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Contributions, which may deal with any aspect of dental history or bibliography, are invited. The maximum length for original articles is about 5,000 words. Manuscripts should be typewritten with double spacing and wide margins. The Editor reserves the right to make literary corrections. All references should contain name(s) and initial(s) of author(s) and full title of paper or work. Journal articles should also include name of journal, year, volume number and complete pagination, in that order. With books, the city of origin, publisher, date and full pagination should be given.

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A plaque honoring Dr. William T. G. Morton was unveiled on November 13, 1968 at Leicester Junior College, Leicester, Massachusetts. Morton, who attended Leicester Academy, forerunner of the present school, from 1834 to 1836 was the first to demonstrate publicly the successful use of ether for anesthesia more than 120 years ago. The plaque, a gift of the Massachusetts Dental Society, was presented by Dr. H. Martin Deranian (center), president of the American Academy of the History of Dentistry. Henry C. Borger (left) president of the college accepted the plaque. On the right is Dr. Robert D. Ovellette, president of the Massachusetts Society of Anesthesiologists. Also present was Dr. Milton B. Asbell, secretary-treasurer of the Academy, who delivered a paper on Dr. Morton's life and achievements.
John Riggs and His Disease

—HENRY D. EPSTEIN, D.M.D.
Boston, Massachusetts

In these days, of what we like to think are the best of all possible days insofar as scientific discoveries are concerned, it is a good idea for us to sit back and take stock of the past. Some of you may remember that Henry Ford said “History is bunk” and that the German philosopher Hegel observed “No one ever learns from history.” Nevertheless, the study of history gives us a sense of humility; it shows us how little or how far we have gone in the great procession.

A sense of our place in dental history is good for our professional souls. We should be mindful, even reverent, of the accomplishments of our professional forbears who, without radiographs, without laboratory research and without extensive and expensive equipment were able to make observations and treat patients well, simply by using their native talents and keenness of eye and brain. Some of these observations are as modern as any in the most recent journal. In fact, with embarrassing frequency, they are the same observations!

Periodontal disease is as old as recorded history. From the Ebers Papyrus dating from the 37th century B.C. down through the ages there have been references to remedies for bleeding gums, loose teeth and periodontal abscesses in the writings of men of various races and civilizations.

Upon reading through these old remedies one is struck by the interesting observation that there was a certain unanimity of feeling about the therapeutic value of certain remedies. For example, human urine was considered a sovereign remedy for periodontal disease in the cultures of many and diverse peoples. Ancient Chinese writings of 2000 B.C. mention the use of the urine of a young child as a mouth wash. The Romans also used this rather unpleasant method. In fact, Catullus wrote a popular poem about a certain enemy of his, Ignatius of Celtiberia, who made a continuous show of his white teeth, even to the extent of laughing at funerals. He writes that each “in your Celtiberian land is accustomed to rub his gums with urine” and ends his poem: “Ut quo iste vester expolitior dens est. Hoc te amplius bibisse praedicet lotii.” (“The more polished your tooth is proclaims how much of the lotion you drink.”)
As late as the eighteenth century the eminent Pierre Fauchard gravely recommended this therapeutic agent, but with a difference. He advocated "rinsing the mouth every morning and also in the evening before going to bed with a few spoonsful of one's own urine immediately after it has been emitted, always providing the individual is not ill." He adds, "It is rather difficult in the beginning to accustom oneself to it, but what would one not do to secure one's health and repose." Dr. Arthur Merritt, a former president of this Academy observed that the great improvement in the 3000 years since this famous remedy was recommended by the Chinese, was that one use his own and not his neighbor's urine. A small step forward, but hardly a major breakthrough in periodontics!

In the early 1800's, dentistry was still not too far along the road in preserving the teeth from the ravages of periodontal disease. A prevailing theory of the time was that periodontal disease was a "scurvy of the gums", a debilitating disease that came with old age and loosened the teeth. It was proclaimed inevitable and incurable, and it was felt that there was little point in devoting too much time to its treatment.

As the nineteenth century progressed, however, new voices were heard in the land. Men of skill and vision were beginning to look at the disease differently. It doesn't really matter who first devised the precursors of the surgical techniques we use today. It seems likely that many practitioners were coming to realize, about a hundred years ago, that the loss of teeth was not inevitable, and that the treatment offering the best result was mechanical and surgical, rather than through the use of drugs and mouth washes. After thousands of years men in dentistry began to realize that Hippocrates' remedy of the burnt head of a hare and three mice, or various tinctures, or even urine were really not too successful.

There are references in the literature to men of the early 19th century, now long forgotten, who were treating periodontal disease surgically and with success, the term "surgical" embracing curettage and scaling, as opposed to the application of tinctures. Chapin Harris wrote admiringly of the work of Leonard Koecker, a dentist of London and formerly of Philadelphia who, in a paper in 1826 entitled "On the Devastations and Absorptions of the Gums and Sockets of the Teeth" gave a detailed description of periodontitis and its treatment by meticulous scaling and curettage. He followed this by a system of home care closely approximating the Charters technique. Harris quoted him at length in his text "The Practice of Dental Surgery."

However, in spite of these men writing and telling of their successful treatment of periodontal disease by techniques which were in many ways the same as those used today, more advances weren't made because the profession at large refused to believe them. Some of the outstanding dentists of the time labelled them charlatans, Harris' support notwithstanding. And after hearing a man as eminent as Horace Hayden pronounce "that all efforts to treat periodontal disease, except perhaps in its most incipient stages, have proved ineffectual," many dentists breathed a sigh of relief and went back to their gold fillings and dentures.
In the middle of the 19th century a new voice was heard crying in the wilderness of periodontal therapy. This man was doughty enough to stand up to the dicta of the leaders of the time; he insisted upon being heard. He was a man who, more than any other single individual, deserves the title "Father of Modern Periodontology." His work could not be dismissed lightly. He demonstrated his techniques at clinics and treated as patients other dentists, and his results were there for all to see. This man was John M. Riggs.

Upon reading the biographies of the early great men in American dentistry one is struck by the fact that a large number of them came from the tiny rural towns of New England, such as Barre, Winchendon or Windsor. Apparently the farm boy of the last century with an outlet at the forge for making and repairing farm equipment, plus a sense of beauty and basic order engendered by living close to nature, was good material for the making of a dentist.

Riggs, who was such a farm boy, was born on October 25, 1810 in Seymour, Connecticut. As a young man his natural mechanical ability led him into the blacksmith shop where he devised and created numerous farm implements. Being of a naturally studious nature the smithy was not enough for him, and yielding to family persuasion he matriculated at Trinity College in Hartford with the hope of eventually entering the Episcopal ministry, graduating from there in 1837. At the commencement exercises the baccalaureate sermon, preached by a bishop of the church, appropriately enough concerned the Trinity. Riggs' reaction to this makes an interesting commentary on the character of the man. After sitting through the sermon he advanced to the bishop and greeted him by saying: "I believe in one God and one God only; I do not believe in three and I'll be damned if I'll ever preach any such doctrine!" This did not impress the bishop too kindly with the future aspirant to holy orders, and so upon graduation we find Riggs teaching school in Hartford.

After a short time he enrolled at Jefferson Medical College in Philadelphia, but after a year his attention turned to dentistry, and he began its study under Horace Wells in Hartford. In 1840 he opened an office adjoining Wells'.

Riggs was a participant early in his career in that historic moment in December, 1844 when nitrous oxide was first used for dental anesthesia. Horace Wells had attended an exhibition of "laughing gas" by the itinerant Professor Gardner Q. Colton, becoming quite excited about its possibilities in dentistry. After a long discussion that night with Riggs, Wells asked Colton to bring a bag of the gas to his office the next morning and requested Riggs to remove one of his, Wells', teeth.

Riggs' brief but eloquent report of the memorable occasion is worth quoting: "Wells took his seat in his operating chair. I examined the tooth and he took the bag in his own hands and inhaled the gas — as he lost control of the muscles of his arms his elbows slipped from the arms of the chair dragging the gas tube from his mouth. His head dropped back on the head rest and I slipped the forceps on the tooth (a left superior molar) and extracted it." It was at this point that Wells came out of the effects of the gas and
exclaimed the famous words: “A new era in tooth pulling!”

Riggs never made any presumptions as to his role on that day, deeming it honor enough to have been a participant in any degree. In Wells’ long and bitter fight to achieve recognition for his discovery, Riggs was always his loyal and forthright supporter.

Very early in his career Riggs became interested in periodontal disease and its treatment. He devised a heroic technique of subgingival curettage using very small instruments down to the very level of the bone itself. It was his belief that the various phenomena attending the progress of periodontal disease from the earliest manifestations of gingivitis to the final exfoliation of the teeth were all different stages of the same disease. This concept is one that modern writers and researchers in periodontology like to think of as their own discovery.

His treatment attracted considerable attention, with the name “pyorrhea alveolaris” being supplanted by the term “Riggs Disease”, a name that persisted until quite recently. In fact, he talked so much about it that one eminent practitioner of the time said of him “He has Riggs Disease on the brain.”

He became a missionary for better understanding of the treatment of periodontal disease, appearing as a speaker at numerous meetings, and as a clinician both in this country and abroad.

Although not a prolific writer he did publish an article in 1878 in Johnston’s Dental Miscellany entitled “Suppurative Inflammation of the Gums and Absorption of the Gums and Alveola Process.” This article affords tremendous insight into Riggs’ powers of observation and modern approach. His style of writing, even though a bit florid, surpasses much of what we read today.

“This disease is called by many the disease of old age, as formerly it was more particularly noticed in persons of advanced years, but at the present we find the middle-aged and even the young affected by it. Many of the text books consider it hereditary, or constitutional, or bone disease. The result, from whatever cause, is most disastrous to the teeth, and in many cases to the health of the patient, for one by one the teeth become loose because of loss of bony support and are plucked out as an intolerable annoyance. If the inflammatory action be great and involve most or all of the gum embracing the teeth, pus tinged with blood exudes from around the necks of the teeth on the slightest pressure of lips or tongue or in mastication . . .

“As the disease exists in a less annoying and less dangerous form for several years previous to the above aggravated symptoms covering from 10 to 20 years before it culminates in its miserable characteristic — the loss of teeth — I have thought it best to tabulate its progress by treating it under four heads or divisions:

First: Where the margins of the gums show decided inflammatory action with some absorption of its substance and bleeding at the slightest touch of the brush.” (We would call this marginal gingivitis.)

“Second: Where the inflammation extends over the thinner alveolar border causing absorption of the bone as well as the gum tissue, forming small pockets beneath the gums filled with pus.” (We would call this periodontitis.)

“Third: Where the diseased action takes deeper hold involving thicker portions of the process absorbing it most rapidly near the tooth.” (This would be an infra-bony pocket.), ”causing it to sway back and forth for lack of most of its bony support.”

“Fourth: Where the disease has swept away all the alveola and much of the gum.”
With obvious modernity of concept, Riggs recognized that the first and second states were seldom noticed by the dentist, stating with obvious disapproval that "only when it has reached the third stage does it challenge the attention of the practitioner — then to be treated by astringent washes or styptic tooth powders!" Today the hapless patient is all too often put on peroxide and sodium perborate rinses, instead of the proper treatment. Riggs' paper goes on to say:

"The patient is informed that he has scurvy of the gums, or bone disease, or old age disease, even though the subject be not thirty years of age!

I adduce the proof that the teeth themselves, with their accumulated accretions and roughened surfaces from whatever source derived are the exciting cause of the disease. The teeth in perfect polish and cleanliness, at and under the margins of the gums, whether of animals or man, produce no inflamed action in that tissue. It can be artificially produced, however, by inserting a foreign body into or beneath its substance. If then, diseased action can be set up by a foreign body artificially introduced, it can be arrested and cured by withdrawing the same. And therefore, if the tooth becomes an extraneous body by reason of the accretions and concretions upon it, near and under the free margins of the gums, and inflammation ensues as it certainly will, the true prophylactic and pathologic treatment surely would be to thoroughly and carefully remove said concretion, tartar, or roughness, polish the tooth and let nature take care of the rest. If the operator fails to make a clean operation and to remove all foreign accumulations on the tooth the disease is sure to show the fact instanter. If a speck of tartar not larger than a small grain of gunpowder be overlooked, the gum over it will manifest the fact."

Modern periodontists are grateful for the numerous techniques that seem to make the practice of periodontics today more successful such as the apically repositioned flap, the split flap or the reversed bevel; yet if a man knew nothing else except how to remove all deposits on teeth with properly designed instruments, his patients would have cause to rise up and call him blessed. Therefore Riggs properly concludes his article: "Blessed are the eyes of the man who recognizes the disease and applies the remedial treatment early."

Riggs' treatment was admittedly difficult. His patients were very often placed under chloroform while he assiduously manipulated his curettes. When warned of the danger of this, the strong-minded Riggs answered "Should I meet the misfortune of having a patient die on my hands under the use of chloroform I shall not go out and hang myself, for I shall have the satisfaction of feeling that I used my best judgement." He designed six curettes for his treatment, both lefts and rights. After the surgical treatment, the teeth were polished and careful oral hygiene methods instituted. He disapproved of the use of gingivectomy as a barbarous treatment, but his curettage was certainly no less radical for his day.

Riggs admitted that because of the meticulous nature of his treatment and its difficulty of attainment, it could not become popular with the rank and file of dentists. However, he felt that dentists were not to be censured since the treatment was 50 years ahead of its time. Recognition did come to him in the form of many honors, among them a resolution by the Connecticut Valley Dental Association naming him as the originator of a successful treatment for inflammation of the gums, and also an honorary D.D.S. degree.
from Baltimore.

In 1866 Dr. Riggs was one of a committee that attempted to have a dental department established at Yale University Medical School, but Yale was reluctant to take this forward step. In the following year Harvard saw the advantage of such a project, and in 1867 organized the Harvard Dental School, Riggs securing an appointment as clinical instructor.

As a business man Riggs was not a success, even though his practice was tremendous, with famous people, authors, theatrical celebrities as well as fellow dentists coming from a distance to be treated. His accounts were as often as not kept in an old gold-foil book, but by day's end he would have lost the book.

At the age of 75 while marching with the Governors Foot Guard of Connecticut, he caught pneumonia and died on November 11, 1885.

It would be nice to report that after Riggs' death periodontics made giant strides because of his work. But we must echo Hegel's "No one ever learns from history." We have had to repeat for ourselves many of the lessons Riggs taught, but in his day he was a giant, and as such is worthy to be remembered.

REFERENCES

GUERRINI, VINCENZO: A History of Dentistry
Philadelphia, Lea and Febiger, 1909

HARRIS, CHAPIN A.: The Principles and Practices of Dental Surgery
3rd Ed., Philadelphia Lindsay & Blakiston, 1848

KOCH, CHARLES E.: History of Dental Surgery, Vol. 3
Cleveland, National Art Publishing Co., 1910

MERRITT, ARTHUR H.: A Brief History of Periodontology
J. Dent. Res., 3:xxix, 1921

AMERICAN DENTAL ASSOCIATION: Proceedings of the Centenary Commemorations of Wells' Discovery in 1844, Horace Wells, Dentist
Chicago, Amer. Dent. Assn., 1946

RIGGS, JOHN M.: Suppurative Inflammation and Absorption of the Gums and Alveolar Process
Johnston's Dental Miscellany, 5:306, 1878

RIGGS, JOHN M.: Pyorrhoea Alveolaris
Dental Cosmos, 24:524, 1882

WELLS, HORACE: History of the Application of Nitrous Oxide Gas, p. 21, Testimony of John M. Riggs
Hartford, 1847

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(Presented at the Seventeenth Annual Meeting of the American Academy of the History of Dentistry in Miami Beach, Florida on October 25, 1968.)
The appearance of professional men in a frontier area often indicated the region’s advancement to a higher level of development. Because they usually possessed education and special skills the professionals contributed to the growth of a well-organized social system characterized by law, order, and morality. Yet, the frontier exerted its influence. Pioneer life encouraged and often necessitated versatility; ministers taught and teachers preached while some doctors attended to the medical needs of both man and beast. In numerous cases the professional calling became subordinate to other activities, and in the final analysis the frontier rather than the individual had produced the most change.

One such professional man was Waltus Jewell Watkins, born on July 7, 1852, near Lawson, a small farming community in northwestern Ray County, Missouri. His father Walrus Lockett Watkins had migrated from Kentucky to Liberty, Missouri, in the early 1830’s and had operated his own cotton spindles in addition to offering Clay County, Missouri, residents custom wool-carding services. When fire had destroyed his spinning machinery, the elder Watkins turned to farming, tanning hides, attempting the commercial production of honey, and operating a saw mill. In 1839 he had moved his family to a huge tract of land a few miles west of Lawson. With bricks fired in his own kiln he had erected a two-story house in 1850 and ten years later he completed the construction of a woolen and grist mill.

Three of his sons, Joseph, Judson, and John, continued to operate the farm and mill after their father’s death in 1884, but Waltus Jewell lacked the stability of his three younger brothers. Although he attended William Jewell College at Liberty, Missouri, he apparently failed to graduate, and the next few years of his life seemed marked by intermittent employment. With funds from his father’s estate he attempted ranching in Montana, but abandoned that pursuit and returned to Missouri in the late 1880’s to open a jewelry store and watch repair shop in Bunceton. He next studied dentistry, and by the mid-1890’s offered his professional services to the residents of Burlington Junction, Missouri. The year 1895 found him completing a post-graduate dental course in Chicago.

In the spring of that same year Jewell toured Colorado with
all the exuberance of a tenderfoot in search of gold. He seemed especially fascinated by the mining camps of southwestern Colorado, and was determined to try his hand at prospecting even though his wife Minnie failed to share his enthusiasm. When his talents as a miner produced little income, Jewell’s wife returned east with the assurance that her husband would follow after settling some financial obligations. Rather than join her, he sold their household belongings for $35.00, loaded his dental equipment on a wagon, and commenced approximately thirty years of wandering. He never contacted Minnie again.

After establishing headquarters at Craig, Jewell visited the mining camps and small towns of Colorado searching for teeth to repair, deer to hunt, and claims to mine. Before his death in a Kansas City nursing home in 1925, he had written more than one hundred letters to his brothers in Missouri, describing his travels and his schemes for gaining quick wealth. Jewell’s boundless optimism concerning the West provides little that is new to the student of western history, but the comments in the following selection of his letters perhaps offer some insight into the impact of the frontier on one professional man.

Denver, Colo.
12/8/1898

Dear Brothers:

. . . I got here the right day for my business transaction. If I had been here one day sooner I would have had to stand an examination which I could not possibly pass. One of the board showed me some of the examination questions and they were corkers. I paid the secretary and took his receipt (which is unlawful on his part) and will have to stand an examination in time. I can practice until that time. He, the sec. is doing crooked work therefore I feel safe . . . $100.00 to $500.00 fine or 6 months to 1 yr in jail or both for practicing in this state without license. I have the pinch on this dental examining board. (They think I dont know it) and I am feeling very comfortable. Love to everybody and my dog Joe.

Your affect Brother
W. J. WATKINS

Jimtown, Colorado
12/18/1898

Dear Brothers

Well I am here in Jimtown all right. Jimtown, Creede and Bachelor are mining camps all connected together (in a manner) in a mountain gulch about 9000 feet altitude . . . Jimtown is in Mineral Co. I think I can do well here in the practice of dentistry. These miners get from 3 to 5$ per day. Money is plenty in this camp. Population about 3000 souls. There is a dentist here, but I will locate here just the same. . . . Some of the people here wont let this dentist work for them. He gets drunk and rasises—old
ned. A pretty good class of people here now, but was a tough place when the camp was new. . . . No Sunday here except in name. My hotel has office and saloon all in one little room and it is the best hotel in town. I can only get one small room for dental office & I have to sleep in that. Every thing is crowded to death. A good 2$ hotel could make money here. . . .

I Remain your affet. Brother

W.J. WATKINS, D.D.S.

P.S. The name of P.O. here is Amethyst and not Jimtown

Amethyst, Colo.
March 9—1899

Dear Brothers.

. . . Somebody killed here every week or two. Sometimes with gun & sometimes accidentally in mine. 3 men got killed in mine today & one more in dying condition. . . . My advertisements cost me about $6 pr. month. Other expenses about $50 pr month not to say anything about tobacco, life insurance, lodge dues & numerous other things. . . . Everything is pretty high here. . . . A great many of these people want gold crowns and bridges, & some of them want gold crowns on front teeth for display. They ought not to be put there of course, but I am not here to regain lost health. I crown them when they want it done. I have two incandescent lights in front of my dental chair; each light is 32 candle power. I do considerable night work for miners. . . . The dentist I bought out is still here. He agreed to leave by the 15 of Jan. . . .

