A STUDY OF THE DENTAL HYGIENE PROGRAM IN THE WOLFPEK ELEMENTARY
SCHOOL OF AMARILLO, TEXAS, TO DETERMINE ITS NEEDS
FOR A PREVENTIVE PROGRAM IN DENTAL HYGIENE

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SCHOOL OF AMARILLO, TEXAS, TO DETERMINE THE NEEDS
FOR A PREVENTIVE PROGRAM IN DENTAL HYGIENE

THESIS

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By

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CHAPTER I

INTRODUCTION

Purpose of the Study

The purpose of this study was to discover and record the present dental conditions of the pupils in the Wolflin Elementary School, Amarillo, Texas, and to use this as an informative basis for the establishment of a concentrated dental program.

From reports received by the Dental Division of the State Department of Health, the following figures have been tabulated from the volunteer inspections: 65.32% of the children have been to the dentist prior to inspection; 18.9% have malocclusions; 66.32% have carious teeth; 42.18% have one or more carious or missing sixth year molars; 12.36% have mottled enamel; 81.5% need dental care; 64.12% need cleaning; and, 4.51% have other dental conditions which need attention.¹

Practically 100% of the adult population is affected by some form of oral disease.²

Health service to the people is its goal. It is obvious that inasmuch as from 95 to 98 per cent of the people of the civilized world at some time in their lives have dental diseases, dentistry is a service of no mean proportions, and the preparation of men and women for the work of the profession is an important part of the program of the universities of America.³

The study of these statements and the daily contact with elementary school children influenced the writer of this thesis to begin a concentrated study of tooth conditions among school children.

¹Edward Taylor, Texas State Health Department, (Letter)
²Health Dentistry for the Community, Michael M. Davis, 1935, University of Chicago Press, Compiled by the Committee on Economics of the American Dental Association.
Methods of creating a desire for better and stronger teeth were sought. It was thought that the results of this study might further emphasize the importance of teaching dental hygiene, especially in the preschool and kindergarten ages of individuals.

This study was made possible through the cooperation of W. I. Dinan, the school dentist; Tempest Ray, the school nurse; Ethel Jackson, the school principal; and Edward Taylor, Director of the Texas State Department of Health.

Sources of Data

The information in this study was obtained from the following sources: (1) a dental inspection sheet by the dentist; (2) a questionnaire that was given to each child of the fourth, fifth, and sixth grades of Wolfin Elementary School, Amarillo, Texas; (3) reports from the Texas State Dental Society; (4) National Dental Society; (5) bulletins from the Texas State Health Department; (6) magazine articles; (7) compilation of Texas Dental Laws from the Texas State Board of Dental Examiners; (8) personal interviews and correspondence with the officers of the Texas State Dental Association.

Method of Procedure

The primary procedure was a survey of teeth conditions of 200 children in the fourth, fifth, and sixth grades of the Wolfin Elementary School, Amarillo, Texas. This school was chosen as the laboratory for the work because of the social conditions existing there. The ages of the children who were surveyed were from eight to fifteen years. This group consisted of children whose parents were employed in thirty-five different professions and businesses.
CHAPTER II

HISTORY OF DENTISTRY IN THE UNITED STATES AND IN TEXAS

In order to better understand the procedures employed by dentists, the writer has sought to find the beginnings of dental practices in the United States and in Texas.

Early American Dentistry

During American colonial days and indeed for many years thereafter it was common practice for dentists to advertise. Josiah Flagg, one of the better known early American dentists, did not hesitate to boast a bit in the local paper about his ability as a dental surgeon.

But despite the fact that Josiah Flagg and his contemporaries made rather boastful claims regarding their skill, prosthetic and restorative dentistry was very crude as is evidenced by the famous set of George Washington's artificial teeth with which every dentist is familiar.

Dentistry in 1839

As late as 1839 there was no dental colleges in the world. Dentistry was a trade that was undertaken after a brief apprenticeship in the office of a practicing dentist. There were a few men of considerable ability in the larger cities, who devoted themselves with dental practice and their time was almost entirely occupied with the replacement of lost teeth in order to improve appearance. These teeth were not very helpful in chewing and were so expensive that few could afford them.

Dental service for the large majority of people consisted of extraction of teeth and the placing of an occasional filling. Many dentists traveled from farm house to farm house and from village to village exchanging dental service for food, lodging, or goods.

The Establishment of the First Dental College in the World, The Baltimore College of Dental Surgery

The first lectures on dentistry in America were delivered by
Dr. Horace B. Hayden in the University of Maryland, School of Medicine, between the years 1823-25. These lectures were interrupted in 1825 by internal dissensions in the School of Medicine and were discontinued. It was Dr. Hayden's idea that dental education merited greater attention than had been given it by medicine or could be given it by the preceptorial plan of dental teaching then in vogue. It was also his opinion that dental education should be developed as a special branch of medical teaching.

Dr. Horace B. Hayden began the practice of dentistry in Baltimore in 1800. From that time he made a zealous attempt to lay the foundation for a scientific, serviceable dental profession. In 1831 Dr. Chapin A. Harris came to Baltimore to study under Hayden. Dr. Harris was a man of unusual ability and possessed special qualifications to aid in establishing and promoting formal dental education. Since Dr. Hayden's lectures had been interrupted at the University of Maryland and there was an apparent unsurmountable difficulty confronting the creation of dental departments in medical schools, an independent college was decided upon. A charter was applied for and granted by the Maryland Legislature February 1, 1840. The first faculty meeting was held February 3, 1840, at which time Dr. Horace Hayden was elected President and Chapin A. Harris, Dean. The introductory lecture was delivered by Dr. Harris on November 3, 1840, to the five students matriculating in the first class. Thus was created as the foundation of the present dental profession in Baltimore College of Dental Surgery, the first and oldest dental school in the world.

