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Fig. 1. One of the few sketches of Lincoln, by a modern artist, showing his teeth.

The Dental Problems of Abraham Lincoln

—MAYNARD K. HINE, D.D.S.
Indianapolis, Indiana

Abraham Lincoln must be ranked as one of the most remarkable and well-known individuals of modern times. He has an established reputation as a writer, diplomat, humorist and humanitarian. The literature about Lincoln has become voluminous and more is written each year. As Ida Tarbell wrote, “There is no man in American history with whom the people so desire intimate acquaintance as they do with Abraham Lincoln.”
Although many volumes have been written about Abraham Lincoln, it is surprising to note that there are very few comments in the literature concerning his oral health. Searching for information regarding Abraham Lincoln's teeth has interested the author off and on for about a decade, and just about all of the possible sources of information that one's imagination can dream up have been exhausted. Scores of biographies and books of Lincoln photographs; museums; governmental agencies; historians; many magazine and newspaper articles; all have been checked, and one must admit that the search has had but limited success. Seldom does one find a mention of his teeth, or a tooth ache, or his dentist. This paper is a summary of all that the author has learned, and is inclined to believe, all that is recorded about Abraham Lincoln's dental problems. However, additional information might be found in some forgotten records; readers are urged to send any new references to the author of this report.

Even though Lincoln lived during the time that dentistry was developing into a profession, with several well-established dental journals and dental societies in existence, comments about Lincoln and dentistry are almost non-existent. By comparison, the frequent and serious dental problems of George Washington are well known.

**DOCUMENTATION OF LINCOLN'S DENTAL EXPERIENCES**

Actually, only four visits by Lincoln to dental offices can be documented. The first two were reported in a well-known letter from Abraham Lincoln to Mary Speed dated September 27, 1841. He wrote:

Do you remember my going to the city (Louisville) while I was in Kentucky, to have a tooth extracted, and making a failure of it? Well, that same old tooth got to paining me so much, that about a week since I had it torn out, bringing with it a bit of the jawbone.

Apparently it took two visits to get one of Lincoln’s teeth extracted, but who took his tooth out in 1841 is not known. Evidently a third visit was to Dr. Wesley Wampler of Milton Station (now Humbolt) Illinois in 1856, while Lincoln was on his way to Chicago. Dr. Wampler extracted a tooth using an ivory handled turnkey, but nothing else is known about this visit.

A fourth visit was in 1862, while Lincoln was president. It is reported as follows:

One day in 1862, Dr. G. S. Wolf, 1313 New York Avenue, N.W., (Washington, D.C.) but one door next to the church which Mr. Lincoln attended, was honored by a visit from the President, who asked that an annoying tooth be pulled. After the examination, Dr. Wolf selected a pair of forceps, and as he adjusted it to the tooth, Mr. Lincoln exclaimed, 'Just a minute, please!' To Dr. Wolf's surprise, the President reached in his pocket for a small bottle from which he took a few deep inhalations and then gave a signal to proceed. Dr. Wolf stated that the contents of the bottle was chloroform and that the extraction of the tooth was practically a painless operation.
Apparently a Dr. Austin T. Hewett of Chicago had done some experimentation with chloroform as an analgesic agent before this time and had extracted one of his own teeth in the same manner. Just how Lincoln learned of the "Hewett method" of analgesia is not known.

This extraction apparently resulted in much discomfort for President Lincoln; a letter by J. H. Littlefield to William H. Herndon, dated December 11, 1866, included this comment:

Mr Lincoln, one evening (1862) at the White House was suffering with pain caused by the extraction of a 'raging tooth'... and notwithstanding the pain that afflicted him, chatted humorously, with here and there a flash of real logic that showed that he comprehended the situation (Yazoo River Expedition).³

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Fig. 2. Lincoln With His Friends — 1861

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3
Of course, Mr. Lincoln may have had other unrecorded visits to a dental office. As a youth Abe split many rails for a Dr. Josiah Crawford, a physician from near Gentryville, Indiana, who also performed some extractions for his patients. If Lincoln did need dental care, he probably would have visited Dr. Crawford, but no records are known that suggest this occurred.

Dr. A. W. French has been referred to as Lincoln’s dentist in Springfield, Illinois, and reported in an interview that he “... had numbered the family of Abraham Lincoln among his clients.” However, his records do not indicate he had treated Lincoln, although he made records only of patients who did not pay in cash.

WHAT WERE LINCOLN’S TEETH LIKE?

Because of the complete lack of direct evidence, one can only speculate about the appearance and the condition of Mr. Lincoln’s teeth. Even the detailed autopsy study of Lincoln failed to mention his teeth, nor did an anthropologic survey made of Lincoln. Of the 119 photographs taken of Lincoln (39 beardless and 80 with a beard), none showed his teeth. Several photographs show him smiling a little, but none of them with his mouth open. (It must be remembered, of course, that in Lincoln’s time photography was in its infancy and time exposures were required. It was also customary for the individual being photographed to pose in a formal manner.) Even in caricatures of Lincoln, of which there were many, his teeth are seldom seen. Only two or three from a collection of 163 published in 1953 show any suggestion of teeth, and these of course were merely artists’ impressions. Similarly, none of the over seventy sculptors made statues of Lincoln with his mouth open.

In the book, “Facts About The Presidents,” Joseph N. Kane does not mention teeth, although he does indicate that Lincoln was the first president to wear a beard, which he began to grow shortly after his election in 1860. Many of his supporters had suggested he would look more dignified with a beard. As a matter of fact, more is known about Lincoln’s beard and his feet than his teeth!

Henry B. Rankin wrote that Lincoln’s jaws were long, up-curved and massive, and looked solid, heavy and strong, but he didn’t mention his teeth. Only three references have been found concerning the appearance of his teeth. One was in Ralph Waldo Emerson’s account of his visit with Lincoln in January 1862. Emerson mentioned that “... when he has made his remark, he looks up at you with great satisfaction, and shows all his white teeth, and laughs ... .” Whether this is an accurate description of Lincoln’s teeth, or merely polite poetic language, is not known.

A second comment about the appearance of Lincoln’s teeth was in an obviously politically inspired character sketch in The Kentucky Statesman:

Abraham Lincoln is a man above the medium height. He passes the six foot mark by an inch or two. He is raw-boned, shamble-gaited, bow-legged, knock-kneed, pigeon-toed, slab-sided, a
shapeless skeleton in a very tough, very dirty, unwholesome skin. His hair is . . . black and shaggy; his eyes dark and fireless like a cold grate in winter time. His lips protrude beyond the natural level of the face, but are pale and smeared with tobacco juice. His teeth are filthy." (Most authors comment, however, that Lincoln did not use tobacco.)

Third, an Englishmen, Edward Dicey, wrote an uncomplimentary description of Lincoln which included these comments about his face:

. . . a face furrowed, wrinkled, and indented, as though it had been scarred by vitriol; a high narrow forehead; and, sunk deep beneath bushy eyebrows, two bright, somewhat dreamy eyes that seem to gaze through you without looking at you; a few irregular blotches of black bristly hair in the place where beard and whiskers ought to grow; a close-set, thin-lipped, stern mouth, with two rows of large white teeth, and a nose and ears, which have been taken by mistake from a head of twice the size."

On the jacket of a book entitled "Lincoln's Lost Speech," published in 1967, an artist portrayed Lincoln with his mouth open, but this of course is merely an artist's conception of Lincoln's appearance. (Fig. 3) Correspondence with both the author of this book, and the artist, indicated that they knew of Emerson's comment, but had no other information about Lincoln's teeth.
WHAT MIGHT THE TRUTH BE CONCERNING LINCOLN'S TEETH?

It is interesting to speculate on the reasons why we know so little about Lincoln's teeth. Although dentistry was not too well established in Illinois and Indiana prior to the War Between the States, by the 1860's the dental profession was fairly well organized. In Washington, D. C., during Lincoln's term of office, dentists or historians undoubtedly would have recorded any significant dental problems of President Lincoln, so it is probable that he did not visit a dentist very often.

One can conclude that undoubtedly Lincoln had good oral health, with a minimum of dental problems. One can also argue that Lincoln should have had a good dentition for several reasons. First, in Abraham Lincoln's youth his family used water from wells and springs in Kentucky and Southern Indiana, and it is known that the fluoride content of some of the water in these areas contains about the optimum amount of fluoride. The surface water of Hardin County was reported as .1 p.p.m. in 1962, but according to a geological survey of that area some of the water had at least 1 p.p.m. Since the exact locations of the springs used by the Lincolns are unknown, it is not possible to determine exactly how much fluoride existed in their drinking water. It should be remembered also that the fluoride content of surface water varies with the amount of rainfall. Unfortunately, no weather records for 1809-15 are available. There is no positive evidence available, but it is possible that Abraham Lincoln's freedom from dental care could be attributed in part to his consumption of fluorides in his early years.

Second, since one writer reported that Lincoln purchased a tooth brush in June, 1843 and another on May 18, 1853 (for 20¢) one can assume that he had some understanding of methods of maintaining oral hygiene. In fact, Mrs. Lincoln, in 1862 while she was in the White House, endorsed "a highly scented American tooth powder". An advertisement believed to have been published in the New York Times included the following statement: "The case containing your far-famed tooth powder has been received, and I cheerfully testify that it is superior to all others I have used in thoroughly cleansing the mouth, purifying the breath, and whitening the teeth. Yours respectfully, Mrs. Lincoln." It apparently was the custom at that time for prominent individuals to give testimonials for commercial products. President Lincoln himself gave testimonials for a hair tonic, soap, and for a chiropodist who cared for his feet.

More important, it is also known that Abraham Lincoln's diet did not include many freely fermentable carbohydrates. Much has been written about Lincoln's dietary habits. Lincoln's stepmother, Mrs. Sarah Bush Johnson Lincoln, wrote that "Abe was a moderate eater. He sat down and ate what was set before him, making no complaint." It seems that even though he never complained of the fare, he rarely praised it, either. While President he usually ate a very frugal breakfast of an egg and a cup of coffee; at luncheon he rarely took more than a biscuit and a glass of milk, with a plate of fruit. At dinner he ate sparingly of one or two courses; for instance, some hot soup and usually meat and potatoes.
Dessert, if he ate any, was home-made apple pie or fruit. His tall, gaunt physique suggests that he ate sparingly and hence probably did not partake of many cariogenic foods. Incidentally, he drank little or no wine, or liquor of any sort, and never used tobacco. So his diet probably would have contributed to good oral health.

In summary, then, after a rather diligent and lengthy search, it must be admitted that few documented facts about Abraham Lincoln's teeth can be found. It is always possible that some new evidence will be located, but at this late date it seems unlikely.

Based upon scanty information and some calculated guesses, one can conclude that:

1. Abraham Lincoln had relatively good teeth, and seldom needed to visit a dental office.
2. There is some evidence to suggest that Abraham Lincoln practiced good oral hygiene.
3. Abraham Lincoln ate an anticariogenic diet and may have had the benefit of naturally occurring fluoride in his drinking water.

REFERENCES


DR. HINE recently retired as Chancellor of the Indiana University-Purdue University at Indianapolis. He is currently the Special Consultant to the President of Indiana University. His address is Indiana University-Purdue University, 1219 West Michigan Street, Indianapolis, Indiana, 46202.
Tucked away in the far southwestern corner of France is the lovely and ancient region known as Provence. During the days of the Roman empire, this served as a major center of that civilization in the larger Roman province known as Gaul. Many ancient Roman artifacts as well as edifices have been uncovered in that area, and one of these is the ancient Theatre of Vaison.

About a thousand meters, as the crow flies, to the north of this theater, is to be found a very old farm called "Barn of the Io3n" in the Provençal dialect, and "Barn of the Egg" in French. The farmhouse is certainly very old. Its thinnest walls are 80 centimeters thick and on the face of the building there are cuboidal stones which are clearly of Roman origin and design.

The house is located on a slight rise surrounded by about 12 acres of gently rolling vineyards. A cleared area, which serves as a terrace, surrounds the house and the whole is itself encircled by a narrow grassy belt. Other vineyards nearby and long rows of native cypresses or reeds called cannes de Provence and some mulberry bushes stand as testimony to a flourishing garden which existed here in days gone by. In the background one can see the silhouette of the mountains known as the Ventoux and the Dentelles du Montmirail. We are in the very heart of Roman Provence, and further to the north one can make out the Barounties which from the southern border of the Fosse Vocontienne.

The Discovery of the Bridge

Up until the year 1965 a shallow depression in the ground behind the buildings served as a vegetable garden. But our story begins in January of 1953 when Mme. Carpentras, the wife of the owner of the farm picked up from amidst a row of vegetables denuded by the winter winds, a little dental bridge which is the subject of this paper.

The little bridge was found about 50 meters to the north, northwest of the house, and just a short distance from a very handsome Roman sarcophagus unearthed long ago by M. Carpentras' ancestors.

It is worth noting that this beautifully made sarcophagus is monolithic, (that is, carved from one piece of stone) and was carved from the same sandstone used by the Romans to build Vaison-la-Romaine, and is the same as is still being quarried from the impressive and still visible quarries to be found not far from Beaumont du Ventoux. Unfortunately, however, it is impossible to establish any real relationship between the little dental bridge and the sarcophagus.

By a stroke of good luck, the little girl of the house, Odette, had, as a
friend, the eldest daughter of the Curator of the Museum of Natural History at Avignon, a M. Leon Germand. Odette told her friend, Anne-Marie Germand, of the discovery, and she, in turn, told her father. He then relayed the news to a M. Sylvain Gagniere who was the Curator of the Palace of the popes at Avignon, and so on a day in February, 1953, the two experts paid a call on Mme. Carpentras in order to see the object and its site of discovery. M. Germand drew a very exact, annotated, sketch, which he then placed in his files. The value of this discovery didn't escape these two trained minds, and they promised themselves to publish something about it, after first having made a study of the bridge in depth. But good resolutions gave way to more pressing duties, and so the little bridge was all but forgotten as the years went by.

THE REDISCOVERY OF THE BRIDGE

In 1964 an ancient skull was discovered in Avignon. This skull created a stir of interest in dental historical circles because it had a number of teeth which had been wired together for stabilization in order to overcome the effects of severe periodontal destruction.* The aforementioned curator, M. Gagniere had the skull in his possession, and he kindly allowed the author to study it, at which time a sketch was made of it accompanied by a written dissertation.

It was on this occasion that M. Gagniere spoke to the author about the bridge of Vaison and expressed a desire that a study be made of that as well as of the skull of Avignon. However, in spite of all good intentions and plans to begin the study, our respective occupations allowed us little free time in which to undertake the project. And so time still kept slipping away.

A number of months ago the author decided to begin the studies necessary for the attainment of the advanced degree Docteur d'Etat en Chirurgie Dentaire which is conferred by the Faculty of Odontology of the University of Marselles, and it was felt that a study in depth of these relics would be an excellent basis for a thesis. And so the decision was made to dedicate the study and research to the ancient discoveries which came forth from the soil and the past of Provence. They would certainly be of great value, it was felt, in the amplification of our knowledge of the art of odontology on the part of our ancestors.

It is interesting to note that it took no less than twenty years time, accompanied by favorable circumstances, to pull these discoveries out of oblivion and to finally publish information concerning these two precious relics. And in spite of our eagerness, our humble and groping investigations in the pursuit of the truth often went ahead at a maddeningly slow pace.

Before anything else it was necessary to find the bridge of Vaison. Two winter Sundays were dedicated to the investigation, which finally led us to the "Barn of the Egg," but, unfortunately, it had become deserted. A meeting with M. Henri Carpentras was finally arranged after a series of letters. We learned with sorrow of the passing of his
wife; he, however, greeted us with great cordiality and kindness. We explained to him the goals of our investigation and the direction of our research, and he graciously agreed to turn the bridge over to us for as long as it was necessary to finish the study. Our thanks to him are expressed here.

WHAT IS THE BRIDGE LIKE?

Basically, the bridge consists of a small homogeneous block of raw material from which are carved three upper front teeth. Extending from the base of each carved tooth is a metal post; however, the posts of the two outer teeth are the only ones which are entire, the one of the middle tooth having been broken off flush with the bottom of the artificial tooth.

The anatomical rendering of the teeth is at best only a poor approximation. They are shaped like truncated cones from the neck, or gingival portion, to the incisal edge, which is quite contrary to the natural shape of incisors. Nevertheless, their relative dimensions seem to have been adhered to.

Their color is of a yellowish-white, with more-or-less darkish stains of discoloration localized at the point where the post is imbedded in the artificial tooth. The labial surface had been remarkably well polished as demonstrated by the fine smooth surface on the left outermost of the three teeth; however, the long sojourn in the earth has severely corroded the surfaces of the other two teeth. (Fig. 1)

Fig. 1. The bridge as seen from the labial. Note the highly polished surface on the left outermost tooth.
The lingual surface is flat and rectlineal for each element of the bridge. And at the base there is a deep basal depression which would correspond to the gingival crests above which the bridge would have to be seated.

The incisal border bears evidence of file marks, almost obliterated by time and use, made by the file which was used to delineate the three teeth one from the other.

WHAT IS THE MATERIAL OF THE BRIDGE?

The original small block from which the teeth were carved was probably produced by sawing a larger piece of bone and then fashioning the individual teeth with a file, traces of the file marks having already been alluded to.

In the past various objects such as figurines, statuettes, handles of instruments and household objects have been unearthed which had been fashioned from bone or ivory. It had often been difficult, even with the help of a powerful lens, to reach an accurate determination of the material which had been used in their construction, especially where the materials had acquired a patina of wear and usage or had otherwise been altered by the passage of time.

We, however, were fortunately able to use modern techniques in our investigation. A fluorescent chemical (industrially known as a "sweating product") named Zygo-Magnaflux was obtained.* This consists of two components: a penetrating agent known as Z.L.I.C. and a revealing powder, Z.P4.

The technique was as follows: The bridge was first washed to remove the greasy stains and then left to dry, after which it was dipped in the Z.L.I.C. for 20 seconds and then rinsed in water and allowed to dry in the air without brushing or otherwise rubbing it. After it had dried completely, the Z.P4 powder was sprinkled over the piece, with great care being taken to avoid touching the bridge with the fingers. It was then placed on a stand and subjected to the light of an ultra-violet lamp. The Haversian canals, which had picked up the fluorescent material, were now clearly revealed.

In order to prove the material’s origin, a comparison study was made with a human tooth which had been ground, polished and treated in the same way, as well as with a piece of tibia from a bovine animal. The similarity between our bridge and the beef bone was immediately apparent. On the other hand, the dentine of the human tooth was revealed to be incomparably denser and more homogeneous. Further examination showed that the fragment used for the bridge had been taken out lengthwise from a long bone of a bovine animal, in the manner recommended by some of the ancient authors. This was evident in the fact that the septal fibers of the bone show up perpendicular to the long axes of the artificial teeth as well as to the metal posts.

*Produced by Dufour, Pere et Fils, 11 Rue de L’Aspirant d’Argent, 92- Levallois Perret, France.
THE COMPOSITION OF THE POSTS

An extensive study, the details of which would be too dull to go into in a paper of this nature, finally led to a determination of the nature of the metals of which the posts were constructed.

At the sites of implantation of the posts of the two outer teeth were to be seen areas of greenish stain, and this led naturally to the assumption that copper was a constituent of the material in question, leading us to speculate that the posts were made of bronze. However, it has now been verified that the metal used was silver (except for the central tooth's post which proved to be made of iron, and which was very rusty, thus explaining the peculiar stain at the base of this middle tooth.)

From where, then, did the copper come? The answer is the fact that it was coined silver, and since 'first-class' or pure silver was too soft for coining, it was alloyed with copper for added hardness. From this copper, then, came the stains which appeared around the points of implantation of the posts. (It should be noted that alloying of copper with silver for minting had been documented as early as the year 1236, but is known to have been done for many years before that time.)

The posts were so constructed that there was a threaded portion at one end and a smooth portion at the other. The threaded portion was imbedded into the artificial tooth, while the smooth portion would have been fitted into the roots of the natural teeth remaining in the jawbone. (Fig. 2) The posts' diameters are of a dimension referred to as "twelve-tenths," and this size diameter was often used by jewellers and goldsmiths from as early as Merovingian times, i.e. from the 7th century A.D.

Fig. 2. The bridge as seen from the palatal. Note the threads on the posts where they enter the artificial teeth and the concavity where the bridge rested on the gingiva.
The screw itself has an interesting origin. The first screws were made by soldering a fine wire around a core. Then the thread was reworked with a file in order to achieve a spiral of uniform thickness and spacing. Ultimately, a screw-former was invented and modified over the years. However, the thread of the posts of the bridge here under discussion have the dimensions of the threads used in screws from Merovingian times until the advent of the modern industrial screw: the whorls are much shallower than they are today, and the threads are much closer together. It is therefore impossible to date the bridge on the basis of the threads of the posts, because the usage of this type of thread spanned more than a millenium.

THE PHYSICAL FORM OF THE BRIDGE

The bridge was apparently made to replace the upper right central and lateral incisors and upper right cuspid. The total weight of the bridge is 1.18 grams. An identical bridge was constructed by the author of modern materials, metal and acrylic resin, and it weighed 2.78 grams. This underscores the fact that the early bridge was far lighter because of the lesser density of bone as compared with our modern resins.

Although the three teeth differed in size, with the central incisor and cuspid being of the same dimension, and the lateral incisor being somewhat smaller, the average size of the teeth was approximately twelve millimeters with the posts averaging about five millimeters in length. The posts are slightly narrower in the portion that was intended to fit into the root, because here the threading had been filed away.

When the bridge is viewed from the gingival aspect, i.e. by looking down upon the surface which bears the posts, one can distinguish a slight curvature of the whole piece along its mesio-distal axis, with a convexity apparent on the labial surface and a concavity being present on the lingual. (Fig. 3) The curvature of the arc is most pronounced at the
distal end, which would lead us to believe that this was intended to simulate the position of the cusp in the arch, or more specifically the rounding of the arch in the region of the cusp. And we are reasonably certain that this bridge was intended to replace maxillary teeth, because its construction, measurements and external features, however primitive they may be, do not allow us to ascribe it to the mandible.

FOR WHOM WOULD THE BRIDGE HAVE BEEN MADE?

At this stage of the study the temptation is obviously great to outline an odontological approach to the problem at hand; an approach which might be haphazard or even dangerous, it is true, but which nevertheless could shed some light on the scientific as well as the social and human aspects of our relic.

First, it behooves us to think that such a piece which includes three posts would by its very nature be destined to fit into a jawbone still containing the roots of the teeth to be restored. The dimensions of the teeth suggest that they were made for an adult, probably of the masculine sex. The relative lengths of the component parts of the bridge also indicates that when the bridge was inserted, there was still adequate bone support around the roots of the teeth to be restored, and therefore it is a reasonable assumption that the bridge was made for a relatively young individual whose articular height, i.e. the height of the alveolar process, had remained intact and had not been diminished by age or disease.

In addition to the fact that the teeth seem to be too large for a female, our contention that the bridge was made for a young person seems to be borne out by the fact that many of the skulls found in ancient sepulchers were more or less toothless because of the widespread ravages of periodontal disease, especially among the older population, a disease which in certain places attained an endemic state.

To work out an etiological diagnosis is much more difficult! The problem might have been one of trying to restore three teeth badly destroyed by caries. On the other hand, it might have been a question of replacing three teeth broken as a result of some facial trauma resulting either from an accident or a war wound. The fact that the bridge was probably made for a man tends to make one lean toward the latter hypothesis.

