline of the type, since New Comedy replaced Middle Comedy at about 330 B.C.

The information about the occupation of the person who posed for the artist is also of great interest. One can easily imagine the social implications of a cleft lip deformity at a time when surgical rehabilitation could not be provided. Under such circumstances the reaction of the individual varies. Apparently the bearer of the cleft had the mental qualities to overcome the psychological burden of his disability, and most likely he was one of the fortunate victims who was even able to use his disfigurement as an asset in his professional life.

The statement that other heads of comic actors were characterized by a bent nose might even indicate the possibility that the cleft lip deformity was frequent in this professional group. There may have been a tendency to select people with this type of deformity to undertake comic parts, or alternatively the occupation might have been handed on within families with a high incidence of this hereditary deformity. Apart from facial appearance consideration could also be given to the effect of the characteristic abnormalities of speech that are associated with this deformity.
COMMENTS

From a medical point of view this portrait made 2300 years ago is an astonishing achievement. It is particularly remarkable that the unknown artist had such a complete awareness of the morphological complexity of a cleft lip deformity and in fact was able to visualize some anatomical abnormalities, which have not become widely recognized in medicine until recent years. The general sculpturing of the face is an inspired creation of great simplicity and superior artistic quality. In contrast, the deformity of the lip and the nose has been modelled in great detail, with an almost scientific accuracy.

The common deformity of a cleft lip is also known from the art of other cultural periods. For instance, it was reproduced in figurines by the Inca Indians. Compared to the masterpiece from Ancient Corinth these works appear very primitive.

REFERENCES


DR. SKOOG is Professor of Plastic Surgery at the University of Uppsala, Sweden.

To the Editor:

I have just received the Bulletin containing material on the teaching of dental history and would like to congratulate you most heartily. It will be of permanent value. Do you think you could spare me another copy?

I well remember the interesting day we had together in London and hope that we may meet again some time.

With kindest regards,
R. A. Cohen
Senior Research Fellow in Dental History
The Dental School
The University of Birmingham, England

To the Editor:

Congratulations on the very fine June issue of the Bulletin. This should arouse the dental profession to the importance of dental history not only to its members, but more especially to the faculty of our dental institutions.

Could you spare three copies for distribution to prospective candidates to the Academy. This will be appreciated.

With best regards,
Louis B. Amyot, D.D.S.
Schnectady, N.Y.

To the Editor:

I received the June Issue of the Bulletin. This special issue is extremely interesting for the many fine papers published.

I want to express to you my sincere appreciation for the generous book review you wrote about my book. I hope that in the
near future this book will be translated (it already is being translated) and published in English.

Yours very cordially,
Dr. Samuel Fastlicht
Mexico City, Mexico.

(Dr. Fastlicht is the author of numerous articles on the mutilation of teeth among the early Mexicans, and most recently of the book *La Odontologia en el Mexico Prehispanico*.)

To the Editor:

I am pleased to extend to you a most cordial invitation to attend the XV WORLD DENTAL CONGRESS of the Federation Dentaire Internationale, which will be held in Mexico City from October 22 to 27, 1972, with the Asociacion Dental Mexicana as host organization.

In order that our colleagues, who read your reputable journal, will be informed about this event, I would greatly appreciate your publishing the enclosed invitation.

With my grateful thanks for your courtesy, I am

Sincerely yours,

Dr. Abel Samano
President of the Commission
of Scientific Publications

Ambroise Paré, who rightfully holds the place as one who did most to elevate the barber-surgeons, and who laid the groundwork of modern surgery, is best known for his principal literary work, Oeuvres, which was published in 1575. In that compendium was encompassed all of Paré's observations concerning the surgical procedures he innovated, as well as a full discussion of the many dental techniques he pioneered, such as the palatal obturator and many other dental prostheses. However, twelve years prior to the printing of that work, in 1563, this book entitled Dix livres de la chirurgie was issued, and it was this work which formed the nucleus of the later one.

Fifteen copies of the Dix livres are known to exist, and the translators of this volume used a copy which had been acquired by the University of North Carolina School of Medicine from a bookshop in France.