Hayden and Harris, the admitted founders of the dental profession, contributed, in addition to the factor of dental education, other opportunities for professional growth and development. In 1839 the American Journal of Dental Science was founded, with Chapin A. Harris as its editor. Dr. Harris continued fully responsible for dentistry's initial venture into periodic dental literature to the time of his death. The files of the old American Journal of Dental Science testify to the fine contributions made by Dr. Harris. In 1840 the American Society of Dental Surgeons was founded, with Dr. Horace H. Hayden as its President and Dr. Chapin A. Harris its Corresponding Secretary. This was the beginning of dental organization in America, and was the forerunner of this American Dental Association, which now numbers approximately forty-five thousand in its membership.

In 1844 Horace Wells, a dentist of Hartford, Conn., first demonstrated the anesthetic properties of nitrous oxide. He was the first to demonstrate the use of that gas as a general anesthetic and to employ it for dental and surgical operations.

Two years later in 1846 William T. G. Morton, a Boston dentist, publicly demonstrated for the first time the usefulness of ether as a surgical anesthetic.

Dentistry in 1889

During the next fifty years, that is from 1840 to 1890,
tremendous strides were made by the dental profession. Several
dental colleges were established, books and periodicals were
published. The American Dental Association was founded in 1859
and many state and local dental societies were formed. A method
of making dentures of vulcanite rubber had been invented, the
technic (technique) of inserting gold foil and amalgam fillings
was improved. The use of general anesthesia, particularly
nitrous oxide permitted better surgery and most of the dental
offices contained somewhat modern operating equipment.

As dental educational requirements were improved, dental
legislation became necessary. The first state dental law
governing the practice of dentistry was enacted by Alabama in
1841. Kentucky enacted a dental law in 1867, New York and Ohio
in 1868. By 1899 all states in the Union had enacted similar
laws for the protection of the public. During the past ten
years, at the request and instigation of state dental societies,
sided by the A.D.A., every state has revised and strengthened
their dental practice act to protect our citizens against dental
quackery, unprincipled dental practitioners and dental fraud.

The original national dental organization, the American
Society of Dental Surgeons, which was organized in 1840, dis-
banded in 1856. It was succeeded in 1859 by the American Dental
Association which was organized by twenty-six delegates at
Niagara Falls in that year. In 1874 the membership was 121,
today the membership is a little over 45,000 or over 2/3 of the
62,000 practicing dentists in the U.S.A. Shortly after the
organization of the A. D. A. in 1859 state and district societies
began to form. Today every state has its own dental society and
each state society is subdivided into district or component
societies. At the present time there are about 429 component
dental societies in every county and subdivision of the U. S.

Coincident with the development of dental education, litera-
ture, organization and legislation improvements took place in
the manufacture of dental instruments, equipment and materials
all of which has helped improve the quality of dental service
rendered our citizens.

The growth and improvement in the organization of the A. D. A.
during the past twenty years has been phenomenal (phenomenal).
The service that it renders the public and the dental profession
is unfortunately not well known. Some information regarding these
services is contained in the two articles entitled "The American
Dental Association, A Century of Dental Progress" and "What Does
the American Dental Association Do for Me."

Since 1900 the practice of dentistry has been tremendously
improved. The discovery and use of the x-ray, the discovery of
local anesthesia, the development of technics (techniques) to
coat gold for inlays and other dental restorations, the improve-
ments in denture materials have all contributed toward the
technical advancement of dentistry. The newer knowledge of
pathology and bacteriology, fool of infection and oral surgery
have enabled the dental profession to improve their service to mankind. Fifty years ago a young man could become a dentist by studying for several months under a preceptor. Today besides four years in high school a boy must have two years in college and four years in dental school before he receives his degree of Doctor of Dental Surgery.

Dentistry of the Future

During the past few years there has been a noticeable change in the objectives of dentistry. Having perfected their operative and technical skill to a very high degree dentists are turning to new fields to conquer. These new fields lie in prevention. It is infinitely more satisfactory to prevent disease than to correct it or to replace lost teeth with artificial substitutes. Consequently dentistry of the future will concern itself more and more with children. Dentists will do their utmost to detect and correct dental defects for the child in order to preserve the teeth in a healthy condition. Furthermore, it is not too much to expect that within the next few years, dentistry through its continued research, will definitely establish the etiology of dental caries. Once this fact is known to science the dental profession will devote its energies and talents to prevention rather than cure.

The March of Time

Events that mark stages of progress in the growth and development of the dental profession

Gordon said the founding of a dental journal, the organization of a dental society and the establishment of a dental college stand as the first great landmarks in dental progress. He described it as the tripod upon which a profession must be built if it is to become firmly established.

In 1839, the first dental periodical was published.
"The American Journal of Dental Science."

In 1840, the first dental school was established.
"The Baltimore College of Dental Surgery."

In 1840, the first national dental society was organized.
"The American Society of Dental Surgeons."

In 1844, Horace H. Wells, a dentist, suggested that nitrous oxide might be used for surgical anesthesia.

In 1846, W. T. G. Morton, a dentist, demonstrated the use of ether as an anesthetic.

In 1847, gutta percha came into use as a temporary stopping.

In 1859, the American Dental Association was organized. (See 1867, 1897, 1922)

In 1862, the use of rubber dam in dental operation was presented.
In 1864, James E. Garretson was made Professor of Anatomy and Surgery at Philadelphia Dental School, which was the first recognition of Oral Surgery as a specialty in dentistry.

In 1867, the first University Dental School was established. "Harvard Dental School."