SOME SOCIOLOGICAL ASPECTS

The fact that discoveries such as this one, of early prosthetic appliances, are very rare in relation to the number of skeletons exhumed, either by accident in the course of building construction or by systematic archeological digs, is food for thought. It is clear, however, that dental work such as this was reserved for important people - important, that is, because of their wealth or their function in society; maybe even, hopefully, because of their individual merit.
The great people of this world like to appear, and sometimes must appear, as well-groomed as possible so that they may talk or show off in an advantageous light, their goal being either a seductive or intimidating one. On the other hand it has always been necessary to have one's purse well-lined in order to afford dental work such as this. Indeed, let us recognize that it also required great physical courage and a well-tempered spirit to be able to face with equanimity the acute suffering once inflicted by the dentist's forceps, his scalers, his cauteries and all of the other instruments and techniques which the pioneers of our art used with singular competency if not without causing pain. Thus it is most likely that the wearer of the bridge belonged to a deserving and privileged clientele.

CAN WE DATE THE BRIDGE?

Can this little prosthesis, as it has revealed itself to us through our studies, tell us any more about itself? Is it possible to compare it to other already-known specimens? And lastly, is it possible to date it approximately?

In the showcases of the Centre Francais de Documentation Odonto-Stomatologique in Paris can be found a remarkable collection of all sorts of ancient dental prosthetic appliances.

The only specimens comparable to our bridge, however, are three isolated teeth on pivots. We may immediately eliminate one which consists of a cylindrical tooth carrying a post made of wood. The technique used in its manufacture is similar to that of Maury who worked in the 19th century. It is quite esthetic in form and is very natural looking.

We may also safely eliminate another 19th century specimen whose vestibular surface is made out of ivory and is fixed on a gold armature with a projecting post also made of gold. The result is quite pleasing and the technique is very much superior to that used in the construction of the tooth previously mentioned.

There remains, then, only one tooth with an attached post, and this one is attributed to Fauchard. Its construction is such that it is pleasing and natural looking. The post, where it enters the artificial tooth, is a barbed one, similar to others made and described by Fauchard. Thus this is the only specimen worth comparing to the bridge under consideration in this paper.

It is an unfortunate fact that the absence of any archaeological clue makes dating — even approximate dating — almost impossible. The problem is a complex one because the specimen is tragically unique: it lacks an archaeological context, and in addition, it is not entirely clear as to the technique used to produce it.

Anatomically, the sculpturing of the teeth is not correct, and from an esthetic point of view, the truncated shape of the teeth leaves much to be desired. These factors would lead one to judge the piece to be very old.

Technically, the construction of the threads of the screws of the posts and the material of which they are made leave us, as we have seen, with a margin of more than ten centuries. Moreover, the presence of the
Roman sarcophagus near the spot where the bridge was found leads us to make some tempting, but so far unsupported, hypotheses about the bridge’s origin!

A set of false teeth dating from about the 12th century would be a singularly fortunate discovery. However, we know that the state of the art at that time was in full decline due to the incessant invasions and wars which raged during those years. Moreover, the very imposing technical success of the implantation of the posts into the artificial teeth by threading them in makes us feel that the specimen is of a more recent period, and this without even touching upon the problems of parallelism.

Fauchard, Bourdet and others describe in their writings techniques used from the beginning of the 18th century for the construction of teeth with posts. However, one must note that the esthetics of their anatomical forms are far superior to those of the bridge found at Vaison-la-Romaine. Yet on the other hand, doesn’t it seem to be more advanced to think of threading the post into the artificial tooth than to make dangerous barbs and plunge the post by force into the prosthesis?

CONCLUSIONS

All things considered, we find that we are left with two possibilities:

1. The bridge of Vaison-la-Romaine was made before Fauchard. This can be deduced that in spite of the work having been done by a highly skilled goldsmith, its form is decidedly more archaic than Fauchard’s.

2. The bridge of Vaison-la-Romaine was made after Fauchard. This deduction is made from the methods employed in the threading of the posts into the artificial teeth, the fine finishing of the posts and by its maker having obviously overcome the problems of parallelism. Its obvious crudities of form would then have to be explained as the work of a mediocre sculptor.

The problem has been posed, and only new discoveries accompanied by more precise archaeological contexts, will permit us one day to choose between these two possible solutions.

This paper is part of a larger thesis presented by Dr. Marry in fulfillment of the requirements for the degree Docteur d’Etat en Chirurgie Dentaire which was conferred upon him on January 18, 1974 by the Faculty of Dental Surgery of the University of Marseilles. Dr. Marry’s address is 3, Montee du Fort, 30400 Villeneuve-les-Avignon, France.

(Translated from the French by Mrs. Catherine Smith, Piffard, New York.)
Biographies and Autobiographies
of Dentists

-AKE B. LÖFGREN, TANGLÄKARE
Göteborg, Sweden

Biographies and autobiographies form an important facet of the literature of any field of academic endeavor. Biography contributes to a better understanding of an individual and his activities and places his contributions in their proper perspective to his time and environment. Even if an autobiography seems to contain personally colored or exaggerated statements, it nevertheless gives valuable information concerning details which no one could know better than the author himself; and in this respect it makes the autobiography a unique contribution to the literature, as well as an excellent primary source for research.

Throughout the ages literary figures have borne witness to the importance of biographies. The English author Thomas Carlyle said that "... history is the essence of innumerable biographies," while the American Ralph Waldo Emerson stated that "... there is properly no history; only biography."

The word biography derives from the Greek roots bios, life, and graphein, to write. Thus, biographies are not only writings about a life but about life itself.

A biography can vary in length, style and form. Its source can be an inscription on a tombstone or monument; a memorial tablet; a statement in a register or reference work; an article in a journal or periodical; and most commonly a separately published book or monograph.

An autobiography, on the other hand, is the intimate story of a person's own life, written by himself. It generally has its source in memoirs or diaries, but in frequent instances, from fully-completed and documented books. However, the source of the autobiography may also be a description of a scientific endeavor, a travel experience or adventure, or even the recounting of a hobby.

Biographies and autobiographies of dentists must be considered as valuable additions to the history of dentistry. This compilation, however, is limited to books and monographs alone, the author being well aware that innumerable other biographies exist in the periodical literature. Space and time, however, forbid the inclusion of these latter in this bibliography.

The author is also well aware that there will, of necessity, be gaps in his compilation, and will welcome any additional information from his readers which will make this listing as complete, meaningful and up-to-date as possible.
I. AUTOBIOGRAPHIES OF DENTISTS


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Rowat, Haddon. "This won't hurt a bit." *The musings and memories of a dental surgeon*. Foreword by J. C. Middleton Shaw. Bristol, John Wright & Sons Ltd., 1956, viii + 141 pp., 1 pl., portr.


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Albrecht, Eduard (1823-1883)


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Apffelstaedt, Max (1863-1950)


Assur, Amalia (1803-1889)


Äyräpää, Matti (1852-1928)


Bensow, Victor (1854-1939)


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Black, Arthur Davenport (1870-1937)


Blum, Theodor (1883-1962)


Bruhn, Christian (1868-1942)

Mayer, Suse-Marie. *Professor Dr. med. dent. h.c. Christian Bruhn und die

Carabelli, Georg, Edler von Lunkaszprie (1787-1842)

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Jagan, Cheddi (b. 1918)

Jessen, Ernst Gotthard Peter (1859-1933)

Joachim, Albert (1882-1962)

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Appleby, Thomas, and Applegate, George N. *Mahlon Loomis—Birth of wireless.* [c. 1964].

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Morgan, William Henry (1818-1901)
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Greve, Hans Christian (1870-1955)


Grey, Zane (1872-1939)


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Panduro, Leif Thormod Petersen (b. 1923)

Jørgensen, John Chr. Leif Panduro. Radio-Film-Theater-TV. N.p. [1973]. 259 pp., portr on the front cover. (Borgen's Billigboger, 131.)


Pfaff, Philipp (1716-1780)


Revere, Paul (1735-1818)


Römer, Oskar

Schrott, Johann Joseph Nepomuk

Serre, Johann Jacob Joseph (1759-1830)

Tomes, Sir John (1815-1895)

Volck, Adalbert Johann (1828-1912)

Watry, Marie Ferdinand (1884-1959)

Wells, Horace (1815-1848)

Williams, James Leon (1852-1930)
DR. LÖFGREN, who is an Honoray member of the American Academy of the History of Dentistry, is the Curator of the Museum of Dental History sponsored by the Dental Society of the city of Göteborg, Sweden. His address is Vidblicksgatan 1, Göteborg 412 57, Sweden.

(Editors note: Dr. Milton B. Asbell who is a noted bibliographer as well as one of the most knowledgeable dental historians in the world and author of the recently published book A Bibliography of Dentistry in America: 1790-1840, graciously consented to act as consultant for this article. The following biographical works which were omitted by Dr. Löfgren were supplied by Dr. Asbell, who also tells us that the Dr. Wilhelm Herbst listed in Dr. Löfgren’s compilation was a pioneer in the technique of gold foil insertion which became known as the “Herbst Method,” and that when Dr. Herbst visited the United States he was widely acclaimed by the American dental profession.)


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Miller, John Anderson. *Yankee Scientist: William D. Coolidge*. Schenectady, N.Y. Mohawk Development Service. 1963. 216 pages. illus. portr. (Although Dr. Coolidge is not a dentist, he is so intimately connected with dentistry and is an Honorary Member of the American Academy of the History of Dentistry that he is included here.)


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Dr. William D. Coolidge, the internationally known scientist who played a major role in the development of the modern X-ray tube, celebrated his 100th birthday last October. Dr. Coolidge, the Director Emeritus of the Research Laboratories of the General Electric Company in Schenectady, N.Y., is an Honorary Member of the American Academy of the History of Dentistry. In the photo above Dr. Coolidge, flanked by Arthur M. Bueche and C. Guy Suits of G.E., stands before the birthday cake which was lighted with 100 ductile tungsten lamps and topped by the cathode target from an early Coolidge tube. Dr. Coolidge is the discoverer of ductile tungsten, which made possible the modern tube with its accompanying high penetration and excellent resolution.
Oddments in Dental History:
The Dentist’s “Arm-Chair”
as Seen by the Poet

—MALVIN E. RING, D.D.S., M.L.S.
Batavia, New York

From almost the days of their inception, the dental journals of this country were wont to carry poetic outpourings of members of the profession. It seems that it was the fashion of earlier times to express oneself in verse, and this also held true for fields other than dentistry, but the dental fraternity seemed to have held a high rank in this artistic form of self-expression. In fact the eminent dentist Solyman Brown attained world renown with his poem “Dentologia” which was published in 1833. This was an epic work in five cantos that dealt with the diseases of the teeth and their remedies, and upon its being republished as a 176 page book in 1840 was hailed not as a dental but as a major literary accomplishment of its time! It was discussed and quoted in literary circles, and the interesting fact is that its merits were debated in the light of its literary and poetic value rather than its scientific content. This work and a subsequent poem of his in blank verse, Dental Hygiea, merited for Brown a comparison with Whittier as the “people’s poet” and the bestowing upon him of the unofficial title “Poet Laureate of Dentistry.”

Just about a hundred years ago a dentist whose name has come down to us as only L. Parmele wrote a poem which used the familiar dentist’s chair as the personification of all that the public dreaded or lauded about dental practice, and it is such a quaint and charming mixture of Victorian sentimentality and moral preaching that it deserves reprinting in full. It appeared in the February, 1875 issue of one of the most widely circulated professional journals, Johnston’s Dental Miscellany.

THE DENTIST’S ARM-CHAIR.

No. 1.

I hate it, I hate it, and oh! who shall dare
To chide me for hating the Dentist’s Arm-Chair?
I’ve sat in it long, shedding many a tear,
With mouth wide extended, from ear unto ear,
My shrieking and groaning and sobbing in vain,
No matter how deep or tormenting the pain.
And oft I’ve endured with the wail of despair,
Alas! Quite too much for a mortal to bear;
No voice of compassion to comfort or cheer,
Entreaties I waste on a pitiless ear;
That hand unrelenting still cruelly pokes,
And throbs of wild agony coolly evokes;
Those borers, and scrapers, in frightful array,
They drive me to madness; I'm filled with dismay;
I hate, oh! I hate it! and who then shall dare
To chide me for hating the dentist's Arm-Chair?

No. 2.

You say that you hate it; but yet who shall dare
Deride me for loving the Dentist's Arm-Chair?
I've sat in it long, and serenely, and oft,
With bright crimson cushion of velvet so soft;
I've sat in it calmly, with never a fear,
For I knew that the head of the dentist was clear,
His hand firm and steady, his heart kind and true,
I feared not the things that were frightful to you:
Those instruments keen had a mission to save
My molars from pain and a premature grave.
It may be your dentist is what's called a rough—
Perhaps worse, a bore, and sure that is enough
To drive one to madness, dismay and despair,
And cause a false dread of that soft-cushioned chair.
Since practice and skill are so wisely combined
To guide and control every well-tutored mind,
My fears are all banished, and hence I declare
My trust in the dentist, my love for his chair.
Early Reports of X-Ray Dangers

—PHILIP V. MAZZOLA, B.S., D.D.S.
Selden, L.I., New York

The two greatest discoveries in the history of the health professions are the use of anesthesia and the use of X-rays, and although much controversy has existed concerning the original discoverer of anesthesia, its practical uses were nevertheless quickly accepted.

Some forty-one years after Horace Wells first used anesthesia, William Conrad Roentgen quite accidentally discovered X-rays, and thus, a new era in the diagnosis of physical conditions was opened. Roentgen was employing a Hittorf tube in an investigation of "invisible rays" when the discovery was made. He had covered the tube with black paper, so as to exclude all light, and had the screen, which was coated with barium platino-cyanide, lying on a table three or four meters from where the covered tube was situated. He excited the tube to see if all light had been excluded, and it was then that he noticed the fluorescent glow given off by the screen.

Quick to look for hoped-for cures in new innovations, an editorial in the Journal of the American Medical Association, in February, 1896, expressed the opinion that the new X-rays might have a beneficial therapeutic function. Unfortunately, the rays were put into use before any of its adverse biological effects could be recognized, and thus many necessary precautions were not observed. It is interesting to note, however, that Roentgen, on the other hand, made all his experiments with a lead shield interposed between himself and the tube.

SOME EARLY ILL EFFECTS NOTED

Many of the early investigators of X-rays observed various strange effects associated with their experimentation. For example, Thomas Edison noted that after several hours work with the rays, he suffered severe pain in his head and eyes, and so he shortly thereafter abandoned this phase of his investigations. Similar occurrences were reported by W. J. Morton, M.D., who is credited with having taken the first dental X-ray in America. This was several months after Roentgen's discovery and, at about the same time that Dr. C. Edmund Kells, a dentist, began to use X-ray in his dental practice. But as a result of the latter's frequent exposure to the rays, Kells later died, a victim of radiation necrosis.

One of the most often reported ill effects observed to be related to the use of X-rays in the days of its infancy was that of loss of hair, or epilation. Several people then postulated that the rays might indeed be used as a means of what is today known as electrolysis, the removal of unwanted hair. It was believed that exposure of a man's chin, for example, to the rays would remove a beard and therefore eliminate the necessity of shaving.
Other work was done with X-rays, and Thomson, who later compiled some basic facts concerning the rays, conducted an experiment in which he wished to determine the effect of X-rays upon the skin. He therefore exposed his hand to a tube for approximately one and one-half hours. For several days little effect was noticed, but then his fingers became red and swollen and the skin began to blister and peel. Thomson thus recognized the absolute necessity for a shorter exposure time.

DANGERS NOTED IN EARLY DENTAL USE

One of the earliest reports of the dangerous effects of X-rays in dental work was cited in an 1897 journal. Two dentists had a certain Miss McDonald undergo a series of X-rays of her face in order that they might better diagnose her dental problems. The radiographs were taken by a Mr. J. O'Connor, who claimed to have taken a thousand X-ray photographs, many of them, he said, similar to the ones he planned to take of Miss McDonald. In only one other instance, was there anything like a burn resulting, and that, indeed, was not a serious one. However, as a result of the exposure to "the strange mysterious light," Miss McDonald suffered severe burns. A few days after the radiographs were taken, the skin on the young lady's face, neck, shoulders, arm, and breast became blistered and finally peeled off. The ear on the affected side swelled to three times its normal size, and she complained of a total loss of hearing on that side. In addition to the burns, large patches of Miss McDonald's hair had fallen out. Upon further questioning, Mr. O'Connor admitted that the first radiograph taken was unsatisfactory and so he made a second attempt, this time with the exposure time increased from eight to thirteen minutes.³

FURTHER EVIDENCE OF INTERNAL DAMAGE ACCUMULATES

By 1905, evidence had been accumulated that X-ray exposure had serious undesirable effects upon the tissues within the body, as well as upon the skin and other superficial structures. The health professions had by this time recognized the great value of X-rays in diagnosis as well as its considerable therapeutic value. Thus, the medical profession was "...earnestly desiring that the character of the disturbance producing these occasional toxic reactions be determined, in order that we may thereby attempt to devise a well-found method of preventing the reactions."⁶

One case was recorded of a forty-three year old man who had been hospitalized for pernicious anemia. The patient did not respond to ordinary treatment, and therefore, owing to apparently successful results previously obtained in other, similar, cases, X-ray treatment was prescribed. However, the exposure was to be brief and mild, because in another case of pernicious anemia in which a single exposure had been ordered, a violent reaction had resulted. It was noted in this new case
that the patient had had a slight fever for some time before the exposure. Approximately four hours after the treatment, the patient became very ill and was suffering from chills. His temperature rose to 104° and his pulse became weak and rapid. He shortly thereafter refused to eat and his condition worsened gradually, resulting in his death.

Like results occurred in another patient, who was similarly treated for rheumatoid arthritis by the same physicians. The interesting facts pertaining to these cases is that there was a remarkable change in the metabolism of both men immediately after X-ray exposure. Previous work had shown that in cases which had responded favorably to the action of X-rays, an increase in tissue destruction occurred directly after exposure. Thus, the physicians caring for these two patients came to this conclusion: "A toxic reaction is particularly likely to occur in persons who are already subject to a toxemia, because their organisms are already taxed to a considerable degree. Because of the tissue destruction caused by the X-ray, it seems quite natural that the metabolism should, in the cases already most severely taxed, suffer more or less complete collapse."

EARLY RECOGNITION OF THE PROBLEM

Further results of difficulties following X-ray exposure were recorded, but, by this time, the causes of such problems and the methods of preventing them were beginning to be recognized. Thus, in addition to the many and varied devices which were being developed and employed to protect both operator and patient, it is interesting to note that the concept of sensitivity was also being recognized, i.e. that some persons are more susceptible of X-ray damage than others. Thus we have a report of a dentist, who took the usual number of X-rays of a patient only to have the patient return several days later with the side of his face, which had been exposed to the rays, completely devoid of hair.

The report goes on to say that the patient recovered after several weeks, but the author went on to point out "... that though the X-ray is the most valuable tool in the work of root therapy, there are certain patients whose skins are exceptionally sensitive to the rays, and that in our use of them we should take cognizance of the fact that, like drugs and chemicals, they have a danger point which we must be careful not to pass, since the result may not always be as fortunate as in this instance described."

Another example of the early recognition of the dangers of X-rays is the case of Dr. Charles Eller, who in 1918 bought an X-ray machine for use in his dental office. He assumed that a lead screen would not be necessary, but after a short time, a slight blistering and breaking of the skin occurred on several fingers of his right hand. However, within several weeks the affected area healed. But two months later the eruption returned, and this time involved the fingers of his left hand as well, and was accompanied by a fever. He was forced to close his office for a week or so, and within that time his fingers began to heal. He returned to work and once again his fingers blistered; so that after several weeks he concluded that the X-rays had a cumulative effect, such that even a
slight daily exposure would build up and might take a considerable time before manifesting itself. As a result of these events, Dr. Eller sold the machine and sent his patients elsewhere to have any necessary X-rays taken.9

It was as a result of reports such as these of the dangers involved in the use of X-rays, that Thomson, about 1910, was led to compile his list of facts concerning X-rays, which are still valid today. Among these were that X-rays were undisputably responsible for tissue damage and that the amount of damage was directly related to the amount of exposure, which exposure time could not be allowed to go beyond a critical point without causing severe trouble. Furthermore, even prior to Eller’s experience, he had concluded that X-rays had a cumulative effect and that several short exposures, if occurring within a short time span, would have the same effect as one long exposure equivalent to the same amount of time, and further, that the biological effects so induced would not be immediately apparent. Thomson also developed the “Inverse Square Law,” as a means for determining proper exposure times. This law stated that the intensity of rays decreased as the square of the distance from the source increased.

The modern X-ray is one of the most valuable tools in the diagnosis of medical and dental problems today. This has only been achieved after its destructive and mutating effects on human tissue were recognized, and protective devices were adopted and exposure routines were developed that resulted in making a radiographic examination the relatively safe and simple procedure it is today. It is unfortunate that many of the earlier workers in this field suffered exposure to a degree that led to required amputation of hands and fingers, to malignancies at the sites of exposure, and, in several cases, even to death. But without these intrepid and earnest pioneers in an uncharted course, the tremendous boon to mankind which is the X-ray may never have reached its full potential.

REFERENCES
7. Ibid., P. 430.

DR. MAZZOLA is engaged in the general practice of dentistry. His address is 7 Balsam Court, Selden, Long Island, N.Y. 11784.
(Editor’s note: The following communication was received from Dr. J. Ben Robinson, the dean of American dental historians and former Dean of the Schools of Dentistry of both the University of Maryland and the University of West Virginia.)

I am in the process of preparing an historical article that will include references to a number of 18th century dentists in America, among them John Baker. My problem is: Should I use his alleged degree, "John Baker, MD.,” which is the inscription on his tomb? I ask the question because I doubt the validity of the degree.

John Baker was buried first on his farm in New York. His remains were removed about 1873 by the Corporation of Trinity School to Trinity Cemetery in New York City. A tomb was erected at the grave-site with the inscription "John Baker, M.D." Is there evidence that the M.D. was copied from a grave stone that marked his first place of burial? If so, has any reference been made to it? If not, by whom and why was it recorded at this final resting place? Perhaps the M.D. was merely added to Baker’s name by grateful persons representing Trinity School in appreciation for the millions of dollars it had received from Baker’s estate!

Weinberger readily accepted the "M.D." degree as having been earned by Baker. (An Introduction to the History of Dentistry, Vol. 2, page 21.) He speculated that Baker may have been the "...earliest medically trained dentist to practice in America." (op. cit. page 71.) He suggests that Baker may have earned his degree at Cork, Ireland. (op. cit. page 79.) There was a school of anatomy at Cork, (primarily for instruction of artists) but there is no evidence that it was a degree-granting institution. Finally Weinberger expressed doubt of the validity of the claim when he wrote: "Why he (Baker) never used the title of 'M.D.' remains a mystery." (op. cit. page 83.)

Other relevant facts inconsistent with Baker’s alleged M.D. degree are: Baker boasted that before coming to America he had practiced dentistry extensively in "...Great Britain, France, Ireland and other principal places in Europe." But not once in his 22 announcements which appeared in the public press during his 20-odd years of practice in America, is there indication, either directly, indirectly or by implication that he was medically educated. In his two announcements in Boston, three in New York and his first in Philadelphia he refers to himself as "Mr. Baker," beginning in Annapolis on December 14, 1773, and after that in Philadelphia, he refers to himself as "Dr. Baker;" Paul Revere referred to him in 1768 as "Mr. Baker."