Paré's methods were far in advance of his time; he urged upon his fellow surgeons conservatism in treatment and gentleness in handling the wounded, in spite of a poor prognosis. "Therefore it is necessary," he says in concluding a chapter detailing his treatment of a gravely wounded soldier, "that the surgeon have always before his eyes that God and nature command him not to leave patients without doing his duty although he may foresee the signs of death, for nature often does what seems to the surgeon to be impossible."
Paré attempted to find rational bases for his treatments and although he still clung to many worthless remedies, he shunned those which by their very extreme nature revolted him. "I have made no mention of mummy for giving to the patients to drink, as most do," he says in one chapter. "I can assure you that it is because one does not in truth know what it is, except a rotten flesh of dead men, of bad taste and odor. In this I have found no effect except that it provokes vomiting and wounds the stomach strongly. Because of this, I cannot in conscience and dare not prescribe it for anyone whatsoever."

Although the principal portion of the Dix livres is given over to treating bladder stones, fractures, gonorrhea, gangrenes and "mortifications" and the like, there is a section devoted to Pare's drawings of his instruments, many of which he used for various types of dental treatment. (Most of Paré's discussion of his dental treatments occur in his later Oeuvres.) Among the illustrations is the obturator which consisted of a gold plate surmounted by an attached clip which served to enclose a piece of sponge. When the sponge was inserted into the palatal defect, absorption of mucous would cause it to swell, thus locking the obturator into place. Numerous other dental instruments are pictured including gum lancets, files for cutting teeth, pelicans and other extraction forceps and a cautery for opening an abscess beneath the tongue. In addition there is a single drawing of Paré's bridges described as "... artificial teeth made of bone which are attached by silver wire in place of those that have been lost."

On the whole the book is exceedingly interesting to anyone concerned with the history of medicine and surgery. The translation admirably captures the flavor of the speech of the middle ages. The book is well printed and beautifully bound in simulated calf with the name imprinted on the spine in gold, and makes a handsome addition to a bibliophile's shelf.


Although the problems faced by dentists in the United States and Canada are markedly similar, development of the profession in one country didn't necessarily keep pace with that in the other. Montreal dentists, plagued as were their American colleagues by non-paying patients succeeded, at the second meeting of the Montreal Dental Society a hundred years ago, in establishing a "Black Book" in which was to be entered the name of each "dead-head" patient and each member was to receive a copy. How successful this early attempt at credit rating was, is not recorded.

Dissimilarities in our histories abound, however. Although in the United States a dental school became an integral part of a university when the school at Harvard was established in 1867, this step
was strongly resisted in Canada. All dental schools in the U.S. were granting D.D.S. degrees, but in Canada dentists were limited to an L.D.S., an expression of licensure only, and they yearned for the prestigious title of Doctor carried by their American confreres.

Yet the Province of Ontario took the lead, a hundred years ago this year, in adopting an act establishing the Royal College of Dental Surgeons of Ontario; adjunctive to this was the adoption of a strong professional code of standards and regulations. It was the first legislature in the world to do so.

Soon after Dr. Alfred C. Fones established his school for the training of hygienists in Bridgeport, Connecticut in 1913, dental schools throughout the United States were clamoring to introduce this innovation into their curricula and the dental hygienist was quickly accepted as an integral part of the dental health team. But in Canada such strong opposition to the utilization of hygienists existed that it was only as late as 1919 that Toronto established a course in dental nursing, but limited the activities of the dental nurse to duties outside the mouth. And it wasn't until 1947 that the Ontario dental law was amended to provide for hygienists!

In spite of these differences, the professions in our two countries tend strongly to influence each other. The recent establishment in several areas in Canada, over the strong opposition of organized dentistry in that country, of a “denturist” classification, has given rise to fears among dentists of this country of a lowering and debasing of professional dental standards. Therefore, it is invaluable to the dental profession in the United States to have an understanding of how Canadian dentistry arrived at the state of development at which it is today.

Dr. Gullett has had a long and distinguished career in dentistry, having served as Secretary of the Canadian Dental Association from 1942 to 1964 and as President of the American College of Dentists in 1959-60. He spent five years gathering information from public archives, libraries, interviews and records of the profession. From this voluminous material he selected the details which illuminate the history of the profession. Add to this more than fifty previously unpublished pictures, and the result is an interesting, valuable and eminently readable book.