In 1867, the Southern Dental Association was organized.

In 1880, Norman Kingsley published the first scientific treatise on orthodontia.

In 1882, W. D. Miller announced the chemo-parasitic theory of dental caries.

In 1895, G. Edmund Kells demonstrated the use of roentgen rays in dentistry.

In 1896, E. F. Philbrook, of Denison, Iowa, wrote a paper on "Cast Gold Fillings."

In 1897, the National Dental Association was organized. (Merger of the American Dental Association and the Southern Dental Association)

In 1900, the Federation Dentaire Internationale was established.

In 1906, Wm. H. Taggart demonstrated the cast gold inlay.

In 1908, C. V. Black published his book on technique, "Operative Dentistry."

In 1913, William J. Cies founded the Journal of Dental Research.

In 1920, William J. Cies founded the International Association for Dental Research.

In 1922, the present American Dental Association was organized with its "Code of Ethics" as a basis for professional practice and public service.

In 1925, the American Association of Dental Schools was organized by the amalgamation of the National Association of Dental Faculties, Dental Faculties Association of American Universities, American Institute of Dental Teachers, and Canadian Dental Faculties Association.

In 1926, the Carnegie report on Dental Education was published, forming the basis for a new alignment of dental schools under the direct supervision of the universities.

In 1930, the Council on Dental Therapeutics was set up by the American Dental Association, forming the basis for the service to the public.

In 1932, the survey of dental literature pointed the way for the control of dental literature by the profession.

In 1936, the American Association for the Advancement of Science, recognized the dental profession as a scientific body by granting associate membership to American Dental Association, American Association of Dental Schools and the American College of Dentists and in 1935 granted affiliate membership to the American division of the International Association for Dental Research and creating a sub-section on Dentistry of the American Association for the Advancement of Science.4

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4 Guerini, History of Dentistry
In a discourse before the Central Texas District Dental Society, the following was read:

To bring more clearly to our minds, let us see where we were one hundred years ago.

Texas was largely wilderness, infested with the most war-like savages, its hard-won independence from Mexico being but four years old and it had yet five years to go before being admitted to the Union in 1845. To bring it closer home to us, by a coincidence, the first dwelling house in McLennan County was erected exactly one hundred years ago—that is, in 1840. It was built on South Bosque, some seven miles west of what was later to be the city of Waco. A century ago? Yes, just that. What a wealth of progress has taken place in that one century right here in our own Central Texas and, yet, phenomenal as it may seem, no more progress was made than in our own beloved profession of dentistry.

Previous to 1840 we might justly term the dark ages of dentistry. The Charlatan and the Quack dominated the profession or trade, as it might more properly be called. The blacksmith with his crude tools might do some pulling. We could not give it the honor of denominating it as extractions. The barber in his back room with his cupping and leeches all had their day. All had various forms of charlatanism had their secrets and formulas of practice. They, of course, did their good in carrying on until better ways could be evolved. The advertiser with his promises had full sway. It was at this time that two Frenchmen came to New York with a filling material with the high-sounding euphemism, "The Royal Mineral Succadeneum" and the most extravagantly impossible promises, as was their wont in those days.

What a name for molars! But as the years have passed and it has been improved and the gold adherents of that day had in a measure lost their prejudice against it, it became, and has been for years, one of our greatest assets.

There was, of course, at the beginning of the eighteenth century the occasional conscientious man who strove to the best of his ability to serve mankind. Such a man was the redboundable Josiah Flagg, who, with his undoubted ability, was not averse to bragging a bit in the public print. Dr. Horace Hayden, whom we shall discuss later, began his practice in Baltimore in 1800. It seems a far cry from the mountain legends wherein they speak of having a large spike nail with which to set in the bifurcation of a tooth's root and drive said tooth out with a swift blow of a hammer or the cases wherein it was claimed that many heated knitting needles red hot and plunged them into aching pulps to deivialize them—a far cry indeed to the present day block anesthesia and its manifold uses.
You, young men must realize that among your contemporaries of today there are many eminent men who have practiced dentistry fifty years—exactly one-half of the age of organized dentistry. When one considers the handicaps of these pioneers and realizes to what heights they have grown, despite these handicaps, it should make us all the more determined to make use of the present knowledge and to improve upon it as the distances to which we can go are limitless.

Thomas Edison makes a statement about like this, "We know less than one per cent about anything." It seems to me that the thought of how much is yet to be learned in dentistry is well explained in that sentence.

Some forty years ago when many of the present day practitioners were in college they had a great admiration, and justly so, for the attainments of dentistry at that time. All honor should go to the pioneers who had brought to light the knowledge of that day and yet the practice that was taught then and as it exists today differs as does the day from the night. It would surprise some of us to know that one time it was an accepted practice to enter an abscessed tooth with a small round but just under the free margin of the gum and with this but to open into the pulp chamber to allow for the escape of the pus and gas, thus making a so-called useless tooth. You must recall that at this time focal infection had not been invented. You see, at that time any form of tooth or root that was not too loose and was not actually aching was considered, when built up and crowned, as an excellent part of the dental mechanism. How my heart goes out to you young guys who have never experienced the pleasure of practicing as you pleased without fear of consequence. What a good time we had until one William Hunter, an English physician, made some such statement as this, "They are golden mausoleums filled with the rotting of dead men's bones." I do not guarantee the correctness of the quotation, but the sense is there. He was speaking of so-called modern dentistry and, too, what a pleasure it was to leave broken roots without fear until such time as nature brought them to the surface. At that time we did not have to fish for roots pushed into the antrum.

There was no focal infection so when we observed the rapid improvement of our patients after the removal of teeth and the building of false ones (we did not have dentures then) we attributed the wonderful improvement of their health to the fact that they could now chew properly.