In my opinion, Dr. Weinberger was not justified in according Dr. Baker the distinction of having earned the "M.D." degree, or, of his having been the first medically educated dentist in America.

I will be grateful for any comments on the subject, since I am sure they will be helpful to me.
PROFESSIONAL ANNOUNCEMENTS OF JOHN BAKER, SURGEON DENTIST

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<tr>
<th>Date</th>
<th>Where appearing</th>
<th>Under what name</th>
<th>Special Comments</th>
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| Jan. 22, 1767 | Boston          | John Baker      | "shall leave in 20 days."
| Apr. 10, 1767 | Boston          | John Baker      | "leaving; will return again."
| Apr. 28, 1768 | New York        | John Baker      | "is now in New York."
| May 9, 1768   | New York        | John Baker      | "he is now in New York."
| July 7, 1768  | New York        | John Baker      | "departs this town in 10 days"
| 1771        | Williamsburg    | Mr. Baker       | "now at Mrs. Maupin's"                |
| Mar. 12, 1772 | Williamsburg    | Mr. Baker       | "lv. short time; return October"      |
| June 22, 1772 | Philadelphia    | John Baker      | "lv. for Williamsburg in July"        |
| Jan. 14, 1773 | Williamsburg    | Mr. Baker       | "recovered from late illness"          |
| May 13, 1773  | Williamsburg    | Mr. Baker       | "lv. soon for Fredricksburg"           |
| July 15, 1773 | Williamsburg    | Mr. Baker       | "returned to this city"                |
| July 29, 1773 | Williamsburg    | Mr. Baker       | "To Frederick Springs for month"       |
| Sep. 14, 1773 | Annapolis       | Dr. Baker       | "From Williamsburg"                    |
| Sep. 30, 1773 | Annapolis       | Dr. Baker       | "lv. next wk. for Williamsburg"        |
| Sep. 1, 1774  | Annapolis       | Dr. Baker       | "From Williamsburg just arrived"       |
| Feb. 3, 1778  | Philadelphia    | Dr. Baker       | "From Williamsburg"                    |
| June 23, 1779 | Philadelphia    | Dr. Baker       | "From Williamsburg"                    |
| Dec. 27, 1780 | Philadelphia    | Dr. Baker       | "From Williamsburg"                    |
| Dec. 4, 1782  | Philadelphia    | Dr. Baker       | "Freeman's Journal, dentifrice advt."  |
| Feb. 25, 1783 | Philadelphia    | Dr. Baker       | "Just arrived from Williamsburg"       |
| May 30, 1786  | Philadelphia    | Dr. Baker       | "Will spend summer, Newport, R.I."     |
| June 13, 1786 | Philadelphia    | Dr. Baker       | "set off for Rhode Island"             |

(Editor's note: With Dr. Robinson's permission, this question of John Baker's possession of an M.D. degree was posed to Dr. J. Menzies Campbell of Glasgow, Scotland, who is one of the world's leading dental historians and an authority on dentistry in the British Isles. His reply follows.)

Dear Dr. Ring:

I was delighted to hear from you again, and would normally have replied by return mail to your kind letter, but for the fact that old age (87 years in June) brings physical handicaps as well as pleasures. I trust, therefore, that you will not attribute delay on my part to indifference.

I am decidedly of the opinion that John Baker did not possess an M.D. degree. Certainly, it was impossible to obtain this from Cork, because there is not, and never has been, a university in that city. The College, opened only in 1849, forms part of the National University of Ireland, which confers the degrees.

Further, if John Baker did possess such a degree, it is somewhat surprising that Paul Revere failed to enter it in his advertisement of 1768, because, not unnaturally, he would desire it to be widely known that his preceptor possessed an M.D.

With my greetings and kindest regards, which please also convey to our mutual friend Ben Robinson, and trusting that you are both well.

Very sincerely

J. Menzies Campbell
The following communication was received from Professor Gardner P. H. Foley, a Past-president of the American Academy of the History of Dentistry:

There is a book by Charles L. Dana entitled *The Peaks of Medical History* (1926.) It suggested to me that the Academy might, through a panel of its membership, or from a selected panel of several members, create a listing of "The Peaks of Dental History." I figure that such a project would constitute an interesting and valuable testimony to the progress and accomplishments of the dental profession.

Perhaps about 25 peaks could be selected from choices nominated by a panel. Then notes could be composed to support the validity of the choices made. This idea might be brought to the attention of the Executive Committee for examination. We might choose even 50 peaks. I think that our members would approve a device by which the historical values of dentistry could be well certified.

The job that the Advisory Board from our Academy did for the Medallic History of Dentistry series would form a very good basis for selection of the "peaks."

Another procedure to effect the same result: a paper on the subject read before the annual meeting of our Academy this October in Washington, with the paper then published in the Bulletin. I would be glad to prepare such a paper, with the selections then examined by a panel of members of our Academy. I would list selections of my own with the panel approving, rejecting or adding to them.

Sincerely,

Gardner P. H. Foley

(The above was transmitted to Dr. J. Henry Clarke who is program chairman for the 1974 annual meeting and Professor Foley's suggestion will be brought before the Executive Committee for action.)

Dr. Frank J. Orland, the Director of the Zoller Memorial Clinic of the University of Chicago, a dedicated history buff, longtime member of the American Academy of the History of Dentistry and the renowned former Editor of the *Journal of Dental Research*, was on his way home to Chicago last October from the annual meeting of the American Dental Association in Houston, Texas. He decided to stop enroute in Jacksonville, Illinois, the hometown of one of the world's most illustrious dentists, Greene Vardiman Black. He had heard that there were historical memorabilia in the town connected with Black, but found, when he got there, that they weren't easy to locate. This is his informal account of his sleuthing, which finally enabled him to find and photograph them. The sadness pointed up by Dr. Orland's brief account is that G. V. Black, who did so very much for the health and well-being of mankind, is so little remembered by his townspeople of today!

**THE G. V. BLACK HISTORICAL MARKER**

Soon after its dedication in late 1973, the historical marker erected to honor G. V. Black was observed and photographed in Jacksonville, Illinois by Frank J. Orland for his collection. The marker is quite attractive in color; it is concise yet adequate in description as the accom-
panying picture (Fig. 1) shows. It was erected jointly, after months of deliberation, by the G. V. Black District Dental Society, the Illinois State Dental Society and the Illinois State Historical Society. It marks the site of Dr. Black's home which contained his famous laboratory and his dental office, now reconstructed at the Smithsonian Institution in Washington. It was in this laboratory that he conducted his research, assembled inventions, and wrote innumerable original articles and books, all of which gained him world fame.

Unfortunately, the G. V. Black house was demolished years ago, but the home of his son has been restored and is standing next door to the west, as seen in Figure 2. This site is located almost on the campus of MacMurry College, some 200 meters to the east of the town square.

Ironically, when Dr. Orland and his wife, Dr. Phyllis Orland first drove into Jacksonville, they logically headed for the town square which is the active center of the area assuming that a historical marker would surely be found there. Upon inquiring at various houses of business and the bank, where no one knew about Dr. Black, Drs. Orland sought the public library which commendably had a whole file on G. V. Black. Even
his well-sculptured bust in the foyer stared down from its pedestal, but no librarian knew exactly where the historical marker was located, though they had heard about it!

Finally it occurred to Dr. Orland that he surely might learn the site from a local dentist. The few that were located on the square had heard of G. V. Black’s home, but it took one young practitioner who finally remembered that his father had attended the dedication of the marker, and provided the hint that it was up one street off the square toward the College. This was all that was necessary as a lead. It was found and photographed promptly.

To locate the gravesite of G. V. Black and his family was no problem since the Orlands had been there before. In point of fact, Frank wrote an article on G. V. Black based on that earlier visitation. (Editorial Views and News, J. Dent. Res. 45: 1373, 1966.) The other two photographs
were taken in the Diamond Grove Cemetery located in the southern part of Jacksonville. There is a large family tombstone with the single word BLACK on it, at the base of which is G. V. Black's headstone, and which is marked with an arrow in Figure 3. This is to the left of the large spruce tree said to have been planted at the time of G. V. Black's demise. At the base are several headstones with individual names including some of his sons and their wives. Unfortunately, there has been evidence of vandalism here and even the headstone of G. V. Black shown in Figure 4 has been marred. (The statue of him in Chicago's Lincoln Park had been earlier badly chipped.)

Greene Vardiman Black — the foremost man in his profession — was also interested in history as shown by his vast collection of books and memorabilia and in all probability might have become a member of the AAHD had it been organized but a century earlier!

![Figure 4.](image)

(Editor's note: Each year the Connecticut State Dental Association presents the "Alfred C. Fones Award" for outstanding contributions to dentistry. Named for the founder of the modern science of Dental Hygiene, the Award in the past has been bestowed upon such dental luminaries as Dr. Kurt Thoma, Dr. George C. Paffenbarger, Dr. J. Ben Robinson, Dr. Sterling Mead, Dr. Gerald Timmons, Dr. Harold Hillenbrand and many others as well as on non-dentists who had contributed greatly to the advancement of the profession such as Dr. William J. Gies, Senator Abraham Ribicoff and former Governor John Dempsey. This year the recipient of this coveted award was the former Past-President of the
Dr. Jacob Sharp, a native of New Haven has been a member of the dental profession since his graduation from the U. of Pennsylvania School of Dental Surgery in 1913. He is actively engaged in the practice of dentistry, and is affiliated with many civic and professional organizations. He became interested in the New Haven Hospital Dental Clinic which in 1934 became known as the New Haven Dental Clinic Society, and more recently as the Morton J. Loeb Dental Clinic Society. He was appointed assistant clinical professor of dental surgery, Yale U. School of Medicine, curator of the Thomas W. Evans Museum and Dental Institute, Sch. of Dentistry, U. of Pennsylvania, and later was appointed a member of the advisory committee of dental collections at the Smithsonian Institution. He was the chief librarian of the now extinct Edward S. Gaylord library of the New Haven Dental Association, and has served for many years as the historian of the Connecticut State Dental Association.

In 1947 he was elected president of the New Haven Dental Association, and in 1963-1964 served as president of the American Academy of the History of Dentistry. He is a Fellow of the International College of Dentists, and is an advisor on dental literature to the Yale Medical Library, and a past member of Trustee Associates.

In 1955 he authored the History of the Connecticut State Dental Association and in 1965 wrote its supplement. He contributed many articles on dentistry to professional journals and was a consultant on dentistry for the sub-committee of the Federation Dentaire Internationale.

Each year the Royal College of Surgeons of England sponsors the Menzies Campbell Lecture. This lecture, which is devoted to some aspect of the history of dentistry, is named in honor of one of the world’s greatest dental historians, Dr. J. Menzies Campbell of Glasgow, Scotland, who is also an Honorary Member of the American Academy of the History of Dentistry. The featured speaker for this year’s lecture which will be held on Wednesday, September 11th, at the Edward Lumley Hall, Royal College of Surgeons of England, 35-43 Lincoln’s Inn Fields, London, will be Dr. F. E. R. de Maar of The Hague, Netherlands. Dr. de Maar, an active member of our Academy, will speak on “The influence of 14th-19th century dental writings, with special reference to Dutch artists, guilds and instruments.”
The Working Group on Dental History of the Committee on Education of the Federation Dentaire Internationale will meet during the 62nd Annual World Dental Congress of the F.D.I. in London on Friday, September 13th. The meeting has been arranged jointly with the Lindsay Club of the British Dental Association. The tentative program is as follows:

Professor J. Boyes: Nasmyth and his Membrane
Mr. R. A. Cohen: Tim Bobbin and his Dental Prints
Mr. J. T. Cook: The influence of Angle
Dr. C. Gysel: L'Abbe Bourdelot (1610-1686)
Dr. W. Hoffman-Axthelm: Son academie et les dents.
Dr. A. B. Lofgren: Origin and Therapy of Dental Cysts (a historical view)
Mr. A. G. MacDonald: Two French dentists in Sweden about 1800: C. A. de la Faye and J. B. Dubost
Mr. J. D. Walter: Some early studies on the chemistry and physiology of saliva
The difficulties facing the Historical Research Worker.
Letters to the Editor

To the Editor:

I have just had an opportunity to review the December, 1973 issue of the Bulletin of the History of Dentistry.

I wish to sum up my preliminary response to the Bulletin in "fantastic." The information contained therein is of inestimable value, both for the clinician and the historian, in understanding and appreciating the perspectives of and on dentistry that project us into the future.

Best wishes on a job that continues to be eminently well done.

Warm personal regards,

Sincerely,

Raymond F. Zambito, D.D.S., M.A.
Chairman, Department of Dentistry
The Catholic Medical Center of Brooklyn and Queens, Inc.

To the Editor:

Knowledge of the past is a good help for better understanding of the future! As a historically minded orthodontist I have now and then been able to find interesting items in the Bulletin. I have therefore finally taken time to write this letter for a subscription, because I miss the Bulletin too much! One can't always borrow things.

I would also be very grateful for information about the conditions and means of securing an active membership in the American Academy of the History of Dentistry.

With many thanks in advance for your help,

I remain, yours sincerely

Dr. Juri Kurol

(DR. KUROL is associated with the Institute for Post-graduate Education of the Odontological Institute in Jönköping, Sweden.)

To the Editor:

Congratulations to you on another fine edition of the Bulletin of the American Academy of the History of Dentistry. I especially enjoyed the article by the student on the University of Buffalo Dental School. I have
an interesting picture taken, I assume, in about 1900 of the Anatomy Lab as it was in those days.

Some of the students, as I recall it, are wearing derby hats in the Lab. It was a picture I found in my father's papers. I think my brother-in-law has it now.

Sincerely,
L. L. Mulcahy, Jr.
Batavia, N.Y.

To the Editor:

Thank you for sending me copies of your review of the Library's Bibliography of the History of Medicine, Number 6, 1970. It is as important for us to learn about the deficiencies of this publication as about its merits. I am sorry that the subject of Dentistry received short shrift in this number, and in particular that the articles from the Bulletin of the History of Dentistry were not included.

To set the record straight, we do not intend to plead "computer error," since the Bibliography is not now nor has it ever been computer produced. Many citations to historical articles in medical journals are provided us by the MEDLARS computer, but all of them are reprocessed by hand for the Bibliography. Articles in the Bulletin of the History of Dentistry are not indexed for or filed in the computer. Along with most of the historical journals which are examined for the Bibliography, your Bulletin is indexed and processed completely manually in this Division, without reference to or entry in the computer system.

I am as anxious as you to have the articles of your Bulletin indexed for our Bibliography. Unfortunately, the History of Medicine Division has not yet received the volumes of the Bulletin which ordinarily would have been indexed in our Number 6 or Number 7. In fact, we have been informed that those particular issues of your Bulletin, Vol. 18 and 19 (for 1970 and 1971) were not received by this Library until September 1973, after which our Technical Services Division sent them directly to the binder rather than to the History of Medicine Division. Accordingly, we still do not have access to those volumes for indexing in the Bibliography. This will explain why no articles from them will appear in our Number 7, which has just appeared, and perhaps not in Number 8. Both issues of your Volume 20 are now in the Library, and No. 1 of Volume 21. All appropriate articles have been indexed and will appear in one of the forthcoming Bibliographies. Meanwhile, we trust that the missing volumes will appear shortly so we can include them also.

Sincerely yours,
James H. Cassedy, Ph.D.
History of Medicine Division
National Library of Medicine
Bethesda, Maryland

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To the Editor:

I would like to tell you how extremely appreciated the last issues of the Bulletin of the History of Dentistry were. I have been distributing copies to my colleagues here and my stock of the last issue is down to two. Thank you very much indeed for several extra copies.

Best wishes,
Otto C. Francke

(DR. FRANCKE, a frequent contributor to the Bulletin — his last article appeared in the December 1973 issue and concerned William Miller's attack on American dentistry — is the Editor of the Swedish Dental Journal.)

To the Editor:

Thank you, very much, for your letter of February the 20th with reference to our recent publication, In Search of the Hollidays.

Mr. Pendleton and I are most appreciative of your generous gesture in offering to review the book in the June, 1974, issue of the Bulletin of the History of Dentistry. I mailed the copy you requested a few days ago, and you should be receiving it shortly.

Needless to say, the research for our book has been most interesting. Unfortunately, the documentation concerning Dr. John H. (Doc) Holliday's professional schooling did not arrive in sufficient time to include it in the body of our book. However, we were able to incorporate this information in the back of the book under "Special Notes."

We also discovered a document in the local courthouse which proves that Doc did perform some dental work in Valdosta in 1871, prior to his graduation from the Pennsylvania College of Dental Surgery in 1872.

We know that he was associated for a short time with Dr. Arthur C. Ford of Atlanta and with Dr. John A. Seegar of Dallas, Texas, for a longer period of time. We are in touch with a relative of Dr. Seegar and hope in time to be in touch with relatives of Dr. Ford. Perhaps in time we will know more of Doc's professional work.

Thank you, again, for your interest. We have already had several interesting letters from dentists throughout the country as the result of the article which Dr. L. C. Holtzendorff authored for the January, 1974, issue of the ADA Journal.

Sincerely,
Mrs. Susan McKeé Thomas

(MRS. THOMAS is co-author of this new biography of Dr. Holliday which is reviewed in this issue of the Bulletin.)
Book Reviews


Your reviewer teaches a course to sophomore dental students in the history of dentistry and one of the course requirements is that each student write a term paper concerning some aspect of dental history. Not a year has gone by where at least three or four papers have not been turned in dealing with the life of that fascinating dentist who became a hero of the old west, known best for his gunfighting alongside Wyatt Earp in the O.K. Corral, "Doc" Holliday. "Doc" seems to have a perpetual fascination for us.

Holliday was a scion of one of the south's most respected families and after studying dentistry he hung out his shingle in his home state of Georgia somewhere in the 1870's. But he apparently contracted tuberculosis and was advised to seek the drier climate of the west, which in those early post-Civil War days was truly a wild and frightening place. So out west trekked "Doc" and it is indeed hard to follow his peregrinations, for he wandered in and out of towns and cities, doing a little dentistry and a little more drinking and gambling until "circumstances" made him move on.

His career has always fired the imagination of writers of the west, and the truth is as hard to believe as the stories written about him, but they are apparently true, for this biography of "Doc" Holliday is so meticulously researched that it would be difficult to find fault with the authors' conclusions. The list of references and persons consulted runs to about ten pages alone, and there is a valuable bibliography of other writings about this colorful colleague of ours.

And colorful he was! It seems that he took up with a woman named Kate Elder, described as a lady of "questionable character" and in the fall of 1877 he met up with Kate again in the town of Fort Griffin, Texas, where, incidentally, he met Wyatt Earp. But to quote from the book:

It seemed that things could not remain quiet for too long when Doc was around. He became involved in a gambling episode with Ed Bailey in Fort Griffin, which episode resulted in Doc's leaving there. Bailey drew a gun on Doc, and Doc let him have it with a knife. Bailey collapsed and died. Even though according to the law Doc was in the right, he was arrested and incarcerated in a local hotel room there being no jail in the city. It was evident that Bailey was popular among the townspeople, and it seemed that Doc's fate was doomed in spite of the circumstances. Kate came to Doc's rescue by setting fire to the back of the hotel, thereby creating a diversionary action in attracting the citizens' attention to the fire. Kate, armed with a pistol, proceeded to the hotel room "got the drop" on the deputy town marshal who had been left in charge of the prisoner, and set Doc free. Kate and Doc hid out during the night. When morning came, they mounted their horses (supplied by one of Kate's
friends) and headed for Dodge City. Once in Dodge, Doc renewed his friendship with Wyatt Earp, who made this town his headquarters.

One of the most valuable contributions this book makes is its settling once and for all the question of whether or not Holliday had an earned dental degree. Suffice it to say that he had, and the authors document that aspect of his life thoroughly. But this is just one small part of the book which on the whole is written with a great deal of love and interest, the distaff half of the writing team being a descendant of "Doc's" on his mother's side. In addition the many photographs of Holliday, and the numerous carefully done pen and ink drawings add a great deal of interest and charm to this book. It deserves wide circulation among all those who are interested in biographies of dentists as well as among those, too, who are concerned in tracking down the true stories of this nation's past.


More than half a century ago, Dr. William J. Gies, a Professor of Biological Chemistry at Columbia University keenly felt the need for a nonproprietary journal to communicate findings in dental research to a profession which was just beginning to make tremendous strides in controlling oral disease, one of mankind's most persistent and ubiquitous plagues. For most of the preceding three-quarters of a century dental publications were organs of dental supply companies or manufacturers; and although some exceptional journals did exist under this medium of sponsorship, such as the Dental Cosmos, many members of the profession had long felt that what was needed was a journal which was not tied to any commercial interests.

Accordingly, in 1880 a new publication, the Journal of the Allied Dental Societies was launched under the aegis of the Institute of Stomatology of New York in cooperation with three Massachusetts dental societies. By 1917 Gies conceived the idea that a new and larger publication was needed for the growing segment of the dental profession truly interested in research, and was so successful in convincing the Editorial Board of the Journal of the Allied Dental Societies of the soundness of his idea that this journal agreed to cease publication in December, 1918, to be succeeded immediately thereafter in January, 1919 by the Journal of Dental Research, a quarterly publication of increased size and significance, with an initial editorial staff totaling 67 members, chosen from among the leading investigators in all disciplines related to dentistry.

The Journal fulfilled Gies' original concept of merging basic scientists with men in dentistry only to the extent that it disseminated their research findings. But Gies felt that there must be an organization where
these men could meet on a one-to-one basis, and to this end he corresponded with about a hundred of the leading dentists of his day, seeking out supporters of his vision. Then on December 10, 1920, twenty-two men gathered for dinner at Columbia University and launched the International Association for Dental Research.

From this meeting Gies carried the idea to several other leading cities of the nation and was instrumental in having those area dentists set up local chapters of the I.A.D.R. From this tiny beginning has grown the major dental research organization in the world, with over 3,000 active members in fifty countries of the world!

As chairman of the I.A.D.R. History Committee, Dr. Frank J. Orland of the University of Chicago, was the primary organizer, editor and writer of this outstanding biography of an organization. A former Editor of the Journal of Dental Research for eleven years, from 1958 to 1969, Dr. Orland has a keen sense of the value of history. He is an active member of the American Academy of the History of Dentistry and a contributor to the Bulletin of the History of Dentistry, and this is evident in his preface where he states that "... it is only through an understanding of history that we can improve our evaluation of the present and attempt to guide the future with more enlightened and rational judgments."

To this end he has begun the book with contributions by noted professors of the history of science and the history of medicine who trace the changes in the scientific climate over the past half-century, as well as the grand achievements of medical science during that period. This is followed by a very brief, but very well written account of dentistry's history from the days of ancient Egypt to the date of the founding of the I.A.D.R.

The bulk of the book is given over to the histories of the various sections and divisions of the organization, in each case with them being written by the dentist who is the leader of the group, either from a geographic or disciplinary standpoint. This section would understandably have little interest to the general reader, but it is invaluable to the seeker of knowledge concerning the history of our profession, for Dr. Orland has done a heroic job of amassing his information from almost lost sources, a task that occupied him for more than four years!