Your affet. brother

WALTUS J. WATKINS

Amethyst, Colo.
June 3, 1899

Dear Brother

. . . I have rented a doctors residence in the best location in town and it is finely furnished, paying $40 a month rent. Everything in the house is beautiful & costly. I will have the finest equipped dental office & residence combined in the state. The house is in the middle of the block of business houses. The dentist I bought out is still here he has been sober for 5 wks & is getting considerable practice. . . . I am not going to Denver to stand examination. I expect I will have trouble with them. It costs like fury to go up there & return, and I am going to risk the trouble. . . .

With love to all I am your brother

W. J. WATKINS
Amethyst, Colorado  
Sept 25, 1899

Dear Brother

... I go prospecting every Sunday & Wednesday. I have a half interest in two claims which I think will bring me some money next year. They both need more development, but they are so high and no good way to get to them. I cant do but very little work this fall; besides I have to practice dentistry to make a living. If it hadnt been that I had to stay at office nearly all of the time I think I would have been shipping ore before now. ... I was up above timber line last Wednesday & had to shovel away six inches of snow before I could dig in prospect hole. ... Dentistry is dull. The dentist I bought out is still here. I think I will have to go to Denver in Dec & stand my examination. I don't think I can hoodoo the dental board any longer.

With love to all I Remain your Brother

WALTUS J. WATKINS

Amethyst, Colo.  
1-4-1900

Dear Bro.

... I went to Denver about a month ago to stand examination before state board of dental examiners. I passed all right & received my certificate today. Now I have license to go and do in this state just as I ..............please. I have done $15 worth of work today and I am tired and have not much time to write before the train leaves...

I remain your Brother

W. J. WATKINS

Amethyst, Colo.  
2-21-1900

Dear Bro.

... There is a man who lives in this town & two others who live in other parts of the state who have 4 patented claims on Campbell Mountain ... On this mountain are 3 different mines all excellent producers shipping gold, silver, lead, & zinc. (Sounds funny but true.) These claims I am about to lease are situated higher up the mountain on a line with these good mines below. ... In all ore that runs 50 dollars to ton we will have to pay 10 pr cent royalty. Over $50 we will have to pay 15 pr cent, that is cheap. ... Labor is worth $3 pr day. I think we can get men to work it for 1/8 interest by boarding them & furnishing powder fuse & such like. Now Jno can you come out here at once. I truly believe there is lots of money in this deal. ... I aint able to work it. I dont want to see you lose one cent, & I dont think you will. Every word in this letter is the truth. If you come I am sure you will like it. ... Help me out on this and we will divide equally... I have been so infernal busy mining and trying to practice dentistry...
at the same time that I have not had time to do anything. . . . I feel like I would like to start in where that zinc is oozing out of the mountain & follow it to a finish. Now if you cant come send dispatch. . . . I hope to God you will come. 10

With Love to all I remain your Bro.
W. J. WATKINS

Amethyst, Colorado
2-22-1900

Dear Bro.

. . . The night shift struck a vein of quartz in our mammoth mountain claims last night which run 39 oz in Silver. The quartz is about 12 to 14 inches wide. We are running two tunnels. One is about 300 ft below the other. The upper tunnel is where we got the quartz. When we get the lower tunnel in as far as the upper one now is I think we will have it very rich. . . . Well it begins to look like I am in it or will be pretty soon.

Your Brother
W. J. WATKINS, D.D.S.

Amethyst, Colo.
3-15-1900

Dear Brothers

. . . I am getting leary of the mines. The second night I worked in the mine I came in an ace of getting killed. . . . I quit the mines about a week or ten days ago. . . . I expected to take a trip down the valley & make some mon at dentistry, but the nearest town is Delnorte 40 miles, and they have the smallpox there. . . . I am going to try awful hard to keep my interest in the lease up without work until we find it in paying quantities. Then I will be all hunky-dory. . . .

With Love to all I Remain
W J WATKINS

Craig, Colo.
Sept 15—1900

Dear Bro.

I am in Craig Colo. 11 and expect to be here a week yet & perhaps a few days longer. . . . I intended going to Baggs & Saratoga Wyoming but from all I can learn it will not pay me to go there. . . . I am stopped here expecting to do dental work. . . . There has been several dentists through here this summer & some of them done very poor work & charged high prices & the people here are rather sore on dentists and it makes it hard on dentists that can do good work. 12 I expect to go from here to Hotchkiss

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Colo. and winter. . . . At Hotchkiss the weather is not severe and feed is cheap. . . . It has been very dry here this summer. There is no grass in Colo except on the higher mountains. Will Close with love to all

Your Brother
W. J. WATKINS

Craig, Colo.
Sept 29-1900

Dear Brothers.

I arrived in this town Sept 12—and got here the right day and under the right circumstances for the practice of my profession. There had been some dentists through here that done very poor work & the people were kinder [rather] afraid of new dentists, but I got started to work & pleased every one I worked for & I have had a very good practice. I have taken in $76.50 & expect to take in at least 35 or 40$ more next week. I will be here another wk yet, and then I may go to Baggs & Dixon Wyoming about 50 miles from here. If the snow comes before I get out of this country I will put my wagon on sled runners and travel that way until I get out of snow. . . . I spent $40 for dental material & my expenses here will be considerable. I think me and my little red wagon can make it all right in this country next spring & summer and fall. . . . I am waiting now for material from Denver. . . . it takes 6 days to get an answer . . . . They will have a telephone line in soon from here to Rifle and then we can telephone & telegraph. . . .

With love to all
JEWELL

Craig, Colo.
Oct 11-1900

Dear Bro

. . . I have done a pretty good business in this town considering its size. There are about 100 souls here. 2 stores 1 harness shop 1 newspaper 1 blacksmith shop 1 saloon one two by 4 hotel. I get work to do from about 30 miles away. I think I have taken in about $115. . . . I think I will work my way in to Hotchkiss about as fast as I can get there. Direct all letters to Craig I will have them forwarded. . . .

Your Affect Bro.

Oats are scarce and sell at 2½¢ pr lb. I want to winter where feed is cheaper.

Craig, Colo.
Oct 20-1900

Dear Bros.

. . . Expect to be here for quite awhile yet. I and another man are going about 50 miles from here and locate some oil

—12—
placers. Some parties have been boring for oil and struck it & there is considerable excitement about it here... I may be here all winter... Write to me at Craig...

With Love to All Your Affect Bro

Craig, Colo.
3-8-1901

Dear Bro.

... went to Meeker and made a little dough & done work for a $42.00 set of spring wagon harness, and stopped at Hamilton P.O. and done 30$ worth of work and wont get those 30$ till next summer. I came on to Craig & then went 22 miles down the "valley" & made a set for an old lady, & while there a man came along and wanted a set and said he had no mon & didnt know when he would have. I axed [asked] him if he had any hosses he could trade. He had one. I went and looked at her. A great big 4 yr old mare as poor as a snake. We traded & I make him a set & traded the mare off before I left his house.

Love to Everybody
W J WATKINS

Steamboat Springs, Colo
1-4-1902

Dear Brothers and Sister 13

... Drove 24 miles in a snow storm to make a set of teeth for a man that was not able to come to Craig. Went back to Craig in a snow storm. Had to buy a sleigh before I started... There is no wagons used here now. Snow everywhere... It was 30 below zero before I left Craig. Went to Hayden and stayed two weeks, & took in over 100 shekels [sic]. Came to this town Jan 1st., 1902. I made 5 gold crowns today since dinner all except polishing. Will put them in a mans face tomorrow & collect the dough. ... I got my teeth mended in Denver & the day I got to Craig I broke one of the crowns off. No I didnt say a word but if I had had hold of that dentist I would have walked his log. I will be here one week or longer and then expect to go to Craig... Direct to Craig and letters will be forwarded if I aint there...

Love to everybody
Bro. JEWELL

Steamboat Springs, Colo
1-9-1902

Dear Bro.

... A great many of these people in Steamboat, and the best of them too want me to rent an office here and make this place my headquarters. They dont like the dentist here, or his work. I have made two bridges over since I came that he had made...
I dont' know about renting an office, but I will be sure and come around once in a while and relieve them of some of their cost.

Bro. JEWELL

Craig, Colo.
4-3-1902

Dear Bro.

... Expected to leave here for Hayden yesterday noon but a lady came in yesterday morning to have a tooth extracted and I prevailed on her to have some bridge work done and I just got through with the work this afternoon. I pulled the old gals leg for $50. Will be in Hayden two or 3 weeks and if the weather will remain good I think I can then go on to Steamboat. . . .

Your Bro.

W. J. WATKINS

W. J. Watkins
Optical, Musical, and Sporting Goods—
Watches and Jewelry—
Glasses Accurately Fitted.

Baggs, Wyo.
June 4, 1902

... I traded dental work for a 25-35 smokeless Winchester & traded it for a 30-40 U.S. govt Winchester. . . . I have had paper and envelopes printed same as this sheet & I write for almost any kind of catalog and wholesale prices and I get them, consequently I buy almost everything at wholesale. I sell a few spectacles in my travels and can always have a pair to fit myself. Will leave here in 4 or 5 days and go to Craig. . . & remain until first of July & then hunt & prospect for two weeks.

Love to All.

YOUR BRO JEWELL

Craig, Colo.
7-19-1902

Dear Bro.

I am not doing much this month practicing but am having a pretty good time hunting etc. . . . When I go to Steamboat . . . am going to advertise like the devil & try & make some dough & if there is no other dentist there I expect to make it win. I dont think the resident dentist will be there then.

Well good bye

BRO JEWELL

—14—
Craig, Colo.
Oct. 15, 1902

Jno. H. Watkins
Lawson, Mo.
Dear Bro.

... I visited Hayden and Steamboat Springs professionally staying a week at each place. I done a good business in Hayden but didn't do near so well in Steamboat. Two dentists were there but the editor of the paper up there gave me a good write up as you will see from the clipping enclosed.

Mr. Watkins, the dentist will remain in town until Sunday, but will be back later on to stay longer. His business in Steamboat, as elsewhere in the country, is always good. He is competent and the people know it. That is the reason they pass up the fakirs and wait for Watkins.

Love to all
BRO. JEWELL

Craig, Colo.
1-25-1903
Dear Bro.

... I am going to have sleigh runners fitted to my wagon and am going to use my own rig in the future. I will have to carry sleigh runners & wagon wheels both. Part of the time between now & May I will have deep snow in places ... so I am going to be prepared to travel either in wagon or sled. I lost money last spring by not having a sleigh & wagon combination. I will be here 3 wks anyway and will then go to Baggs & Dixon in Wyo.

YOUR BRO. WALTUS

Craig, Colo. Aug 2, 1904

Dear Bro.

... There are two traveling dentists on snake river & two on Bear River. ... One of them came into this town yesterday, but he wont do very much and perhaps nothing while I am here. I am going 50 miles down the river in 2 or 3 days to look at horses for dental work, (That is trade dental work for horses) providing every thing is right. Will be gone 2½ or 3 days and then I am going to Glenwood Springs.

YOUR BRO JEWELL

Craig, Colo. 9-21-1904

Dear Bro

... Got here on time & went to Hayden and found a dentist had been there for a month and advertised to remain permanently. I looked him up & found he had no license to practice and told him he had better “git” but he ... just staid until I had him arrested. He couldnt give bond and had Hahns Peak jail staring him in the face so I let him off if he would pay costs and get out of the country....

YOUR BRO W J WATKINS

Dixon Wyo 12-13-1905

Dear Bro.

... I will be in Craig next week, in Hayden Christmas week, & will then go to Yampa & stay about 10 days; after that I am going 90 miles west of Craig where I have an interest in some mining claims. Another man & I also have a reservoir site in that country, and I am going down to have it surveyed. ... A little later on I am going to take up a homestead and also 160 acres under the desert act. ... I am taking or locating a mill site just below where the reservoir will be, and there is a mighty good spring there. ... I took up the mill site because I think some one will put up a Smelter in that country before a great while. The reservoir will furnish water for a mighty big scope of country. ... It is taking
nearly all I can make to pay expenses and keep the prospectors going. I and a few other men have two prospectors over in Utah. They talk encouraging but prospectors talk don’t go very far with me. We have two men at work down where I am going. . . . The mercury registers from ten to 20 below zero every morning.

I Remain Your Brother

W J WATKINS

Dear Brother.

I am going to start to Goldfield [N]ev.¹⁵ in the morning. . . . I have some claims near Silver Peak and I think now I can make some money out of them. There is quite a boom there and—there has been a Railroad built in 4 miles of my claims, and have started a town there. They call the town Blair. . . . The price of beds in Goldfield now is $4 pr night. They have had a wood & coal famine there and there has been some suffering & sickness in consequence . . . . A spring wagon and team costs $18 pr day. I presume I will have to give some man a half interest in my claims to haul me a round. . . .

YOUR BRO JEWELL

Craig, Colo
1-31-1907

Dear Brother

. . . I have stock in the Storm Cloud mine at Lida, Nevada & I think I am going to make some good money out of it. I was looking for a sure thing & I believe I have it. I also see in the Goldfield papers where quite a number of people have perished in snowstorms going from one place to another. I could make money in that country if I would stay there, but I would rather be a poor dentist in Colorado than be wealthy and have to live in that country very long at a time. . . .¹⁶

As ever your brother

W J WATKINS

REFERENCES

¹ The original Waltus Jewell Watkins letters are located in the Watkins Mill Collection, Jackson County Historical Society Archives, Independence, Missouri, and are published with the kind permission of the society. The editor is indebted to Mrs. Ruth Roney of Lawson, Missouri, who supplied much of the background material on the early life of Jewell Watkins.

² Letters addressed to “Brother” were written to John H. Watkins. The salutation “Brothers” included not only John but also Joseph and Judson.

³ Colorado enacted its first dental law in 1889 (Colorado, General Assembly, Session Laws, 7th Sess., 1889, pp. 122-24). It required individuals who wished to practice dentistry in the state to pass an examination administered by the Colorado State Board of Dental Examiners. When the board was not in session, its secretary was authorized to issue a temporary permit which was valid only until the next board meeting, at which time it could be extended. However, a subsequent law passed in 1897 (Colorado, General Assembly, Session Laws, 11th Sess., 1897, pp. 144-47) made no provision for the issuance of temporary permits. It also reduced the maximum fine for practicing without a license from $500 to $300 and eliminated a jail sentence included in the earlier law. See also William A. Douglas, A History of Dentistry in Colorado, 1859-1959 (Boulder: Johnson Publishing Co., 1959), pp. 121-25.
4 With the arrival of great numbers of miners following the Creede strike, camps quickly appeared in the vicinity. In 1891, Jimtown (sometimes known as Gintown, Creedmoor, and Amethyst) came into existence and above Jimtown, following Creede's first fire, Bachelor (or Teller) was built nearby. Muriel Sibell Wolle, Stampede to Timberline (Boulder: University of Colorado, 1949), p. 321.

5 Jewell religiously paid his dues to the Masonic and Woodman Lodges throughout his travels in Colorado. He explained to his brother John that attendance at lodge meetings in the towns he visited helped to combat his feelings of loneliness and isolation.

6 Typical of other mining camp practitioners, Jewell established evening office hours to accommodate miners.

7 Although Jewell's optimism regarding his right to do as he pleased was generally correct, the holder of a Colorado dental license was expected to be a person who subscribed to a professional code of ethics. Douglas, History of Dentistry, pp. 120, 125.

8 Under United States mining laws, the patent was the grant of deed of the United States, which passed the title. Legally, it was considered proof of having met all of the necessary requirements for issuance. Robert Peele (ed.), Mining Engineers' Handbook (New York: John Wiley & Sons, Inc., 1916), pp. 1475, 1484, 1499, 1501.

9 A royalty, which was normally based on a sliding scale varying with the value of the ore, was the rate paid to the mineowner under a lease contract. Peele (ed.) Mining Engineers' Handbook, p. 1361.

10 Joseph Watkins visited Creede in April, 1900, to inspect the mining prospects discussed in this letter. However, since Jewell had moved to northern Colorado by September of the same year, it seems unlikely that he was able to obtain the necessary funds to develop the claims on Campbell Mountain.

11 As indicated, Jewell had moved from Creede, in southern Colorado, to Craig, located approximately forty miles south of the Wyoming border.

12 Jewell was only one of a large number of itinerant dentists who moved from town to town in Colorado, much to the consternation of the permanent and often better-trained practitioners. Douglas, History of Dentistry, pp. 119-19.

13 Cary Watkins was Jewell's sister who lived with John in Missouri.

14 Jewell was probably referring to the Carey Act of 1894 rather than to the Desert Land Act of 1877 with its several revisions. Although both laws were created to deal with the disposal of arid western land, at the time of Jewell's intention to settle, one person could claim 320 acres under the Desert Land Act while under the Carey Act, he could only claim 160 acres. Benjamin Horace Hibbard, A History of Public Land Policies (New York: Peter Smith, 1939 [first published in 1924: New York, Macmillan Company]), pp. 424-55.

15 Located in southwestern Nevada, Goldfield was a booming mining camp of about twenty thousand in 1906. The area eventually produced about $105,000,000 in gold and silver, although Jewell's share seems to have been negligible. Rufus Wood Leigh, Nevada Place Names: Their Origin and Significance (Las Vegas: Southern Nevada Historical Society. Boulder City: Lake Mead Natural History Association, 1984), p. 82.

16 As indicated, none of Jewell's mining ventures or promotional schemes ever produced any substantial profits, and in May, 1925, he closed out his business in Craig and returned to Missouri. John paid the cost of his care in a Kansas City nursing home prior to his death on July 17, 1925.

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Pioneers in the Dental Laboratory Field

—ROBERT J. ROTHSTEIN,
Silver Springs, Maryland

The early history of dental laboratories is a subject which is close to my heart, since I have been associated with dentistry for almost seventy years. Not only have I seen dentistry progress a long way during this period, but I have also witnessed the constant improvement in dental laboratories.

Very little information is available regarding the very earliest dental laboratories. One of the earliest on record is Sutton & Raynor who operated a laboratory and salesroom on the second floor of 609 Broadway in New York City, and who advertised in October 1854 that they did mechanical dentistry of all descriptions, exclusively for the dental profession and at moderate rates.

Sutton & Raynor also operated a dental supply store in connection with their laboratory, stocking many items used in dentistry such as instruments, burs, dental gold and silver plate, solder, gold and tin foil, platinum plate and wires. They also had a complete stock of single teeth made from an improved pattern.

The next laboratory of which we know was one founded in 1855 in New York City by a Dr. B. W. Franklin and his son. They advertised that they were using the new gum process patented by Dr. John Allen. Later Dr. Franklin became editor of a publication called "The Vulcanite" devoted to the science of mechanical dentistry, and published by The American Hard Rubber Company. Dr. Franklin subsequently formed a partnership with a Mr. Sproull, changing the firm name to Franklin & Sproull. They advertised continuous gum work, guaranteeing its mechanical construction but not its adaptation to the mouth tissues.

In February, 1859, John T. Toland of Cincinnati advertised that he was starting a dental laboratory for the purpose of doing mechanical work exclusively for the profession. Unfortunately, Mr. Toland became involved in litigation with the Goodyear Dental Rubber Company, and was ordered to cease constructing rubber dentures for the duration of the Goodyear patent.

THE FIRST MAJOR LABORATORY

There were many other scattered small laboratories during this
period, some conducted in conjunction with dental offices and some operated independently by dental technicians. Most of these, however, quickly went out of existence. It was 1887 before the first industrial dental laboratory was organized in Boston, Massachusetts by William H. Stowe.

Dr. Stowe, who was born in 1862 and died in 1937, received his dental training in an office in a small town in Maine. He studied some crown and bridge work in New York City, and then settled in Boston where he worked in a dental office, spending most of his time processing dental restorations.

In the 1880's modern instruments and tools to construct prosthetic appliances were not always available. It was necessary for Stowe to design and fabricate working tools and instruments to suit his needs. Since he had a natural ability to design functional appliances, he soon became popular with his colleagues in the profession who came to rely upon him for assistance with many of their restoration problems. At that time dentists had to process their own prostheses since there were very few qualified technicians.

When the demands on his time became too great, Dr. Stowe hired assistants as apprentices. He then fitted up a crude laboratory in the attic of his home where, working evenings and Sundays, he constructed prosthetic appliances for other dentists.