Then came the fad of devitalizing with arsenical preparations. While you youngsters have had to suffer the agony of searching for minute root tips, you have been spared the grief of permitting a little of your arsenic paste leak out of the cavity and the resultant destruction of the alveoli. While an effort was being made at this time to cap pulps, by far the majority destroyed the pulp.
This slogan was taught and quoted daily, "Better be safe than sorry" and it was considered entirely safe to devitalize any tooth. In fact, where today you use a nerve-block to make proper preparation for filling or bridge abutments, it was routine practice with many to devitalize all such teeth. Block anesthesia was unknown, or rather untaught. In 1884 Dr. William Stuart Halsted of John Hopkins blocked the mandibular nerve in the mandibular foramen, using a cocaine solution, but this method of nerve blocking, original as it was, was fraught with danger, owing to the toxicity of cocaine. As a result, it did not become generally used.

In 1905 Einhorn of Germany gave novocaine to the world. This marked the rapid advance in local anesthesia for here was an agent that possessed the anesthetic qualities of cocaine without its toxicity.

In 1913 Dr. Guido Fisher in a visit to the United States gave further impetus to the subject of local anesthesia and its uses in dentistry. In a series of clinics conducted here he demonstrated the exceptional value of novocaine for this purpose. What particularly interested the profession was the novel means of obtaining anesthesia, known as the conduction or nerve blocking method. To you who have always known it, it is hard to realize the handicap of those who were forced to practice without its wonderful benefits. Before leaving this subject, it is well to take note of the influence of dentists and dentistry in the practice of general anesthesia. This should be a source of much pride to us. Nitrous oxide gas is one of the oldest anesthetics. Sir Humphrey Davy about the year 1800 suggested the use of nitrous oxide gas to prevent paining surgical operations. In 1840 Horace Wells demonstrated its use as an anesthetic in dentistry. William Morton, an assistant of Wells and Jackson, a chemist, demonstrated ether-narcosis in the Massachusetts general hospital.

C. W. Long, a physician of Georgia, claimed the credit for using ether as an anesthetic in removing a cyst from the neck of a patient in 1842. However, he made no general mention of the event until some ten years later. We must give credit to Morton for his courage in giving a clinic before all these "doubting Thomases" of the medical profession in the Massachusetts hospital in 1844. While, as I stated above, Sir Humphrey suggested the use of nitrous oxide as an anesthetic in 1800, we find no history of its being used as such until Horace Wells demonstrated its use in dentistry in 1844. Thus we take great pride in the influence of early dentistry in bringing the wonderful benefits of general anesthesia to the world.

Consider for a moment what your daily practice would be without the benefits of casting. In 1906 Dr. William H. Taggart demonstrated the cast gold inlay. As nearly as I can recall, it was around 1916 when Doctor Taggart placed on the market an inlay casting machine and the threat of a law-suit for every dentist who practiced inlay work without paying a tribute of
§26 for his invention. Many of our magazines have been paying
eulogies to the memory of this great man for his wonderful
gift to dentistry. I do not say it is not a most wonderful
thought to give to dentistry. It is in truth one of our greatest
aids, but I do deny that it was a gracious gift from the in-
ventor. This is not to be construed as a condemnation of
Doctor Taggart, for he did do a great deal for dentistry—just
keeping the record straight.

In 1890 E. F. Philbrook wrote a paper on cast gold fillings.
We are indebted to the untiring workers of our dental associations
for their efforts in carrying on through the courts the great
fight until finally casting was given to the world without cost.
From the modest beginning of the cast gold inlay has come the
wonderful castings of various sorts so useful in our everyday
practice.

With the advent of the cast gold inlay and the various forms
of artificial enamel came practically the death knell of
malleled gold fillings, one of the greatest losses that dentistry
has known, but, like so many of our fads, and there are no
greater faddists than dentists, the gold filling is coming back
and we believe you young men will restore it to the pinnacle it
so richly deserves. Coming at the time it did, the casting
process being so recent, many of us who are still active in the
profession were forced to practice many years without this great
boom. Our sincere admiration must go out to many of them for
their skill and ingenuity in making many of the wonderful resto-
rations of twenty-five years ago.

Then came along the dental X-ray to show us up. And how it
did show us up! As a result came the cult known as "one hundred
per centers", those refusing to devitalize any and all teeth and
demanding the removal of all devital teeth. This, perhaps, as so
many of our hobbies, has been run into the ground. With the
cessation of devitalization went the Logan and Richmond crowns,
two of the principal bulwarks of the mid-age dentistry. And
sinuses came into being—not that we did not have them occasion-
ally before but with focal infection and X-rays to show us up,
root ends that had never before caused us the slightest worry
began to be pushed into the maxillary sinus and here was the
devil to pay! And these cheerful inspections where you have to
excavate as though you were laying foundations for a skyscraper.
Until the event of dental X-rays, this type of tooth lay quite
easily on our consciences even though they may have lain more
painfully on the jaws of the unsuspecting patient. Truly, the
X-ray has thrown a heavy responsibility upon the shoulders of
the conscientious dentist. But you who have always known the
X-ray can scarcely appreciate its value as can those of us who
had to go long without its benefits. Again we must throw
bouquets to one of our scientific brethren for, if not the first
to use the X-ray for the benefit of humanity, our beloved member,
the late Dr. C. Edmond Kell of New Orleans did as much or more
than any one individual to bring it into use. In 1896 Professor Wilhelm Roentgen, a German physician, discovered the X-ray and we find that in the same year Doctor Kells began its use in dentistry and continued his investigation of its use until finally he died, a martyr to his enthusiasm.