The biographical sections are especially useful. These contain photographs and short biographies of the forty-nine past presidents, and a lengthy section entitled "Who in I.A.D.R. was Who" which has biographical data on several hundred deceased greats in the profession, material which might be difficult to find elsewhere.

The book is lightened considerably by Dr. Orland's flair for including some hilarious anecdotes about the members or the meetings of the organization. Photographs are copious, and it is especially interesting to see exactly what some of the greatest names in dentistry actually looked like, for too often we forget that these luminaries were workers like ourselves in this important branch of the healing arts.

Although fifty years have now gone by since the non-dentist William Gies laid the groundwork of the I.A.D.R., Dr. Orland makes clear that this organization serves such a vital need that it is sure to be
continued for many half-centuries to come. And he exhorts future
generations to write companion tomes to this one to mark each new half-
century of the I.A.D.R.'s existence. If they do as well as this book to
point up the growth of dental research, as well as the men who did the
research, they will also be making a major contribution to the history of
our profession.

Die Geschichte der Zahnheilkunde. By Walter Hoffman-Axthelm. 515

After carefully going through this book your reviewer was left with
a tremendous feeling of disgust with the American medical publishing
houses who will not undertake to publish a history of dentistry because
it is "not economically advantageous." But more than that am I fed up
with the dental profession in this country in general for not having
demanded of these publishers that they issue such a volume. One can
scarcely imagine a physician who doesn't have a history of medicine on his
bookshelf, be it Garrison or Castiglioni or any one of the numerous
histories of that profession which are constantly in print. Is it that den-
tistry hasn't a history worth writing about? That's patently nonsensical,
for where would medicine be if it weren't for the many discoveries, ad-
advances and techniques introduced by our colleagues in dentistry? Per-
haps it is that dentists as a group are interested only in those books
which can point the way toward financial aggrandizement to the neglect
of their cultural enrichment.

At any rate, dentists and publishers in other countries don't seem to
share their American confreres' lack of enthusiasm, for a glance through
some of the back issues of this Bulletin will show that all of those
histories of dentistry which have been reviewed in the past have been
products of foreign houses.

Here we have one of the finest books on this subject ever issued, bar
none! And great is the pity that many of our American colleagues will be
denied the joy of perusing it, nay, imbibing it, unless they happen to be
fluent in German.

The author, one of the world's leading dental historians who has had
innumerable articles in this field published in the leading European den-
tal periodicals, is a professor at the Institute of the History of Medicine
at the Free University of Berlin. His erudition, as well as his outstanding
command of his subject, shine forth on every page of this book.

The author begins his story with the status of dentistry at the very
dawn of civilization and carries it forward into our century, at all times
linking it to the general history of mankind. He documents his material
so fully that this book can serve as a tremendous source book for anyone
embarking on the study of any phase of dental history. Each chapter is
followed by a complete list of references to major works concerning that
period, and this is in addition to the extensive footnotes concerning
sources. The illustrations are of superb quality, and there are so many of
them which are new to this reviewer, that I wonder how it is that we have never seen them. The book is printed on the very finest coated stock, and thus the rendition of the illustrations is so incomparably fine that nothing I have seen in American textbooks can even approach them for quality.

However, physical quality alone is not all this book has to offer. The author is well aware of the huge strides made by American dentistry, and of the important part it played in influencing the development of dentistry worldwide. Thus a very large portion of the book is devoted to the growth and development of our profession in the United States, with extensive discussions of the contributions of such towering figures as G. V. Black, Kingsley, Riggs, Angle, Halsted, Hullihen and a host of others, far too numerous to list.

At the end of the book there is a fine bibliography of books on dental history, and this can well serve as the basis for a more complete collection on this subject, especially for health science libraries desiring of expanding their holdings in the history of medicine in general. This is followed by a biographical index which lists all of the many personalities discussed in the book; and at the end is an excellent subject index.

On second thought, the mere fact that one isn't familiar with the German language isn't barrier enough to keep one from enjoying this book. The pleasure of studying the illustrations and the extremely valuable and extensive lists of references for further study which, as I mentioned, accompany each chapter, make this an invaluable as well as pleasurable tool for the researcher in that marvelously exciting field of the history of dentistry.


Although the ancient Egyptians have long been admired for their advanced technology and flourishing civilization, it has always seemed strange that they did not excel in the field of medicine. It would appear that of all the population, the Pharaohs would have had the best of medical attention; yet recent studies of the mummies of several of these rulers by both radiographic and pathologic means has demonstrated that they suffered from a wide variety of diseases which apparently went untreated, and not the least among these, dental diseases.

Surprisingly, however, we have had a great deal of information available to us about the medical and surgical treatment which was practiced in ancient Egypt, especially so since the Egyptians were so fond of maintaining lengthy records as well as decorating their tombs, temples and palaces with long and descriptive wall inscriptions. What the author of this book has done has been to gather together much of this material and present it in a cohesive, understandable and, most important, a readable fashion. Not an Egyptologist, the author nevertheless has im-
pressive credentials since he has practiced medicine in Egypt for over 30 years and held the post of Senior Professor of Medicine at Ain Shams University in Cairo.

Beginning his discussion of Egyptian medicine with a description of their beliefs and practices in magic and sacerdotal medicine, he then goes on to consider some of the principal sources of our knowledge, the various surgical and medical papyri which have been discovered at varying times over the past century, and includes not only the well-known Ebers, Hearst, and Edwin Smith papyri, but other lesser known writings, quoting extensively from them and pointing out where incorrect translations led to misconceptions about Egyptian medicine.

The book also contains lengthy discussions about the various branches of medicine and the modes of treatment of each, ranging from the bizarre to the rational. It is in this section of "Special subjects" that the dentistry available in those far-off times is considered. The author's conclusion is that there must have been a dental profession, practiced, no doubt, as a specialty of medicine, and this conclusion is arrived at in spite of the fact that we have almost no artifacts, such as prosthetic appliances, to back up this contention. For example, one of the most important finds was a set of two natural teeth bound together with gold wire. The assumption has been made that the unknown patient suffered from periodontoclasia and that a weakened tooth was bound to one with more bone support. However, since this was found apart from any skull, others claimed that it was probably an amulet rather than an example of dental treatment. The author supports the idea that it truly represents dental care, since he points out that the "... workmanship of (this) piece is quite primitive compared with the exquisite craftsmanship of Egyptian jewelry, and fits better a mechanic's job performed under the difficult conditions obtaining in an oral cavity."

The author has done an admirable job in bringing together so much important material and documenting his findings so thoroughly (his references alone running to ten pages!) Yet he leaves us tantalizingly unsatisfied as to the reason that more extensive medicine wasn't practiced; that the level of achievements of these remarkable ancient people with regard to repairing the human body was nowhere up to the level of their overwhelming accomplishments in architecture and engineering. Nevertheless, the book is a fascinating one, of certain interest to any who are concerned with the background of the healing arts.


Pictures have long held a fascination for many people, and this was true as well of a young physician named Otto Bettman who began collecting pictures on all subjects many years ago, and whose collection has become today what is probably the world's greatest commercial storehouse of pictures on any conceivable subject, the Bettman
Archives. Several years ago Dr. Bettmann selected pictures from his vast collection dealing specifically with the field of medicine and its allied sciences, and put them together with a finely written text which traces the history of the healing arts from the days of the ancient Egyptians to the beginnings of the era of modern medicine, to the accomplishments of those giants such as Koch, Pasteur, Lister, etc. To cover the field of the medicine of today would, no doubt, require another volume.

In this book Dr. Bettmann presents the course of medicine as a part of the whole realm of human experience, and makes it abundantly clear that the story was not always one of uninterrupted progress. The benighted physicians with their totally worthless medical knowledge who flourished in the early renaissance are included along with the great breakers of new paths to healing truths.

There seems to have been no special climate for medical discovery; great discoveries have been made almost everywhere and anywhere. Wherever there were people, among them were to be found persons intrigued with the search for solutions to human suffering, and these people were not physicians only, but dentists, nurses, physicists, chemists and innumerable others who were in one way or another exposed to the intriguing search for truth.

This book is not primarily for the historian of medicine, but rather is designed for the general physician or any other educated and interested person, in the health science field or out of it. It is sumptuously produced on fine stock, and it fairly bids one to pick it up and peruse it. But once one does he's hooked, because the photographs chosen from that vast storehouse of Dr. Bettman's 30 years of research keep one's interest throughout, having been chosen for their unusualness and difference from the run-of-the-mill medical illustration. In addition, it makes a superb gift to anyone in the field of the healing arts.


One of the longtime members of the American Academy of the History of Dentistry has just had published this very fine, but unfortunately too short, outline of dental history. Dr. Monica, who is a special lecturer in dental history at Fairleigh Dickinson University, has compiled this short account of the origins and growth of our profession with the general dentist, dental student or even the layman in mind. It is written in an entertaining, anecdotal style, and adapts well to use as an introductory text in courses on dental history at the lower levels of instruction in dental schools.

The author has grouped his topics by subject matter, rather than approaching it through the traditional chronological approach. Thus there are chapters on Extractions, Concepts of Decay, Dental Organization, Fillings, Early American Dentists, and so on. This is a good system of
organization and gets us away from the stereotyped thinking associated with most history textbooks. The last 40 or so pages of the book are devoted to small anecdotes about famous personages and their experiences with dentistry, little stories about some of dentistry's great men, or just plain homey news items culled from the daily press in which dentistry played a part. Thus I learned that a clothing store proprietor in New Jersey was held up by two bandits who relieved him not only of his cash but also of his gold lingual bar partial denture!

This illustrated, softbound book is available at a reduced rate of $2.00 per copy when ordered in lots of 20 or more. It will prove especially valuable in those schools which do not include a course in dental history in their curriculum.

Interesting and informative as this book is, it still does not fill the great need which exists for a definitive history of our profession, in the English language, hopefully of the caliber of Dr. Hoffman-Axthelm's outstanding new book, which is also reviewed in this issue.
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NOTICE TO CONTRIBUTORS

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.

Manuscripts as well as correspondence relating to the publication of papers should be addressed to the Editor, Bulletin of the History of Dentistry, 4 Bank Street, Batavia, New York 14020.

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Our new President, Dr. J. Henry Clarke is a man who has shown exceptional devotion to the cause of dental history and brings to his new office a wealth of experience.

Born in Salt Lake City, Utah in 1930, he received his B.S. from Portland State College in 1958 and his D.M.D. from the University of Oregon Dental School in 1961.

Upon graduating from dental school, Dr. Clarke entered private practice in Portland and also became a member of the staff of Woodland Park Hospital in Portland, serving in 1970 and 1971 as Chief of the Dental Service.

Dr. Clarke began teaching the History of Dentistry at the University of Oregon Dental School in 1970, and in 1971 accepted a half-time position as Supervising Dentist in the Department of Dental Hygiene. Finally, in 1974 he gave up private practice to devote his entire time to teaching, and was appointed Chairman of the Department of Behavioral Science. Among his other duties he is responsible for instruction of dental students and dental hygiene students in History of Dentistry, Behavioral Science, Dental Anatomy, Preventive Dentistry, Expanded Duties for Hygienists and a new offering called “Omnibus” which is intended to introduce freshmen dental students to the scope and career areas of dentistry.

In 1974 Dr. Clarke was awarded the Outstanding Instructor’s Award by the freshman dental hygiene class at his dental school. A further honor was his election as faculty representative for a three-year term to the American Association of Dental Schools by the dental school faculty.

Our new President has served our Academy diligently and well in
the past. He has been chairman of the Committee on Teaching Dental History and did much to make the Symposium on the Teaching of Dental History such a success when it was held by our Academy in November of 1970. He also has done an outstanding job as chairman of the Bremner Award Committee for the past three years; served as chairman of the Committee on Local Arrangements for the annual meeting in 1970; as well as serving on the Membership, Program and Finance Committees at various times.

In addition to his membership in the American Academy of the History of Dentistry and his national, state and local dental societies, our new President is a member of the American Society of Preventive Dentistry, the American Association of Dental Schools, The Oregon Society of Forensic Odontology, the Oregon State Historical Society and the Smithsonian Institution.

The entire membership joins in wishing Dr. Clarke a happy, fruitful and satisfying tenure as President of our Academy. It is clear that under his leadership our organization will indeed move ahead!
The Evolution of Professional Ethics in American Dentistry

—CHESTER R. BURNS, M.D., Ph.D.

Galveston, Texas

No person is value free; we are all bundles of values; we are all our own “top value” stamps. We may or may not be aware of the social sources, intellectual meanings and emotional intensities of our various personal values. We do experience conflicts among these values, and these values change as we grow and develop. We become value laden in at least four ways: by being members of a family; by being pupils in schools; by being parishioners in churches; and by being citizens in a given political system. We learn manners and customs from our parents; we learn ways to define the “good life” from philosophers and school teachers; we learn about ultimate purposes from clergymen; and we learn rules and penalties from law makers and political authorities. Throughout the history of the United States, dentists have behaved both as persons and as citizens. In so doing, they have learned values from their families, churches, schools, and community groups (governing and non-governing).

FOUNDATIONS OF EARLY ETHICAL CODES

It has not been possible for most American dentists to create patterns of professional ethics without relating them to their values about individuals and groups. As early as 1839, Solyman Brown, one of America’s most renowned dentists, proclaimed: “Our daily calling which brings us into constant intercourse with our fellow man, is the proper sphere in which this law of love should operate, and he who imagines that charity and high toned Christian morals are very becoming in our religious connexions, and in our domestic relations, but have little to do with our business transactions . . . has, in my opinion, lost the immortal substance of true religion by grasping at its pale and meagre shadow!” Thus it is not surprising that Section I of the Code of Ethics of the American Dental Association, adopted in 1922, read as follows: “In his dealings with patients and with the profession, the conduct of the dentist should be in accordance with the Golden Rule, both in its letter and in its spirit.”

Additionally, the ideal American dentist was expected to be a gentleman. As W.H. Robinson said to members of the California State Dental Association in 1879, “If a member of our Association is a Gentleman, he will not violate our ethical code, and if he is not, all the punishment we can enforce will have as little influence on his moral cuticle as a flea bite on an elephant.” In extending these ideals to groups, some dentists exhorted their colleagues to be patriotic, to
promote the cause of democracy. "Without a lengthy analysis, I may divide the duties of the dentists... into three groups: First, his duties to his country and to the general cause of humanity..." said G.S. Dean in 1894. Thus, American dentists, as also physicians, have announced their personal and social obligations as individuals.

THE SPECIAL NATURE OF PROFESSIONAL ETHICS

Although it was not possible to deal with patterns of professional ethics without recognizing their connections to values about persons and about communities, it was possible — indeed, necessary — for American dentists to construct patterns of professional ethics that were not identical with these personal and community values. Dental practitioners have professed special personal and social values qua professional, and they have professed a willingness to "police" themselves in terms of these "special" values. These professional ideals emerge from judgements made within a network of four kinds of human relationships in dentistry: 1) those involving the demands of teachers and scientists as a layman is transformed into a knowledgeable and skillful practitioner; 2) those occurring during the transactions of an individual dentist with his individual patients, 3) those emerging from the relationships of a dentist with a variety of groups in a community, of which he, his colleagues, his assistants, and his patients are only a part, and 4) those arising during the interactions of a dental practitioner with colleagues, assistants, and other health professionals who, together, provide care to individual patients and community groups.

To portray certain highlights in the evolution of professional ethics in American dentistry, each of these transactional networks will be reviewed now. These highlights will be placed within the context of the evolution of professional ethics in American medicine as a whole.

HOW DEVELOPMENT OF KNOWLEDGE AND SKILLS AFFECT ETHICAL CODE

As a professional person, a dentist professes that he possesses a certain kind of knowledge and a certain set of skills. One ethical assumption is basic to this posture: knowledge is better than ignorance. Beyond that, practitioners have created and expressed a variety of ideals regarding what a dentist should know; whether or not a dentist should create knowledge as well as apply it; what the best environment for creating, transmitting, and using knowledge ought to be; and whether or not dentists have obligations for continued "knowing."

In viewing American medicine before the Civil War, not all citizens nor all physicians fully accepted the basic assumption; much less, the need for constant attention to the logical implications of that assumption. The problem, then, was one of persuading and demonstrating to both laymen and professionals alike that knowledge was better than ignorance. From the time of John Morgan's denunciations in 1765 to the reforms of medical education initiated by Charles Eliot at Harvard in
1869, many American physicians proclaimed the importance of educational ideals as integral components of professional ethics. The reforms at Harvard presaged a veritable crescendo of reformations in American medical education, culminating in the report by Abraham Flexner in 1910.

Similar voluntary, intramural efforts were made in establishing standards for American dental education.

Said Solyman Brown in 1839, “The truth is, the profession of Dentistry is both an art and a science; an art that requires great mental cultivation.” Throughout the 19th century, numerous dentists reinforced the implication of Brown’s remark by exhorting their colleagues to acquire a thorough education as the sine qua non for a dental professional. Quotations from numerous individual dentists could be offered.

Rather, recall the important groups of dentists and dental professors who sought to improve dental education between 1884 and 1923: The National Association of Dental Faculties (1884), The National School of Dental Technics (1894), The Institute of Dental Pedagogics (1900), The Dental Faculties Association of American Universities (1908), The Dental Educational Council of America (1910), The American Institute of Dental Teachers (1914), and The American Association of Dental Schools (1923). (The dates in parentheses refer to the years of the founding of these organizations.) Their efforts culminated in the Carnegie Foundation’s Bulletin #19, Dental Education in the United States and Canada, A Report to the Carnegie Foundation for the Advancement of Teaching by William J. Gies, published in 1926. These reform activities represented concerted efforts to establish superior standards in American dental education during the last 130 years.

THE NEED TO ESTABLISH SCIENTIFIC PRINCIPLES BASED ON EXPERIMENTAL METHODS

In this first category of relationships, though, an emphasis must be given to the emergence of experimental science in medicine and dentistry. Rational medical and dental practice could not be morally right without truthful theory. Teachers and investigators had to determine which portions of medical and dental knowledge were true and which false. The establishment of these scientific standards would justify a formal process of teaching these principles to prospective practitioners, and it would increase the probability of practical successes in treating the sick. Also, by diminishing some of the omnipresent intraprofessional conflicts, these standards would help to produce more community respect for practitioners.

In 1865, the Paris physician, Claude Bernard, published a work that goes by the English title, An Introduction to the Study of Experimental Medicine. Using physiology as a model, Bernard offered a brilliant defense of the philosophy of experimental science. In the last thirty pages of the book, Bernard extended his remarks to the realms of pathology and therapeutics, arguing that the same experimental method
should be the basis for improving these medical domains.

During the 1860's, this model of experimental science became a visible part of American medicine. In 1863, Dr. J.J. Woodward started a laboratory for Microscopy, Anatomy, and Pathology at the Army Medical Museum. In 1869, Henry P. Bowditch was appointed Professor of Physiology at the Harvard Medical School and established the first university laboratory of physiology in the United States. A variety of scientific laboratories were established in medical and dental schools during the latter three decades of the 19th Century, and, as you recall, the Rockefeller Institute opened in New York shortly after the turn of this century.

The opening of the research hospital at the Rockefeller in 1910 signaled, for American physicians, the use of the experimental method on man himself. It became possible to initiate the Journal of Clinical Investigation in October of 1924. In the first issue of this journal, the author of an essay entitled “Purposes in Medical Research” recognized Claude Bernard and his philosophy of experimental science. Three years later, Bernard’s Introduction to the Study of Experimental Medicine was translated into English. To view it another way, this translation was made just 47 years ago, and is symbolic of a fundamental shift in American medical science during this century.

In that same year, 1927, the application of a philosophy of experimental science to dentistry was championed in an outstanding address given by Dr. Fredrick C. Waite at the annual meeting of the Ohio State Dental Association:

Compared with the activity in other sciences, dental research by the scientific method, which alone leads to reliable results, is dormant,” said Dr. Waite. “Is it not astounding that dentistry claiming to be a learned profession — now independent for more than half a century, and having allotted to itself everything regarding the teeth, by notifying medicine to keep away from them — that dentistry does not today, know the intimate structure of enamel; is not agreed as to whether or not the dentinal tubules contain a nerve of fibres; knows little of the structure or function of the dental pulp; has not accurate knowledge of the cause, course and prevention of caries or pyorrhea; is entirely vague as to the relation of nutrition to the development, growth and decay of teeth; and rests its great amount of talk regarding the relation of tooth infection to systemic disease upon speculation rather than upon facts indisputably proven by repeated and reliable investigation by the scientific method.4

This was a momentous invitation for dentists to cultivate experimental research, a call that has been heeded during the last 47 years. It is unnecessary to cite the numerous theoretical and practical advances that have occurred as a result of dental research and the application of experimental science to dental problems.

As the quantity of discoveries mushrooms and the quality of insights improve, we tend to forget the youthful age of educational and scientific standards in American dentistry. To repeat, contemporary standards of dental education and dental science are a product of only the last 100 years of human effort.
THE ROLE OF CARE OF INDIVIDUAL PATIENTS IN DEVELOPING AN ETHICAL CODE

Dentists profess to use their knowledge and skills in solving particular health problems and meeting particular health needs of individual humans. Conscientious practitioners have always appreciated that the central transaction between practitioner and patient, i.e., the selection of a remedy for a sick person, is also the central concern in professional ethics, the pre-eminent obligation of a health professional.

During the last 100 years, many ethical problems concerning treatment have been experienced by American physicians and dentists. The apparent success of experimental science caused outstanding changes in these experiences, changes associated with the appearance of specific pharmacological and surgical treatments.

In the 1860's bleeding, cupping, and blistering had not disappeared in medical practice. Physicians employed calomel, cinchona, opium, digitalis, ether, ipecac, antimony, and smallpox vaccine. They also used molasses and flour for burns, spider's web as a nervous stimulant, oil of skunk for hysteria, alcohol as a tonic, and oil of turpentine for a variety of complaints. There were only three synthetic drugs listed in the 1870 U.S. Pharmacopoeia: chloroform, iodoform, and chloral hydrate. In 1938, sixty eight years later, there were 157 synthetic drugs listed in the U.S. Pharmacopoeia. With the growing skepticism about empirical remedies, and with the phenomenal growth in knowledge of structure and function of animal and human bodies produced by using the experimental method championed by Bernard, pharmacology and pharmacological therapeutics had replaced the materia medica of old.

During the last 100 years, human beings developed an understanding of drugs and their effects in ways unknown in previous history. This understanding has enabled man to create specific drugs for specific purposes. Some 3,400 new drugs were brought onto the U.S. market between 1938 and 1962. What an extraordinary and drastic revolution in drug remedies! In addition to the ethical problems of clinical investigation and experimental testing that has accompanied this revolution, the advent of anesthetics and antiseptic agents including antibiotics has altered the entire spectrum of surgical and dental therapeutics during this same 100 years. The impact on patient care in dentistry has been profound, altering nearly all therapeutic decisions and their associated value judgments.