In time Dr. Stowe opened his own office for the practice of dentistry. However, he had developed a very fine skill in processing appliances and seemed to favor his laboratory operation. Beset by continuing pressures from his colleagues Dr. Stowe had to make an important decision: to give up either his dental practice or his laboratory. Because of his special skill with and love for dental appliances, he decided to devote his full time to the dental laboratory. His way in this was paved by a relative, Frank F. Eddy, a tool maker and machinist by trade. He had observed Dr. Stowe at work in his laboratory and suggested a partnership. The year 1887 saw the establishment of the Stowe & Eddy Dental Laboratory at 125 Tremont Street in Boston, and this became the first industrial dental laboratory to weather the storms and trials of growth.

This laboratory occupied one front room up one flight of stairs, with another room three flights further up. The equipment was crude: an old flat-top kitchen table served as a workbench; a lathe used for grinding and polishing was powered by a foot treadle; waxing was done by alcohol lamps, and a kerosene stove was used for heating water. The two-flask Whitney vulcanizer required constant watching. Soldering was accomplished with a mouth blowpipe and an alcohol flame.

My own background in dentistry goes back to 1898, with the Spanish-American War in progress. I was then employed by a practicing dentist on the East Side of New York. In 1890 Stowe & Eddy opened a branch laboratory in New York, and I was offered a position there, which I gladly accepted. There were very few qualified technicians available in those days, and the firm found it necessary to transfer some of their technicians from Boston to start their New York branch.
There was great opportunity in those days for those who were seeking to learn the art of dental technology. In 1906, a Washington dentist who processed restorations for other dentists invited me to come to Washington as his employee. After one year of this employment, and upon the encouragement of several dentists, I launched what is now known as the Rothstein Dental Laboratories, Inc. and which is now completing its 62nd year of constant service to the profession.

OTHER EARLY PIONEERS

In order to gain further understanding of the growth of the commercial laboratory field, it is of interest to review the careers of some of the early workers in the field.

HENRY P. BOOS

In 1895 in Milwaukee, the Bunde-Upmeyer Laboratory was a going concern, and from that workshop emerged Henry P. Boos, founder of one of the largest laboratories in the world today. In 1902 Boos left his employer, Frederick A. Weiss, owner of Bunde-Upmeyer and opened his own laboratory in Minneapolis. His continuing success resulted in continuous expansion and necessitated organization by departments.

In its long history, the Boos Dental Laboratories were compelled to suspend operations only once, and then for only one day. A fire destroyed their building, but Boos was able to salvage all usable equipment and set up temporary quarters. The day after the fire, they were processing and shipping out cases on schedule.

Henry Boos retired several years ago, with his son Dr. Ralph Boos, a graduate of the School of Dentistry of the University of Minnesota, carrying on the operation of the firm. Another son, Dr. George Boos, also a dental graduate of the University of Minnesota and who was also involved in the running of the firm, passed away suddenly while on vacation a few years ago. Ralph’s son, William, is now being groomed to assume the future leadership of the Boos Laboratories.

JACK DRESCH

In Detroit, Jack Dresch started work for the Briggs Dental Company as errand boy and apprentice in 1905. In 1913 he developed the “Occlusal Bite Guide” consisting of a metal plate having an antero-posterior curvature of 25° and a lateral curvature of 12°. It was used to form the occlusal surface of the lower bite rim and furnished a guide for positioning the upper teeth for balanced “anatomical” occlusion.

Dresch opened his own dental laboratory in Toledo, Ohio in 1915 and that same year improved upon an English method of making
an upper rubber denture with a uniform thin plate. The English method used a swaged lead base in place of the usual wax pattern. This was improved by the addition of a swaged sheet of tin, "polished plate", which covered the entire palatal surface of the denture and was held in the plaster of the upper half of the flask. The rubber vulcanized against this polished plate reproduced the rugae and came from the flask fully polished. The method insured the proper placement of the anterior teeth and proper thickness of the anterior ridge for phonetics, and the resulting denture was said to have "a phonetic palate."

Later that year Dresch's article describing the construction of the phonetic palate denture won second prize in a contest sponsored by the magazine Dental Digest. The article was the only literature available on the subject, and was used as a textbook by various dental schools for some years.

In 1920 Dresch introduced a stress-breaker attachment, the first device of its kind. His device was soldered to a rigid clasp, and while affording retention by means of the clasp, relieved the abutment tooth of overloaded stresses.

Four years later Dresch developed the first low-heat modeling compound. Its purpose was to reduce the danger of tissue swelling during impression taking as a result of the heat, as well as reduce discomfort from excessive heat.

**J. L. DUNKLEY**

The J. L. Dunkley Laboratory in the Loop District of Chicago, was the oldest in Illinois. It was founded by E. B. Palmer in 1892 and later purchased by James Dunkley, the former business manager of the W. W. Tarr Dental Parlors.

Within a dozen years after the establishment of the Dunkley Laboratory, several others who are still operating made their appearance. Miller & Glick was started in 1903; Dr. Carl Christopher and Dr. Walter Goldbeck opened their concern in 1902. These were followed by the Atlas Dental Company, the American Dental Company, the Chicago Dental Laboratory and the Illinois Dental Laboratory.

**A. O. EBERHART**

Dr. A. O. Eberhart was born on a farm near Crawford, Georgia in 1873. He spent his youth in farm work until 1898 when he entered Southern Dental College in Atlanta.

As a dental student he excelled at prosthetics, and one of his instructors recognized this aptitude and encouraged him to concentrate on laboratory work. Upon graduation, Dr. Eberhart was offered a position on the faculty as an instructor in prosthetics. Later, the same professor who had been his mentor, and who knew the need for a qualified dental laboratory, induced Dr. Eberhart to open such a laboratory in the city of Atlanta, the first of its kind in the area.
A. S. VAN HOUTON

In 1892, in Newark, New Jersey, A. S. Van Houton began his laboratory apprenticeship in the employ of a father-and-son team of dentists, Drs. A. W. B. and J. H. Crane. In 1903 he left them to establish, in partnership with a dentist Dr. Frank C. Totten, the American Dental Laboratory.

Although consisting of only one room, business was good and the laboratory grew. After six months Dr. Totten left the firm to go into the private practice of dentistry, and Van Houton changed the name to the Newark Dental Laboratory. In time Lyle L. Wilkins entered as a partner, the firm name now becoming Van Houton & Wilkins. Van Houton retired after selling his interest to Harry Hess at which time the firm name was again changed, this time to Wilkins & Hess, Inc. Wilkins died in 1953 and Hess is carrying on the business.

Dr. Van Houton, as did other principal laboratory owners of the early decades of this century, built his laboratory on the theory that progressive change was a prime consideration, and that the newest techniques and equipment must be adopted as soon as they became available. Thus 1914 saw him active in the formation of the first dental laboratory owner's association in the United States. In 1920, with Samuel Supplee, he formed the Dental Lab Club of New York; a year later with Supplee and Dresch he launched the first national dental laboratory association.

SAMUEL G. SUPPLEE

My acquaintance with Mr. Supplee dates back to shortly after the turn of the century when he opened his laboratory in New York City, soon after Stowe & Eddy had opened theirs.

Although he was primarily a laboratory man, Supplee also spent a great deal of time in study and research. He developed many new techniques and was frequently invited to discuss his findings before dental society groups. He became known as an outstanding clinician, one of his favorite clinics being devoted to the closed mouth technique for taking impressions using modeling compound.

At that time, Dr. Alfred Gysi of Switzerland was doing pioneering research on articulation. In 1911 the Dentists Supply Company issued a book edited by Dr. George Wood Clapp based on Dr. Gysi's findings combined with Supplee's impression techniques. Dentists Supply had arranged a class to which the leading prosthodontists of the time were invited, with Dr. Gysi lecturing on articulation and Supplee demonstrating impression taking. In the years that followed, Supplee traveled extensively holding similar classes. However with the passage in New York of the Dental Practice Act which forbid the taking of impressions by unlicensed persons, Samuel Supplee had to curtail this phase of his activities.
LOUIS WEINSTEIN

Louis Weinstein, who at the turn of the century, operated a dental laboratory in New York City, had a penchant for metallurgy. He travelled frequently to Washington, D.C. in order to consult with the National Bureau of Standards, and during many of these trips he would call upon me in my laboratory. It was easy to see in those conversations that research was his real love. In later years, he decided to give up his dental laboratory and devote his full time to further research on metals, subsequently becoming Chief Metallurgist for the J. M. Ney Company. In this capacity he was responsible for the development of many new investment materials and gold alloys.

EARLY DENTAL LABORATORIES ASSOCIATIONS

In the early 1920's some of these men organized the American Dental Laboratories Association, with members from all parts of the United States. The Association, which was free from politics, was formed for the exchange of ideas in an effort to improve methods of processing all types of dental restorations.

There is no question but that this group of pioneers was of great help in the advancement of dental prosthetics. We would meet for three days, two times a year. Lectures and clinics would be given by members of the dental profession as well as laboratory men. Our meetings were held in different areas of the country, enabling men from all over to participate in the programs.

CHANGING CONDITIONS

Since there were no schools for training in dental technology in the early days, it had to be done on a hit or miss basis. The dental manufacturer subsequently assumed an important role in the training of technicians, a function which has been greatly appreciated.

The early dental laboratories were a far cry from those of today. They were located in undesirable locations, lacking sanitation and daylight. They had no modern workbenches, no suction systems, no electric motors and other features we have today. Polishing was done on foot lathes, with a foot bellows used for soldering. One of the major frustrations facing those early laboratory men was the frequency of remakes of restorations. This was due to poor impression materials, inadequate equipment and poorly trained technicians. In spite of the laboratories' best efforts, satisfactory results could not always be assured.

There is a sharp contrast between the laboratories of those days and those of today. In almost every area of our country one may find modern, well equipped laboratories, many of them housed in their own new buildings, with every known modern device to help produce a better product in prosthetic dentistry.
The Rothstein Dental Laboratory was started in 1906 in a humble third floor back room in Washington, D.C. Today we enjoy a most modern dental laboratory with full facilities for 300 technicians. The plant is fully air conditioned. It has an electric kitchen to serve our employees hot meals, a dining area for all, a modern lecture room seating 150. We also have a complete health program for our employees and their families, including comprehensive dental care. On the roof of our building is a parking lot with space for 90 automobiles. The current president of the firm is my son, Ralph Rothstein who had attended the Wharton School and George Washington University, receiving there his degree in business administration. He is a member of the Council on Dental Education of the American Dental Association as well as a trustee of the American Fund for Dental Education. My other son, Dr. Irving Rothstein, is a proud member of the dental profession.

Dental laboratories today are big business compared with those of yesteryear. They compare favorably with all progressive industries. Today's laboratory men, eager to keep up with the progress of dentistry, are ever on the alert for new creations. The ethical dental laboratory is an asset to dentistry, with every law abiding laboratory striving to the best of its ability to be an important part of the dental health team.

MR. ROTHSTEIN'S address is 1100 East-West Hwy., Silver Springs, Md. 20910.

(Presented at the Seventeenth Annual Meeting of the American Academy of the History of Dentistry in Miami Beach, Florida, October 25, 1968.)
Oddments In Dental History

MALVIN E. RING, A.B., D.D.S.

One of the most flamboyant practitioners of the dental art in English history was Martin van Butchell who practiced in London in the mid-1700's. His bizarre and unorthodox ways were the talk of London society, and his exploits carried his name to the far corners of the realm.

John Hunter, the renowned "Father of Modern Surgery," was a close friend of van Butchell, and communicated to him a number of his observations regarding the treatment of dental disorders. The recipient of this advice did not fail to trade on the name of his illustrious friend in his expansive advertisements:

"His Serene Highness of Orleans encourages the author more than anyone in Britain, except the discerning John Hunter, Esq. . . . Price four guineas ready cash for Martin van Butchell's new invented Spring Band Regulators . . . At home from ten till two. Churls may be so good as to stay away . . . ."

Van Butchell felt himself worthy of the appointment as dentist to His Majesty, George III, and applied for this position. When he was passed over in favor of Thomas Berdmore he published an open letter to the Earl of Salisbury, in which he stated that his earnest desire to be of service to the King's subjects made him "humbly hope that the King will not call me to that honorable appointment."

His home for nearly forty years was in Mount Street, near Berkeley Square, and he refused to treat patients anywhere else. He once turned down an offer of a thousand guineas to treat a bedridden patient. "I go to no one," said he.

He was twice married and twice widowed. At the time of the death of his second wife, John Hunter's older brother William was lecturing to his medical students on the art of embalming as practiced by the ancient Egyptians. Van Butchell heard that one of William Hunter's assistants had embalmed his newly deceased mistress, keeping her body in his bedroom until he married and his new wife objected to the presence there of the corpse. Van Butchell thereupon applied to Hunter to have his wife preserved in a similar fashion, and in spite of the costliness of the procedure, exceeding 100 guineas, the work was completed to his satisfaction. He then had a glass case constructed and in this deposited his wife's remains, installing it in a place of honor in the waiting room of his dental office! And there she remained on view every day between 9:00 a.m. and 1:00 p.m., except Sunday, for almost thirty years. Upon the death of her eccentric husband her mummy was willed to the museum of the Royal College of Surgeons, where she stands today, greatly deteriorated.

(This material was culled from "The Reluctant Surgeon: A biography of John Hunter" by John Kobler, published by Doubleday, 1960.)
Chapin A. Harris and Horace H. Hayden; An Historical Review

Camden, New Jersey

HORACE H. HAYDEN

To be referred to as the "Father of American Dental Science" or the "Father of Professional Dentistry" or the "Father of American Dental Surgery" or the "Father of the American Society of Dental Surgeons" would indicate a sire of prodigious talent, superlative scientific excellence, unquenchable spirit and prophetic vision. And to heap this acclamation upon one individual seems almost unbelievable and yet . . . here is that story.

October 13, 1769 is the birthday, in Windsor, Connecticut of a son of true New England stock. Named Horace H. Hayden, his ancestry both maternal and paternal was traced to the earliest settlers who gained fame and fortune in the colonies. Many of them had brilliant careers in the military and governmental service of the colonies; others were faithful members of the clergy. Thus he received these hereditary gifts of an honored ancestry. If this inheritance was truly activated in him, we find it no surprise that as a youth he exhibited a remarkable liking for natural history, and for the study of ancient languages; and still in his youth, a spirit of adventure found him sailing the seas. His studies even included the science of architecture and he even spent some time in teaching school.

As happens so often in life, a chance meeting was to change the course, not only of his life, but that of American dentistry. Since 1784 John Greenwood had been practicing dentistry in New York City. In 1792, requiring some dental attention, Hayden called upon him. Apparently intrigued and impressed with this unusual technology, "he enquired of Greenwood for books on the subject of dental theory and practice. That gentleman informed him of the work of John Hunter which he procured. Soon after he obtained possession of some few other works both in French and English."

Whether he actually became a student of Greenwood can not be confirmed. However, we do know that his initial efforts in the practice of dentistry soon followed and we find him in the northern states, particularly in the capital cities and towns of the state of New York.

What prompted his travelling to Baltimore is not known but

—27—
the record shows that during the summer of 1800 he was em-
ployed as an assistant to Thomas Hamilton then practicing in that
city. The character of Hamilton's practice may have been such
that Hayden preferred to work for him rather than half-a-dozen
other able practitioners in Baltimore. He was soon established in
practice and also spent some time in visits to surrounding towns,
such as Annapolis and Frederick.

Hayden rose rapidly in public confidence. He became associated
with the most celebrated medical men in the city and his opinions
were listened to with respect and he soon gave status to the prac-
tice of dental surgery. As early as 1804 he was contributing to the
medical literature of the day with such articles as "Ulcerated Tons-
sils" and "Anatomical and Pathological Observations on the Teeth-
ing of Infants." Thus began a career in journalism which was to
continue his entire life.

Firmly established, he turned his attention to the growth and
development of his calling. The granting of a license to practice
dentistry by the Medical and Chirurgical Faculty of Maryland in
1810 carried with it a membership in that medical society. Since
he now experienced the association of men in a professional setting,
this may have given rise in him the desire to bring together the
men of the dental profession in a similar association. This he at-
ttempted several times, as early as 1817 and again in 1829, failing
both times. However, he finally succeeded on August 10, 1840 in
New York City.

(It should be noted that this was not the first dental society;
for the first such body was the Society of the Surgeon Dentists
of the City and State of New York organized on December 3, 1834.
It should also be noted that this was a local organization most of
whose membership was composed of medically-trained practitioners
and it was their philosophy that dentistry was a branch of medicine.
Perhaps it suffered some isolation from the medical profession and
thus sought to establish a surgeon-dentist group.)

The society formed by the efforts of Hayden after long and per-
sistant labors was a national group called the American Society of
Dental Surgeons. The words "Dental Surgeons" is most significant
in contrast to the surgeon-dentist of the former society in that the
shift of emphasis was to the strictly dental aspects of the pro-
fession.

A memorandum of one of its members at that time gives us a
picture of the profession: "Among the seventy or eighty members
of the dental profession at that time in the city of New York, the
majority were little better than scoundrels and charlatans. Perhaps
there were thirty-two who were earnest, honest and intelligent.
These men were the pioneers. Horace H. Hayden of Baltimore was
the man to whom we owe the first association among dentists
ever started in the world. Dr. Hayden gave his time and talked and
wrote incessantly. He went from city to city to induce dentists
to come together and interchange their opinions for the benefit
of each other. In Boston, he had but little encouragement... But
when he got to New York he found men who would come right
up. It was but fifteen earnest men of New York and five from
other cities, principally Baltimore who organized an association of dentists."

Hayden, as did many other dentists, participated in preceptoral training of practitioners. However, as early as 1819 he lectured on dental surgery to medical students at the University of Maryland but this was discontinued due to internal strife of the faculty. This initial contact with medical education and the conferring upon him of the honorary M.D. degree in 1837, may have led Hayden to attempt to establish dental education as part of the medical curriculum. However, medical faculties found it incompatible for dentistry to be taught as a medical discipline; dentistry needed separate facilities which were not available at medical institutions. Thus it was that dental education became independent insofar as it was practical to arrange a dental curriculum that would provide the study of the biological sciences together with dental technological training.

As is well known throughout the scientific world, Horace H. Hayden and Chapin A. Harris were the founders of the first dental college in the world — the Baltimore College of Dental Surgery. Its faculty reflected the dual purposes of the biological and dental art and science, consisting of two dentists and two physicians. Horace H. Hayden at 70 years of age became dentistry's first Professor of Dental Physiology (as well as President) and Chapin A. Harris, Professor of Practical Dentistry (in addition to becoming the first Dean). By their action, they established not only institutional dental education, but elevated dentistry to a professional level.

Hayden, along with the prime mover, Chapin A. Harris, was greatly instrumental in the formation of the first dental periodical in the world — the American Journal of Dental Science. Hayden's interest in disseminating professional knowledge dated from the articles of 1804 which he submitted for publication to the medical press.

We thus find him the motivating force in the triad of professional dentistry: education, organization and literature. To quote Dr. J. Ben Robinson: "Hayden contributed more to the coherence, the stability and usefulness of American dentistry than any other person in dentistry." It may truly be said that he led a dedicated professional life.

CHAPIN A. HARRIS

Chapin A. Harris was a talented author, teacher and practitioner, co-organizer of the American Society of Dental Surgeons, first Dean of a dental college, editor for 20 years of the first dental journal in the world, "The American Journal of Dental Science," and President of the American Dental Convention. These are the headlines of an account of the professional career of one of America's great founders of the profession of dentistry.

Born in Pompey, New York on May 6, 1806 he was descended from English stock who arrived in our country before the Revolution. He was one of three sons and received his early training in medicine and dental surgery from his brother after moving to Ohio. It was there that he first began as a practitioner of medicine, surgery
and dentistry, settling for a few years in several localities, but later travelling through the South as an itinerant, finally locating in Fredericksburg, Virginia for the full time practice of dental surgery. By 1835 he relocated permanently in Baltimore.

He loved art and literature, being friend and correspondent of many eminent literary men. A diligent reader and collector, he was known to have one of the finest libraries in Baltimore. It would appear quite natural for him to become an able and voluminous writer on his profession. From his establishment in Baltimore until his death, he enriched the literature of dentistry not only with his prodigious output of scientific articles in the periodic literature but with the publication of his book, THE DENTAL ART in 1839, which was subsequently retitled PRINCIPLES AND PRACTICE OF DENTAL SURGERY. This book appeared for the next 74 years in thirteen editions; it was republished seven times up to his death in 1850, and later with the assistance of Philip H. Austen and Ferdinand J. S. Gorgas achieved six additional editions until 1912. No other book on dentistry, past or present, can match this record.