It has often been said that dentistry is a branch of medicine. This I deny for dentistry is medicine. The body must be taken as a whole. It functions in that way. We do a special service on one part of it as does the man take special training on any other part being but a cog in the machine and must be considered as such. The dentists of the future must study more and more of the body as a whole and functioning as a single piece of machinery in which every part is considered. There was a time when many students received the study of anatomy below the clavicle, contending that since their work was all above it, there was no need to clutter their minds with non-essentials. How short-sighted they were and how thankful we should be that the professors at that time had knowledge and vision. The time will come, and we hope soon, when the requirements for a dental diploma will be the same thorough knowledge of the human body as for the medical diploma. We are not a branch of medicine. We are working with a special part of the human mechanism with a view to the betterment of the whole.

At this time we might well pay tribute to another of our great scientists, Dr. J. Leon Williams, who, from a study of types brought to us the beautiful molds of the Trubyte teeth and with these for the first time we could speak of them as restorations.

With the advent of better teeth came a demand for more beautiful materials to set them in and you today are enabled to turn out work of such beauty as we had never dreamed of.

With the signing of the Armistice and the return of our soldiers came into our lives and into our practices a disease we learned in our textbooks under the caption "Vincent's Disease" and promptly forgot. Not so, however, in the past twenty years for it is only too often that we have reason to wish that it might again be forgotten.

On February 1, 1840, a charter was granted by the Maryland Legislature for the Baltimore College of Surgery, the first dental school in the world. Dr. Horace H. Hayden was elected president and Dr. Chapin C. Harris, dean. The introductory lecture was delivered by Doctor Harris on November 3, 1840, to the five students matriculating in the first class. Thus was created the foundation of the dental profession.

Hayden and Harris, the admitted founders of the dental profession, contributed in addition to the factor of dental education, other opportunities for professional growth and development. In 1839 the American Journal of Dental Science was founded, with Doctor Harris as its editor. In 1840 the American Society of Dental Surgeons was founded, with Dr. Horace H. Hayden as its president and Doctor Harris as Corresponding secretary. This was the beginning of dental organization in America and was the forerunner of the American Dental Association which now numbers about 45,000 in its membership.
If I should be called upon to name but one thing that would contribute to the growth and knowledge of the practicing dentist, I should, without hesitation, name as that one thing active membership and participation in the numerous dental associations of our country, for it is by taking part in them that we get our greatest benefit. It is utterly impossible to give without receiving.

The first half of this century of progress from 1840 to 1940 perhaps shows the greatest progress in dentistry of any fifty years since the world began. Charles Goodyear of New Haven discovered a way of curing or vulcanizing India rubber in 1843. The process of making hard rubber was patented in 1851 by Nelson Goodyear. In 1855 a patent was granted Charles Goodyear, Jr. for improvements in artificial teeth. A charge of from $1.50 on partial plates to about $2.50 on full plates was made by Goodyear to all who should use his process. This system of making plates marked the greatest single advance that has ever been made in dentistry, combining as it did speed, accuracy, and inexpensiveness. For the first time it was made possible for the poor as well as the rich to have dental plates. Previous to this, as you will recall, the only method of making plates was the laborious and painstaking method of carving plates out of bone or ivory.

It is easy to see how few one man could serve in this manner and the expensiveness of it, to say nothing of how few might possess the necessary skill. With this new method of plate making, together with the improvements of anesthesia, and the number of other improvements, dentistry made great strides through the gay nineties.

With all the wonders of vision and achievement of this century just ended, I would not have you think it was all "beer and skittles." The good old profession has had its hardships and setbacks as well.

The century just passed, with all of its wonderful accomplishments, might well lull us into a feeling of smugness; we might even get the feeling as did Alexander the Great that there were no worlds to conquer. But are there?

Pyorrhea, that bête-noir of the dental profession—You recall this statement somewhere in the Bible, "The poor ye have with you always." This seems a fitting statement for pyorrhea as well. As far back as we can make scientific researches we find the prevalence of pyorrhea and somehow we feel that this is one of the greatest snarches on our history of achievement. With all of our efforts, apparently it goes on, serenely from generation to generation. Much as Mark Twain said about the weather, with lots of talk but very little done about it. In fact, I would almost risk the statement that it is on the increase rather than the decrease. Our living under modern civilization seems to foster it.

The medical profession has made great strides in removing from our midst or at any rate almost removing such scourges as
small pox, diphtheria, typhoid fever and seems well on the way
to cope with the dreaded pneumonia. However, they still have
the cancer on which they have made little, if any, progress,
and so it is with our pyorrhea.

We might as well speak of it as the "cancer" of dentistry.
However, we shall hope that the next century in its progress
may so serve the public that through its research and edu-
cational advantages, it may conquer this great scourge of the
human race.

Children's dentistry—it is with much appreciation that we
view the steps being taken by our educational directors toward
fostering a greater interest in children's dentistry. Those of
us so fortunate as to hear Dr. Charles A. Sweet on his recent
trip through our State must go out with renewed interest to
give to this important phase of dentistry the attention it so
richly deserves. Here comes into the fullest meaning that old,
old quotation, "An ounce of prevention is worth a pound of cure."
It is through education and cooperation that we are to achieve
that greatest of all booms to mankind, the prevention of the
need for all of the wonderful mechanical aids with which we
propped up and carried on the teeth and mouths of the present
century. It should be the aim and ambition of all practitioners
of dentistry in the coming century to drop into the limbo of
useless things all the wonderful mechanical devices of the
century just ended.

I care not with what skill a man may make a restoration for
me, how efficient or how beautiful it may be, should it be
dentures or a wooden leg, I shall always hold him in much higher
esteem who prevents my need of one. 1

Dr. George W. Staples of Dallas, Texas, compiled the history of
the dental societies in Texas up to 1910.