Yet, even before many of these drugs were available, most dentists agreed with Edmund Noyes who, in 1923, emphatically claimed that the primary goal in the practice of dentistry was "the welfare of the patients" committed to the care of dentists. "The relation of a dentist and his patient is not that of seller and buyer, nor that of employer and employee," said Noyes. "It is a trust, confided to the dentist by his patient, who entrusts his future comfort, beauty, health, not infrequently the prolongation of life itself, to the knowledge, skill, good judgement, sincerity, honesty and disinterestedness of the dentist."
HOW RELATIONSHIPS TO COMMUNITY GROUPS AFFECT ETHICS

As the third set of relationships, dentists relate to both governing and non-governing groups in the community. That is, a dentist professes to use his knowledge and skills in solving particular problems and meeting particular needs in the community. He professes not only to be responsible for improving the health and well being of an individual patient, but also for improving the health and well being of the community, obligations commonly shared with physicians.

Although novel and not generally accepted, American physicians had, by 1847, acknowledged professional obligations toward a community qua community. In the code of medical ethics adopted by the American Medical Association in 1847, practitioners identified the following values: that physicians should honor all requests for their opinions at coroner's requests and in courts of justice, and that physicians should aid legislators in all matters of public health. Subsequently, physicians became more and more involved as expert witnesses in courts and began to experience a steady increase in malpractice accusations. Also, they gradually began to express their concerns for communities by supporting public health reforms. After the turn of this century, many physicians urged the inclusion of public health and preventive medicine in the medical curriculum and even supported the development of specialized schools of public health. These events also affected dentists.

It is not by accident, for example, that the first book on professional ethics in dentistry published by an American dentist included a section on Forensic Dentistry. Probably occasioned by the new code of ethics adopted by the American Dental Association in 1922, Edmund Noyes, Professor of Ethics and Jurisprudence at the Northwestern University Dental School, published his monograph in 1923. Entitled Ethics and Jurisprudence for Dentists, the third part of his book included several chapters on jurisprudence and dentistry. As with physicians, dentists had become more active as expert witnesses and had begun to experience some malpractice proceedings. Like physicians, moreover, dentists gradually included preventive dentistry in their curricula and, especially since 1950, they have become significantly more concerned about the public health aspects of dental care.

ETHICAL RELATIONSHIPS TO COLLEAGUES AND OTHER HEALTH PROFESSIONALS

The fourth category of professional relationships involves those between dentists, and those between dentists and their assistants and other health professionals. Among physicians, the need for these relationships was fully apparent by 1800, as enduring medical societies had been organized in nine states. By the 1860's physicians had grouped themselves into approximately 80 distinct local, state, and national medical societies. Most of these societies were organized on a voluntary
basis, and most of these voluntary societies adopted codes of medical ethics.

Prior to 1847, the most influential codes were adopted in Boston (1808), New York (1823), Baltimore (1832), and Philadelphia (1843). The code adopted by the American Medical Association in 1847 represented a unification of the various state and local codes already in existence. The AMA code was voluntarily adopted by many local societies during the ensuing eight years. In 1855, the American Medical Association resolved that all state and local societies had to adopt the AMA code of ethics if they wanted to send delegates to the annual meetings of the Association.

Many physicians resented this bit of coercion. In fact, the AMA code dramatically illustrated the perennial American problem of balancing individual freedom and institutional coercion. The code was actually a form of group persuasion with coercive force inherent but seldom applied. A code set limits, thereby defining certain acts as moral and certain as immoral, just as a law made certain acts legal and others illegal.

Thus, a fundamental reason for resistance to codification among physicians was the problem of enforcement. Who would be the "policeman" in the societies? Who would be the "judges" and what penalties would be used? Since individual physicians and the medical societies desired a maximum amount of freedom, it is not surprising that it took a long time to establish disciplinary mechanisms in the state medical societies and in the American Medical Association.

PROBLEMS ASSOCIATED WITH ADOPTING A CODE OF ETHICS

A remarkably similar course of events occurred among dentists who wished to elevate standards of dental practice in the United States. In 1866, at the sixth meeting of the American Dental Association held in Boston, a Code of Dental Ethics was adopted in spite of much opposition. This Code included articles that dealt with the duties of the members of the profession to their patients, maintaining professional character, the relative duties of dentists and physicians, and the mutual duties of the profession and the public. In the following year, there was an unsuccessful attempt to make adoption of this code a mandatory requirement for membership in the American Dental Association. Fourteen years later, in 1880, this mandatory requirement was adopted. Dentists, presumably, were experiencing the same problems of enforcement as did the physicians. By 1891, only two alleged violations of the code, both regarding advertising, had been reported. No punishment was rendered in either one. In that same year, the Association agreed to prohibit individuals violating their code from holding clinics or giving other exhibitions at the various sections of its annual meeting, suggesting that violators were known.

In 1897, the year in which the Southern and American associations merged to form the National Dental Association and 30 years after the adoption of the Code of Dental Ethics, a dentist was dropped from the membership list of the American Dental Association because of un-
professional conduct.\(^{13}\) In the following year, a committee from the newly formed National Dental Association began to prepare a revised Code of Ethics. At the annual meeting in 1899, this revised code was adopted.\(^{14}\) The new code was essentially the same as the one that had been adopted in 1866, with the only major change being an added paragraph regarding consultations. When the National Dental Association reorganized in 1912, it did not change the code that had been adopted in 1899.\(^{15}\)

**REFINEMENTS IN THE CODE**

The next major change occurred in 1922 when the organization assumed its original name as the American Dental Association and adopted a new Code of Ethics at the time of its meeting in Los Angeles.\(^{16}\) This Code was considerably shorter and rather different from the previous codes. In fact, it was almost identical with a code of ethics that had been adopted in May of 1909 by the Illinois State Dental Society. Five of the seven sections dealt with ways in which dentists should interact with each other, and the remaining two sections exhorted a dentist to abide by the Golden Rule and to be "morally and mentally and physically clean," "honest," and a "cultured and professional gentleman."

Until 1950, this emphasis on intraprofessional interactions remained characteristic of the adopted and revised codes. A major enlargement of the code occurred in 1928, but the values incorporated into that code involved, for the most part, ways to sustain professional loyalty.

In 1950, the Association adopted a revised Code of Ethics that had been prepared by its Judicial Council in the preceding year. Although most of the previous sections were included in the new code, in one way or another, there was a stated recognition by the Council that dentists had responsibilities to the public, to their patients, and to their fellow practitioners. There was also a disclaimer that the sections of the Code did not "cover the whole field of ethics for members of our profession."\(^{17}\)

Subsequently, the Judicial Council converted the sections of this Code into a set of "Principles of Ethics" that was approved in October of 1955. The Council encouraged all dentists to use the "Principles" as guidelines and also urged component societies of the Association to "adopt additional provisions or interpretations not in conflict with these Principles of Ethics which would enable them to serve more faithfully the traditions, customs and desires of the members of these societies."\(^{18}\) During the 1950's and 1960's, a number of state societies accepted this invitation and adopted codes that were modifications of the Principles. Another revision occurred in October of 1960 and the Judicial Council has offered and continues to offer advisory opinions based on its interpretations of the Principles.

**WHY IS A CODE OF ETHICS NECESSARY?**

For any group of health professionals, including physicians and dentists, codes of ethics represent badges of respectability and models
for proper conduct. Adopted in a spirit of shared authority and compromised freedom, a code is a bill of rights as well as a loyalty oath. It is a set of intramural "laws" designed to boost morale and to shield professional consciences. It is a means of intraprofessional discipline, a guide for intraprofessional policing. It is a statement of the ethical bonds of practitioners, an expression of shared desires to maintain high standards of practice.

Usually, these norms have not been determined by educational or scientific idealists. Rather, they have been defined by groups of practitioners who are trying to circumscribe their interprofessional and intracommunity purposes. To be members of dental societies, for example, dentists agree to abide by the rules. Fulfillment of these ethical objectives produces improvement for all members of the dental profession. Moreover, adherence to these standards produces a distinctive group of practitioners within the community, state, and nation.

However, that distinctiveness has not, in our democracy, become exclusive for dentists or physicians or other health professionals. A very important development in this fourth category of professional relationships involves the manner in which these relationships between dentists and between dentists, assistants, and other health professionals including physicians have become exceedingly complex and complicated in our society during this century.

American health professionals have subdivided themselves into a remarkable mixture of specialists and subspecialists who experience obligations only for certain parts of an individual human. These specialized imperatives make it extremely difficult for individual health professionals to understand the manner in which their specialized social roles interdigitate in the care of an individual or in solving the health problems of a given community.

CODES IN AN ERA OF MULTIPLE DISCIPLINES

During this same period of time, American health professionals have extended themselves into so-called teams. They have permitted the fragmentation of a medical profession into an incredible hodgepodge of highly specialized health professions. There are multiple, competing groups of generalists, primary care specialists, surgical, medical, and dental subspecialists, allied health professionals, paramedical technicians, and a social smorgasbord of assistants and aides.

What is extraordinary for these relationships between the varied health professionals is that each group — be they nurses or social workers or physicians or occupational therapists or dentists or dental assistants, or dental hygienists — has created a code of ethics for itself. And, as you might suspect, none of the groups has expended much effort in correlating its particular code with those of other health professional groups. It is noteworthy that some specialized groups of health professionals including psychiatrists and public health professionals have no generally applicable codes at all.

Some of the principal features in the evolution of professional ethics in American dentistry have now been reviewed. Emphasis has
been placed on the development of educational and scientific standards, the appearance of specific pharmacological and surgical treatments that enable better care for sick individuals, the discharge of professional obligations toward communities in terms of forensic and public health activities, the grouping of individual practitioners into societies who adopt codes and establish disciplinary policies, and the complexity of colleague relationships emerging from the interactions of varied health care professionals.

American dentists, therefore, profess special personal and social obligations as scientists, as practitioners for individual patients, as practitioners for groups of individuals and as one kind of health professional among other health professionals. A dentist, furthermore, professes to voluntarily police himself in terms of these special obligations.

What about the reciprocal obligations of teachers, scientists, patients, nurses and other health professionals, and lay groups? Do they have any obligations toward dentists? This question points to one of the most perplexing problems in understanding professional ethics, namely, the extent of moral responsibilities.

A pervasive theme in the evolution of American health professional ethics is that neither physicians nor any other group of health professionals have been willing to accept total responsibility for the comprehensive care of individuals and groups. With the emergence of scientific specialists, multiple kinds of personnel in hospitals and other health care facilities, distinctive health professional groups other than physicians, and the democratization of responses on the part of lay groups in our society, physicians or dentists or other groups of health professionals are willing to share in total responsibility for the health care of individuals and groups, but they are unwilling to accept total responsibility for this care. A central tenet of the ethics of American health professionals that has been prevalent, particularly since the middle of the 19th century, is that of mutual responsibility between the health professions and the communities they serve.

WHAT IS THE RESPONSIBILITY OF THE PROFESSIONAL PERSON TO THE COMMUNITY HE SERVES?

In addition to conflicts of values that emerge from trying to determine the extent of moral responsibility for the human predicament, there are conflicts of values within each of the dimensions of professional relationships previously reviewed and, also, there are conflicts among a dentist's values about persons, his values about professional persons, and his values about the community in which he or she lives. These conflicts are pervasive, and today we are witnessing and participating in a renaissance of concern generated by these conflicts.

In terms of science alone, how do knowers "police" themselves? Existing codes of ethics do not specify the nature of the scientific differences for each professional group as the basis for the rights and privileges of professional status, even though these are the principal
differences between the groups. Moreover, there are no provisions in existing codes nor specific codes of ethics for medical scientists and teachers qua scientists and teachers. What are the obligations of those who profess to know and those who profess to create new knowledge?

In terms of individual patient care, there are few patient-dentist situations in which decisions of therapy and management do not involve some risks and conflicts. The conflicts often involve a decision about the best of two good remedies or two good surgical procedures. The conflicts become even more painful when technically possible procedures, such as abortion, or prolonging cellular life, or extraction of teeth, make it necessary for health professionals to determine whether these procedures are ends in themselves or means to other ends.

Attempting to discharge one's community responsibilities gives rise to persistent dilemmas between one's role as a citizen and one's role as a dentist. These conflicts are readily seen in discussions about the extent to which dental students should understand the urban crisis, the propriety of the health professional who publicly protests about military events, and the involvement of dental school faculty or dental practitioners in national, state, or local political contests.

Yet, the very nature of these conflicts and their pervasiveness offer challenges to all of us in creating and understanding our professional values. We must recognize the perennial tensions between quality and equality in our democracy and appreciate the nature of these tensions as they contribute to the health enigmas of our society. We must discard a few myths about dental ethics that are sometimes expressed, more often felt. These include such myths as professional values are constant, unchanging phenomena; or dentists are naturally good and just; or dentists will eventually solve all of the ethical problems in dentistry. We must give young professionals and students the freedom to face the dilemmas and paradoxes of their own time; the freedom to allow old professional ideals to decay, or to bring new vitality to old ideals, or to create and vitalize new professional standards.

WHAT IS NEEDED FOR THE FUTURE?

We need a spectrum of professional values that are worthy of our daily allegiance, worthy of being taught to future generations of professionals, and worthy of being recalled and used in judging professional propriety and the lack thereof. We need a spectrum of professional values flexible enough to be revised, hardy enough to withstand repeated stresses and strains. We will probably not discover these values by ritually genuflecting before a Dentist's Creed once a year, or by reciting the ADA's Principles of Dental Ethics once in a lifetime.

Let us strive for a comprehensiveness of view, a realistic view of the many dimensions of professional values. Let us be willing to conscientiously determine the origins and meanings of our personal, professional, and social values and be willing to openly and freely discuss the paradoxes and conflicts emerging from this conscious examination. Let us avoid narrowness and dogmatic exclusiveness. Let us create
some pattern, some coherence that provides a vision of the breadth and depth of the whole of the health professions and, in so doing, let us recognize that dentistry needs a broad conception of standards embracing many kinds of excellence at many different levels.

ACKNOWLEDGMENTS

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In Memoriam
Dr. J. Menzies Campbell

J. Menzies Campbell,
1887-1974

On June 27, 1974, one of the world’s foremost dental historians, authors and bibliographers passed away at his home at Glasgow, Scotland at the age of 87. He was the renowned J. Menzies Campbell whose name and writings are known throughout the world of dentistry, and who had pioneered in many a virgin field of study. In fact, to quote his wife Margaret, Menzies Campbell felt “...that there was still so much to do that he hoped that as he had ploughed only a few furrows in a very large field, others would be able to do a good deal more.”

His whole life was devoted to teaching and inspiring the younger men in the field to develop a true and full appreciation of the heritage of the excellent profession they had entered, and he also addressed his writings to the lay public to help them attain an understanding of the benefits of modern dentistry. In fact, he gave the very first B.B.C. radio talk on oral hygiene on April 13, 1923, feeling, as he put it, “... that passing clean food over foul teeth was comparable to delivering laundry through a coal chute.” He also authored the book Those Teeth of Yours: A Popular Guide to Better Teeth which appeared in 1929 and again in 1931.
His writings in the field of dental history were voluminous; (a partial bibliography follows this obituary), and he endeared himself to the profession with his charming recounting of his experiences in dentistry in the article "Fifty Years in Dentistry" which appeared in two parts in the September and December 1956 issues of the British journal *Dental Magazine and Oral Topics*. In this paper his wit and charm shine through as he describes dental practice in Victorian days when a dentist was "... attired, when operating, in a black frock coat... a stiff white shirt displaying about two inches of cuff, and a very high linen collar termed a choker. If a practitioner favoured a mustache, it was invariably lengthy, waxed and so finely tapered as almost to resembled a barbed nerve extractor!"

Menzies Campbell was born in Paisley, Scotland on June 9, 1887. He was educated at George Watson’s College in Edinburgh, and then deciding upon dentistry as a career, he became an articled pupil (what we would call a preceptorial student) to a Mr. J.G.S. Angus, whom Campbell described as "... a capable and enlightened dentist, who had served seven years 'at the bench' and qualified for his L.D.S. and had for several years acted as an assistant to a dentist with a superior clientele. A talented craftsman, he was imbued with considerably artistry and inventive ability." That he proved to be an able teacher who imparted much of his ability to Campbell is evident in the fact that the latter became renowned as one of England’s most skilled dental practitioners. He was held in such high regard by his clientele that he felt no need to enter the nationalized health service and in 1948 sent out the following letter to his patients:

In order to clarify my position with my patients, I should like to state that I am not participating in the new National Health Service.

Instead I shall continue to conduct my Dental practice entirely on a personal contract basis, thus maintaining the pleasant professional relationships which have hitherto existed between my patients and me.

I am fundamentally opposed to being compelled to submit the details of treatment which I may recommend (and which my patients may desire) to any State-appointed board for approval or rejection: a procedure necessarily entailing considerable irritating delays.

Upon leaving Mr. Angus', Campbell attended the former Anderson’s and St. Mungo’s medical colleges in Glasgow and in 1911 obtained his L.D.S. from the Royal Faculty of Physicians and Surgeons of Glasgow, (now the Royal College of Physicians and Surgeons.)

Wishing to learn American methods of practice, he enrolled at the University of Toronto where, because of his L.D.S. degree, was accepted as a post-graduate student, and in 1912 was awarded the D.D.S. degree *cum laude* by that institution, as well as the L.D.S. by the Royal College of Surgeons of Ontario.

Returning to Glasgow he established himself in general practice, but at the same time devoted himself to doing a considerable amount of
dentistry for charity. For three years he was a part-time dental surgeon to the Govan School Clinics in Glasgow, and in the war years from 1915 to 1919 he was a volunteer visiting dental surgeon at the Woodside-Springburn Red Cross Hospitals. This however was not the sole expression of his interest in helping those less fortunate. For three years he was vice-president of the Ivory Cross Dental Aid Fund, a member of the Executive Committee of Secours Dentaire Internationale, a volunteer dentist to the Salvation Army Goodwill Center and for three years served in the same capacity at the Men's and Women's Hostels in Glasgow.

In December, 1924, he married Margaret Williamson Shirlaw, a physician who had received her M.B. and Ch.B. from St. Andrew's University, (incidentally the oldest in Scotland, having been founded in 1411). She had been a house surgeon in England and the couple was married in Darlington, although she, too, was a native Scot. They resided in Glasgow, first in Buckingham Terrace and then at 70 Great George Street, from which home Campbell was buried and where his widow resides today.

Menzies Campbell was first attracted to the field of dental history because of the influence of Dr. G.M. Hermiston, the lecturer in that subject at the University of Toronto, and for the remainder of his life was an ardent devotee of the field. "Dentists as a rule fail to realize their indebtedness to the past," he once wrote. "How frequently something, regarded as strictly modern in its conception, has actually been suggested by a visionary who lived in an earlier century." And so with a collector's flair he set about learning all he could about his profession's past, collecting along the way old dental instruments, paintings, objects of art, documents, books and many other artifacts pertaining to dental history. His collections were of many types. One, for example, is of dental advertisements containing over 650 examples dating from 1711 to 1850.

His description of how he searched out his collectibles is fascinating, and points up his insistence upon the utmost accuracy:

The unearthing of details of former times has entailed constantly assuming the role of a sleuth-hound for clues, ever hoping that their accretion would establish irrefutable evidence. The thrill beggars description should one succeed, after years of labour, in solving a perplexing historical dental problem. There are many pleasures in this unceasing quest. For instance, I have journeyed to many places, once over five hundred miles, to consolidate clues and meet the remaining descendant of an eighteenth century dentist; and on a subsequent occasion, to peruse intimate family papers relating to another practitioner of around the same period. I regard it as a high privilege to impart freely to the dental profession the results of my researches, but only after confirming them to the best of my ability. A person with a facile pen may write an absorbing article on dental history, but it will prove worse than valueless if unable to withstand the "acid test" of accuracy. In such a case, better far it had never been published, because it will merely confound future historians. Many gross errors are still being perpetuated because careless ill-informed writers have not troubled to probe
statements to their sources. A defective foundation results in a faulty superstructure.

In 1964 he presented his collection of dental pictures, instruments, appliances and ornaments to the Royal College of Surgeons of Edinburgh, where they are now displayed as the Menzies Campbell Collection. His personal library containing many rare and unique items he gave, in 1969, to the Royal College of Surgeons of England. By these very generous gifts he made accessible to scholars two major sources and treasuries of information and primary source material. The Catalogue of the Menzies Campbell Collection published in 1966 by the R.C.S. of Edinburgh is judged by many to be an outstanding scholarly work and of inestimable value to future dental historians.

But it is not in collectibles alone that he made his contribution. He was a prolific writer in the field of dental history and authored a number of excellent books, among them Dental Bibliography, British and American, 1682-1880 (1949); Dentistry as Practised 1800-1921 (1955); From a Trade to a Profession (1958); and Dentistry Then and Now (1963). Of course, in addition to these writings he has had published almost a hundred journal articles which were alluded to earlier.

His interest in the field led him to help found the Scottish Society of the History of Medicine and was a member of its Council from 1950 to 1953. In May, 1950, he delivered by invitation at Edinburgh University the first lecture devoted exclusively to the history of dentistry at any Scottish university.

All of these outstanding contributions earned him the plaudits and appreciation of his colleagues worldwide. Of the greatest magnitude is the fact that in 1958 he was the first dentist ever to be awarded an honorary fellowship in the Royal College of Surgeons of England, and in 1959 the R.C.S. of England instituted a triennial eponymous lectureship on dental history in his name. The Menzies Campbell Lectures have been given by many outstanding historians, a number of them honorary members of our Academy, among them Dr. R.A. Cohen of Warwick, England and Dr. F.E.R. DeMaar of the Hague, Holland.

Among his other honors he was made an Honorary Member of the American Academy of the History of Dentistry, of the Pierre Fauchard Academy and of La Societe Francaise de l'Art Dentaire as well as of the Dental Students' Society of St. Andrew's University. Most recently, in 1973, he was awarded Honorary Membership in the Canadian Dental Association. By this time he was too ill to travel to Canada to receive the award, so the president of the Canadian Dental Association, Dr. Gullett was deputized to travel to Glasgow to deliver this honor in person to Menzies Campbell.

Menzies Campbell's health was very poor in his later years and he often was unable to venture outdoors from October until perhaps May. But this didn't keep him from maintaining a lively correspondence, and many of his letters correcting flaws which appeared in papers published in this Bulletin have appeared in its pages in the past. But all of this would have been impossible without the tremendous help of his wife, Margaret, who shared his enthusiasm for dental history. In fact, when he was Lecturer in Dental History at the University of Edinburgh and
was unable to give some of his lectures because of his illness, his wife stood in for him and did an admirable job! She was his right arm and his secretary, his researcher and library worker, and the dental profession owes a profound debt of gratitude to her as well as to her illustrious mate.

Menzies Campbell’s death came gently to this gentle man. He just became gradually weaker until by June 12th he was unable to leave his bed. But he was alert almost to the end, being unconscious for no more than a quarter of an hour. He was cremated at a very simple and moving service conducted by an old friend and patient of his earlier days, with only a few close friends in attendance.

In Menzies Campbell’s death dentistry has lost an invaluable scholar. But from his life we have gained inestimable riches that will illuminate the pathways of dental history for generations to come.

—MALVIN E. RING, D.D.S.
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Nations of the world have been selling stamps for postal purposes ever since England introduced the first stamp in 1840. They learned then that it was a highly efficient device for collecting transportation charges for the mail. Since then, hundreds of thousands of stamps have been issued. Presently, there are about 190 countries which issue postage stamps in various colors, sizes, shapes, patterns, and values. Since it is virtually impossible to acquire one of every stamp issued, the serious collector, or philatelist, specializes in order to build a complete collection in a particular field. People like to collect stamps both as attractive and colorful objects in themselves, and as tangible expressions of the cultural traditions and motivations of the countries which issue them.