Another landmark in dental literature was established by Harris in the publication of a DICTIONARY OF DENTAL SCIENCE in 1849, the first of its kind. This work had six editions to 1898.

He joined with others in establishing a separate journal of dentistry. This was the American Journal of Dental Science which was first published in 1839 of which he was one of the two editors of the first volume, chief editor of the next ten volumes and then sole editor for the remaining ten years of publication covering a period of almost a generation. His editorial work was highly praised, and it was this as well as his being the dean of the first dental college, which gave him an enviable position of leadership and influence in the profession.

This position was greatly coveted. Harris was one of the founders of the first dental college, his forte being the vigorous pursuit of all areas of practical considerations in the development of this venture. He not only became its first Dean but was President from 1844 to 1860 in addition to serving as Professor of Practical Dentistry.

Harris was appointed by Hayden to be the chairman of a committee to draft a constitution for the newly organized American Society of Dental Surgeons during the initial meeting. The next day, the constitution and by-laws were completed and adopted. It laid the foundation for a scientific, democratic body of professional men whose purpose was to "promote union and harmony... advance free communication and interchange of sentiments... and to give character and respectability to the profession." He also became the Society's first Corresponding Secretary.

It should be of interest to know that the seal of our Academy is almost a copy of the seal adopted by this Society in 1840. It was described as "Three pillars based upon a rock, surmounted by the lamp of science, throwing its rays above and around, encircled by the cognomen of the Association. Our seal — the three-legged pedestal — is thus symbolic of dental education, literature and organization, the triad upon which rests our professional progress;
supporting the ever-burning flame of crowning brilliance, exemplifying achievements of the past, the fullness of the present and suggesting the future with its opportunities for continued and improved service to mankind."

Chapin A. Harris has been characterized as a tower in the field of scientific dentistry, who for fertility of ideas and resourcefulness and for generosity in giving time, talent and energy to his profession no one has excelled. To Harris belongs the credit of placing dental literature and autonomous dental education upon a permanent basis. He was a writer, a teacher, an interpreter — a defender of the faith.

The personalities of these two men somewhat mirror their contributions to dentistry. Hayden was a man of strong intellectual pursuits, with a proficiency in languages, a special talent for scientific disciplines and an adherence to conscientious beliefs. He was quiet and unassuming, a seeker after the truth whose sole object was to serve. Harris on the other hand, was not only a man of science but also of the practical affairs of the world. He created order and system from the fund of dental knowledge with his publications; in like manner, he systematized and organized the affairs of the practice of dentistry. It is most interesting to observe that their respective positions on the faculty of their dental school reflected this characterization. Hayden lectured on the scientific and theoretical while Harris lectured on the practical and factual.

If there should arise any question as to whether one was more outstanding than the other, or that one was more dedicated than the other or that either should claim the priority of our interest, let us recall that such an opinion once was asked of the famous Goethe: namely, whether he or Schiller was the greatest poet of the time. Said Goethe: “What use to discuss this matter? The people ought to be glad that two such men as we are in the world.” So we may say that American dentistry ought to be glad that two such men as they were in the world.

It is thus in the annals of dental history that we honor them both. Our Academy has therefore created the Hayden-Harris Award in recognition of, and bestowed upon, that person who has made outstanding contributions to the history of dentistry.

DR. ASBELL’S address is 25 Haddon Ave., Camden, New Jersey 08103.
An Announcement
of
Extraordinary Importance!


THE PLACE OF THE MEETING
NEW YORK CITY
THE DATE OF THE MEETING
OCTOBER 10, 1969

A COMMITTEE HEADED BY GEORGE E. BATTERSON, PRESIDENT-ELECT OF THE AMERICAN ACADEMY OF THE HISTORY OF DENTISTRY IS HARD AT WORK ARRANGING AN EXCITING PROGRAM OF INTERNATIONAL INTEREST.

THE OCCASION WILL ALSO MARK THE 110th ANNUAL SESSION OF THE AMERICAN DENTAL ASSOCIATION, WITH OUR ACADEMY MEETING ON THE PRECEDING FRIDAY.

ALL MEMBERS ARE URGED TO ATTEND OUR ACADEMY'S MEETING AND SHARE WITH THE OUTSTANDING DENTAL HISTORIANS OF MANY FOREIGN COUNTRIES A MOST MEMORABLE EXPERIENCE.

DETAILS OF THE PROGRAM WILL BE ANNOUNCED IN A FORTHCOMING NEWSLETTER.
"We have no high cathedral for his rest
Dim with proud banners and the dust of years.
All we can give him is New England’s breast,
To lay his head on, and his country’s tears."

These verses, one of the gems of American literature, were written by the dentist Thomas William Parons, in homage to Daniel Webster, the great constitutionalist senator, whose death occurred just 116 years ago yesterday, October 24, 1852.

These verses of Parsons, who was born in Boston in 1819, clearly show that dentists are capable of being moved deeply by spiritual things. In like fashion, Dr. George Henry Dunster, a simple man and a hard worker, in a province of Argentina far from his native land sowed the seeds of solidarity, of culture, and of something even more beautiful, the seeds of friendship. It was through my study of the life and career of Dr. Dunster that I have learned to know and admire your great nation; I also hope that my modest effort may, God willing, serve to bring the people of our two countries closer together.

Our story begins in Scotland many centuries ago, in a small village Duns, apparently named after the families who resided there. Pressure of invading tribes from the north-east forced these families to migrate south and relocate in England, in what is now Somersetshire. Many notable persons derived from these families, notably St. Dunstan, Archbishop of Canterbury as well as John Scotus, one of the most eminent theologians of the Middle Ages who was known as "Dr. Subtilis."

In Somersetshire, very near to Minehead, alongside Bristol Channel stands Glastonbury Abbey, reputed to be the burial place of King Arthur and his Queen Guinivere; and in the outskirts of Glastonbury there stands an old castle, built in the year 1200, called Dunster Castle, the suffix "ter" deriving from the Latin word for land, it being therefore the "land of the Duns".

The first English immigrants to the New World were religious dissenters who left on the ship Mayflower from the county of Nottingham in 1620, that place being not far from Somersetshire. It is probable that in the same fashion members of the Dunster family left their homeland and came to New England because of religious or political differences. They too settled in Massachusetts, with one of their descendants, Henry Dunster being named the first president of Harvard University.
Because the logical route of migration of settlers was to the south, it is not surprising that in the early years of the 18th century many members of the Dunster family are found living in the colony of New Jersey. This colony attracted many settlers from England, as witness their fondness for naming their new homes after the places they had left in the home country: Somerset, Gloucester, Essex, Gladstone and Marlborough. In the listing of New Jersey's "Board of Proprietors" for 1705 appears the name of Charles Dunster, to be followed in 1738 by Daniel Dunster and in 1748 by the latter's son William. Members of the Dunster family demand attention by their 150 years of activities in the villages of Clinton, Newark and South Orange. When the city of Newark was created from the former village, a directory was published which listed the names of George, Henry and William Dunster, the last one being listed as a banker.

Argentinians have a particular soft spot in their hearts for New Jersey, because of that state's championing of the rights of small states. When the Constitutional Convention met in Philadelphia in 1787, it was New Jersey who succeeded on May 25th in having adopted the "New Jersey Plan" which guaranteed the rights of small states in the newly drawn federal constitution. This detail is familiar to me because my province, Corrientes, was the first of the Argentinian provinces to adopt a constitution which embodied in its articles a true federalism, and this was modeled after the New Jersey plan.

In the city of Newark, on the 3rd of May, 1855 the future Dr. George Henry Dunster was born to William and Henriette Devor Dunster. By coincidence, the 3rd of May is also the date of the biggest holiday in Corrientes' religious calendar, the "Feast of the Miraculous Cross." The year 1855 was one of intense cultural and scientific development. The United States had 25 million inhabitants, and Franklin Pierce was in the White House. It was the year noted for the publication of Addison's book "The Constitutional and Local Effects of Illness From the Suprarenal Cartridges" as well as for the completion of the work by Sequard on the suprarenals which laid the basis for the science of Endocrinology. In this year also was born Edward H. Angle, the Father of Orthodontics.

The Dunster family lived not far from Broad Street, where there stood the Union Bank, of which George Henry's father was a director. During the Civil War, William Dunster played an active part, having been sent to the Russian court at St. Petersburg in a dual role: banker and emissary from the North. It may be a coincidence, but when Duster returned home there soon followed to these shores a Russian fleet on a goodwill mission, to offset somewhat the presence of a British fleet in southern ports. When Andrew Johnson ascended to the Presidency he too sent William Dunster on a mission to St. Petersburg, and soon after his return in March of 1867, the United States acquired Alaska from Russia.

It was at this time that William Dunster relocated with his family in the city of New York, in the district of Queens, which was populated primarily by families of English descent.

The Argentinian Ambassador to the United States at that time
was Don Domingo Faustino Sarmiento, later to become President of the Argentine Republic, and there seems to be a likelihood that he became acquainted with the Dunster family on one of his frequent visits to New York.

In the year 1874, at the age of nineteen, George Henry enrolled in the then New York College of Dentistry. This institution had been founded just nine years previously, and when George Henry entered the Dean was Frank Abbot. The curriculum consisted of the following courses: Regional Anatomy, Histology, Visceral Anatomy, Physiology, Chemistry, Therapeutics, Technical Dentistry, Operative Dentistry and Oral Surgery. George Henry showed a marked inclination for dentistry, and when he was graduated in 1876 he received a prize which consisted of one hundred dollar's worth of dental equipment. (This prize had been won five years previously by the great researcher, C.F.W. Bodecker.)

While George Henry was a dental student his family lived in St. Petersburg, where his father held the post of American Vice-consul, as well as Assessor for the Russian Imperial Bank. Upon George's graduation, he travelled to Russia to visit his parents and his sister Anne, and then returned to America where he apparently engaged in the practice of dentistry in South Orange, New Jersey, but for a short time only. At that time an additional two years of study after receiving a dental degree entitled one to a degree in medicine, and so George Henry enrolled in the New York College of Medicine, receiving from there the degree Doctor of Medicine in 1878.

In 1885, in company with his friend, the prominent American dentist Ebenezer Flagg, he arrived in the Argentine Republic. Many dentists from the United States had emigrated to Argentina, among them Dr. George Newbery, a classmate of Dunster and the father of the famous Argentinian aviators, George and Edward Newbery, as well as dentists named Kimball, Stewart, Loeb, Frick and Tenker. After Dr. Dunster had registered his degree at the Capital, he left the country and traveled to Asuncion, Paraguay where he and his friend Flagg set up practice. He also devoted some time to practice in Corrientes, Argentina, which is not too great a distance from Asuncion, as evidenced by the following notice which appeared in the Corrientes newspaper "El Litoral" dated December 25, 1888: "Doctors Dunster and Flagg, North American dentists are in attendance on San Juan Street, alongside of the theater." A short time later, however, the same newspaper carried the notice that "Dr. Dunster will attend from this date permanently on Salta Street between Junin and Julio Streets."

In 1893 he interrupted his work in Corrientes to travel to Chicago to assist in the organization of the International Congress of Dentistry. But the Corrientes natives claim that their province has paye, which means that one who arrives there becomes bewitched so that he will never leave there again. And this proved true with Dr. Dunster, for upon his return he married, on March 28, 1894 Adela Biotti, the daughter of a well known Italian builder, whose wife was an Argentinian.

Dr. Dunster now bought a very spacious two story house built in the Spanish style, with lovely Spanish gardens. His wife bore
him five children, three sons and two daughters: of the sons, two became dentists and one a physician. The youngest of the sons, 74 years old, still practices dentistry today in the town of Alvear in Corrientes province, not far from the birthplace of General San Martin, the "George Washington" of Argentina. I have been a frequent visitor to the Dunster house which is the residence of Dr. Dunster's daughter Anna, the widow of a prominent dentist, Dr. Armando Esquivel who died just this year.

Dr. George Henry Dunster's contributions to Argentina's development are many and varied. Besides being a successful dentist he was an enterprising businessman who founded the first company of river transport between the cities of Barranqueras and Corrientes, both of which lie on the River Parana, the "Mississippi" of Argentina. In partnership with another North American, Dr. Edward Newkirk he installed at Mercedes the first ice factory to be built in the interior of the province. In addition, Dr. Dunster was a very prominent amateur photographer, and several volumes of his photos are preserved which deal with the city of Corrientes at the end of the nineteenth and the beginning of the twentieth centuries.

He was an active member of the "Workmen's Society" and a devoutly religious person who set aside both Tuesday and Thursday for the treatment of the dental ills of patients too poor to pay.

On October 1st, 1913 Dr. George Henry Dunster passed away and the newspaper "Alem" carried this obituary:

"At break of day this morning there passed away a very appreciated gentleman, the victim of an illness that he had suffered for some time. Dr. George Henry Dunster had joined our society in which he gained, by his excellent professional services, admiration and fortune. Later he was bound more definitely to this community by making his home here and bringing up his family here. All those who had dealings with him will remember him with fondness. His contributions to the life and progress of Corrientes, both socially and professionally, were very great, and he has left us a name to be honored, respected and esteemed.

His coffin was carried by members of the "Workmen's Society" and as they passed by the Centennial School, the children, who had been drawn up in rows in the street, threw flowers on his coffin as it was carried by."

This is my modest homage to Dr. George Henry Dunster, a North American dentist who was, and always will be, an example to the people of Argentina.

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[Presented at the Seventeenth Annual Meeting of the American Academy of the History of Dentistry at Miami Beach, Florida, October 25, 1968.]
When one considers an historical account of orthodontics, the initial reaction may be to visualize the changes that have come about in the design and fabrication of appliances. An endless procession of devices passes through our minds with bands, wires, hooks, rubber bands and all sorts of gadgets that can accomplish a given task with greater or lesser success. To be sure, noteworthy advances have been made in mechanical orthodontic procedures, but these are more frequently the result of improvements in the physical properties of the materials used, and more effective utilization of what is available, than of major technical strides in appliance design or manipulation. In fact, the orthodontic treatment procedures in greatest favor in this country, have been in existence for several decades. The popularity of any given mechanical system swings like a pendulum both in this country and abroad, often in response to economic, political, and social pressures, as well as in the pursuit of occlusal excellence. Frequently, these outside influences have been so strong, they have caused orthodontics in a given geographic area to develop along a separate pathway. Because of the wide divergence in the present day methods of practice throughout the world, this report will limit itself to a consideration of orthodontics in the United States.

In order to better understand the evolution of orthodontics in this country, it is far more profitable to examine the changes in concept that govern mechanical therapy than to chronologically list appliance methods. Perhaps the most constant thread that has woven through the orthodontic literature over the years, has been the concern over the control that mechanical intervention can exercise over the growth and development of the facial structures of the patient. One of the most prominent men in the field at the turn of the century, Edward H. Angle, advocated the philosophy that the dentist, by expanding and advancing the dental arches, could cause the underlying bone of the maxilla and mandible to grow in response to what he considered "normal" forces,\(^1\) The many proponents of this theory went on to create a "non-extraction" approach to treatment that taught the practitioner it was never necessary to remove teeth in conjunction with orthodontic therapy, and, in fact, that extraction was mutilation. Since Angle had es-
tablished the first orthodontic school and his alumni were the early orthodontic teachers in this country, condemnation of extraction was the predominant orthodontic philosophy in American dental schools for many decades thereafter.

However, these thoughts were not universally accepted by everyone in the profession. Another forceful group, but one that was not a firmly entrenched in the dental schools, was led by Calvin Case. They maintained that extraction of selected dental units was necessary in order to successfully treat some orthodontic problems. The extraction issue continued to be of such great interest in orthodontics, that a heated argument on the subject, held in 1911, the Case-Dewey-Cryer debate, was republished in its entirety in the American Journal of Orthodontics in 1964. This article is well worth reading because the level of sophistication of many of the pros and cons would qualify it to be delivered at any present day orthodontic meeting.

With the development of the cephalometric X-ray technique by Broadbent in 1931, orthodontists were given another tool with which they could examine their results. In 1938, Brodie et al, using this instrument to evaluate completed orthodontic cases, concluded that the effects of treatment were largely limited to the teeth and alveolar process with no effect whatever on the underlying bone. This caused many practitioners to feel that the removal of teeth was biologically justified in many of their patients since the morphologic pattern of the individual seemed to be unalterable. Subsequently, an extraction wave, which amounted to 80-90% of the cases in some offices, swept the country for many years. This has levelled off considerably in the past decade, so that at this point in time, extraction is completely accepted as a necessary adjunct in treating certain orthodontic problems by the vast majority of practitioners, but it is not held as a panacea that will insure success in all difficult cases.

Another interesting concept that has had a cyclical history in orthodontic practice has been the use of orthopedic methods to physically move the bones of the face instead of limiting the action to the teeth. In the late 19th century, many dentists, including G.V. Black, advocated a method of expanding the maxillae which involved actual separation of these bones at the mid-palatal suture. This technique went out of vogue in the early 1900's largely because of the popular thinking already referred to, namely that normal occlusal forces would develop the bones themselves. Men reasoned that if this were so, then it was not necessary to move the bones since orthodontic treatment procedures would ultimately bring about any needed structural modification of the skeletal elements. Consequently, orthopedic techniques went into limbo in this country for many years until Haas reintroduced them in 1961. As a direct result of this influence, and also because of the rebound of a functional concept of growth, orthopedic and functional appliances have enjoyed a strong resurgence of popularity. We have, in fact, come full cycle, in that once again, there are many practitioners who claim to solve essentially all of their orthodontic problems using variations of these techniques. The test of time, as well
as more fully documented cephalometric evidence, will prove or disprove the methods. Quite possibly, a middle ground will be found where more critical diagnostic analysis will reveal which cases may respond best to this mechanical approach.

In addition to those already mentioned, many other orthodontic techniques and philosophies have encountered inconstant popularity. Such things as 'bite-jumping', myofunctional therapy, and extraoral force have enjoyed their day in the sun, then after being largely discarded, have emerged once again into clinical favor. Indeed, a similar fate has befallen one of the most basic factors in force control itself. For years, the argument raged over whether light or heavy forces were the most desirable in orthodontic treatment. Just as the evidence seemed to unquestionably favor the use of light force, the orthopedic methods already mentioned advocated the utilization of some of the heaviest pressures ever used in orthodontic practice. To be sure, orthopedics differs from orthodontics in principle in that anatomic parts are being moved instead of teeth alone, but nonetheless, the teeth are the 'handles' in the oral cavity that are used to deliver the force. So, just as most of our mechanical efforts were being directed toward incorporating light forces in appliance construction, we have to readjust our thinking to at least consider these comparatively huge orthopedic pressures.

While these changes in fundamental ideas were occurring, there were, of course, appropriate modifications made in mechanical devices to perform the desired objectives. During all of this time, orthodontics was also expanding its educational and organizational horizons. The Postgraduate and Graduate instruction which is available in the dental schools, for example, has evolved to the point where more than ten percent of the graduating dental population is being trained in orthodontics. These educational activities have sprung from modest beginnings in proprietary schools to highly developed clinical and research programs in essentially all of the dental schools in the United States.

In regard to the internal organization of the orthodontic profession, it may be of some interest to mention that the American Board of Orthodontics has been in existence since 1929. This arm of the American Association of Orthodontists was established in order to elevate the standards of practice and ethical conduct of its members. It has the distinction of not only being the first such Board to be established in dentistry, but it is actually the third American specialty Board in either medicine or dentistry. It was only preceded by the American Board of Ophthalmology in 1917, and the American Board of Otolaryngology in 1924.

It was recently written that the past five decades were, and will probably remain, the golden years of orthodontics. Quite an opposite opinion, however, could be legitimately defended if consideration is taken of the level of today's technology, as well as our research, clinical, and educational potential. These factors coupled with a social awareness of the profession's responsibility to provide orthodontic service to a steadily increasing segment of the population, seem to indicate that orthodontics is on the threshold of advancing at a greater rate than ever before. Hopefully, future
progress will be built upon a broader, firmer foundation, so that repetitive experiences of the past may be avoided.

REFERENCES


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The American Academy of the History of Dentistry is indeed fortunate to count among its members a man who, although himself not a dentist, has done a great deal to further interest in the study of the history of the dental profession.

Mr. Robert J. Rothstein joined our Academy in 1967 after a long life spent in close association with dentistry. He has been for many years the president of Rothstein Dental Laboratories of Washington, D.C., one of the nation's oldest laboratories, authored the book *The History of Dental Laboratories and Their Contributions to Dentistry*. This was published by the J. B. Lippincott Company and was well accepted as a scholarly contribution to the field of dental historical literature. This year will see the publication of Mr. Rothstein's new book, *The Dental Health Team*.