On September 30, 1880, Dr. J. L. Fountain of Bryan, Texas,
sent out a call for a meeting of the dentists of Texas at
Houston, on November 25, to consider the organization of a state
association.

On that date there assembled in the parlors of the Barnes
House in Houston, in response to the call, the following men:
W. S. Carruthers, Galveston; S. E. Jones, C. C. Thomas,
E. W. Bryan, Houston; W. R. Clifton, Waco; J. L. Fountain,
Bryan; C. B. Stoddard, Austin; G. W. Ellington, Hempstead;
J. B. Chess, San Antonio.

The meeting was called to order by Dr. W. S. Carruthers as
temporary chairman, Dr. J. B. Chess acting as temporary secre-
tary. After a general discussion of the objects of the meeting,

1 Helms, L. W., A Century of Progress in Dentistry
a constitution and by-laws were drawn up and adopted. The following officers were then elected: President, W. S. Carruthers; First vice-president, C. B. Stoddard; Second vice-president, S. E. Jones; Secretary and Treasurer, J. B. Chess; Corresponding secretary, W. R. Clifton; Executive committee, C. B. Stoddard, J. L. Fountain, and W. R. Clifton.

The first regular session of the association was held at the Raymond House in the city of Austin, May 4, 1881, with the following dentists present: W. S. Carruthers, president; C. B. Stoddard, first vice-president; J. L. Fountain, W. R. Clifton, J. B. Chess, J. Fredd Chess, R. E. Grant, and H. M. Hunter.

The association has a membership of about 250 now, thirty-four new members joining at the last annual meeting. 2

From the records there seem to have been only seven Texas Dental Societies up to 1910. Since that date there has been an increase to about thirty dental societies in Texas.

The total membership of Texas State Dental Society for 1940 is 1250. 3

The organization of the State Dental Society is composed of a president, four vice-presidents (instead of one up until two years ago) one of whom is president elect. The other regular officers, together with the three immediate past-presidents form an executive committee; this committee might be considered a board of trustees. Delegates and alternates are selected from each component district society on the basis of membership to compose the House of Delegates who are the governing body and the voice of the Society. The State Society is divided into District Component Societies and the State Society is a component of the American. Membership in any one of these requires membership in all three.

The responsibility for the activities of the Society is prorated to standing committees; namely, Executive, Program, Exhibit, Membership, Legislative, Cripps, Publicity, Economics, Dental Board, Dental Hygiene, Finance, Mottled Enamel, Neurology, Resolutions, Texas Dental Journal, Dental Science and Literature, Child Guidance and Protective, Dental Art and Invention, Military, Clinic, Council of Mouth Hygiene and Public Instruction, Delegates to the American Dental Association and Alternates to the American Dental Association. 4

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3Willard Ogle, Secretary, Texas Dental Society, (Letter).

4Edward Taylor, Texas State Health Department, (Letter)
The object of the society is to cultivate the science and art of dentistry and all its collateral branches; to elevate and sustain the professional character of its members; to promote good fellowship; to promote usefulness, honor, and interests of its members; to enlighten and direct public opinion in regard to the duties, responsibilities, and requirements of the dental profession.

At each annual convention we present men from all parts of the country in an intensive post graduate course on latest techniques and materials known. We have endeavored over the years to promote better health of our citizens, especially of our school children. Our educational-school-work is now tied in with the Dental Department of the State Board of Health. 5

The following report was given to the House of Delegates by the Texas Dental Society.

Honorable Body:

The following is a brief report of the Dental Division of the State Department of Health from April 1, 1938 to April 1, 1939. The period of time covered by the report represents the third year of existence of the Dental Division. We beg to report briefly the activities, accomplishments, and future plans since the last report to this Body in April, 1938 at San Antonio.

According to the policies, as approved by you at Dallas in 1936, the program of the Dental Division has been almost entirely one of Dental Health Education. It has been our strict policy to consider the welfare of dentistry and the dental profession in each and every activity undertaken. It is needless to say that our prime objective has been the welfare and health of the public, but because of the immensity of the task we have limited our activities to basic, sound, and acceptable procedures. We have endeavored to proceed slowly and cautiously, and to build a program that is fundamentally sound and one that will serve as a basis and foundation upon which future growth will be safe, satisfactory and profitable. It has not been the policy to make it a sensational program by which perhaps greater showing can be made for the time being, but we have tried to think in terms of the maximum benefits for the future. Many times it has been difficult, due to the rapidly increasing demand, to avoid growing too fast for adequate foundation.

The increase in the interest, on the part of the public, has been very noticeable, many benefits have accrued which are highly perceptible and yet which are of such a nature that they can hardly be measured in figures. There is no standard of measurement for the volume of education and yet, to one who is closely

5 Willard Ogle, Secretary, Texas Dental Society (Letter), April 12, 1940.
in touch with it, it is evident that there is a decided improvement in dental health interest and knowledge as compared with a very few years ago. Numerous activities have been sponsored by the Dental Division, some of the outstanding ones of which are briefly described below.

School Inspection:

School inspections were instituted in the beginning of the program as a foundation, with the plan that they would perhaps be discontinued after two or three years, but the benefits from them have been so evident, under our new plan, that it is our opinion that they should be continued and enlarged. Under our new plan, with the better follow-up and cooperation of teachers and health workers, school inspections are proving to be well worth while as an educational measure and as a stimulus toward mouth hygiene. Something over two hundred thousand school children, this year, have been inspected in the volunteer program of the schools of Texas. This does not include the inspections that were made in the six counties where we have paid services and does not include inspections made on other charts, such as Red Cross, general health, etcetera.