Topical collectors are those philatelists who collect stamps by subject. Odontophilately is the study of dentistry on postage stamps. Compiling a complete collection of dentistry-related stamps poses only minimal difficulty, because there are only a small number of stamps which will qualify. These stamps are of two types: those which are representational or symbolic of the field of dentistry, and those which depict a person who has contributed in some way to dentistry’s advancement.

**STAMPS REPRESENTING THE FIELD OF DENTISTRY**

The United States delivered a signal postal honor to dentistry, when it released a stamp, (Fig. 1) honoring the American Dental Association’s centennial in September 1959. The design shows two youngsters playing in the background and the happy face of a third child in the foreground. The intent here was to impress upon children that the dentist is their friend.¹

A semi-postal stamp is one which bears two charges: the regular charge for postage and an additional smaller charge to raise funds for a worthy or charitable endeavor. Each year the Netherlands issues a set of these stamps to help finance the care of destitute children. In 1954 a set
of children's stamps was issued which depicted some of the activities of these waifs. One (Scott 1532) which shows a girl brushing her teeth is the only stamp ever issued that specifically illustrates oral hygiene.\(^2\)

The territory of Papua and New Guinea, which is under the administration of the Australian government, issued a set of four stamps on August 5, 1964 to publicize its health services. One depicts a young patient receiving dental treatment with the dentist using a modern, high-speed, air-rotor drill. Dental care is an integral part of the territory's school medical service through which more than 125,000 school children are examined annually.\(^3\)

The British Crown colony of Saint Helena, an island in the Atlantic Ocean, 1,200 miles off the west coast of Africa, has an area of 47 square miles and a population of 5,000. It issued a stamp (Fig. 2) in 1968 illustrating a complete dental unit. It shows the importance of dental care in a relatively small colony.\(^4\)

The independent country of Qatar, located on the Qatar Peninsula in the Persian Gulf with an area of 6,000 square miles and a population of 115,000, issued a series of stamps on June 20, 1968, to commemorate the twentieth anniversary of the World Health Organization. One stamp depicted a dental operatory.\(^5\)

Hungary issued a set of stamps in 1963, showing children in many different settings, to commemorate the centennial of the International Red Cross. One stamp (Fig. 3) illustrated a child with a towel and a toothbrush, further showing the country's emphasis on good oral hygiene especially in children.\(^6\)

![Fig. 3](image1)

![Fig. 4](image2)

The country of Iran, proud of its continuing progress in dentistry, issued a set of stamps in 1965 to publicize the Iranian Dentists Association sponsorship of the third Iranian Dental Congress. (Fig. 4)

In a similar fashion, the Republic of Korea in 1967 issued a stamp to honor the 5th Asian Pacific Dental Congress (Fig. 5), and Bulgaria honored the fact that the 56th annual meeting of the Federation Dentaire Internationale was held in that country in 1968 with a postage stamp commemorating the congress and depicting the newly erected convention hall where the meeting was held.

New Zealand's school dental nurses are a subject of contention in that country. Depending on to whom you talk, the dental nurse is either
a modern Florence Nightingale or simply an auxiliary personnel unqualified for the role she performs. Her job assignment not only includes prophylaxis, topical fluoride application, and dental health education, but also the restoration or extraction of both deciduous and permanent teeth. She also administers the local anesthetic required for the treatment. Critics maintain that the dental nurse’s training does not qualify her for her operative dentistry. Other observers say the dental nurses are doing a fine and needed job.

Nevertheless, in 1971, New Zealand marked the fiftieth anniversary of the School Dental Service and issued a stamp to commemorate the occasion. It was a postal honor for dentistry’s longest running controversy. Intentionally or not, the stamp deftly sidesteps the controversy. It shows the dental nurse holding a toothbrush, not a drill or extraction forceps.

CONTRIBUTORS TO DENTISTRY

The most appropriate name to head a list of contributors to dentistry is that of Pierre Fauchard, the “Father of Modern Dentistry.” Fauchard helped put an end to the ridiculous worm theory of tooth decay and advanced a reasonable explanation for the etiology of dental caries.

This eighteenth century dentist in 1728 published his monumental work, *Le Chirurgien — Dentiste*, a book which in large measure helped make dentistry a profession. Today, his illustrated treatise still remains an inspiration to modern dentists. On the cover page, Fauchard described the book as “. . . a treatise on the teeth in which is seen the means used to keep them clean and healthy, of beautifying them or repairing their loss, and remedies for their disease and those of the gums, and for accidents which may befall the other parts or their vicinity.” In this volume, he brought together all the dental knowledge of his day but also anticipated many of the routine procedures of modern dental practice. It went through four editions to become what is considered the earliest dental “best seller.”

Fauchard was the one of the first to use orthodontic procedures in the treatment of malocclusion. He also was the inventor of many prosthetic devices. In 1746, he gave the first detailed account of *pyorrhea alveolaris*, or periodontoclasia.

An international gathering of dentists was held in Paris in July, 1961 to commemorate the 200th anniversary of Fauchard’s death. French postal authorities honored the occasion with the issuance of a postage stamp (Fig. 6) showing Fauchard holding his famous work, *Le Chirurgien — Dentiste*.

Several years after Fauchard, principally in the 1770’s a family named Talma gained wide prominence in both France and England as outstanding dental practitioners. One of the most notable of them, Francis Joseph Talma, although a successful dentist in Paris, decided in 1724 when he was 24 years old to forsake dentistry for the theatre and made his debut at the old Theatre-Francais, playing the part of Seide in Voltaire’s *Mahomet*. He ultimately became France’s greatest tragedian,
and in 1961 that country issued a stamp (Scott 998) showing him portraying the tragic role of Orestes. (Fig. 7)

Paul Revere (1735-1818) is most famous in history for his immortal midnight ride; but his contributions to dentistry are very noteworthy even though he was not a dentist in the true sense of the word but only a skillful artisan. From 1768 through 1770, his advertisements appeared in the Boston Gazette, announcing that he "continues the Business of a Dentist."

One of Revere's most noteworthy contributions was in the field of Forensic Dentistry: he was the first to identify human remains by dental means.

One of the first to be killed at the battle of Bunker Hill in 1775 was Dr. Joseph Warren, a physician and leader of the rebellious colonists in that battle. The dead were hastily buried in a mass grave after the battle, but a year later, when Massachusetts wished to honor Warren, the bodies were dug up for reburial. It was impossible to determine which of the remains were Warren's, until Paul Revere made positive identification from a bridge he had put in Warren's mouth some time before the fateful battle.

The United States honored this fine American, Paul Revere, on a regular issue postage stamp in 1954. (Fig. 8)

One of Revere's contemporaries was Charles Wilson Peale (1741-1827), a man of varied and exceptional talents. A colorful figure of the Revolutionary period, he was an officer under George Washington, legislator, artist, silversmith, naturalist, and a dabbler in dentistry.

Peale made dentures which were said to be extremely life-like in appearance. His were probably the first porcelain teeth to be manufactured in America, and he was one of the first to incorporate platinum in porcelain work.

As the founder of the Pennsylvania Academy of Fine Arts, Peale was honored by a 1955 stamp commemorating the 150th anniversary of the Academy's establishment. The stamp shows Peale in his museum. (Fig. 9)

But contributors to dentistry's past are not the only ones depicted on stamps. Many of the most important advances of today have been built on foundations laid by scientists and practitioners of long ago.
Two early medical pioneers who wrote extensively on dental problems and dental treatment were Hippocrates and Avicenna. The writings of Hippocrates (460-377 B.C.) have many references to dental subjects, including oral hygiene, orthodontics, treatment of toothache, and reduction of a dislocated mandible. He described the function and eruption of teeth and was the first to recommend the use of a dentifrice. His formula was carbonate of lime mixed with the head of a hare and the intestines of mice.

More than a thousand years later one who was to become recognized as the greatest intellect in Islam, dealt extensively with dentistry in his great *magnum opus*. This great pathfinder was Avicenna (930-1037), a Persian physician, who studied minutely the anatomy and physiology of the teeth. His *Canon of Medicine* contains 53 sections devoted to dental subjects, ranging from caries to oral malignant lesions. He attached great importance to prophylaxis and gave explicit instructions for oral hygiene.

These two great human benefactors, although separated by centuries, were depicted side by side on an Iranian stamp issued in 1962. (Fig. 10)

Perhaps the greatest contributor to dentistry's progress among the physicians of the Golden Age of Arabic Medicine was Abulcasis who was born in Cordoba, Spain around the year 930. His contributions to stomatology were among his outstanding achievements, with his description of the treatment of periodontitis being valid even today. In 1946 Syria honored Abulcasis, author of the important text *De Chirurgia*, with a postage stamp which was issued to commemorate the 4th Arab Congress of Dental Surgery, held that year in Damascus.

Moses Maimonides (1135-1204) was a rabbi, philosopher, and distinguished physician. He was an outstanding clinician who laid down rules of health which served as a yardstick for medicine for centuries. The "Prayer of Maimonides" ranks with the Hippocratic oath as a code of medical ethics, and as with those of his predecessors, Maimonides' writings contain numerous dental references. He referred to the use of a gold shell crown to restore a broken down tooth. He was honored on a stamp (Fig. 11) issued by Israel in 1953 to commemorate the Seventh International Congress for the History of Science.
The Renaissance produced numerous notable contributors to dentistry's advancement, among them Malpighi, Vesalius, Eustachius and many others. One of the most important was one who was to prove himself one of the world's greatest thinkers, visionaries and geniuses — Leonardo de Vinci.

When one thinks of Leonardo Da Vinci, the Mona Lisa immediately comes to mind, since Da Vinci's most notable achievements were in the arts. However, Da Vinci was the first authentic dental anatomist. A meticulous dissector of the human body, he made the earliest accurate drawings of the skull, teeth, and related structures. He presented a true picture of tooth form, determined the number of roots of each tooth and demonstrated the concepts of occlusion and articulation. He was the first to describe the maxillary and frontal sinuses. By studying the human body closely and portraying it in minute detail, Da Vinci laid the groundwork for the technique and profession of medical illustration. Italy commemorated the 500th anniversary of Leonardo Da Vinci's birth by issuing a postage stamp in 1952. (Fig. 12)

Another who wrote extensively on dentistry during the later Renaissance was Ambroise Pare (1510-1590) who is known as the Father of Surgery. An advanced thinker, he introduced many new concepts relating to wound treatment and healing. Among his many contributions to dentistry, the most important was his invention of the obturator for the treatment of cleft palate patients. He was the foremost surgeon of the sixteenth century and France honored him on a stamp in 1943. The surtax on the stamp was used for national relief.

Jean Hyacinthe Vincent (1862-1950) is a very popular name to dentists. Vincent, a famous French bacteriologist and physician, studied fusosporillary angina of the mouth and won the distinction of having an oral disease named after him. In various forms it is known as Vincent's infection, Vincent's angina, Vincent's stomatitis, and Vincent's gingivitis. The tendency in recent years has been to use descriptive terms of the conditions to which they refer. Thus "necrotizing ulcerative gingivitis" has replaced their term "Vincent's gingivitis." No matter what the condition is called, Vincent receives the credit for discovering that fusiform and spirochete bacterial organisms are the etiological

Fig. 12

Fig. 13
agents of this serious and widespread periodontal disease. France recognized this and honored Vincent with a stamp on the centennial of his birth in 1962.¹¹

One of the great benefactors to mankind through dentistry was a man who was himself, however, not a dentist. George Eastman’s contributions to dentistry were humanitarian rather than technical. Eastman, founder of the Eastman Kodak Company, early appreciated the importance of dentistry in children’s health. He believed the prevention of disease was more urgent than its cure. With this philosophy, in 1918, he established the Eastman Dental Dispensary in Rochester, New York, one of the first children’s dental clinics of its kind in the world. Eastman later established dental clinics in England, France, Italy, Belgium, and Sweden, all patterned after the Rochester institution. The United States commemorated the centenary of George Eastman’s birth with a postage stamp in 1954. (Fig. 13)

One of the greatest single medical advances of all time, one that has saved countless lives, has been the introduction of antisepsis in surgery. By proposing this, Joseph Lister, a Glasgow surgeon, was to revolutionize the healing arts. Mid-nineteenth century surgical practice had no basic cleanliness and tooth extractions could, and sometimes did, have fatal consequences. The accepted theory was foul air, but Lister reasoned otherwise. He concluded that sepsis in a wound resulted from microbes in the air, not from the air itself. Lister felt it necessary to remove the bacteria from the air surrounding the operative site. He devised an apparatus to throw a spray of disinfectant over the area of surgery. He also disinfected hands and dressings. Improvement in the patients’ survival rate was dramatic and antisepsis opened new vistas. Lister’s principles are an integral part of modern dental office routine. Few of the procedures of modern dentistry would be possible or successful without a sterile technique. England recognized Lister’s contributions to medicine and dentistry by issuing a pair of stamps in his honor in September, 1965. One stamp (Fig. 14) depicts Lister’s apparatus for spraying disinfectant.¹²

More recently the Soviet Union saw fit to honor with a stamp Alex-
ander Nishnevski (1874-1948), noted for his work in reconstructive surgery. He made a major contribution to dentistry in his refinement of the technique of tissue infiltration with procaine hydrochloride. This was extremely useful in the development of operative dentistry as well as oral surgery. The Surgical Institute of the Academy of Medical Sciences in Moscow was named in his honor. Russia honored him with a postage stamp in 1964. (Fig. 15)

One of the greatest contributors to dentistry was Wilhelm Konrad Roentgen (1845-1923), the German physicist who discovered X-rays. Roentgenography has been and continues to be the most important diagnostic tool in dentistry. In fact, X-rays are an absolute necessity in all fields of dentistry. West Germany recognized Roentgen's great achievements and honored him with a stamp in 1951, commemorating the fiftieth anniversary of his receiving the Nobel Prize in Physics.

As can be seen, dentistry has evolved through time with many individuals contributing a part to its development. It is but fitting and just that countries all over the world should honor these great men and their achievements with postage stamps. Dentistry and the world are very grateful.

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(Editor's note: The Secretary-treasurer of the American Academy of the History of Dentistry, Dr. Milton B. Asbell, is a man who never ceases to amaze this Editor. In addition to his exceptional knowledge of the history of our profession, Dr. Asbell is also a long-time odontophilatelist! It is through his courtesy that
we are able to publish this supplemental list of references to writings concerning the history of dentistry in stamps:


"'Stamps of Medical Interest: A Dental Stamp.'" *Practitioner*, 200 (June) 1968, page A48.


Oddments in Dental History:
Delavan, Wisconsin, Home of
the Dental Swindle

—MALVIN E. RING, D.D.S., M.L.S.
Batavia, New York

About 45 miles southwest of Milwaukee lies the little village of Delavan, Wisconsin (population 1970: 5,526). The surrounding country has fine dairy and livestock farms, while the village itself boasts several factories producing knitted wear, electric pumping equipment and cigars, as well as the Wisconsin Institute for the Deaf.

Just one hundred years ago, when the town’s population was scarcely half of what it is today, it achieved world-wide notoriety as the center for the exploitation of gullible dentists seeking to improve their knowledge and skills, as well as the single greatest source of fake dental diplomas.

The deceitful schemes had their origin in the violent struggles raging at that time over the Vulcanite patents. The Goodyear Dental Rubber Company was demanding that every dentist using Vulcanite secure a license from them and pay a royalty for every case processed. But dentists everywhere were attempting to circumvent the rubber company’s patents, “bootlegging” rubber dentures, as it were, with the company finally sending out Josiah Bacon as a vengeful tracker-down of errant dentists who didn’t pay the licensing fee. It finally ended in tragedy when Dr. Samuel Chalfont of San Francisco shot and killed Bacon who had trailed and hounded him from one end of the land to the other.

But adversity also brings forth crooks, and many swindles and dubious schemes arose in widely scattered areas where unscrupulous men sought to capitalize on this bitter clash over Vulcanite. One who signed himself D. Ensign and gave an address of a Dental Depot at 733 Broadway, New York City, went so far as to send a letter to every dentist asking for a $5 contribution to his committee dedicated to fight the Cummings’ (Vulcanite) patents. (Dental Cosmos, January 1873, page 54). Needless to say, there was no such committee and the money ended up in the pocket of this swindler.

At that time in the little village of Delavan lived a dentist, Dr. George Morrison who, according to the local Delavan Republican, was the oldest of the brothers of the “... Morrison family of dentists.” Morrison saw a way to capitalize on the Vulcanite struggle without boldly stealing money from the profession as did this D. Ensign. George realized that like the strip-treaser who is successful because she shows little but promises more, he could excite the curiosity of dentists everywhere by promising them hidden secrets which would make it easier for them to find a substitute for Vulcanite and make their practices more lucrative. First, however, he had to whet their interest with a peek at what he was offering.
He set his prices low, $2 per secret “recipe,” counting on the fact that such a low sum would lure many responses, and he circularized dentists from one end of our nation to the other. Exactly how many dentists he gulled into parting with $2 isn’t known, but the evidence seems to be that he waxed rich on his little scheme.

His method was to send out under this impressive letterhead the following letter:

Dear Sir and Brother Dentist:—Please do not look upon this circular with prejudice, but candidly consider its merits; and here let me say on my honor as a man and a dentist, every statement herein made shall be the truth. After an experience of seventeen years in the practice of dentistry, and traveling through seven States in this Union, making one or more plates for nearly every dentist in those States, and adopting every point of merit which each dentist might suggest, I have completed a method for constructing plates for artificial teeth. I take this means to place its advantages at your service. I am aware that the day has gone by when the intelligent dentist will concede that I can make a better fitting plate than any other, neither do I claim any such superiority, but I will give you what I claim as merit. Mark well the advantages: my plate is uniform in thickness, giving the ruga of the mouth so that the wearer can articulate (or speak) distinctly. It is finished on both sides when it comes from the vulcanizer or the celluloid press, except to polish on a brush-wheel, no rasping or sand-papering required, which is usually the most disagreeable part of the work. This is not done with metal casts. I use plaster, but have a method of hardening the model so that it is insoluble. An additional expense of five cents will prepare fifty models, and the uniformity of thickness I get as uniform as a sheet of paper, and of any thickness that may be desired. I do not use any wax or gutta percha. An investment of ten cents will furnish base plates for one hundred sets, which is a great saving to the dentist. I also save the time spent in waxing up and scraping of plates, which is one half of the work.

Should you wish to avail yourself of this method, send me Two Dollars, P.O. order, or registered letter, and I will (by return mail) send you all the necessary instructions and office-right. I trust you will appreciate my services, as this method has cost me time and money, and return your order promptly in the enclosed envelope.

Respectfully Your Servant,
George Morrison.
Then followed an impressive listing of citizens of the fair village of Delavan, ranging from the pastor of the Baptist church to the president of the local bank, all attesting to the fact that Dr. Morrison "... was a gentleman of honor and rare ability." A year later he sent out a second letter exactly like the first, but appending to it the following postscript: "And if the Cummings claim is not for the application of Rubber to Dental Purpose, but for the method of working it, as specified in his second re-issue, No. 1904, my method affords entire freedom from infringing upon the Rubber Company's monopoly."

One dentist who fell for Morrison's seductive advance apparently felt he had been cheated when he received the following reply, and "... pronouncing the whole thing a swindle" sent it on to Johnston's Dental Miscellany which printed both Morrison's original letter and the purchased "recipe" in its March 1874 issue:

Office of Geo. Morrison, Dentist, Delavan, Wis., 1874.

Dr. 

Dear Sir:—This is to certify I am in receipt of two dollars, which entitles you to my method of constructing plates for artificial teeth, which I enclose, trusting you will deem it a desirable acquisition to your laboratory. This shall be your recipe, as per circular.

I am your servant,
Geo. Morrison.

Directions.—Take the impression with plaster as usual, scrape the centre where the hard ridge is in the arch, so that the plate will not rock. Make model or cast (put no salt in plaster for cast), scrape a little each side of the arch at the heel or back part of model, so the plate will set close to the soft parts of the mouth. To harden model, place it over vulcanizing lamp and heat gently till evenly warmed through, so that the plaster will absorb the coating or varnish which is put on with brush. While model is hot, rub the face of the cast with pulverized soap-stone, to give it a polish. To prepare varnish for cast, common resin one-quarter ounce, alcohol one ounce. To make base plate, use Japanese tea lead (not from chests containing green tea, as it has not the required strength). Use three thicknesses, more or less as you may desire, burnish on to model with plate burnisher. Fasten teeth in position with wax, same as with other base. Make plate of rubber or celluloid, as usual. By close adherence to these instructions you will be successful.

That Morrison had latched onto a good thing was recognized by others in Delavan, and the medical profession wasn't exempt. A D.B. Deavendorf, M.D., Surgeon of the Deaf and Dumb Institute of Delavan also felt the dental profession was ripe for the picking and aping Morrison sent out to dentists everywhere a letter promising them a "recipe" for a local anesthetic, again on receipt of the "... wretched pittance of two dollars," (this being almost a quarter of a century before the anesthetic properties of cocaine were discovered). Johnston's Dental Miscellany for November, 1875, printed a letter from an irate dentist who'd been "taken" by the physician and include the "recipe" which follows:
Delavan, Wis., October 6th, 1875.

Dear Sir: I am in receipt of two dollars, which entitles you to my formula for producing local anaesthesia. Hoping it will meet your highest expectation, this is your receipt as per circular.

Respectfully yours,
D. B. Deavendorf, M.D.

FORMULA.—Morphia, 5 grs.; Veratria, 5 grs.; Tinct. Aconite, 1 oz.; Pellitory, ½ oz.

DIRECTIONS.—After removing all moisture from the gums, saturate a pledget of lint with the anaesthetic and apply for thirty second before extracting.

Dr. Morrison, however, wasn’t satisfied with the piddling $2 fees, and dreamed of bigger things and by the 1880’s he had dreamed up the Wisconsin Dental College, “located” in Delavan. He then began a campaign throughout western Europe, where American dental degrees were highly in demand, to sell dental diplomas from his “college” for fees ranging from $100 to $300. (See: “Oddments in Dental History: The Bogus Dental Diploma for Sale.” Bull. Hist. Dent., 20(2), Dec. 1972, page 76).

From $2 to $200 represents quite a jump. But fortunately the dental and medical professions ultimately began self-policing to rid themselves of swindlers and schemers such as Morrison and Deavendorf. The paper by Dr. Chester Burns in this issue of the Bulletin on the evolution of codes of professional ethics points up the importance of guarding the profession from the nefarious activities of schemers which serve only to drag a profession down.
CLASSICS IN DENTAL HISTORY

Beginning with this issue, the Bulletin will reprint articles and other writings from various journals and other sources which were notable milestones in the development of dentistry. Dentists are all familiar with the names of our great forbears such as G.V. Black, Angle, Wells, Kingsley, Fauchard, Flagg, Parmley, Fones and innumerable others. But seldom have they had the opportunity to read for themselves the words of these great pioneers in which they describe their epochal contributions to our profession. It is our hope that this new section will not only allow dentists to become acquainted with these writings, but also to realize that these great pioneers were persons like themselves laboring in the field of dentistry to improve the health and welfare of mankind.

This first selection, which is reprinted from the Dental Cosmos of November, 1907, deals with the notable contribution of Dr. William H. Taggart, the first to formally announce the use of a casting method utilizing a disappearing wax pattern. This technique revolutionized the entire approach to restorative dentistry, allowing the development of the sophisticated crown and bridge prostheses of today.