Mr. Rothstein has been in the forefront of those who by their generosity have made possible the construction of facilities for the betterment of the oral health of the people. In 1968 there was opened in the School of Dental Medicine of the Hebrew University of Jerusalem, Israel a dental students' laboratory which Mr. Rothstein had donated, and the following year saw the dedication of a dental clinic at the New Home of the Aged in Rockville, Maryland which was also Mr. Rothstein's gift. He was also one of the major contributors toward the building of the library of the District of Columbia Dental Society.

The dental profession has acknowledged Mr. Rothstein's many contributions, and the list of his honorary memberships in dental organizations is impressive. He is the only dental laboratory man who has ever been admitted to honorary membership in the American Dental Association.

The cost of producing our Academy's *Bulletin* had become too great for our organization to bear. Mr. Rothstein was approached and the situation explained to him, and in his typically generous fashion, presented to our Academy a cash gift sufficient to insure the publication of this issue of the *Bulletin*. We trust that Mr. Rothstein's exemplary gift will stimulate others interested in furthering the study of the history of dentistry to contribute in a like fashion, so that our publication will be published uninterrupted.

It is therefore with a great deal of thanks for his generosity which alone has made possible our continuing publication, that this issue of *The Bulletin of the History of Dentistry* is dedicated to

Mr. Robert J. Rothstein
North American Indians and Dentistry

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INTRODUCTION

The North American Indians lend themselves readily for historical investigation. They have a rich cultural and social background and provide ample material for research and speculation. However, many aspects of their history are lacking in facts. Such is the case of the North American Indian and dentistry. The scattered remnants of historical proofs are few, yet interesting.

To understand the medical and dental practices of the North American Indians requires an understanding of their complex spirit, mythology, theology, organizational structures and functions, and a myriad of other facets. The mythology and theology of the Indians are rich with symbolism and beauty. The ability of the Indians to express emotional and esthetic appreciation of nature and life is enormous. The tales and legends of the Indians were used to transmit their traditions over generations, and are rivaled only by those of the ancient Greeks.

The Indians' complex, yet practical lives related closely to their religion, and conversely their beliefs and practices were structured to meet the needs of everyday life.

Their supernatural practices and beliefs were invoked not only in the crises in life, but in their daily activities. Their illnesses were attributed naturally by them to the anger of the gods or the mal-evolence of evil spirits. Their ailments were spiritual as well as physical, and this physical and spiritual dualism thus became a primary force in their concept of medicine.

Medicine was used not only to cure disease but also to advise, protect, and insure success in ordinary as well as unusual events of life. It was used to influence social and civic events and to help the sick.

PHYSIO-ANTHROPOLOGICAL DENTAL FINDINGS.

The various Indian tribes of North America each maintained a specific cultural and ethnological way of life. Thus each tribe was
independently analyzed and anthropological data was gathered by researchers using various analytical techniques. Since differing methods were used, conclusions were reached which often were in conflict with those obtained by other workers. Nevertheless, an overall understanding of the various findings regarding the dental make-up of the Indians can still be appreciated.

In a general summary on the anatomy of the teeth of the Indians, Hodge writes that

"the teeth are of moderate size; upper incisors are ventrally concave, shovel-shaped; canines not excessive; molars much as in whites; third molars rarely absent when adult life is reached. The usual cuspidory formula, though variations are numerous, is 4, 4, 3, above; 5, 5, irregular, below. A supernumerary conical dental element appears with some frequency in the upper jaw between, in front of, or behind the middle permanent incisors."

Considering health and disease, Hodge remarks that "fractures, and diseases of the bones in general, as well as dental caries, are less frequent than among the whites." An opposing point of view, backed by an archaeological study, is given by Webb, who finds that the teeth of Indians were worse than those of civilized man in that the teeth showed excessive cuspal abrasion and that irregular occlusion was common.

Leigh states that there are no differences between the several California groups with regard to developmental features of the dentition.

Hrdlicka found that Munsee skulls show the total number of teeth to be normal, loss and decay to be common, wear to be extensive and irregular, and development normal with pronounced cingula. He also found that the dentition was remarkably regular, that decay and loss of teeth were more frequent than in other Indians, that wear was common, and that anomalies were few—the most striking being a perfect fusion of canine and incisor. Pertaining to the Apache and the Pima Indians, Hrdlicka states that supernumerary teeth occurred with some frequency.

In a study of the dental pathology of the prehistoric Indians of Wisconsin, Fisher obtained two hundred and eighty-five specimens from burial sites situated in Wisconsin. The following excerpt summarizes his findings.

The prehistoric Indians of Wisconsin subsisted on both animal and vegetable foods... moderately coarse which undoubtedly were instrumental in producing... attrition... The dental arches... were fairly well arranged, about 5 percent... showing malocclusion, the greater part of which were of the linguo-or bucco-version. [sic]. Most of the malocclusions were observed in male individuals. Impacted and supernumerary teeth were seldom encountered.

About 24 percent of the crania showed carious teeth and it is probable that the prevailing diet in the region is largely responsible for this condition. Carious teeth occurred more frequently among females than males... about 40 percent of the specimens in the series showed lesions of the alveolar bones... grouped into... alveolar abscesses and general areas of resorption of the alveolar process. Approximately 25 percent of the specimens were afflicted with alveolar abscesses... which were the result of infected pulps due to dental caries and fourth degree attrition... About 15 percent of the indi-
individuals exhibited areas of general resorption and many of the specimens showing evidences of alveolar abscesses were afflicted in a similar manner . . . due to periodontoclasia. . . . Pathological conditions of the alveolar process were more frequently manifest in adult crania than among those of the children and adolescents, and the other adults were affected by these pathological processes to a greater extent than were the others.⁸

Leigh makes the following observations concerning the Aboriginial California:

Attrition . . . is the conspicuous dental lesion in these crania . . . Seventy per cent of persons over forty years of age had the pulp of one or more teeth exposed. Dental caries occurred in 25 per cent of the skulls. . . .

Dissolution of continuity of bone surrounding the apices of teeth occurs in 52 per cent of crania. These osseous lesions result from pulp exposure and necroses: . . . Other gross paradental bone lesions resultant from dental infection are: radicular cyst, chronic maxillary sinusitis with fistulae leading into alveoli, and osteitis in various forms.

Periodontoclasia is manifest in about 50 per cent of these crania. . . . Exfoliation of teeth as a phase of the involution of senescence is widely manifest.⁹

A common layman’s misconception is that the teeth of American Indians were much better than those of whites. However, among the Pecos Indians nearly all of the teeth showed excessive wear, due to grit which came from eating rough and raw vegetables and fruits. Caries were found in half of the adult teeth, mostly in the molar region, and pyorrhea was present in more than half of the adults.¹⁰

Leigh, in analyzing the relationship of dental diseases and foods eaten, found that among the Kentucky Indians who ate primarily corn, game, and fish, there was considerable wear of the teeth, many alveolar abscesses, some caries, and some pyorrhea. In the Sioux, predominantly meat eaters, there were some caries and abscesses, and little pyorrhea. The meat-eating Arikara and the agricultural Zuni suffered from attrition, many alveolar abscesses, considerable caries, and pyorrhea.¹¹ However, no definitive conclusions can be drawn from these findings.

In his archeological investigation, Fowke noted the following:

"The one tooth found (a molar) was worn entirely below the enamel except for a small space at the front; the dentine was polished until it resembled a piece of agate . . . wear of this character denotes that the individual did not gnaw bones, crack nuts, or indeed bite hard on any substance. If he had done so, this thin shred of enamel would have broken off.

Wear of teeth among aboriginal people does not of necessity denote a great age for the individual. Grit from ashes and fine sand from mortars and pestles will cut away the enamel to a much greater extent than would result from the use or ordinary food."¹²

Rabkin, also examined the remains of prehistoric Kentucky Indians, and made similar observations.¹³

During an archeological survey in Buffalo, West Virginia, a mid-seventeenth century Indian settlement was excavated. The Indians, who probably belonged to the Shawnee tribe, had a life span between twenty-seven and thirty years. Of the 525 bodies uncovered, one belonged to a female of about twenty years of age, who had a large solid osseous mandibular tumor measuring 24 x 23 cm. All teeth
were present in the better-preserved and non-neoplastic areas, and no caries was present. The body and ramus of the left mandible were the only sections of the lower jaw that were free of tumor. Teeth were scattered throughout the lesion. 14

Many present-day Indians are convinced that their ancestors had better teeth, believing that the white man's foods have caused the degeneration. Corlett's observation is noteworthy:

"In mingling with the Hopi . . . in Arizona, I was so strongly impressed with the glittering display of gold teeth that I asked a descendant of one of their chiefs if it was the fashion to substitute gold for natural teeth, or if it was a necessity. I was informed that, alas, since his people had taken to hot coffee and other luxuries of the white man, it was a necessity." 15

THE MEDICINE MAN

The medicine man was the most important link in the Indian's chain of medical treatment. He was part of the social organization of the tribe, being either the chief or next to the chief. He had supernatural powers conferred upon him by the gods. He possessed the ability to cure the sick, to perform feats of magic, and to enlist the help of the gods in furthering various endeavors. 16

In his diary Parker observes:

"The Muskee-kee win-ni-nee or medicine man is quite a different individual from the priest or prophet or magician. The Indian doctor is very skillful in curing simple ailments. Their remedies are cathartics, sweating medicines, expectorants or cough and lung remedies; diuretics, remedies acting on the kidneys; emetics to produce vomiting; remedies for inflammation of mucous surfaces, bladder, etc., alternatives to eradicate diseases, bitter herbs for tonics, and soporifics, narcotics, etc. to induce sleep; ointments emulsions, lotions, teas, etc." 17

Henshaw observes that:

"The Indian theories of disease originated chiefly among the shamans, and they claimed to be able not only to cure the disease, to drive away or coax out the afflicting spirit, but also to send "disease spirits" to whomever they chose. It was this supposed power which made them so greatly dreaded, and conferred so much influence upon them." 18

Hodge vividly describes the usual practices and procedures of the medicine man:

"He inquired into the symptoms, dreams, and transgressions of tabus of the patient, whom he examined, and then pronounced his opinion as to the nature (generally mythical) of the ailment. He then prayed, exhorted, or sang, the last, perhaps, to the accompaniment of a rattle; made passes with his hand, sometimes moistened with saliva, over the part affected; and finally placed his mouth over the most painful spot and sucked hard to extract the immediate principle of the illness." 19

Often the medicine man caused more harm than good. Brown morbidly describes the manner of treatment by a Blackfoot medicine man.

"... As physicians, the medicine men are below contempt, and, but for the savage cruelty of their ignorance, undeserving of notice. The writer has known a man to have his uvula and palate torn out by a medicine man. In that case the disease was a hacking cough caused by an elongation of the uvula; and the remedy adopted (after preparatory singing, dancing, burning buffalo, and other
conjurations) was to seize the uvula with a pair of bullet-moulds, and tear from the
poor wretch every tissue that would give way. Death of course ensued in a short
time. The unfortunate man had, however, died in "able hands," and according to
the "highest principles of (Indian) medical art." 20

To summarize, Foster gives an interesting historical analysis of
a medicine man performing a ritualistic dental treatment:

"To get an idea of how these Indian doctor-dentists treated patients, it might
be appropriate to visit a dusty Pawnee camp around the time Pastor Leach arrived
in Nebraska. Rev. William Leach came to Omaha in 1855 and organized the First
Baptist Church and pulled teeth to supplement his minister's salary.

Yellow Clay, dressed in a buffalo robe whitened with chalk, can be seen
leaning over Running Wolf, humming a low chant. The hieroglyphic symbols
painted on the old man's face, which is tinted orange by the dim light of a fire,
almost frighten the ailing young brave.

"The Evil Spirits have struck your mouth with the fang of a rattlesnake,"
the old man told Running Wolf, who in reality, was suffering from a swollen
wisdom tooth. "I must remove the fang."

Yellow Clay stood up and danced around the patient in a semi-circle, rattling
a gourd. After a few minutes he took a small stone knife and cut an "X" on
Running Wolf's cheek, directly over the throbbing tooth.

He sucked at the cut lightly—one, two, three times. On the fourth try he
pretended to draw out the fang. He held the invisible lance in the air and showed
it to Running Wolf's relatives, then dashed it into the fire. "The Evil Spirits
cannot use it again," he said triumphantly." 21

MEDICINAL DENTAL TREATMENT

The relief of pain has been the principal aim of physicians
throughout time. Pain among the Indians was variously treated by
medicinals and/or mechanical means. Usually the medicine man was
paramount in the administration of pain remedies, using medicines
from plants, trees, and other vegetations. Pain relief was primarily
achieved psychosomatically; however, some pain remedies are still
used today as legitimate drugs. Different medicines and other cures
and beliefs were available to the Indian tribes for curing the com-
mon toothache, sore mouth, sore tongue, thrush, and other oral
ailments.

Many parts of plants were utilized to relieve the common tooth-
ache. The leaves of Artemisia tridentata were chewed by the
Lemphi Shoshoni. 22 Sweet flag paste made from the rhizome was
chewed by the Plains tribes as a remedy for cough and toothache. 23
"Nigger head," Echinacea augustifolia, a narrow-leaved purple cone
flower, was used by the Plains and Southern Indians, 24 whereas
only the root of this plant was used by the Sioux Indians. 25

The ground root of the hook, Gaertneria aeanthicarpa, was
placed in the hollow tooth for the relief of toothache. 26 An un-
identified lichen was applied by the Tewa Indians to the teeth and
gums. 27 28 The blossoms of the hops, Humulus lupulus, were
placed in a small bag, heated, and applied to the area of an ear-
ache or toothache. 29
The inside bark of the prickly ash, *Zanthoxylum americanum*, "cooler of the teeth," was "beaten up and some of it was inserted into the cavity in an aching tooth, while more was placed around it and the whole wrapped up in a cloth."3 It was also held in the cavity of a decayed tooth or was powdered and made into a poultice by the Choctaw Indians.31

The mesca button, *Lophophora williamsi*, was nibbled for colds and nausea and was chewed to a fine state and packed into the cavity of an aching tooth by the Arapaho.32 The bitter medicine, *Ahisi home*, was used by the Alabama Indians as follows:

"...The roots and the inside bark of the stalk were beaten up and put into water. After soaking thoroughly the medicine was tied up in a clean cloth and placed over any part of the body where a pain was felt, which it relieved, although it raised a blister. It was also put against the cheek outside of an aching tooth in order to destroy the pain—sometimes into the cavity of the tooth itself."33

The bitter root of goldenrod, *Hatacipa*, was put into the cavity of a tooth to stop the pain by the Alabama Indians. Even the elm, *Tafoso*, was used by the Creek Indians to relieve a toothache.34

Grinell gives the following use of black medicine, *Echinacea augustifolia*, by the Cheyenne Indians:

"This is a remedy for sore mouth, gums, or throat. The leaves and roots, when powdered, are used to make an infusion which is drunk. Moreover, the patient may be given a piece of the underground root to hold in the mouth and chew a little letting the saliva run down the throat. A toothache, resulting from a hollow tooth, is relieved if some of this juice can be got on it."35

Wyman notes that "the plants most commonly used for snuff may also be used for toothache. The leaves or root are crushed or powdered and placed in the cavity of the aching tooth or rubbed upon the gums around it."36 Spenser mentions a very interesting fact that "people were never bled for toothache."37

Swanton gives an interesting account of an old Alabaman woman who used the following remedy for the toothache:

"Old Sally," as this woman was called, had cured a toothache almost instantly but putting some of the root of a plant into the cavity. The first application was accompanied by intense pain which soon disappeared and never returned. Apparently the nerve had been killed."38

Other dental conditions besides the toothache were also treated by the Indians. The Navajo used lichens as remedies for sore mouth or gums and chewed various plants for the relief of canker sores, swollen gums, and decayed teeth. The Pawnee used Canada moon-seed for sore mouth.39 The Cherokee used the rhizome of cranes-bill for washing the mouth during thrush infections.40 The Tewa Indians pulverized the cloak fern, *Notholaena fendleri*, and applied powder to the lips as a remedy for cold sores.41

The root of the *Erigonum jamesii* was used in the patient's mouth by the Zuni theurgist, where it remained a day and a night except when removed so the patient could eat. When the theurgist removes the root, he places with it a piece of turquoise and white shell beads and deposits all in an excavation in the river bottom
in order that it may go to the Abiding Place of the Council of the gods.  

The toothache tree, Xanthoxylum clava herculis, was used in the Northwest Territory for "treatment of paralytic affections of the tongue or of the muscles of deglutition."  

For relief of a sore mouth, a plum was swallowed and vomiting was induced by placing a turkey’s feather down the throat—recovery occurred when mucus with blood appeared. The following procedure was used by the Catawba tribe to cure thrush:

"If a person has never seen his father, he can cure a child suffering thrush, by blowing into its mouth. This should be repeated for two or three days until the soreness goes away. The child’s mouth may have to be held open by pressure."  

Mosses, lichens, and cloak fern, Notholaena fendleri (mentioned previously), were ground fine and used on the lips as a remedy for cold sores by the Tewa Indians. At Santa Clara (home of the Tewa), kukowa, a moss growing on rock, was rubbed on sores about a child’s mouth and also put into the cavity of a decayed tooth to stop pain.  

Nuttall in describing the dental treatments among the ancient Mexicans, states that inflammation of the gums was cured by lancing them with an obsidian knife and rubbing in a little salt with the finger and that a toothache was treated by a hot application and lancing of the gum.  

The treatment of periodontal disease among the Creek Indians is also described by Swanton.

OTHER METHODS OF DENTAL TREATMENT

Mechanical

Not only was dental pain relieved by drugs, but also by specific mechanical and religious methods. For the Apache toothaches are sometimes treated by a combination of prayer and medicine.  

Another wrote that to relieve a toothache her mother used an awl she made mocassins with. She got it hot and put it into the hole in the tooth.  

To cure a toothache, a piece of the bark of the toothache tree, Xanthoxylum clava herculis, was put "in the mouth, which being very hot, draws a rheum from the mouth, and causes much spittle." The Lemphi Shoshoni Indians held a heated stone on the face over the pain of the toothache. In the Northern woodland area the Chippewa treated the toothache in this manner:

"In case of the toothache the gums may be lanced by a splinter from a tree which has been struck by lightning, or an awl or some other metal instrument is heated red hot and placed in the offending cavity."  

The Tewa Indians used an interesting method for relieving swol-
len glands in the neck:

"An ear of corn... is laid on the warm hearth near the fire, and the patient
is told to set his foot on it and rub it to and fro... In two or three days' time the swellings will subside. The treatment is suitable for a child of ten years or so, not for a baby." 54

Surgical

If medicines and other methods failed to relieve dental pain, the final solution was to extract the offending tooth. Various methods of extraction were practiced by different tribes.

Among the Eskimos, "an aching tooth might be knocked out with a chisel. However treatment of severe toothache... generally involved shamanistic activity." 55

Oral surgery was practiced even by the "savage" Indians. One method of extraction involved first striking a tooth forcibly, to loosen it, and after a sinew had been fastened about it, the patient's head was suddenly jerked backward. 56 Corlett notes that "if it is thought that the tooth should come out, it is either knocked out, or pulled out by means of sinews tied around the base and attached to some firm object from which the sufferer jerks backwards." 57

"To pull a tooth," Wyman writes, "tie a sinew about it, attach this to a bucksin thong tied to a stick, and jerk out the tooth while the patient lies on his back." 58 Steward observes that "a loose tooth was extracted by attaching one end of a vegetable fiber string to tooth, the other to a stick, and pulling." 59

Among the Ozark Bluff Dwellers, living about 100 B.C., in Missouri and Arkansas,

"dental infections with suppuration and osteomyelitis of the mandible and maxilla were not uncommon. Apparently the tooth was often traumatically removed. Often a part of the alveolar process of the jaw was removed in the course of the operation. 60

... These people were proficient in setting fractures. Dental extractions were practiced but from the appearance of some jaws these extractions really consisted of knocking or tearing the teeth from the jaws." 61

Hrdlicka, being careful to differentiate his observations from congenital absence, or from loss by accident, disease, or old age, writes that the removal of teeth was probably carried out "... with the help of [a] sinew, by forcibly pulling the upper teeth forward, or downward and forward, and lower teeth forward, or upward and forward; that it resulted in general in the breaking of the anterior wall of the alveolus, rarely even in the breaking of the crown from the root and a retention of latter; ... followed by normal healing, with subsequent gradual resorption of the affected alveolar portion." 62

Mooney describes the following treatment by an early stomatologist among the Cherokee:
"If a tooth shows visible signs of decay, the actual causes of pain are not so much believed to be of a mythical nature. The pain is combated as long as possible, by the thrusting in the cavity of the aching tooth a small quid of ordinary chewing tobacco; eventually, in a fit of raging pain, the tooth is knocked out with a stone or a hammer."63

In his diary (1862), Whipple, Bishop of Minnesota, describes an experience in oral surgery:

"During this journey several Indians came to me and said, putting their hands to their cheeks, "Wiobid-akosi" (my tooth is sick), and asked if I could extract it. I was obliged to say "No." But on my next visit to Chicago I called on my old friend, Dr. W. W. Allport, a celebrated dentist, and asked him to teach me to pull teeth. He smiled and said: "It is a very simple matter, Bishop, if you will remember three things. First, be sure to separate the ligaments around the tooth; second, be sure to grasp the tooth firmly with the forceps; and third, pull!" A few minutes later a patient came in to have a tooth extracted. I watched the operation and said to the doctor, "I think I can do it." He gave me a set of forceps which I stored away in my travelling-case, with the feeling that I possessed a new means of reaching the hearts of my red children.