The volume of corrections after inspections shows a cumulative increase where the inspections are repeated from year to year, with cooperative follow-up, to the extent that many of our schools are reporting 50, 60, 70 and 80 odd per cent corrections. The average, as estimated, will run approximately twenty-three per cent. This means that in the neighborhood of forty-six thousand children have had corrections by their family dentist as a result of the volunteer inspection program.

We heartily recommend the continuation of the inspection program as far as it can be carried out without becoming too burdensome.

Public School Cooperation:

There has been a decided increase during the year in the interest in dental health on the part of the public school authorities. It is safe to say that the numbers of teachers and school authorities cooperating has more than doubled that of any previous year. Many of the more progressive school people are requesting the dental program, in contrast to the previous attitude of their having to be urged to accept it. Requests for educational materials have greatly exceeded our possibilities to supply them.

Puppet Show:

The Dental Health Puppet Show has been run throughout the entire school year and by the close of schools will have covered 52 counties, which makes a total for the three years of 156 counties. This year it has shown to 131,423 pupils and teachers. For the three years it has shown to 550,418 pupils and teachers. It has been most valuable, not only from an educational standpoint, but in building good will and a welcome for other dental health programs. The response has been practically one hundred per cent favorable. Many more requests have been made for the show than we will be able to reach this year.
Education:
As stated above, almost the entire program has been one of education. Emphasis has been placed on lectures, newspaper articles, radio broadcasts, films, stereopticon slides, teaching of dental health in the public school curriculum, et cetera. The importance of dental health has been presented as effectively as possible to the public. It has been impossible to keep an accurate check on the volume of the above items, but it has been evident that there has been a decided increase. Special emphasis has been placed on the importance of educational materials for the public schools, with a view to selecting and arranging material that would be acceptable to progressive education. 70,149 pieces of educational material have been mailed upon request.

Short Courses in Teachers' Colleges:
Two-weeks' short courses in dental health were given during the 1935 summer session in five of our larger teachers' colleges. The personnel of these student bodies was made up almost entirely of matured teachers. Courses were given in classes in education, health and physical education, science, and other related subjects, and where possible, one or more lectures was given to the general assembly. These courses were readily accepted by the faculties of the five schools to which they were proposed and the response was very gratifying from both the faculties and student bodies.

It is planned to repeat these courses this summer and to extend them to a total of twelve or fifteen colleges. They are being taught by members of the staff of the Dental Division. We feel that since our program is an educational one, it is very important to acquaint the teachers with the value of dental health and how they can cooperate in carrying on the program.

Refresher Courses for Nurses:
During the month of September, six one-day refresher courses were given in six central points in the State for public health and school nurses, teachers and dental assistants. These courses consisted of a full day of intensive teaching, usually lasting until well up in the evening. They were attended by approximately four hundred people who assumed the "in school" attitude and were intensely interested throughout. Many requests have been made for a repetition of the courses.

Public Health Nurses:
As time goes on, it is more fully realized that the public health and school nurse is an invaluable aid in our health program. The State Department of Health has a staff of 157 nurses, all of whom have had instructions regarding the dental program and are very enthusiastic about it. The interest and understanding on the part of the nurses has materially increased. Out of the 157 staff nurses, 119 have been distinctly and signally active. This does not include the independent and unaffiliated nurses.

News Letter:
In December, we began publication of a monthly news letter which is distributed to the Council of Mouth Hygiene, the Officers
of the State Society, and all District and County Chairmen and
Co-Chairmen. It is the object of this publication to keep the
various workers and officers acquainted with the activities
and plans of the program, and to stimulate them to activity.
The response to these monthly letters has been one of appreci-
ation and a noticeable increase in interest.

The Staff:

The Dental Division now consists of a Director, five
assistant dentists, secretary and two puppeteers. It is planned
and hoped for next year, pending approval of budgets, that the
staff personnel will be increased and the program enlarged.

Expenditures:

We are at present spending $32,088.00 on dental health
programs, which are under direction of the State Department of
Health. This does not include the school and private programs
of which there are a number in the State and with which the
State Department cooperates. Neither does it include the
numerous general services in which we have a part, such as the
service of our 157 nurses, the personnel of the District Units,
the seventeen County and City Health Units, and the assistance
and cooperation of all Departments and Divisions of the State
Department of Health.

County Dental Units:

At present there are six counties who have full-time paid
dental service programs in which the program is divided into
approximately half and half educational and clinical for the
indigent school children. These programs are proving to be
highly satisfactory and pleasing in every instance. They are
pleasing to the dentists, as well as to the school people and
public. A number of other counties are asking for such a
program, if and when the funds can be raised.

One of these programs was instituted in Tarrant County
January 1, 1939. There have been 35,943 inspections and 10,576
corrections in the past year by the five assistant dentists.

May Day:

Again this year our traditional Dental Health Week is being
combined with and as a part of the May Day-Child Health Day
Program. The more than three hundred District and County Chair-
men and Co-Chairmen, and the officers of the local Auxiliaries
have been furnished with an outline of suggestions for dental
health May Day activities. In addition to this, they are re-
ceiving an outline of the general set-up for all the numerous
combined agencies participating. Dentists are being selected
from every County in the State where possible to serve as members
of the May Day Speakers' Bureau, that will be asked to partici-
pate in local programs with talks on dental health. The local
auxiliaries have been asked to sponsor May Day as a feature in
their health programs. It is hoped that dental health will be
included in every May Day Health Program.