Taggart was born in Freeport, Illinois on March 23, 1855. Because of a natural bent for mechanics, he took a job in a machine shop upon graduation from high school, but soon thereafter moved to Chicago. Unable to find similar employment, he began work in a dental laboratory, and as a result decided to become an itinerant dentist. However, he soon realized that if he were to succeed in his newly chosen profession he would need formal training, and so he matriculated at the Philadelphia Dental College (now the School of Dentistry of Temple University) and received his D.D.S. in 1878. He ultimately returned to Chicago where he established a lucrative practice.

Dr. Taggart was a skillful and innovative technician and constantly sought ways to improve his service to his patients. One of the weakest points in restorative dentistry at that time was the relatively crude method of constructing gold inlays by swaging a platinum matrix into a model of a cavity and then flowing gold solder onto it. This resulted in poor fitting fillings, and Taggart worked for years to develop an alternative method. This he finally achieved and he demonstrated it before a large and enthusiastic audience at a meeting of the New York Odon-tological Society on the evening of January 15, 1907.

Taggart had invested much money and many years of work in developing his method, and in order to recoup some of his expenses, attempted to patent his method as well as the casting machine he used. The profession, however, began using his method almost at once, ignoring his attempts to secure legal rights to it. Taggart then tried to get dentists to buy his fairly expensive casting machines, but by now many practitioners were fashioning their own. Failing in this, he tried to induce dentists to pay him a small fee for using his method but without success. Eventually he became involved in extensive litigation over the legality of his patents and was on the verge of winning his suit when it was discovered that an obscure Iowa dentist had demonstrated a
somewhat similar process before his local dental society in 1896, but without Taggart’s sophisticated methods.

And so Taggart lost his case! Embittered and broken, angry at the profession which he had tried to help and by which he felt betrayed, Taggart withdrew entirely from dentistry. He died on April 17, 1933.

Dentistry, however, has not forgotten Dr. Taggart and will be forever in his debt. It is because of his farsighted and pioneering labors that today we are able to use all of the new, intricate and successful castings which have made modern dentistry so successful.

A NEW AND ACCURATE METHOD OF MAKING GOLD INLAYS

For a number of years I have looked forward with the hope that some day I might meet, on their own ground, the men I have learned to know so well—some of you personally, others through your writings, and still others (the larger number) through your discussions of the papers read before your society.

After studying your individual ways of expressing yourselves, I have learned to know most of those who enter into the discussions of your society papers, for each of you puts his individuality into his extemporaneous talks, as he does into his manner of dressing, or walking; and one of my delights in reading our monthly journals is to try to guess whose remarks am reading, before look at the name, and by this means you would be surprised to learn how well I know some of you. But the larger number meet tonight for the first time, and hope you will not remember some of my ways of expressing myself, for if you do I fear that most of my paper will be old to you. I say “most of my paper” advisedly for, gentlemen, I come to you tonight with something new — something which in my fondest hopes for improved and more practical methods of filling teeth I had not thought to realize.

THE GOLD INLAY HITHERTO
It never occurred to me that I would be the one to devise those radical changes which I knew must come in order to make any decided progress; for you will have to admit that our chief improvement in the line of gold inlay work in the last ten years has come more from our increased dexterity, due largely to our experience, than from any novelty of methods.

Of course, individually we have im-
sacred ground of some who believe, first, last, and always, in the gold foil filling, and who point to a number of records of fifty years of good service for foil fillings; but in their eagerness to stand by an old friend they fail to state the thousands of just as perfect fillings as the fifty-year-old ones, that have not lasted three years, not because they were not mechanically correct, but because of the low-grade tooth-structure on which the filling was built. No two substances such as gold and tooth-material can come in actual contact; consequently there is always a chance for capillary attraction to take place; but in the case of the long-lived filling it makes no difference about capillary attraction because the tooth-structure is good, in the short-lived gold filling, however, the structure is faulty, and along with this is a bad environment, and then capillary attraction takes place and bad results follow. In case an inlay is put in a tooth of faulty structure the capillary condition does not exist, consequently the mechanical cause for leakage is no longer present, and the tooth-structure, in spite of its environment, resists decay. I have had inlays come out, and have also seen some mighty poor ones, but I have never yet seen an inlay fail from recurrent decay.

An inlay is an honest filling; it is either in the tooth, and saving it from decay, or, it is in the appendix. I will have nothing to say on cavity preparation except this: If a cavity be a suitable one for a gold inlay, no steel tool should be used in its preparation; carborundum stones of suitable sizes and shapes are far preferable. The inlay is put into cavities with beveled margins, and no steel tool can compare with a carborundum in forming these margins. I say suitable carborundum wheels should be used, but they are not on the market, so I pass around for inspection wheels mounted and shaped for this purpose, and also I pass a file such as I use to shape these points, filing them to shape while revolving in the handpiece. As this inlay process can be made practically painless by use of these stones, why use a steel tool? The difference in comfort to the patient between the two is as great as between a pneumatic tire and an old-fashioned farm-wagon wheel.

A year or so ago Dr. Poundstone, of Northwestern University Dental School, read a paper on cements, and by a series of elaborate experiments showed that the cement took up all of the space occupied by the 1/1000 inch platinum used as a matrix, and consequently there was no use in having a matrix thinner than this gage, as the cement had to occupy the 1/1000 of an inch anyway, whether the matrix was thinner or not. I knew some of my inlays stood away from the margins considerably more than this, and some of them a great deal less, so I immediately combated his idea, and have since incorporated my own explanation in all of my inlay work. It is this:

The grains of cement pile up on top of each other the same as so much sand does; now, when direct pressure comes on these grains, those which can get out of the way do so, but the others remain one on top of the other, and the harder the pressure the less apt they are to assume a new position.

Take, for example, the method of the molders in a foundry. They throw up an irregular pile of sand, and on top of this they put a molding-board; do they then put direct pressure on this to embed it? No. They could put their whole weight on it, and it would embed but a little; but they give it a rubbing movement, so as to push one grain of sand off from another, and in this way they get it to seat itself.

Take the bricklayer. Does he put the mortar down, and the brick on top, and put his weight by direct pressure on it? No, he taps it from side to side and end to end, in order to have the grains of sand roll off each other.

Now, apply this principle to inlay setting. Many are in the habit, as soon as the inlay is approximately in place, of putting direct pressure with an instrument or with a wooden wedge, and by so doing placing the cement grains in a condition where they cannot roll one away from the other, but are on top of each other, and will not allow the inlay to be seated, which to my mind is the cause for an excessive cement line between the inlay and the cavity in what would otherwise be a close-fitting inlay. Now, in the gold inlay I would avoid this by using a mallet and a hard-wood stick, and go forward and back across the corners, and down the center
and back again, and keep this up for quite a few seconds.

In the case of a smaller approximal porcelain inlay, I would press the inlay approximately to its seat, and then take a piece of linen tape, about a foot long and wider than the inlay, and draw its full length against the inlay; this absolutely wipes all the excess cement away and seats it as well as direct pressure can do. Now for our principle:

At this stage take a very narrow tape, viz, one-sixteenth of an inch wide, and use this as you would a polishing strip, going from end to end of the inlay, as you would in polishing a gold inlay; anyone who has not tried this or a similar method will be surprised at the excess cement which squeezes out, because the grains of cement have been allowed to roll away from one another.

The dissolving of the cement line I have never found to be a serious element in the life of the inlay, as the depth to which it dissolves is only equal to the width of the line, consequently it does not leave exposed any vulnerable point, and no leakage can take place under the inlay, as capillary attraction as a force has ceased. But in a good foil filling this same amount of defective margin would be fatal to the life of the filling.

THE NEW METHOD

What I now present to you as my process for making gold inlays under the title "A New and Accurate Method of Making Gold Inlays" should have had a more comprehensive name. The title should have included bridge work and gold plate work, for I believe it will be the coming method for making partial gold plates and bridges as well as inlays. The title also should have included some information in regard to the time consumed, for this is one of its greatest points. By this process I can make gold inlays of the most complicated character in from thirty to forty minutes, inlays which have always taken me from three to four hours to make. In fact, there is not an inlay which I show you tonight that has taken more than thirty-five minutes to make. This, of course, does not include the cavity preparation, or cementing to place, which is the same with this inlay as with any other; the thirty-five minutes is the time actually consumed in manufacturing the inlay.

The process is as follows: After the cavity is prepared, a piece of special wax which has been filtered several times through fine filter paper, in order to remove every trace of foreign matter, is warmed and then pressed well into the wet cavity with the fingers, and the patient is allowed to bite into this in any and all directions, as in mastication. This gives an imprint of the opposing cusps in the wax. The wax is now raised out of the cavity just enough to unseat it, and show that it is not sticking to the cavity. At this stage the wax is chilled slightly with ordinary hydrant water, and the excess wax is trimmed away. Always during this shaping process be sure to keep the wax at an easily workable temperature.

In other words, make a wax inlay the exact shape you wish the finished gold one to be. Any artistic effects put on the wax at this stage will save time in the end, because wax is much more easily carved than gold, and by carving with instruments lubricated with perfumed vaselin one can soon become expert in making wax inlays. If the cavity is so situated as not to have an adjoining tooth to help hold the wax in place while carving, the whole mass of wax can be chilled and carefully lifted from the cavity, and then, keeping it thoroughly chilled under the hydrant water, it can be carved, can be carried back to the cavity any number of times, thus being carved out of the mouth, and the final adapting of the margins is quite easy.

We now have a perfect wax inlay made of a material which has no foreign matter in it. Into this wax inlay (illustrating) a sprue wire is set by warming it sufficiently to melt it to the wax. The wax inlay with its sprue attached is now fastened to the lid of the flask, which is also a crucible mold. The inlay is then wholly embedded in an investing material, and when this has hardened the lid is removed from the flask, and the sprue wire comes with it, which now leaves a crucible with a hole leading to the wax inlay. The flask is put over a flame, and slowly heated up, and the wax is absorbed into the investing material, and leaves a mold the exact shape of the wax inlay. You see there is no separating of the flask to get the pattern out, as is always done in any other kind of molding.
The flask is now put into the molding machine, which has a nitrous oxid blow-pipe flame for melting the gold, and a compressed-air attachment for forcing the liquid gold into the mold, under a pressure of from 25 to 40 lb. to the square inch. The nitrous oxid flame is almost a necessity, as it is only by this flame that the gold can be made liquid enough to cast and cool without shrinking.

When the nitrous oxid flame has heated the gold much beyond its melting point, the lever is quickly brought down, the flame is automatically switched away, and the compressed air is automatically thrown in on top of the liquid gold, which, of course, must go into the mold under heavy pressure. Sometimes cracks have developed in the investing material, and the gold was forced into these minute crevices in sheets as thin as tissue paper, showing how liquid the gold may become.

The actual time consumed in forcing the melted metal into the air-tight mold under this heavy pressure is probably but a fraction of a second, but the success of the whole process depends on this speed.

I have kept pace with all former molding processes, and find that by the time the metal is melted and poured into the mold by gravity, it has become chilled enough to be thick, and not in a thin liquid form necessary for fine casting. My process, as I will show you, takes advantage of every fraction of a second of favorable conditions, and by having this heavy pressure on top, with no possible chance for gold or air to escape, the liquid gold is forced in; and by liquid gold I mean gold in a boiling state — a great number of degrees beyond its actual melting-point. While it is in this freshly molded condition the pressure is maintained for a few moments, in order to allow the molten gold to thoroughly congeal; either this continued pressure prevents the gold from contracting, or the amount of expansion in the hot mold is equal to it; at any rate, the filling fits.

Some have suggested that being composed of the purer and high-grade metals there is less expansion and contraction than with low-grade metals, which I think is true in a measure, but there must be some other reason, for we all know that the coefficient of expansion and contraction is different in each metal, and yet metals — gold, silver, copper, brass — all fit the cavity perfectly. My theory is this: The molten molecules of metal are forcibly thrown into the mold and held there, and consequently are not allowed to rearrange themselves, as they would do if not under pressure.

This being a purely descriptive paper, it has taken but a few moments to describe the process, and as my ability as a teacher, if I have any, does not consist in writing text, if you will permit me I will repeat, in my own language and by the use of my hands, this description, so that, as I hope, you can all grasp it. [At this stage Dr. Taggart gave a minute and detailed demonstration of the whole process, carving, flasking, heating, and casting.]

And now, gentlemen, in conclusion I will say that this is no careless man's process; but I do say that I can take the most ordinary workman in this audience, and if he be a man who will obey instructions to the letter and not allow his own ideas to creep in from the start, I can show him in a half-hour how to make gold inlays better in every way than the most skilled workman can do by any other process to date; and if allowed to instruct the already skilled man, he will make such an inlay as he never dreamed could be made. Gentlemen, I thank you.
A Short History of Endodontics

—WILLIAM F. DOMS, B.A., D.D.S.
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Endodontics, one of the most recent areas of dentistry to become a specialty, may also be the fastest growing phase of general practice as well. The improvements in endodontic instruction in the undergraduate dental curriculum, the number of continuing education courses in endodontics, the time devoted to root canal therapy evaluation at state and national dental meetings, and the growing number of dentists pursuing full-time graduate training in this field all attest to awakened interest in the healthful retention of pulpally involved teeth.

EARLY BEGINNINGS

Removal of the pulp was probably not attempted prior to the middle of the 18th century. Fauchard described the operation then practiced as consisting of opening into the tooth by means of a drill or file held in a brace. The pulp was then extirpated with a roughened needle, and an essential oil on a piece of cotton was used to plug up the hole. Later, an effort was made to fill the root canal with gold foil instead of cotton, this procedure being introduced by Bourdet in France in 1757 and by Hudson in this country in 1809. Of necessity, this type of treatment was limited to anterior teeth.

The earliest recorded attempt of treatment of the diseased pulp in this country was that of Robert Woofendale, who first came to New York from England in 1766 and brought with him a method for handling diseased teeth which was directed only toward the alleviation of pain through destruction of the dental pulp by actual cautery. No attempt was made to fill the canals, however, unless stuffing the open canals with cotton could be designated as such.

An effort to fill the canal with an impervious material was first tried by Edward Hughes who practiced in Philadelphia. With specially designed pluggers he packed the root canal with gold foil. A bill rendered by Hudson to a patient for services from November 1824 to 1825 included a ten-dollar charge "for stuffing the cavity of one tooth from the end of its roots with gold." Note that the emphasis is placed on filling the canal. Treatment of the canal is not even mentioned, since it probably was not undertaken.

Until 1890, the purpose of root canal therapy was mainly limited to relieving pain. Ultimately, however, the need for operations upon the dental pulp stemmed from the operative procedures in vogue during the early part of the 20th century. Such popular restorations as the Richmond crown, the Davis crown, the Peeso split pin and tube, and others, all required the use of a dowel or post in the root canal. As crown and bridge work became more and more popular, the need for root canal
operations became more apparent. Unfortunately, the operations performed on this part of the tooth were carried out, for the most part, under the same contaminated oral conditions in which restorative dentistry was performed. One may speculate as to the degree of success achieved in these early attempts.4

Oils of cajeput, clove and cinnamon, as well as turpentine and camphor were used with the intention of allaying pain rather than destroying microorganisms. Creosote, then called "oil of smoke," became very popular, and its strong aromatic odor pervaded the air of almost every dental office. Root canals were occasionally filled. The orifice to the canal, however, generally was covered with tinfoil, gold, horn or cork before the pulp chamber was sealed off and the filling placed in the crown of the tooth. Where the pulp was still vital but exposed, small sheets of gold, lead, tin, or goosequill were used to cover the exposure, sometimes being preceded by cauterization of the pulp with a red hot needle.5

Pulps were often knocked out by placing a suitably whittled hickory peg into the pulp chamber and giving it a sudden sharp blow. This heroic method of pulp extirpation was continued for more than a quarter of a century after the introduction of local anaesthesia. Devitalization with arsenic came into being in 1836, but it was not until 1847, when gutta percha was first used to seal it into the cavity, that this method of devitalization became a slightly safer procedure.

THEORY OF FOCAL INFECTION

Although root canal therapy at the turn of the century was still mostly a trial and error procedure, and as a result, relatively unsuccessful, a major event occurred at this time which was to have a profound effect on the progress of endodontic therapy. This was the advent of the theory of focal infection.

Even though their deductions were wrong, the criticism of endodontics of that era made by those who first advanced the theory of focal sepsis was correct. What was not justified was the despondency which infused a large segment of the dental world with the result that this group abandoned all efforts to save teeth by endodontic procedures. In fact the theory of focal sepsis split the dental world into two parts. In general, it can be said that the Anglo-American dentists accepted the theory and adapted themselves to extraction and the insertion of prostheses ("blood and vulcanite"). The European dentists and their schools, however, took up the challenge and intensive scientific work followed, encompassing every conceivable aspect of endodontics. The stimulus given this research is a spin-off benefit that derived from the theory of focal infection.6

Root canal therapy was generally not criticized prior to 1911 when William Hunter pointed out that dentists failed to pay attention to oral sepsis around crowns and bridges and to the relationship between the oral cavity and the body as a whole. Hunter did not refer to devitalized teeth since at that time X-ray diagnosis was not available to provide evidence of tissue changes occurring around the roots of teeth. In 1918,
Billings claimed that nonvital teeth were foci of infection for systemic diseases and were responsible for the majority of infections present in the oral cavity. The focal infection theory was based on the results of cultures of extracted teeth. The methods of culturing, however, did not exclude the possibility that organisms recovered in cultures might be those normally present in the oral cavity, as Myers, although a proponent of the focal infection theory, pointed out in 1917. He did not discover any proof that these organisms played a role in focal infection. Other workers (Billings, Rosenow, and Haden) who regularly isolated Streptococcus viridans, the predominating organism in the normal oral flora, placed great stress on the importance of this particular streptococcus in those diseases claimed to have resulted from focal infection.

Immediately this theory was grasped by the medical profession in the hope that many of the obscure conditions physicians had been treating unsuccessfully would be cured by the removal of localized infection. Many in the dental profession were amenable to the exploitation of this theory because of a dislike for performing careful and precise root canal therapy as well as because a standard fee had never been developed commensurate with the value of the service when properly performed.

During the years from about 1917 to 1937, all pulpless teeth were believed to be foci of infection, and all root canal work was severely discouraged by the majority of dentists and physicians. As a result, the teaching and practice of root canal therapy came to a virtual standstill in the dental schools of this country.

The removal of teeth as a prophylactic measure became accepted as necessary, both by the profession and the public. Correspondingly, the fields of oral surgery and prosthodontics rose to increasing popularity. Privately owned dental schools which were dependent wholly or in part upon the revenues of clinic fees for their operation and maintenance were apt to capitalize on the demand for these two services. As a consequence, these areas were often allocated facilities and teaching staffs commensurate with their popularity, frequently at the sacrifice of other areas in lesser demand.

Fortunately, the theory of focal infection had overreached itself by ascribing almost every pathological condition to dental foci. Later, when gradually one disease after another was shown to have quite different causes, serious research was finally undertaken by both adherents and opponents of the theory. Scientific verification of the theory was hard to come by, and as a result the theory has been greatly modified by most authors of textbooks of medicine, pathology and dentistry.

Endodontics might have become a lost art if it had not been for the tireless efforts of such men as Fish and Maclean, Callahan, Johnson, Hatton, Skillen, Coolidge, and Grossman. It was these men who, during the period that the theory of focal infection condemned the pulpless tooth, lifted endodontics from a craft to a scientific technique based on radiographic interpretation and bacterial culture methods. The fact that endodontics was placed on a sound foundation has done a great deal to bring about its present renaissance.
During and following the dispute concerning focal infection several technical and therapeutic advances occurred which helped transform the practice of endodontics into an exact and successful science. One of the first was the widespread use of the X-ray. Pulpless teeth in the earlier days, had not had the advantage of a roentgenogram for diagnosis, let alone treatment. This meant that teeth were treated endodontically regardless of the extent of the area of rarefaction or what it represented. It also meant that root canals were commonly underfilled or overfilled, because the dentist had no way of determining the location of the filling material in relation to the root apex, or laterally, except for the reaction of the patient. When X-ray machines became commonplace after World War I, the startling deficiencies in endodontic practice became apparent; extensive and indiscriminate extraction of teeth followed. In fact, it has only been in about the last quarter-century that a more rational outlook on the pulpless tooth has occurred, and the value of the X-ray appreciated as a necessary adjunct to successful therapy, both in diagnosis and treatment.

Hatton (1931), Coolidge (1936), and Dixon and Rickert (1938) had demonstrated histologically that pulpless teeth properly treated and filled were not a source of infection. It was not, however, until an aseptic technique was introduced (Sommer and Crowley, 1940; Morse and Yates, 1941), and the elimination of culturing the normal oral flora, that endodontics based on scientific methods gained acceptance. The introduction of this aseptic technique of culturing root canals made it possible to truly determine infection, not merely the presence of microorganisms. But more important, the presence of a sterile root canal and elimination of infection could now be determined scientifically. Hedman showed that when the root canal was sterile, the periapical tissues were sterile also. This finding, in turn, was followed by the realization that apical curettage was not necessary in all teeth with periapical involvement. Thus the introduction of an aseptic technique has probably done more than any other advancement in the area of endodontics in placing this phase of dentistry on a sound scientific basis, and has made the practice of endodontics a simple, precise and reliable procedure.

Dentists of an earlier era had relied unduly heavily on highly caustic and irritating drugs in endodontic procedures. Fortunately, the past three decades have seen the development of a more rational approach to endodontic drug therapy. Non-irritating drugs such as chloroazodin, U.S.P., camphorated para-mono-chlorophenol, N.F., and sulfathiazole paste, became more popular, and dentists soon became aware that results were generally better than when caustic agents were employed.

Another very important step was the advent of antibiotics. This greatly improved the control of severe infection and materially reduced the number of treatments required to obtain a sterile canal.

The introduction of better local anesthetic agents and better techniques also led to more rational endodontic therapy. Although Einhorn and his associates had introduced procaine in 1905, it was not
until the 1920’s that this country had a plentiful supply of this drug. As it supplanted cocaine, dentists for the first time had a really safe local anesthetic agent and it was no longer necessary for them to use arsenic for pulp devitalization. More recently even better, safer and longer acting local anesthetics have been developed, allowing the dentist greater latitude in his choice of treatment.

With the organization of the Council on Dental Therapeutics of the American Dental Association in 1930, dentistry for the first time had an evaluating agency which it could trust to provide the most accurate available information on therapeutic agents. In endodontics, as well as in other fields of dentistry, the activities of this Council have greatly rationalized the use of dental drugs.

One of the greatest deterrents to endodontic progress had been the lack of agreement on instrumentation and filling techniques which would insure a more precise and controllable outcome. For many years, the basic instruments for preparation of the canal, the reamers and files, remained, in general, unnoticed, unstandardized and unimproved. Fortunately, much progress has been made in the last decade, so that today a much greater uniformity exists between files and reamers and the concomitant filling materials (silver points and gutta percha), making it possible today to fill canals with predictable accuracy.

Over the years, a large improvement has been made in dental education in the field of root canal therapy. Today, every dental school in the nation teaches endodontics — something which could not be said in 1950. In many schools endodontics occupies a considerable amount of curricular and clinical time, and along with periodontics and restorative dentistry has become the keystone to present concepts of retentive dentistry which is gradually replacing the old concept of extraction-replacement dentistry.