On my next visit I held service at White Fish Lake. After this service a chief came to me and with his hand on his cheek, said, "Wibidakosi." With a not unmingled sensation I boldly answered, "I will help you." He opened his mouth, and to my dismay I saw that the sick tooth was a large molar on the upper jaw. But "in for a penny, in for a pound." It was a comfort to remember that Indians never show signs of pain, no matter how great the agony. I followed to the letter all the good doctor's directions and I did pull. In spite of appearances I know it was the "ligaments" and not an artery that had cut, but I used salt as heroically as I did the forceps, and it was with no small degree of satisfaction that I heard the old chief telling his people that "Kichimekadewiconaye was a great Medicine-man."64

DENTAL MUTILATION AND ORNAMENTATION.

Mutilation of teeth is an old custom practiced all over the world in many different ways. Hrdlicka gives an interesting account of it, and says that:

"Among the parts and organs affected by such practices the teeth received a large share of attention. They were stained black or red, filed in many different patterns, inlaid with gold or precious stones, or wholly removed by knocking out or extraction. These practices were limited to the teeth that showed most ... They differed from tribe to tribe, locality to locality, and even in small groups ... most often, however, the teeth were removed ... as a part of the ritual of initiation of the boy or girl into manhood or womanhood.

He also notes that some or all healthy incisors and even a healthy canine had been intentionally removed during youth, probably as part of initiation or sacrificial rites to confer on the sufferers specific distinctions.65

French writers mention the staining of the teeth by women in tribes living along the Mississippi River.

In his description of the Bayogoula Indians, a Choctaw-speaking tribe below present Baton Rouge, Swanton remarks:

"... it gives the women pleasure to blacken their teeth, which they do by means of an herb crushed in wax (putty); they remain black for a time and then become white again."67

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Ornaments using teeth are not numerously found among the various Indian tribes. Nevertheless, Kanner writes that

"the character of teeth ornaments as trophies is also very evident in the case of the American Indians. The men wear necklaces of teeth taken only from such ferocious animals as they have killed themselves. The ornament therefore, becomes a mark of distinction and is rarely parted with for any consideration." 69

Gold has always been considered decorative throughout the ages. It was often embedded into the teeth by prehistoric people, as noted by Weinberger, who states:

"How strange for us to find that in North, Central and South America, races of Indians comparatively free from dental caries carrying out extensive cavity preparation and inserting inlays in teeth. What makes it more impressive is that although the modern dental casting or gold inlays dates back only to 1907, in Ecuador the insertion of such inlays was practiced around the end of the first century A.D." 71

FACT AND FICTION

Tobacco.

Tobacco was used by the Indians for pleasure as well as for its supposed preventive or curative effect. Parker states that smoking helped to preserve the Indian's teeth and disinfect his breath. 71 Tobacco was enjoyed by the Daruk Indians, who attributed good teeth to a clean mouth and tobacco. 72

Toothache was also treated with tobacco. The leaves were placed on the tooth to cure the toothache by the Tewa Indians, at San Idefonso. 73 Tobacco was placed on the face for a toothache by the Karuk Indians as follows:

"When a tooth aches, they wet tobacco, they put it on a hot application rock. They make the rock hot first, then the one that has the toothache lays his face on the rock. He goes to sleep there that way." 74

Tobacco smoke was blown about the ailing tooth for "pain moving about the teeth" by the Cherokee shamans. 75

Leigh, however, observed the deleterious effect of tobacco:

"The habitual eating of tobacco, especially when mixed with such abrasives as lime and mussel shells, produces rapid attrition of the teeth. The habitual use of tobacco as an emetic would also be deleterious to the teeth in that it produces a decalcifying acidic pabulum about the teeth. 76

Fernando Colombo, the son of Columbus, reporting on a voyage to Beragua, stated that

"...these people when they eat are always chewing a certain herb which we believe is the reason that their teeth are quite rotten and decayed." 77

Prophylaxis

We have little knowledge of how the Indians kept their teeth and mouth clean. Smoking, as mentioned earlier, was thought to be cleansing, but other methods were apparently sparingly employed. Swanton mentions the fact that scurvy grass was used by the Choctaw Indians to clean the teeth. 78

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The Tewa Indians used the Colorado rubber plant, *Hymenoxys floribunda* thus: "the skin of the roots is pounded until it becomes gummy. The materials is then chewed as Americans chew chewing-gum." 79

Olson writes that boiled spruce-gum was also chewed. 80

**Deciduous Dentition**

Many odd beliefs associated with the deciduous teeth may be found in folklore. The Indians, too, were very much intrigued by the coming of the first tooth, teething, and exfoliation of deciduous teeth.

The Chippewa Indians, for example, believed that "a child born with certain physical traits was not conceived in the normal way: it was reincarnated. Such traits were those of being born a twin: . . . or [born] with teeth. . . ." 81

Among some tribes in earlier times, the appearance of a child's first tooth was celebrated as an event:

[His] parents invited persons to a feast. Among those invited was always at least one old man who had been in many wars. He was to pierce the baby's ears, if they had not already been pierced. In return for his services the child's parents gave him one of their best horses. Most informants agreed that the arrival of a child's first tooth had not been celebrated in recent years. Parents merely took pride in the fact that their child now had its first tooth, and would say, "Now it is ready to eat"." 82

However, "the advent of the first tooth was not celebrated by the Chippewa Indians on any reservation. Nor was any significance attached to the loss of the first tooth." 83

The treating of children's oral problems, and beliefs regarding teething among the Delaware Indians are described in the following commentary:

"During the teething period, a little bag containing finely crushed charcoal is hung about the child's neck. The latter chews upon it to ease his aching gums. A loose milk tooth is pulled out by means of a string, its removal allowing the permanent tooth to grow in straight. The extracted tooth is taken outdoors by the child and thrown in the direction of the east, with the words 'My tooth place down here. know when you return will feed you white beans'. "84

Other practices included obtaining grease from a black hen and rubbing it on the aching gums of teething infants 85, as well as using the roast brains of a hare in a like manner. 86 Slobbering from the mouth of the child was prevented by mixing a thimbleful of nine-day old water with the contents of the tea kettle. 87

Another account of teething is given by Hilger, who writes that among the Arapaho

"a teething baby was given either rind of bacon, a piece of gristle, or a small bag of cloth filled with sugar upon which to bite. A mother sometimes rubbed the baby's gums with her fingers after dipping them into an herbal decoction. Occasionally a mother caught a house mouse, skinned it, roasted it by holding it over a fire, and then rubbed the meat about the baby's teething gums. Two informants themselves had done this, and "it certainly helped!" 88

The pods of rattlebox, *Crotalaria sagittalis*, are strung and hung
around a child’s neck to facilitate cutting teeth, and a dried mole’s foot worn suspended around the neck of a child is considered an aid to teething.

Losing a deciduous tooth was a big event in many Indian tribes:

"Among the Cherokee Indians, when the loosened milk tooth of a child has been pulled out or has dropped out of itself, the child runs round the house with it, repeating four times: ‘Beaver, put a new tooth into my jaw.’ after which he throws the tooth on the roof of the house."

The child was cautioned to dispose of his tooth at some remote spot so that witches may not retrieve it and do him harm.

When a Chippewa child’s tooth first came out he was told to take the tooth in one hand and a piece of charcoal in the other hand. Then he was told to throw the tooth toward the east and the charcoal toward the west, saying, ‘I want a new tooth as soon as possible.’

The Quinault Indians pulled the milk teeth of children with a sinew cord. The parents then threw the tooth in the fire and the child blew on the coals until the tooth was consumed. The child was then told to look for a squirrel and ask him for new teeth. This is the way people seldom had poor teeth. The decayed teeth of adults were extracted in the same manner.

Hilger makes the similar observations about the loss of deciduous teeth.

The children of the Fox Indians were told to exchange their teeth with those of garter snakes. The children went around the wickiups four times and threw the tooth to the east.

The Arapaho treated the loss of the first tooth in the following fashion:

"The first tooth that loosened itself from a child’s gums was hidden in the child’s hair at the crown until it fell off and was lost. The belief was that this would cause another tooth to grow soon. ‘My mother put mine in my hair, and said, ‘Now, there, that tooth is going to grow again!’

A prayer whose title may be freely translated as ‘This is when a tooth comes out, to throw it away with’ contains the phrase ‘Beaver, put a tooth in my jaw.’ Mooney explains that since the beaver is noted for its gnawing ability, there is good Indian reason for asking it for a new set of teeth.

Superstitions

Superstition and lore about the teeth are numerous among the various Indian tribes. A superstition of the Senecas (Tonawanda Reservation) held that to ‘make an Indian lie easy in his grave, remove his shoes, his store-bought clothes and his gold teeth, for these are a whiteman’s things.’ The Delaware Indians believed that ‘to dream of one’s teeth falling out, is a forecast of a death in the family’ and insisted that ‘the deciduous teeth of children be thrown in the fire, [for] if a dog should swallow one, a dog’s tooth will grow in the child’s mouth.’

The Navajo Indians stated that ‘the worst dream is that a member of the family died, or that
teeth were pulled. Cure: a one-night sing." \(^{102}\) And the Apache stated that "to dream of losing teeth is another thing. It is as bad as anything." \(^{103}\)

Supersitition figured prominently in the prevention of toothache. The Cherokee Indians took various measures to prevent toothache:

"When you see a shooting star you must immediately spit, else you will lose a tooth. If you always heed this injunction you will keep all your teeth sound as long as you live.

Never throw the remains of anything you have chewed (a quid of tobacco, the skin of an apple in which you have bitten, etc.) into the fire; else the fire will chew your teeth.

Another means, not so simple but even more efficacious: Catch a green snake and hold it horizontally extended by neck and tail; then run it seven times back and forth between the two rows of teeth, after which turn it loose. No food prepared with salt is to be eaten for the first four days following this operation. It will keep your teeth sound as long as you live. The Tuscarora know exactly the same toothache-preventing practice." \(^{104}\)

The Lemphi Shoshone Indians did not believe that a worm was responsible for toothache. They held, instead, that the cause was unknown. \(^{105}\) However, belief in the toothworm was held by other tribes. \(^{106}\)

A rather unique method of treating the toothache was recorded by Kanner, who writes that

"The Tuscarora Indians of North Carolina used to catch a snake which they held in both hands, biting off small pieces off the center; if this was done, the teeth were supposed to be immune against toothache. Snakes' hearts are also prescribed." \(^{107}\)

The following prayer—a free translation—was used by children and adults to treat a sore mouth, thrush, as well as other coatings of the mouth:

"Now then! Ha, now thou hast come to listen, thou Little Snow. It is but Heat that has put the important thing under him (patient). Quickly thou hast come to scatter it. Relief has been caused forthwith, thou hast come to do it for him. Sharply!

This is the medicine when their mouths are sore. Hickory (bark) is merely to be used for blowing them with. (Are) restricted (for) four days: Hot (food), salt and beans". \(^{108}\)

The prayer means that thrush was caused by fever, which was removed by a spirit, while the medicine man blew hickory into the mouth of the patient.

Besides all of the foregoing, teeth also served the Indian in a practical way. An interesting use to which the teeth were put was in removing the scalp from a defeated enemy:

"After the skin had been incised around the head, it was necessary to raise the edge of the scalp a little so that the fingers could seize it and pull it off. A jerk on the hair was usually enough to accomplish that. The hair then served not only to immobilize the head during the incision but also to pull the scalp afterward. But what if the man was bald or if his head had been shaved? The scalp was then removed with the teeth." \(^{109}\)
CONCLUSION

It is perhaps appropriate to finish this analysis of the Indians and dentistry by quoting from Carl Carmer’s book, Listen for a Lonesome Drum, the following anecdote of a white, self-made “dentist”, whose dental methodology—when compared to the Indian’s methods of the same time was rather interesting:

“I learned more about the people of the region from our nearest neighbor “Let” Washburn than from anyone else. Let, at seventy-four, has more energy and ambition than the great majority of the Bristol Hills farmers. He is a powerful man, straight and sturdy, and he does not look over fifty. He has been moderately successful on his farm and would have been more so had it not been for his main weakness—a sincere desire to help other people.

When a neighbor goes on a week’s drunk, a not uncommon occurrence, Let has been known to sneak down to the dissipator’s barn each morning to see that his horses and cows were fed. And he keeps an antiquated set of dental tools for the purpose of helping afflicted friends. The accepted procedure is for his patient to arrive at any hour of the day or night bearing a quart of native whisky. Both surgeon and sufferer indulge in this until their courage is sufficiently aroused for the operation. By this time, however, a certain degree of uncertainty has been generated and Let has been known to pull three teeth before he extracted the real malefactor.”

REFERENCES

2. Ibid., p. 540.
6. Ibid., p. 52.
73. Robbins, op. cit., p. 106.
76. Leigh, Dental Pathology of Aboriginal California op. cit. p. 403.
79. Robbins, op. cit., p. 56.
80. Olson, Ronald L. The Quinault Indians. ("University of Washington Publications in Anthropology.") Vol. 6, No. 1 Seattle, Wash.: University of Washington, 1936, p. 60.
84. Tantaguidegon, op. cit., p. 37.
85. Ibid., p. 56.
86. Ibid., p. 56-57.
87. Ibid., p. 50.
89. Specr, op. cit., p. 44.
90. Ibid., p. 46.
91. Kanner, op. cit., p. 52.
95. Hilger, "Chippewa Child Life". op. cit. p. 27
100. Tantaguidegon, op. cit., p. 63.
101. Ibid., p. 59.
103. Opler, op. cit., p. 190.
104. Mooney, op. cit., p. 76-77.
105. Steward, loc. cit.

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Stomatology and Dentistry in the Golden Age of Arabian Medicine

—GERALD SHKLAR, D.D.S., M.S.

The rise of Islam as a complex and astonishing political and religious phenomenon has received much scholarly attention. However, not all aspects of its intellectual history have been studied with equal diligence and success. Arabian science and particularly the development of Arabian medicine were not only among the great attainments of the eastern world in the middle ages, but represented to a very large extent the impetus for the rise of European medicine in the later middle ages and renaissance. It must be remembered that in the early medical schools of Salerno and Montpellier, the available texts were the renowned arabic treatises in adequate, but far from accurate, Latin translations. Since so much of medieval and renaissance stomatology and dentistry was derived directly from arabic writings, particularly the medieval treatises of Avicenna and Abulcasis, it is of considerable importance to have these texts in adequate translation and to evaluate the material from the scholarly approach of today. Furthermore, tracing of the evolution of the Arabic medical texts from Greek, Roman and Byzantine sources poses an intriguing avenue of historical investigation for both the historian of classical antiquity and the historian of medicine and its allied sciences. As Browne pointed out many years ago, Arabian Science or Arabian Medicine really represents "that body of scientific or medical doctrine which is enshrined in books written in the Arabic language, but which is for the most part Greek in its origin, though with Indian, Persian, and Syrian accretions, and only in a very small degree is the product of the Arabian mind". The translation of Greek books into Arabic was one of the most important intellectual ventures carried out under the patronage of the early Abbasid Caliphate at Baghdad between the years 750-850 A.D. These classical treatises were to be later rehabilitated in Latin translation following the destruction and virtual disappearance of scholarship in Europe during the Dark Ages.

HISTORICAL BACKGROUND OF ISLAM

Arabian medicine must, of course, be studied against the general historical background of Islam. In 622 A.D. Muhammed was to inspire the many tribes of Arabia with a religious fervor and a set of social and philosophical ideals that brought unity and the subsequent military superiority and establishment of an empire whose
size and magnificence was to rival any of the empires of previous ages. This empire was to encompass the entire middle east and extend throughout northern Africa and into Spain. The capital of the empire was Baghdad and this city became a magnificent seat of learning as well as a thriving metropolis with great hospitals and other modern institutions. The empire existed until 1250 A.D. and the destruction of Baghdad by the Mongol barbarians was so complete that little of the Muhammadan culture survived.

The military achievements of the Muhammadan civilization came during the period of the Umayyad Caliphs whose court was at Damascus and whose empire stretched from Samarkand in the east to Spain in the west. The flowering of this civilization came in the next century of the Abbasid Caliphs with their capital at Baghdad.

MEDICINE IN THE MUHAMMEDAN WORLD
At the time of the Prophet Muhammad's birth, there already was a fine medical school in existence in Persia, the school of Jundi-Shapur. To this city came many political exiles and the school represented a convergence of Greek and Oriental learning. We know that in 765 A.D. the second Abbasid Caliph al-Mansur summoned Jurjis, the chief physician of the hospital of Jundi-Shapur, to treat him. Gradually, Baghdad took over as the medical centre of Islam, particularly in the reign of Harun al Rashid who established the great hospital of Baghdad.

Eventually, Baghdad was to share with Cordoba in Spain, intellectual and medical eminence, with the two cities tending to polarize the greatness of the eastern and western Caliphates. The western Caliphate had been founded by Abdurrahman, descendent of the Ummayad dynasty in Syria, who escaped the massacre of the Ummayads at Damascus and eventually reached Spain. By the tenth century Cordoba was the most civilized city in Europe with 70 libraries, 900 public baths and 50 hospitals, as well as an outstanding university.

Of the eastern Caliphate a number of names should be mentioned in the development of medical thought and practice. Hunayn ibn-Ishaq (809-873) was the most celebrated of the translators at Baghdad. Hunayn and his associates translated into Arabic the Greek originals of Galen, Oribasius, Paul of Aegina, Dioscorides, and the Hippocratic corpus. Hunayn wrote original treatises on ophthalmology and other medical topics. Hunayn's versatility in scholarship can also be appreciated by the fact that he also translated into Arabic various works of Plato, Aristotle, Archimedes, and the Septuagint. The rounded education of this time included such subjects as the Koran, Theology, Law, Medicine, Astronomy, Philosophy, Rhetoric and Chess. This is described in the 1001 Nights where the slave girl, Tawaddud, answers questions addressed to her by the experts in these fields. The medical questions were on anatomy, physiology, diagnosis of disease, pathology and general
hygiene.
Ali ibn Rabban al-Tabari wrote one of the first medical encyclopedias, Firdaus-ul Hikmat (Paradise of Wisdom).
Jabir ibn Hayyan (9th century) wrote extensively on chemistry, describing such Arabic discoveries as distillation, sublimation, filtration and crystallization. Al-Kindi (c 813-873) wrote on the preparation and dosage of medicines. The three great names in eastern Arabian medicine are Abu Bakr Muhammad ibn Zakariyya al Razi (c 841-926), Ali ibnu’l Abbas al Majusi (c ? - 994) and Abu Ali al-Husain ibn 'abd Allah ibn Sina (980-1037) known in the European literature as Rhazes, Ali Abbas and Avicenna respectively.

THE THREE GREAT LUMINARIES IN ARABIAN MEDICINE
Rhazes possibly the greatest and most original of the three, wrote on a variety of subjects, but excelled in medicine. Rhazes became physician-in-chief at the great Baghdad hospital and taught medicine in terms of clinical cases, complete with patient’s names, symptomatology, therapy and results. Of Rhazes’ surviving works the largest is Al Hawi, an encyclopedic work on medicine and surgery in 25 books. His al Kitabu-I-Mansuri is an extensive review and compilation of Greek medicine. Although a number of short works and selections from the larger works have been translated into European languages, the major portion of Rhazes’ writings remain untranslated. Among the specific achievements of Rhazes, in addition to case report teaching, was the first accurate description of small-pox and measles among the infectious diseases, and the use of an extensive materia medica including mercurial ointments.