ENDONTICS AS A SPECIALTY

Twenty-five years ago the first specialty organization of dentists concerned with the practice of endodontics was started when a group of 20 men met in Chicago to form the American Association of Endodontists. By 1963 its membership had reached over 800. The culmination of progress by the association was marked that year when endodontics was recognized as a special area of dental practice by the American Dental Association, and the American Board of Endodontics was established. At that time, over 200 American dentists were limiting their practices exclusively to root canal therapy.

SUMMARY

The area of endodontics has expanded in recent years to include very sophisticated operations such as hemisection, intentional replantation, and treatment of periodontally-endodontically involved teeth. Basically, however, treatment of pulpitis and of infected root canals still occupies the major portion of an endodontic practice. The radical treat-
ment of pulpless and non-vital teeth by extraction, which was so prevalent a few decades ago, has given way to conservative treatment and retention of these teeth. What has brought about this change? Primarily, the gradual reduction of acceptance of the theory of focal infection, coupled with the simplification of treatment. A third factor has been the more widespread use of extensive crown and bridge prosthesis, which often necessitated the use of strategic pulpless teeth as abutments. The most important factor, however, has been the realization that properly treated pulpless teeth are not injurious to the patient's health.

REFERENCES

3. Ibid., p. 16.

DR. DOMS is a general practitioner. His address is 455 First Street, Woodland, California, 95695.
Notes and Queries

MORE ON "DOC" HOLLIDAY

We have received a lengthy communication from Mrs. Susan McKey Thomas, co-author of the book In Search of the Hollidays, which was reviewed in the June 1974 issue of the Bulletin. The book is a biography of the famous dentist "Doc" Holliday who was a gunslinger in the old west. We excerpt here a portion of Mrs. Thomas' letter because it sheds some additional light on "Doc's" career and associates:

I feel fairly certain that I have found the real Kate Elder. At least, the materials which I have discovered fit the picture — namewise and timewise — and some circumstance. If only I can get a copy of the personal deposition promised me by one of my newly found correspondents — a gentleman who claims to have a deposition from Kate Elder, given to him by Kate a short time prior to her death in the 1930's.

Too, I have been working on the establishment of Doc's predecessor for some months. I have about narrowed it down to two local dentists who practiced here during the years that Doc was a resident of Valdosta. If my thinking and hunches are correct, both of these gentlemen graduated from the Pennsylvania College of Dental Surgery — which, of course, was Doc's alma mater. I picked up another lead from reading a history of the Pennsylvania College of Dental Surgery which might be beneficial, and I have written once more to John Whittock for assistance — with the hope that he will be able to come up with the answer.

Meanwhile, I am corresponding with a very fine Texas dental historian regarding Doc's dental career in and around Dallas. We also have a third party interested in this research — a gentleman who is employed by the police department of Dallas who is interested in doing a lawman's history of Texas. Together, we have managed to come up with a few items of interest; and we hope, in time, to find more.

Perhaps you would be interested in knowing that Doc Holliday, by John Myers Myers, after being out-of-print for some years, has recently been republished in paperback-indexed form by the University of Nebraska Press, Lincoln, Nebraska. The book, a Bison book, was first printed in August, 1973.

Also, did you know that there is yet a fourth biography concerning Doc? The title of the publication is The Frontier World of Doc Holliday, by Pat Jahns, published by Hastings House, New York, 1957. The book is now out-of-print, however.

SILVERSMITHS AS DENTISTS

The discussion in this section in the last issue of the Bulletin concerning John Baker and his association with Paul Revere has prompted this communication from Dr. Milton B. Asbell, Secretary-treasurer of our Academy:
As you know, there has been a lot of fuss made about "Paul Revere — Dentist." Well, it may be of interest to know that he was not the only silversmith-cum-dentist. Please consider this: My source is The Colonial Silversmith: His Techniques and His Procedures by Henry J. Kauffman (1973), and from pages 36-38 we learn of one Peter Getz (1763-1810) who advertised in the Pennsylvania Herald and York General Advertiser for April 28, 1790 as a jeweler and silversmith who "... also furnishes artificial teeth perfectly resembling the real without inconvenience to the party."

CAN THE EMPIRE SURVIVE WITH BAD TEETH?

Professor John A. Howard of the School of Dentistry of West Virginia University has contributed a choice bit of dental history culled from the British medical journal The Lancet of July 2, 1892. It is an excerpt from an address by the then Lord Chancellor's Visitor, Sir James Crichton Browne, M.D. entitled "Address on Tooth Culture." It is well known that the people of the United Kingdom have had a history of generally poor dental health, and it is only recently with dental care being more available to the population because of the National Health Service that things have become slightly better. But three-quarters of a century ago Dr. Crichton-Browne feared for the future of the British empire because of the deplorable state of dental health. In fact, Professor Howard urges us that his words, even though spoken in 1892 "... not be taken lightly for even at that remote, height-of-the-Empire time, when the schoolboys' world atlas was everywhere marked with British pink, Sir James was firmly advocating the re-introduction of minute amounts of anti-caries fluorine into the diet."

It is impossible to believe that the British Empire would have become what it is today if amongst those hardy Norsemen who pushed up their keels upon the shore at Ebbsfleet and entered upon the making of England there had been only one sound set of teeth in every ten, or if amongst our ancestors, who extended our dominions by land and sea and won for us our civil and religious liberties by struggles in which our personal vigor and endurance counted for more than they do in the highly scientific and explosive warfare of modern times, there had been all but universal rottenness of the teeth before adolescence. Depend upon it that in the England of the past the teeth were not as frail and troublesome as they are today... I am not going to argue that sound teeth are the passports to power, or that biting and grinding capacity have determined the course of history, but this I will maintain, that no nation has ever climbed to pre-eminence on carious teeth, or can retain pre-eminence when its teeth are no more and that it behooves a conquering people jealously to look to its teeth and to keep them, not less than its weapons, bright and sharp. If I might alter Goldsmith slightly I would declare

Ili fares the land, to hasting ills a prey,
Where gums accumulate and teeth decay.

It is not an edentulous race that will finally possess the world.
MORE ANENT LINCOLN'S TEETH

Dr. Maynard K. Hine, who wrote the article entitled "The Dental Problems of Abraham Lincoln" which was published in Vol. 22, No. 1 (June), page 1 of the Bulletin of the History of Dentistry, would like to acknowledge that the artist of figure 1 is Dr. Rolando DeCastro of the faculty of Indiana University School of Dentistry. This information was, unfortunately, not mentioned in the original article.

THE FIRST DENTAL BOOK

The Henry Schuman Rare Book Company of New York City announced in its current catalogue (No. 37) that a copy of the Zene Artzney is for sale, the asking price $3,500. The copy offered is the second edition, printed probably around 1532. This book is the first printed work devoted exclusively to dental therapeutics. The catalogue states that "...it was written to aid the majority of uneducated barbers, barber-surgeons and surgeons to comprehend the knowledge of dental diseases hitherto contained only in Latin medical works. The demand for such a work was obvious, and its popularity assured; between 1530 and 1580 no less than fifteen printings of this work are known. The topics discussed include: development of the teeth, causes of decay, problems of dentition, orthodontics, toothache, fillings, care and hygiene, impactions, extractions and retention of sound teeth. The method of filling with gold foil is incorporated, probably from the writings of Giovanni da Vigo." Schumann further states that no copy of this edition exists in any of the libraries of the United States.
To the Editor:


Sincerely,
Woodrow S. Monica, D.M.D.

(DR. MONICA is a special lecturer in dental history at the Fairleigh Dickinson University Dental School.)

To the Editor:

Thank you so much for the way my article "William Hunter's 'Oral Sepsis' and American Odontology" was presented. (December, 1973 issue.) The article was originally read as a paper during the F.D.I. meeting in Munich in 1971. The man who was before me on the rostrum gave the audience a report of the early history of oral sepsis, not omitting to mention Hippocrates. When I was given the floor, I addressed myself to the Chairman, Fritz de Maar, and said that I did not intend to bore the audience by repeating what my forerunner had said — it is partly in my manuscript — including Hippocrates. This, I said, reminded me of the medical student who had heard so many lecturers start with "Already Hippocrates stated . . . " that he finally thought that Hippocrates' Christian name was "Already." A roar of laughter gave me a flying start with my presentation! Thanks again for the fine work.

Yours, most friendly
Otto C. Francke

(DR. FRANCKE is Editor of the Swedish Dental Journal.)
To the Editor:

Thank you very much for sending me an advance copy of the June 1974 issue of the Bulletin which contained my article "The Dental Problems of Abraham Lincoln." I was indeed pleased with the way it was presented, and I wish to thank you for it. While I know it will not reorient the world, I hope your readers will find it of interest! I would very much appreciate receiving some extra copies of that issue.

Sincerely yours,
Maynard K. Hine, D.D.S.

(DR. HINE is Special Consultant to the President of Indiana University.)

To the Editor:

Thank you for the copies of the Bulletin containing my article "Biographies and Autobiographies of Dentists" (June 1974). Indeed, the article was set up very fine, exactly in the way I wished. As a whole this new issue of the Bulletin is a very good one, and of the greatest value to all interested in dental history.

Sincerely,
Dr. Ake B. Lofgren

(DR. LOFGREN is curator of the museum of dentistry in Goteborg, Sweden.)

To the Editor:

Last year Dr. Carr, President of the Academy, asked me to present a paper on "Pre-Columbian Dentistry in Mexico" before the members of the Academy at their 22nd annual meeting in Houston. The members seemed to like my presentation, since they elected me an Honorary Member of the Academy.

I now have good news. I am going to publish my book Tooth Mutilations and Pre-Columbian Dentistry in Mexico in English. The translation is ready and the printing is going to be done in Switzerland in a good editorial house and it will have better color illustrations. As soon as the book is published, I am going to send you one of the first copies.

With best personal regards,
Dr. Samuel Fastlicht.

(DR. FASTLICHT of Mexico City is one of the world's authorities on ancient Mexican dentistry.)
To the Editor:

Your letter has been brought to my attention, and I wish to thank you, on behalf of all of us here at MD, for your generous tribute to our November issue which was dedicated to dentistry. It is always a pleasure to hear from our readers, and an enthusiastic response such as yours is truly a source of inspiration and encouragement to us.

It was most thoughtful of you to share your kind opinion with us, and because we believe our other readers would also appreciate your comments, we are planning to publish them in our Letters column in one of the forthcoming issues of MD.

Thanking you once again for your gracious words, and with my best regard, I am

Cordially yours,
Verna Sabelle, President
MD Publications, Inc.

(MD magazine is a proprietary medical magazine which features cultural topics and is sent to practically all of the physicians in the United States. The November, 1974 issue was devoted to dentistry, and a great deal of it dealt with the history of dentistry, as well as the great strides our profession has made.)
The role played by dentists in determining the identity of the dead dates back to the time when Paul Revere successfully established positive identification of General Joseph Warren. This patriot had lost his life at Bunker Hill and in the haste following the battle was entombed in a mass grave. Several years later the State of Massachusetts proposed decent burial for him as homage befitting a fallen leader. But it was impossible to pick his body out from the others because of decomposition. Fortunately Revere was able to establish the proper identification because of several artificial teeth he had inserted in Warren’s mouth only a short time before the fateful battle.

Unfortunately, the science of forensic odontology has been neglected by our teaching institutions in spite of the fact that in many major and mass disasters the dental organs have been the only means of identification of the victims. Along with this neglect only two major books in the field have been published in the last three-quarters of a century prior to this one. In 1898 Oscar Amoedo, the so-called Father of Forensic Odontology, brought out his famous book *L’Art Dentaire en Medicine Legale*. Until 1966 no further comprehensive work in the field was forthcoming, and none in English, in spite of the enormous strides made in the technology of investigation. For example, only four months after Roentgen’s epochal discovery, a radiograph was accepted in evidence in a court of law in Montreal! In 1966 the classic work *Forensic Odontology* was authored by the Swedish professor Gosta Gustafson, and it remains to this day the standard reference work on the subject.
The current book by the two British authors, one a physician and pathologist and the other a dentist and Lecturer in Forensic Odontology at London Hospital Medical College is a very valuable updating of Gustafson’s work, adding to it in great measure by a more comprehensive discussion of several aspects of medico-legal problems.

The book makes clear that forensic odontology encompasses more than mere identification of remains. It points out that it includes three major fields of activity: civil, which embraces such spheres as malpractice suits, identification of amnesiacs as well as identification in cases of disasters; criminal, where both perpetrator and victim may be identified by their teeth, by bite marks on bodies as well as on artifacts such as foods left at the scene of the crime; and research, which is especially valuable in anthropological and archaeological studies.

In this latter respect this book will have significant value to dental historians who are engaged in studying skeletal remains of ancient peoples, as well as those remarkably preserved entire corpses which have been found in bogs in Europe, most notable among them being the amazing find of the Tollund man in Denmark who died approximately 1500 years ago. The chapter devoted to archaeological identification goes into great detail as to the procedures to be followed in examining ancient skulls, jaws and teeth, the methods of radiographing them and other technical processes.

From a medico-legal standpoint the book is of less value to an American than a Briton since it deals with inquest procedures in the United Kingdom. Nevertheless it is a welcome addition to the literature of an important science. Its usefulness is further enhanced by an excellent glossary of medico-legal terms for the dentist and many fine photographs and charts.

*The Humanities and Medicine*, Chester R. Burns and H. Tristram Engelhardt, Jr., Eds. (Texas Reports on Biology and Medicine, Special Issue.) Vo. 32, No. 1, Spring, 1974. University of Texas Medical Branch, Galveston, Texas.

"Medicine," say the editors of this fascinating volume, "is the most humane of the sciences and the most scientific of the humanities." The evidence that in dentistry as well as in medicine there is a growing awareness of this precept is the fact that more and more dental schools have established departments variously denominated as "social dentistry," "community dentistry" or some other similar name; and these departments have as their goal the linking of the practice of the profession to the community in which it is practiced.

The University of Texas Medical Branch at Galveston has established an Institute for the Medical Humanities, and it is under its aegis that this volume was issued. (The series to which it belongs is the quarterly *Texas Reports on Biology and Medicine* published by the medical school.) The school was fortunate to have had on its faculty Dr. Chauncey Leake, the eminent medical historian, whose foresight and dedication ultimately led to the founding of the Institute.
Of the two editors of this volume, one, Dr. Burns, is no stranger to our Academy, having lectured before it at our annual meeting. (See the paper by Dr. Burns in this issue of the Bulletin.) His cogent definition of the scope of "medical humanities" can best be summed up in his own words:

We often lose sight of the fact that all sciences and technologies, inclusive of medicine, are particular products of a culture in a particular period of its development. Science and technology presuppose value judgements, issues of purpose. Just as much as facts enable purposes to be accomplished, purposes cause facts to cohere in terms of expectations and meanings. We gather the world around us in terms of what is relevant to us. This is markedly the case with the central concepts of medicine: health and disease. What these concepts have meant and can mean, the ways in which they have structured and can structure medicine's treatment and investigations of man, define in the end his expectations of well-being. They are the key values for understanding what man can be despite the vicissitudes and exigencies of nature. They sketch the limits and the values of the human condition — and this is the business of the medical humanities.

As a result, he and his co-editor have chosen four major areas to explore; to illuminate how they have helped to shape and mold the medical sciences: history, law, philosophy and theology. About thirty excellent essays on all phases of these subjects make up the contents of the book, many of them evidencing great scholarship. "Studies of the Early Scientific Journal. The Basic Source Lists" by Dr. David A. Kronick, Librarian at the University of Texas Health Science Center at San Antonio is a very valuable work for any dental historian interested in the background of the literature of the sciences. Dr. Kronick brings to his essay his many years of experience not only in librarianship but in medical historiography and bibliography as well. Another essay, "From Guild to Profession: The Surgeons of France in the 18th Century" is a gem which gives a marvelous picture of the professional milieu in which Fauchard moved. For the dental historian there is an incomparable article "The Emergence of American Dental Medicine: The Relation of the Maxillary Antrum to Focal Infection" by Dr. Audrey Davis, Curator of Medical Sciences of the Smithsonian Institution. Dr. Davis has done a great deal of research in the field of dental history and her grasp of the subject is excellent, for in this essay of about 15 pages she succinctly makes clear the transformation of dentistry from a trade to a profession. Those members of the American Academy of the History of Dentistry who attended the annual meeting of the Academy this year at the Smithsonian were fortunate to have heard Dr. Davis, who as the luncheon speaker, expanded on this earlier study of the growth of dentistry as a medical science, and her beauty and charm are matched only by her intellect! And that intellectual "know-how" comes fully forth in this essay.

The editors have chosen the essays wisely and have produced a first-rate collection for everyone interested in the history of the medical sciences. And at only $4.00 per year for the Reports, it is indeed a bargain!
From that momentous day when Dr. C. Edmund Kells took the first dental radiograph in the United States, just six months after Roentgen’s epochal discovery, the X-ray has been an indispensable part of the practice of dentistry. Its use has enabled the dental profession to render a service which has been exact and precise, allowing the practitioner a means for diagnosing that which had been hidden from his view, as well as giving him a tool to judge how accurately he had performed the treatment.

One of the pioneers in the use of this new invention was Dr. Howard Riley Raper, who, as a modestly paid instructor at Indiana Dental College, from which he had graduated in 1906 was successful in convincing the then Dean of the college of the need to educate dental students in the use of the X-ray. And in 1909 Dr. Raper had established at Indiana the first course in dental radiology in any dental school.

It is therefore quite appropriate that this school be the sponsor of this short, but fascinating, story of not only the specialty organization of dental radiologists but of the intriguing history of radiology in dentistry as well. Serving as Chairman of the committee which prepared this history was the immediate Past-president of the American Academy of the History of Dentistry, Dr. Jack Carr, who is Professor of radiology at Indiana. Also serving on that committee was another prominent member of our Academy, Dr. Ralph S. Voorhees, Jr. of Rochester, N.Y. who in 1929 was named Director of Dental Radiology of the Eastman-Kodak Company.

The first part of the book is a chronological account in narrative form of the development of the X-ray machine from its discovery in 1895 through the many improvements, especially the tremendous contribution of Dr. William Coolidge and his discovery of ductile tungsten which made possible the modern X-ray tube, to the contributions of other early workers in the field who introduced refinements in techniques, such as Dr. Raper’s innovation of the bite-wing. This portion has great value for all dentists, not only dental historians.

The second portion is devoted to a short description of the founding of the American Academy of Dental Radiology and this is followed by a year-by-year account of each of the annual meetings of the Academy, those in attendance and the speakers and the topics of their lectures, as well as the officers elected for that year. This portion is therefore of interest only to the members of the Academy and sadly has one major flaw: it doesn’t give the reader an understanding of the need for a separate academy of radiology, or of the contributions both to scholarship and research which must have been fostered by this organization. A reading of the book leaves one with no knowledge of any such contributions. It would have been a far more valuable history had it shown us how the Academy had served to help the dental profession achieve the higher standards for which it is always striving.
Nevertheless, it is still a good short history of the fascinating field of the x-ray.


When this reviewer was a dental student about 25 years ago his prosthetics class was told to purchase an articulator known as the Hagman Balancer. What a pleasant surprise it was, therefore, to learn last year that its inventor, Harry C. Hagman, had become a member of our American Academy of the History of Dentistry.

Harry Hagman is a dental technician who started his apprenticeship at the Boos Laboratories in Minneapolis in 1910 when he was 14 years old. When he retired in 1946 as the company's Superintendent, the laboratory had grown from a work force of ten to one of 350 who served dentists in every state of the nation. Much of the growth was due in no small measure to the inventiveness of Harry Hagman whose innovations included the first hooded casting crucible, the sanitary pontic, the pneumatic vibrator, a steam device for eliminating invested wax patterns as well as the articulator which bears his name. For his service to dentistry, he was made an Honorary Member of the Minneapolis District Dental Society. In 1970 he retired from the management of his own laboratory to write, as he calls them, his "Prosthetic Memoirs."

The result is this unusual paperback book which is a fascinating pastiche of odds and ends of dental lore intermixed with detailed directions to a budding technician on the "how to" of setting teeth or using an articulator.

The book has no real formal arrangement. It has a lengthy section which covers in great detail the development of articulators, which Hagman tells us began with one used by Philip Pfaff in 1755, and this section is replete with many old and fascinating drawings.

Hagman pays tribute to some of the great men who pioneered the scientific study of the articulation of artificial teeth, such as William G. A. Bonwill, Alfred Gysi and Rudolph Hanau. He does this by reprinting a short biography of Bonwill, along with Bonwill's original article of 1858 on "The Geometrical and Mechanical Laws of the Articulation of Artificial Teeth" (without, unfortunately, telling us where it first appeared,) as well as by giving step-by-step directions on the use of the Hanau articulator, and so on.

There is a fine section on the history of porcelain teeth and factory made crowns in which just about every type of replacement which was ever devised is mentioned; but this section, too, suffers from rather inadequate organization. Add to this a table of weights and measures, another showing melting points of various metals, and another giving comparison of wire gauges and it can be seen that one cannot truly classify this rather unorthodox work which is neither a history nor a handbook.

But Mr. Hagman has contributed something of himself and his sixty years of serving the dental profession to our knowledge of dental
history in this book. He further points up the fact that he is fully aware of the necessity of using history as a guide to the future in this statement with which he sums up his book:

Man is a creature of habit — usually accepting things with a minimum of questioning inherited from his predecessors. To change these ideas involves a great effort. This book suggests ideas that offer different views to help you evaluate a deeper understanding of issues and to formulate opinions of your own.


As we read of the methods and techniques, as well as the "scientific" beliefs of the early physicians, we are wont to dismiss them as so utterly benighted as to be beneath our concerned notice. So says the author of this fascinating small volume, a noted historian of medicine and an editor of the Journal of the American Medical Association. Not so, however, he feels. "At first glance," he says in his introduction, "the medical doctrines of our ancestors may sound bizarre. The outlandish remedies — the purgings, bleedings and vomits — and the gullibility may appear grotesque." Nevertheless, he argues, the physicians of those days were just as intelligent as are those of today, just as earnest, just as devoted and conscientious. Therefore, in order to understand why they thought and acted as they did, we must understand the operative background out of which their concepts arose.

To better understand, the author has provided us with selections of the original writings of these pioneers which give us an insight into their reasoning processes, and this is a fascinating thing to do. For we begin to understand how they proceeded with their experiments and how they arrived at the conclusions they did. And although upon reading them now, we recognize the errors of their conclusions, nevertheless we are tolerant of their errors, for they arose out of the tenor of the times and the workers' own backgrounds.

The readings are grouped into four major headings: The Classical Heritage; Revolt; Development; and Fruition. The selections range from writings of Hippocrates, through Vesalius, Harvey, John Hunter, through Koch, Walter Reed, Banting and Best up to the latest: an intriguing account of a couple who developed a skin reaction under their wedding rings, incorrectly ascribed to "dishwashing detergent" but ultimately found to have been the result of the gold in the rings having come from discarded radon seeds which had been originally implanted in a tumor. Because of this latter case, which was as recent as 1967, dentists are cautioned to consider that possibility when confronted with unexplained reactions to gold prosthetic appliances in the mouths of patients.

The readings which Dr. King has chosen are not familiar ones, and it is always gratifying to read the words of these great forbears of ours and follow their reasonings, and learn that they, like us, were human and subject to the same errors of human frailty.
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