THE ROLE OF ALI ABBAS
Ali Abbas composed an extensive treatise on medicine known as al-Maliki which for many years was to be regarded as the standard text on the science and practice of medicine, being superseded eventually by the Canon of Avicenna. Ali Abbas who was born in Persia, was apparently a Zoroastrian; he wrote with clarity, style and organization unequaled among his contemporaries and successors. Ali Abbas gives much credit to his predecessors but evaluates their work critically, pointing out that Hippocrates is often too concise and obscure, while Galen tends to be verbose. Rhazes’ work is criticized for its enormous size and unavailability.
Among the original observations of Ali Abbas were a suggestion of a capillary system between veins and arteries, the bloodvessels being distinguished by an absence or presence of pulsation. Excellent descriptions are offered of catheterization, laryngotomy, suturing of bloodvessels before sectioning and excision of tumors. Pleurisy is described as well as many dermatologic entities such as eczema, scabies, seborrheic dermatitis and alopecia areata.
The Contributions of Avicenna

Avicenna, while perhaps not the greatest of Arabian physicians, was certainly the greatest intellect of Islam. His knowledge was universal and his attainments almost unbelievable in their scope. His life is well known through his own autobiography and a biography by his disciple Abu Ubaid al-Juzjani. Born in Bukhara, he soon demonstrated a remarkable precocity and genius. He had mastered the Koran at the age of ten. He lived in an intellectual household and soon mastered the science of logic. read Euclid, Ptolemy and a great deal of literature. By sixteen he had mastered the texts on natural science and metaphysics and had completed his study of medicine.

"Medicine is not a difficult science, and naturally I excelled in it in a very short time, so that qualified physicians began to read medicine with me. I also undertook to treat the sick, and methods of treatment derived from practical experience revealed themselves to be such as baffles description. At the same time, I continued between whiles to study and dispute on law, being now sixteen years of age".

By the time he was eighteen he had exhausted all the known sciences, had treated the Sultan of Bukhara and had completed his study of ancient texts. By twenty-one he had composed an encyclopedia of all the sciences except mathematics. His subsequent work is fantastic in scope and excellence. Avicenna is described as writing 50 pages each evening. His fame rests on two great works: the Canon, a comprehensive treatise on medicine and the Shifa, an encyclopedia of Aristotelian philosophy and science. He made many original contributions to mineralogy, chemistry, astronomy, the physics of heat, light and sound.

The Canon is probably the most famous medical text of all time, having a continuous use of almost six hundred years. Among the basic contributions were clear descriptions of meningitis, tuberculosis and chronic nephritis.

Avicenna’s contributions to stomatology consisted primarily in the diagnosis and systematization of oral disease. He used an extensive materia medica for oral and periodontal diseases and resorted to surgery rarely. Venesection and other primitive procedures were performed. However, there are often intelligent discussions of dental problems such as tooth mobility:

"The mobility of the teeth may be due to a fall, weakness of the nerve, decay of the root, enlargement of the socket, break in the gum (gum recession or ulceration) or atrophy of the teeth due to dryness such as in old people, or people in convalescence who have remained for a long period of time with poor nutrition, and could also be due to the shortness of the dental papillae.

Treatment
1. Avoid chewing on the mobile teeth.
2. Talk less.
3. Avoid touching the mobile teeth with the tongue.
4. If the cause of the mobility was decay, treat the decay using astringent, gargle,
and massaging drugs.

5. If the cause was atrophy give good nutrition, but this type of mobility is difficult to manage. Use refreshing substances for adherence and massage. Also, place drops of nightshade juice and rose oil in the ear.

6. If the cause of the mobility was atrophy, nutrition does not give good results because it does not make it large quickly so we have to use a cold-producing astringent.

If the cause of the mobility was due to a fall or a hit use the same treatment. If it was due to a relaxing humor use a hot astringent such as water which has been cooked with cypress leaves and sultana wine with dill and salt, or water cooked with sagapenum. From the adherent substances use 2 d of alum, 1 d of salt, and place on the root of the tooth. One may use copper rust with olive oil and lilly roots, cypress bark 4 d of each with one part of dill. One may use tamarisk ashes or salt or burnt deer horn and salt mixed with burnt honey, burnt fruit, 10 d of each, myrrh, saffron, spike, mastic 2 parts of each; saffon dry herb of grace with sumach and pomegranate blossom 3 parts each. From the mixture prepare a dentifrice and adherent substance. Astringent mixed with aloes and colcothar (Rouge) is a good dentifrice for this purpose. Another prescription is cyperus, rose, nard, and rock salt, karnage, burnt deer horn, equal parts of each. In cases of deficiency of dental papillae use burnt vitriol blue, and aloe mixed with cypress, pomegranate blossom, and sumach."

(Translated from the original Arabic by Dr. Suad al-Ani.)

Avicenna understood that tooth decay was caused by putrefaction. Treatment consisted of cleaning out the carious areas and preventing further decay by the use of appropriate drugs, usually astringent in nature. Discoloration of teeth was treated with abrasive pastes. A large variety of drug combinations were used in dentifrices and mouth washes. Anesthetic drugs were used in cases of toothache.

ABULCASIS, AN OUTSTANDING CONTRIBUTOR

Abu'l-Qasim (936-?) was the greatest physician of the western Caliphate. Born in Cordoba he became physician to the Caliph and composed a magnificent treatise Al Tasrif or “the Method.” This book is an encyclopedia of medicine and surgery in 30 sections. The last section is on surgery and represents the first illustrated surgical text, containing figures of several hundred surgical instruments whose use is described.

Among Abulcasis’ major contributions were descriptions of hemophilia, operation for cancer of the breast with metastases, use of ligatures and cautery for bleeding vessels, and lithotomy.

A bulcasis contributions to dentistry and stomatology were among his outstanding achievements. In periodontology, he understood that calculus deposits on the teeth were the major etiologic factor in periodontitis. He described in detail the technic of scaling the calculus deposits from the teeth with a set of instruments which he developed:

"On the Scraping of Teeth

Coarse, irregular concretions become sometimes deposited on the internal or external surface of the teeth, or between the gums: the teeth take on a black,
yellow, or green color, then the gums become altered and this in turn is followed by exfoliation of the teeth. To treat this condition, have the patient sit in front of you and place his head on your knees. Scrape the teeth and the molars which present these secretions or gravel-like deposits, until they are completely cleared up. It is possible that a single scraping will suffice. If not, begin a second, third or fourth time until you have fully reached your goal.

Know that scraping of the teeth is done with instruments of varied shape, according to the purpose for which they have been designated.

The scrapers used for scraping the inside of the teeth are different from those used for the outside, or from those used to scrape the interdental surfaces.

Such is the assortment of scrapers which you must have at your disposal."

His instructions for the removal of teeth are essentially similar to those we would use today, and represent considerable sophistication in technic as well as instrumentation:

"Once you are certain of the identity of the aching tooth, a scalpel should be used with some force to incise and separate the gingiva all around the tooth. You must then gradually bring pressure to bear upon the tooth, either with the finger or with light forceps, until it begins to rock. After placing the head of the patient between your knees and positioning it so that he will not be able to move, grasp
the tooth solidly with some strong forceps. Pull on the tooth longitudinally to avoid breaking it. It is possible that it will come out; if not, introduce an instrument under it, and by carefully working around it, try to loosen it as you did the first. If the tooth is perforated or carious, fill the cavity with pieces of linen which you must tightly compress with the point of a fine stylus so that it will not collapse when you grasp it with the forceps. Carefully incise the gingiva on all sides. Take care not to break the tooth, for the remaining portion would occasion to the patient greater sufferings than before. Do not imitate these ignorant surgeons who, in their recklessness and boldness to extract teeth, follow none of the precautions which we have recommended. Very often they leave the patient with grave infirmities of which the least is a broken tooth the rest of which is partially or entirely retained, or they may remove a portion of the jaw as I have several times been the witness. Following the extraction, the patient will rinse with wine or with vinegar and salt. Should a hemorrhage supervene, a frequent happening, place powdered vitriol on the wound, and if this does not suffice, cauterize the area.

The forceps with which you will begin to loosen the tooth should be long, the extremities short, and the handles thick, so that they will not bend during the operation. The shape of it is as follows," and then appeared an illustration.

Abulcasis also practiced orthodontics where gross occlusal abnormalities were corrected. Teeth were filed if prominent in the arch, and extracted if they erupted completely behind another tooth.

Gold or silver wires were used to splint loose anterior teeth that had been injured by a blow or a fall. The loose teeth were fastened to a stable tooth on each side and the wires carefully adapted, twisted and cut so as not to injure the oral mucosa.
On the Consolidation (or Enmeshing) of Loose Teeth, Using Gold or Silver Wires

If the anterior teeth are loose, if they have been injured by a blow or in a fall, if the patient cannot chew anymore and astringent drugs have been of no value in the treatment, one is left with no other choice than splinting the teeth with either gold or silver wires. Gold is preferable. Indeed, silver will change and become green in a few days, whereas gold is not attacked and will always remain preserved in the same state. The wire will be of an average gauge and proportioned according to the available interdental space. The wire network is established as follows. Introduce the bent wire between two healthy teeth. With the free ends fasten the loose teeth, either one or several, and extend this network past the loose teeth until you reach healthy teeth. From there continue your interlacing back to the starting point. Tighten carefully and skillfully so that the teeth will no longer rock. Keep the wires at the base of the teeth so that they will not become displaced. Cut the extra wire with pliers. Twist the free ends and tuck them between healthy teeth in such a way that they will not injure the tongue. Leave the teeth thus bound as long as they will remain in place. Should a wire loosen or break, it should be replaced with a new one, which must be constantly retained. (Translated from the French of Leclerc.)

Replacement of teeth was also suggested, using bone of cattle carved to the exact shape and size and wired into the appropriate position.

Excellent descriptions are given of a frenectomy, of mucous cysts, and of tumor-like growths on the gingiva.

SUMMARY

In summary, not only did the great physicians and surgeons of the golden age of Arabian medicine preserve much of Greek and Roman achievement for posterity, but they left a great wealth of original accomplishment in surgery, clinical medicine, oral surgery and stomatology. These contributions are becoming more appreciated as the original works of Avicenna, Ali Abbas, Abuicasis and their contemporaries are receiving more careful attention. It is hoped that complete translations in the English language will one day be available of all the classical Arabic works in medicine and surgery.

REFERENCES


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The American Woman Dentist:
A Brief Historical Review From 1855 Through 1968

—MIRIAM S. KINSLER,
Columbus, Ohio

"... the profession of dentistry, involving, as it does, the vital interest of humanity, in the relief of human suffering, and the perpetuation of the comforts and enjoyments of life in civilized and refined society, has nothing in its pursuits foreign to the instincts of women, and, on the other hand, presents in almost every applicant for operations, a subject requiring a kind and benevolent consideration of the most refined and womanly nature."

—Resolution passed by
The Iowa State Dental Society in 1865.

"The treatment of ill or disabled patients requires a warm, compassionate nature. Women are naturally sympathetic and are also gentle. Ill or suffering patients require special consideration and they are always appreciative of such essentially feminine characteristics in a dentist."


EARLY WOMEN DENTISTS

American women have been dentists for a long, long time; strictly speaking, even before they were American women.

Probably shortly after the first Pilgrims embarked on the "Mayflower," and someone in that brave little band got a toothache, a Pilgrim lady attended, as best she could, to the dental needs of her fellow passenger, with the herbs which were as much a part of the 17th century housewife's stock in trade as her spinning wheel or her kettle.

We do know, as a matter of historical record, that during the 18th century dentistry was practiced for profit by many women living in England, from which the Pilgrims had come. "Although Dentistry is, today, regarded as a profession, it was certainly not always so. Eighteenth century ... evidence, derived from contemporary books, blatant newspaper advertisements and prints, etc., convinces us that it was then of very lowly status, and, not
infrequently, conducted by ignorant mountebanks," noted Doctor J. Menzies Campbell in 1948. "Although the vast majority of these were men, whose antics often made colourful and amusing reading...", Doctor Campbell limited his discussion to "...fourteen women, who indulged in dental practice (many highly successfully) in the distant past."

His 18th century lady dental practitioners included such exotica as Madame Desclaux, a former Parisienne, who "...claimed to have attended to the dental requirements of the Nobility. She attributed her outstanding success to the fact that she possessed the lightest touch of any dental operator in that Continental city." Madame D. apparently made house calls in the pursuit of her profession. "This enterprising lady also supplied a number of preparations for the teeth, including an opiate for relieving toothache, and an elixir for combating scurvy of the gums and mouth." She did not limit herself to the practice of dentistry, however, for Doctor Campbell reported that "In addition, she sold a solution, which cured inflamed eyes: and even dispelled black specks resulting from a hangover!"

A contemporary compatriot was Madame Rauxcourt, who also advertised that she practiced the dentistry of the times. Madame R. "...claimed not only to cure toothache and scurvy of the gums, but also to construct artificial teeth, indistinguishable from the natural dentition. Further, she invented, and sold, a tooth-powder and an opiate. This lady stated that she acquired her knowledge of dental practice from the 'most famous Monsieur Caperon of Paris, Dentist to the King of France.'"

From Genoa to London during the 18th century had come La Signora Foggioni. "Her technique for curing toothache followed an unusual course," according to Doctor Campbell. "...she claimed success merely by placing her finger on the affected tooth. As proof that this somewhat uncanny gift was free from trickery, she openly washed her hands in full view of the patient." La Signora’s approach would appear to have been somewhat ineffective; but, for her day, unusually sanitary.

There were also native-born Englishwomen who advertised their practice of dentistry in the 18th century; some independently, a few with their husbands. In one case a young lady named Patence was the daughter of a dentist and succeeded to the practice of her father, "...Count Patence, Surgeon-Dentist to His Royal Highness, The Prince of Wales..." The Count, despite his lofty placement in dental practice, taught dancing as a side line.

According to their own advertisements, these women dentists were prepared to cope successfully with all the problems of dentistry, including pedodontics, orthodontics, exodontics, partial and complete prosthodontics—even the making of "...obturators... free from wires or other fastenings to the natural teeth..." as well as oral surgery, complete with the offer to transplant..."
teeth from the jaws of poor lads into the head of any lady or gentleman."

They were also active in the treatment of the then-common ail-
ment of scurvy, and the still-common ailments of caries and pulpitis,
which they apparently usually dealt with by dispensing opiates. Though
their professional successes would seem to have been doubtful,
their professional courage and self-confidence appear to have been
admirable.

EARLY AMERICAN WOMEN DENTISTS

Meanwhile, across the Atlantic, there apparently were also wo-
men dental practitioners. According to Weinberger," "In the Penn-
sylvania Journal and Weekly Advertiser of May 20, 1972, there
appeared a paid notice by 'Nurse Tucker' [presumably a woman]
which is typical of the type of dentifrice advertisement of that day.
'Likewise, a Tooth-Powder for Whitening the Teeth and preserving
them from the Scurvy. . . Any person, by applying to the said
Nurse Tucker, the first Time they have the Toothache, shall be
perfectly cured.'"

In the not-too-distant past, dentistry in America was a trade,
not a profession; and sometimes it was a family trade.

For instance, consider the story of one Miss Emeline Roberts,
later Mrs. Daniel Albion Jones. She is considered to have been Con-
necticut's pioneer woman dentist, when dentistry was beginning to
evolve from a trade into a profession during the 19th century.

Miss Emeline was born July 26, 1836 at Winchester, Connecti-
cut and in 1854, when she was 17, she married Dr. Daniel Albion
Jones who at that time was a practicing dentist of Winsted, Connecti-
cut.

How did Mrs. Daniel Albion Jones become Doctor Emeline Rob-
erts Jones? Quite naturally, for "... shortly after her marriage...[she] quietly began to try to learn the various techniques which
she observed in her husband's work. There is a rather charming
anecdote in this connection which describes her unobtrusive method
chosen in order to learn dentistry. Her husband preserved almost
all of the more interesting specimens of teeth which he extracted,
and his wife, without his knowledge practiced preparing cavities
and filling these teeth, until a two quart jar was almost filled. It
was not difficult after this, to persuade her husband to allow her
to join him in his office work... Mrs. Jones was unable to avail
herself of the opportunity of a dental college education, but wishing
to have a scientific as well as a practical knowledge of the profes-
sion, she studied anatomy and the other subjects necessary to a
complete scientific foundation. At the same time, she received
instruction in the practical side of the work from her husband and
from Dr. R. B. Curtiss, a leading dentist of Winsted, Connecticut.

"In May of 1855, Dr. and Mrs. Jones settled in Danielsonville,
Connecticut, where Mrs. Jones commenced regular practice as her
husband's assistant. In 1859 she became a partner in the business, enjoying a reputation in that town and throughout the surrounding country as a skillful dentist, and when her husband died in 1864, leaving a son three and a half years old and a daughter six years old, Mrs. Jones continued the business.\textsuperscript{5}

The proceeds of her prosperous dental practice enabled the now-widowed Doctor Emeline Roberts Jones to educate her son, David Albion, at Yale and at Harvard's dental school. Before entering dental school, David Albion Jones had studied dentistry with his mother for three years.

National honor came Doctor Emeline's way. In 1893, at the great World's Fair in Chicago, she was first publicly acknowledged to be the pioneer woman dentist. It was noted that she had been officially enrolled as a Lawfully Registered Dentist by the Dental Commissioners of the State of Connecticut in 1893, and the number 18, which she received, bears witness to the fact that hers was among the first group of applications.

Doctor Emeline Roberts Jones lived until 1914, into a ripe old age filled with professional, civic, and personal satisfactions.

Although historical records sometimes vary, it's safe to say that "Mrs. Dr. Jones" — as a Connecticut dentist and historian dubbed her in 1896 — was probably among the first women in the United States to maintain her own dental office, to practice dentistry independently, and to be accepted by the public as a competent professional dentist.

**OTHER EARLY WOMEN DENTISTS**

By far the most prominent early American woman dentist, and a contemporary of Mrs. Dr. Jones of Connecticut, was Lucy Hobbs Taylor, D.D.S., who began life as Miss Lucy Beaman Hobbs on March 14, 1833, in Ellenburg, Clinton County, a tiny town in northern New York State just across the border from the Canadian province of Quebec. To Ralph W. Edwards, D.D.S., we are indebted for a comprehensive and authoritative account of Lucy's career.

Lucy had a hard time of it for a long time. It is recorded that she lost her mother at an early age, and when she became sixteen she embarked on a teaching career that lasted ten years. Teaching was one of the very few honorable careers open to American women in 1849. "While teaching in Brooklyn, Jackson County, Michigan, she studied medicine for a short time with a physician, which aroused in her a desire to attend medical school. In 1859 at the age of twenty-six, she went to Cincinnati with the avowed purpose of studying medicine at the Eclectic Medical College. In spite of the fact that a decade earlier the first woman had received a Doctor of Medicine degree, the old prejudice against women in medicine still persisted and she was refused admission to the medical school. She was advised by the president of the medical college that she might find a more satisfactory career in the profession of dentistry."\textsuperscript{1}
After some profound reflection on this suggestion, according to Doctor Edwards, she decided to become a dentist. Application to various dentists in Cincinnati for a preceptorship resulted in disappointment and she was advised that 'her place was at home taking care of the house.' This in spite of the fact that at that time of her life, Lucy was an impoverished spinster who had no house to take care of. Most dentists were afraid to accept her as a student, because they feared that 'their characters would be ruined if it was known that they had a lady student...' As a temporary expedient Doctor Jonathan Taft, dean of the Ohio College of Dental Surgery, allowed her to remain in his office and study for a period of three months, while she continued her search for a preceptor. At last she had success when Doctor Samuel Wardle, who had graduated in 1859 from the Ohio College of Dental Surgery, allowed her to enter his office on the same basis as other dental students. Doctor Wardle must have been the bravest dentist then in practice in Cincinnati. The indefatigable Lucy supported herself by working nights at sewing. "She continued in this apprenticeship with Doctor Wardle, gaining in skill and knowledge, and never lessening in her determination to enter a dental school."

A hundred years or so ago, oddly enough, this was an unusual ambition for any dental student — man or woman. The reason, according to Doctor Edwards, was that in 1861 while Lucy was cherishing her ambition to obtain a formal dental school education, there were only three dental schools in the entire United States: The Baltimore College of Dental Surgery which opened in 1840; the Pennsylvania College of Dental Surgery dating from 1856, and, very conveniently, The Ohio College of Dental Surgery right there in Cincinnati, which had been started in 1845.

"In March, 1861," Doctor Edwards tells us, "she made application to the Ohio College of Dental Surgery...", but couldn't get in there, either, since '"...women were not acceptable for the study of dentistry..." In her dilemma she turned to her benefactor, Doctor Wardle, who advised her to start practice without the advantages of a dental degree. This was what most male dentists of that day were doing. In general, they learned dentistry by working in the offices of established dentists, and started out in practice for themselves as soon as they felt able. American medical education at that time was equally casual.

On March 14, 1861, on her twenty-eighth birthday, she began the practice of dentistry in a small office in Cincinnati. But Lucy's trials were not yet over. Times were perilous. The Civil War began the next month and the entire country was in conflict. Discouraged, she closed her office and went to Bellevue, Jackson County, Iowa, where she practiced for a year and managed to save $100 above expenses. This was not much more rewarding financially than teaching. Searching for a more suitable location, she moved in 1862 to McGregor, Clayton County, Iowa, where her luck changed. In her
first year there she made a clear profit of $3,000. In 1865, by means of special resolutions, she was elected to membership in the Iowa State Dental Society, thus becoming the first woman member of a state dental society. And in 1866, a bit belatedly but with a minimum of formal educational requirements to satisfy, having already been engaged in active dental practice for almost five years, she was granted the degree of Doctor of Dental Surgery by the same Ohio College of Dental Surgery in Cincinnati which only a few years before had firmly rejected her application for admission.

Her diploma, a large document impressively inscribed completely in Latin, made Lucy the first American woman D.D.S. on record.

Personal satisfaction now followed professional satisfaction. She next opened a dental office in Chicago, where she met and married a Union Civil War veteran, James M. Taylor, who was a painter of trains for the Northwestern Railway at the time of his marriage.

Lucy, still energetic in the field of education, proceeded to train her bridegroom in dentistry. In 1867 they moved to Lawrence, Kansas, where they lived and practiced dentistry together, presumably profitably and happily, for many years.

Lucy lived until October 3, 1910. By then, she was 77 years old, and had had the opportunity of seeing other women travel the paths of professional dental education and professional dental recognition which she herself had blazed.

THE AMERICAN WOMAN DENTIST: 1900-1960

The United States, unlike many other countries, has never had a very large proportion of women dentists. Approximately one out of every 100 practicing dentists in the United States is a woman. In other countries, dentistry is firmly established as an excellent occupation for women. For example, half of the dentists in Greece are women. In Finland, Russia, Latvia and Lithuania, women constitute almost 80 per cent of the profession. In Norway, Sweden, France and Denmark, 23 to 30 per cent are women. In fact, the United States has the smallest percentage of women dentists in the Western Hemisphere. ²

Oddly enough, the 20th century, which has seen an unprecedented burgeoning of formal professional dental education, has also witnessed a decline in the proportion of women dentists. In 1920 there were 3 per cent, 7 in 1930 - 1.8 per cent, and in 1940 - 1.5 per cent. All these were greater than the present one per cent ratio. ⁶

During World War II two women dentists served as dental officers in the United States Navy, for the first time. ⁹ They were the first American women ever to serve as dental officers in the armed forces of the United States; since that time there have been others.

THE AMERICAN WOMAN DENTIST TODAY

In American dentistry today, the dismaying discrimination which
would have defeated a less determined woman than Lucy Hobbs has vanished.

Professional dental journal articles and editorials have been encouraging and seek to recruit prospective American women dental students. A recent addition to this literature is the attractive brochure published by The Council on Dental Education of The American Dental Association in cooperation with The Association of American Women Dentists.

Only six of the 50 dental schools in operation in the United States during the academic year of 1967-1968 reported that they had no women candidates for the D.D.S. degree at that time. Nevertheless, the total number of undergraduate women students enrolled at that time was, as it has been for many years, very low — only 177 out of a total of 14,955.

In spite of this, the American woman dentist has won a secure and honored place among America's health science teachers, researchers, and practitioners. Her achievements are limited now only by her own ambitions, her own capabilities, and her own dedication.

REFERENCES


MISS KINSLER'S address is Apt. 4, 226 West 9th Avenue, Columbus, Ohio 43201.

(This paper was the winning entry in the 1969 Bremner Award Contest, conducted by the American Academy of the History of Dentistry, among dental students.)
Oddments in Dental History

—MALVIN E. RING, A.B., D.D.S.

One of the most delightful books dealing with the practice of dentistry which I had ever read was published some twenty years ago, and retold the story of a Dr. Eskelund, a Danish dentist who practiced for many years in his native Denmark, but who then tired of life there and moved to the exotic Kingdom of Siam. The retelling is done by his son, who writes of his father's life with warmth and affection. He details the beginning years of his father's practice in the small town of Skive in northern Jutland and retells, in his father's words, a humorous story:

"My only competitor was a middle-aged dentist who practiced a few blocks from my office. We could afford to be friends, as there was plenty of work for both of us, and in the late afternoon we met for a drink before going home.

One day an old farmer came to my office and complained of a toothache. Though he had only about ten teeth left, he didn't want a set of false ones. 'I figure that the ones I've got will last me out,' he said. 'Just pull out the one that hurts — how much will you charge for that?'

I told him my prices: four kroner with anesthetic, two without. I had to explain to him what an anesthetic was and how it was administered.

'You mean that I get this here anesthetic, sit down for ten minutes in the waiting room, and then it won't hurt?' he asked.

'Yes, that's right,' I answered.

'I guess I'll have it with the anesthetic, then.'

I gave him the injection. When I went to the waiting room ten minutes later he had disappeared. I thought he might have gone out on a short errand, but he never returned. I wondered about it until late in the afternoon, when I met my competitor.

'I had a strange case today,' he told me. 'An old farmer wanted a molar pulled out. A bad one, but he absolutely refused to have an anesthetic. And the funny thing about it was that it didn't seem to hurt him a bit, though I had to chisel one of the roots out.'

Young Eskelund continues his narrative with his father's life in Bangkok, where one day he received a messenger from the queen with a command that he present himself at the palace in order to construct a set of dentures for her, with the proviso, however, that he crouch on the floor before her while carrying on his treatment. Dr. Eskelund protested that he couldn't work in that position; a compromise was achieved, however, when he agreed to keep his head at a lower level than hers. With this, he was ushered into the royal chamber:

The old queen sat on a throne in the middle of a great hall, surrounded by squatting courtiers and ladies in waiting. A complicated wig, made of some young
girl’s lustrous black hair covered the top of her wrinkled head. Her sunken cheeks showed that she had no teeth. I don’t know how she managed to chew betel, but next to her stood a golden spittoon. Her shrewd old eyes watched me keenly as I approached, head bowed. When she had studied me for a few seconds, she turned her head and spat, with relish and precision, a big mouthful of red spittle into the golden bowl.

‘Her Royal Majesty the Queen wants to know whether the King’s dentist can make her a set of black teeth,’ a court attendant said.

‘May I speak to Her Majesty?’ I asked. . . The attendant forwarded my question to the queen who nodded graciously and beckoned me to move closer.

‘I can make teeth for the queen,’ I said — fortunately, I had just received a supply from a London firm which specialized in making black teeth for betel chewers. ‘However, I cannot finish them right away as I have to do most of the work in Bangkok.’

That was all right with the queen. She told the attendant to tell me to start with my work. Keeping my head as low as possible and using a flashlight, I examined her mouth and prepared to take the impressions. When I began to mix the plaster, the whole court stared at me as though were performing some secret rite.

‘Please open the royal mouth’, I said to the queen.

‘What is he going to do?’ she asked. I explained that I would have to put the plaster into her mouth to take the impressions.

‘No!’, she said, looking with distaste at the plaster, so clean and attractive compared to the foul interior of her mouth. ‘I will not permit it.’

‘In that case I am afraid that I cannot make the teeth for Her Majesty,’ I said, and began to put the instruments back into my box.

Dr. Eskelund had committed a severe breach of etiquette in opposing the queen, but his continued firmness finally won her over. However, she insisted that she wanted the new teeth to stick out of her mouth at right angles, because her own teeth had been like that. The doctor objected that if they were placed like that they would interfere with the ‘royal ability to masticate.’

‘Tell the king’s dentist that he is here to make my teeth exactly the way I want them’, she said icily. ‘Whether or not I can chew with them is none of his business, and he has already done his duty by pointing out the dental point of view.’

I bowed deeply to hide the smile forcing itself to my lips. There was no mistaking that flicker when I looked up — she had winked at me! The indignity she had suffered when I put the plaster into her mouth had been avenged.

(This material was culled from ‘My Danish Father’ by Karl Eskelund, New York, Doubleday and Company 1947.)
"Letters To The Editor"

To the Editor:

Today I received Volume 17, No. 1 of the Bulletin of the History of Dentistry. It's a pleasure for me to compliment you on the really beautiful form the Bulletin has now. The printing is very clear and the colours, which you have chosen, are excellent.

In the hope that I will be able to meet you in October, I am with kind regards.

F.E.R. DeMaar

(Dr. De Maar, who practices in 'S-Gravenhage, The Netherlands, is the Vice-chairman of the Sub-committee on Dental History of the Federation Dentaire Internationale.)

To the Editor:

I have just received the June issue of the Bulletin of the History of Dentistry. This is a particularly fine number which, as usual, I have read with considerable interest and profit.

As you quote material relating to Martin van Butchell (1735-1814) culled from John Kobler's The Reluctant Surgeon: A Biography of John Hunter, I am regretfully impelled, in the interests of historical accuracy, to query one or two of his statements.

Van Butchell practiced in the latter (not the middle) part of the 18th century and the early years of the 19th. From the 1760's, his home and office were at 56 Mount Street, Berkeley Square, London.

When his first wife died on 14 January 1775, he decided to have her body embalmed, and entrusted this to Dr. William Hunter and a surgeon, Mr. William Cruikshank, he, himself, actively assisting. When duly executed, the body was embedded in 130 lb. plaster of Paris and enclosed in a sealed case with a glass lid. This he kept in his home, permitting friends, patients and others to view it at specified hours.

A few years later he remarried, and his second wife resented the presence of his "dear departed." Consequently, the embalmed body was removed and eventually deposited in the Museum of the Royal College of Surgeons of England, Lincoln's Inn Fields, where it remained (with other van Butchell relics) until destroyed in 1941 by enemy aircraft.

Incidentally, certain striking mis-statements concerning Bartolomeo Ruspini also appear in Mr. Kobler's book. Interested readers will find these detailed in The Bulletin of the History of Dentistry, Vol. 34.
With cordial greetings and kind regards, Sincerely

J. Menzies Campbell

To the Editor:

Several months ago I was afforded the honor and privilege of being accepted as a member of the American Academy of the History of Dentistry. You may be assured of my grateful appreciation. As a continuous student of our profession's past, I am sure that there will be much for me to learn in the future from all of the knowledge possessed by our illustrious colleagues in the Academy.

My main reason for writing is to offer my commendation for the splendid work you are doing in your editorial capacity. The Newsletters and your recent Bulletin are a stimulus to help me become a better historian, and I know there is room for improvement on my part. Let us hope that your fine literary expressions will effectively aid in arousing more men and women in dentistry to become effectively concerned with the fine objectives of the Academy. Respectfully yours,

Joseph H. Kauffman

To the Editor:

Dental history has a way of getting "under your skin". I have just returned from a few days vacation in the mountains of northern New England. Much to my delight, I discovered a thirty seven hundred foot mountain named for a dentist, located in the Crawford Notch area of the White Mountains of New Hampshire, adjacent to the famous Presidential range. Dr. Samuel Bemis was a Boston dentist who moved to the White Mountains in 1860, built a large granite mansion in the European manner and acquired large real estate holdings. In this mansion, which is still preserved, I discovered some rare antique dental items. So you see, you never can tell when you will run into a find!

Sincerely yours,

H. Martin Deranian
To the Editor:

I have recently read the article, "The Long Journey to Corrientes: The Story of George Henry Dunster", which appeared in the Bulletin of the History of Dentistry for June, 1969. I found the article quite interesting and very informative.

For the past four years I have been interested in Latin American dentistry. In 1965 I was privileged to participate in a nutritional survey conducted in Paraguay. Since that time, I have been assisting my colleagues in Asuncion and we have developed a program of assistance to the Faculty of Dentistry of the National University of Asuncion. At the present time I am a Visiting Professor of that institution. Therefore, the references to Asuncion were especially interesting.

I have traveled throughout Latin America during the past few years on business to various dental schools. Unfortunately, my only experience in Corrientes was a brief stop enroute to Buenos Aires to Asuncion. I hope that on a future trip I can arrange to visit for a longer time, as I understand that the highway between Asuncion and Corrientes has recently been paved.

Congratulations on a very fine article. It was a pleasure to read the kind words for Dr. Dunster.

Sincerely yours,
Stuart L. Fischman

(Dr. Fischman is Associate Professor of Oral Diagnosis, School of Dentistry, State University of New York at Buffalo.)
Official Comment

As the amount of scientific knowledge concerned with the study of dentistry increases, dental school curriculum committees have been hard put to find time in the schedule to fit in all the material to which the dental student should be exposed. Sadly, one of the first subjects to feel the axe is the course in dental history. Over the years the number of hours devoted to this important field has been cut in school after school, to the point where in some schools only a single clock hour is devoted to it.

The American Academy of the History of Dentistry deplores this, recognizing as it does that one of the characteristics distinguishing a trade from a profession is a knowledge and appreciation of the history of that particular field. It is not derogating his work to say that the bricklayer or pipefitter need have little knowledge of how bricks were laid or pipes fitted in years past in order to do a creditable job in his trade. Strip a dentist of the knowledge and understanding of how his professional forbears built step by step to the techniques and methods he uses today and you reduce him to the status of a mechanic.

It is because of these pressures for reduction in the teaching of dental history, that the American Academy of the History of Dentistry offers the following resolution for discussion by the membership. Your officers would be grateful for any comments you may wish to make, and urge you to let your views be known. Comment may be sent in care of the Bulletin.

"RESOLUTION"

In view of the current growth in dental education of "Community or Social Dentistry" curricula, with emphasis on dental service for the debilitated, for those with limited incomes, and for ethnic groups;

And whereas the "socio-dentistry" curricula often appear to emphasize clinic dental service, with less concern for socio-psychology and economic legislative measures that underlie the cause and the need for social dental health measures;

And whereas the most essential qualification for dentistry's intellectual approach to the solution of humanity's health problems is its understanding of past successes and failures within the historical social scene;

And whereas we fully agree with the expression of Dr. J. Ben Robinson: "The dental profession will continue to flounder, to perpetuate its handicaps and to fail its true purpose as long as it lacks an intelligent understanding of its historical background."

And whereas the American Academy of the History of Dentistry views with alarm the reported trends of some dental school curriculum committees that seem to relegate the teaching of dental history to lesser roles of influence in the curriculum or to submininal time or faculty interest;

And whereas the Academy decries the possible de-emphasis of dental history in future curriculum development as a move toward anti-intellectualism in dental education.
THEREFORE, BE IT RESOLVED that the Executive Committee of the American Academy of the History of Dentistry prepare a position and advisory statement expressing the values and the necessity of expanding dental history teaching in American dental schools.

The statement shall express the feeling and hope that teachers of dental history and closely related "social science" subjects will be engaged, with important influence and in leadership roles when curriculum studies in the area of social or community dentistry are being considered.

Be it further resolved that the scholarly complement to the clinical service side of social dentistry, as represented by dental history and dental sociology be a major course program in social or community dentistry curricula.

Be it further resolved that this statement be forwarded to the deans and all curriculum committee chairmen of all American and Canadian dental schools, with the request that they thoughtfully consider the recommendations.

Be it also resolved that the American Academy of the History of Dentistry extend an invitation to curriculum chairmen to call upon members of the Academy for advisory course and curricula counsel, when expansion of the dental social-sciences courses are being studied.
Current Bibliography

This bibliography lists publications which have appeared since the issuance of the October, 1967 Bulletin of the History of Dentistry. Every effort has been made to include all of the articles in the field; nevertheless, the Editor makes no claim to completeness.


Arzhantsev, P.Z.: 50th anniversary of the Stomatologic Department of the N. N. Burdenko Military Hospital (Russian) Stomatolog. (Mosk) 47:96-9 May-June 1968.


Santa Apolonia - nos ornamentos sagrados. Accao Medica (Lisbon) No. 1 & 2, Jan.-June 1968.


—40—


Dentistry at the Mayo: the early years. Mayo Alumn. 4:8-10 1968.


Carl Sauer, 1st professor of prosthetics at the Dental Institute in Berlin (German) Zahnarztl. Prax. 18:216 1967.
Dental and oral prophylaxis in the 16th Century (German) Zahnarztl. Prax. 19:96 1966.
When operative pain was conquered. J.A.D.A. 76:1270-6 June 1968.
Langer, H.: 75th anniversary of the dental clinic of the University of Vienna (German) Zahn. Prax. 17:85-6 1966.
Liljestrand, G.: Karl Koller and the development of local anesthesia.
Lofgren, A.: Goteborgs Tandlakare-Sallskaps Stiftare. Biografier
Sammanstallda Arsbok p.7-17 1967.
Goteborgs Tandlakareinstitut 1888-1893. Goteborgs Tandlakare-
Lorber, C.G.: Die anfange der Stomatologie im 16 Jahrhundert.
MacLennan, W.D.: The Menzies-Campbell Collection at the R.C.S.
Madariaga, B.: Diet of prehistoric man [Spanish]. Soc. esp. Orto-
Marchi, A.: The dental art of Guissepe Colombani (Italian) Mondo
Odontostomat. 10:362-71 1968.
Markovitch, E.: The history and development of general anesthesia
McCall, J.O.: Dental societies and dental progress: research-preven-
Paul Roscoe Stillman, 1871-1945. Clinical researcher in periodon-
The making of a dentist. . .the 1900s Part I. Dent. Delin.
Spring 1968.
The making of a dentist. Part II. Dent. Delin. 19:18-21
Autumn, 1968.
Merkle, G.: Dr. Carl Joseph Ringelmann, der erste Dozent fur
CAL June 1968.


—50—
Twenty years of the Dental Association of Cundimarca (Spanish)

Verd, Y.: Quelques mots d'histoire de la medicine militaire navale

Vetter, T.: Esquisse d' une histoire de l' art dentaire a la lumiere

Voutov, M.: 56 Godini v shlushva na stomatologichata teoriya y
praktika v Bulgaria. Stomatologiya (Sofia) 1968.

Vinogradova, T.F.: Development of therapeutic pedodontics during
the years of Soviet power (Russian) Stomatologiya (Mosk.)

Walker, R.O.: The British Dental Association and the evolution of


Welker, A.: The teeth and tooth diseases of Schiller (German).

Wells, C.: Dental pathology from a Norwich, Norfolk, burial ground.

Wigdorowicz-Makowerowa, N.: 20th anniversary of the Chair and
Department of Prosthodontics (Polish). Czas. Stomat. 21:215-8
1968.

Wigginton, D.J. and Newton, S.E.: The Dentists' Provident Society,

Witt, F.H.: Die Entwicklung der ungarischen Zahnheilkunde und ihr

Wolf, H.: Substanz und Magie in Behandlungen des 18 Jahrhunderts

Wolf, W.: A history of personal oral hygiene customs, methods and


BOOKS
Angelov, Ivan: Achievements of dental care services in the Peoples

Bobbio, Amadeo: Historia sinoptica da anestesia. Sao Paulo, Brazil

Boleo, Jose de Pava: Amatus Lusitanus, the inventor of the palatine


University of Alabama: Rare books and collections of the Reynolds Historical Library: a bibliography. Univ. of Alabama Press. 1968.

FACSIMILE REPRINTS


Crowley, C.: Dental bibliography: a standard reference list of books on dentistry published throughout the world from 1536 to 1885 Philadelphia 1885. Reprint Amsterdam.


Hooke, Robert: Micrographia or some physiological descriptions of minute bodies made by magnifying glasses with observations and inquiries thereupon. London 1665 269 p., 38 pl. Editions Culture et Civilisation, Brussels, $22.80.


Parmly, Levi: The summum bonum and medical electrician Quebec 1815. College of Dental Surgeons, Quebec 1969.


Varolio, Costanzo: De nervis opticis Padoue 1573. Editions Culture et Civilisation, 82 p. $5.