Children's Dentistry:

It is generally agreed that the greatest drawback to the
dental health program is the shortage of children's dentistry
as compared with the needs for it. This is due perhaps in a large measure to the fact that the average dentist has an aversion to children's dentistry and it is also agreed that this aversion is largely due to a lack of training in the technique and management of children's dentistry practice. Therefore, it is the plan and desire of the Dental Division to make special effort toward improving and encouraging more and better children's dentistry for the future. Accordingly, a plan has been outlined and the request submitted for the necessary funds to cover the expenses of children's dentistry programs in each of our Component Societies of Texas within the near future. This plan, we believe, by using our own Texas' specialists in the children's dentistry as clinicians, drawing for the most part from the faculties of our two dental colleges, will go a long way toward strengthening the children's dentistry situation.

These plans have been submitted to the president and secretary, the Council of Mouth Hygiene, and numerous other dentists including the February Session of the Central Texas Dental Society, all of which have approved the idea.

Conclusion:

The State Health Officer and the State Department of Health, including the Maternal and Child Health Division, of which the Dental Division is a part, are all heartily in accord with the program of dental health as an important phase in the program of general public health. They appreciate the fine spirit of cooperation that has been evident on the part of the dentists of Texas and acknowledge the fact that without this cooperation the existing degrees of success could not have been attained. They especially appreciate the consideration of the State Dental Society in arranging a stronger and more accessible public health program for the Annual Convention. We wish to recommend that such a plan be continued in the future.

The increase in interest and cooperation of the various agencies of the State and the growing beneficial results have been most gratifying. We would re-emphasize the fact that it is largely through the cooperation of the dentist and the Dental Auxiliary of Texas that the above mentioned items have been accomplished.

We wish to express to this Honorable Body the appreciation of our State Health Officer, Dr. George W. Cox, for such cooperation, and to assure you that it is the aim of the State Department of Health, through the Dental Division, and with your continued cooperation to build and perpetuate a dental health program wholly acceptable to you and second to none.
The Texas State Dental Society has been instrumental in procuring legislative actions in the form of laws which regulate dental practices in dentistry in Texas. Below is the list of laws which control the dental profession in Texas today.

Regulating the practice of dentistry or dental surgery in this State and providing for assurance of license therefor:

H. G. No. 1, Chapter 31

An act to regulate the practice of dentistry or dental surgery in the State of Texas, providing for the examination and registration of persons desiring to practice dentistry and dental surgery, and the issuance of license therefor, prescribing the qualifications of the Board of Examiners, prescribing fees that may be charged for registration, making it unlawful for any person not licensed under the provisions of this act to practice dentistry, defining a reputable dental college or school, providing for registration of persons who have been engaged in the practice of dentistry in other states, for the revocation of license granted by the Board of Examiners upon satisfactory evidence of misconduct on the part of the license, for the exhibition of his or her license by persons engaged in the practice of dentistry, prohibiting any person from advertising or soliciting business under any other than his or her proper and legal name, prescribing the fees to be charged by the Board of Examiners for the examination fees, penalties for the violation of any of the provisions of this Act, repealing all laws, or parts of laws, in conflict with this Act, and declaring an emergency.

Be it enacted by the Legislature of the State of Texas:

Section 1. It shall be lawful for any person to practice or offer or attempt to practice dentistry or dental surgery in the State of Texas, without first having obtained a license from the State Board of Dental Examiners, as provided for in this Act; provided that physicians and surgeons may, in the regular practice of their profession, extract teeth or make application for the relief of pain, and provide further that nothing in this Act shall apply to any person engaged in the practice of dentistry in the State of Texas at the time of the passage of this Act, except as hereinafter provided.

Section 2. It shall be unlawful for any person or persons to extract teeth or perform any other operation pertaining to
dentistry or dental surgery, for pay, (or for the purpose of advertising, exhibiting or selling any medicine or instrument) unless such person or persons shall first have complied with the provisions of this act.

Section 4. A Board of Examiners, consisting of six, practic- ing dentists of acknowledged ability as such, is hereby created, and shall have authority to examine all persons making application for license to practice dentistry in Texas, and to issue license to any person in the practice to dentistry or dental surgery in the State of Texas; provided such applicant shall be not less than twenty-one years of age, and shall have complied with all the requirements of this Act, and shall have passed a satis- factory examination before such Board.

Section 4. The members of the said Board shall be appointed by the Governor of the State of Texas, and shall serve two years, except that the members of the Board first appointed shall be made as follows:

Three for one year and three for two years respectively, after which each member shall be appointed for two years; and until his successor is duly appointed. In case of vacancy occurring in said Board by resignation, removal from the State or by death or otherwise, such vacancy may be filled for its unexpired term by the Governor, provided, however, that no person shall be eligible to appointment on the Board unless he has been actively engaged in the legal practice of dentistry in the State of Texas for a period of not less than three years next preceding his appointment.

Section 5. Before entering upon the duties of his office, each and every member of the Board shall make oath before any officer authorized to administer oaths, and who shall be em- powered to use a seal of office, that he will faithfully and impartially discharge the duties incumbent upon him to the best of his ability; said oath of office shall be filed with the County Clerk of the County in which affiant resides, and the clerk of said county shall duly record the same on the records of his office, and shall receive a fee of fifty cents for said service.

Section 6. Said Board shall keep a record, in which shall be registered the name and residence or place of business of all persons authorized under this act to practice dentistry or dental surgery in this State. It shall elect one of its members president and one secretary, and it shall meet at least twice in each year, and as much oftener and at such times and places as may be necessary. A majority of the members of said Board shall constitute a quorum, and the proceedings thereof shall be open to the public, provided, further, that said Board shall examine and grade all papers submitted by applicants within thirty days from the time of meeting of said Board.
Section 7. Any person desiring to commence the practice of dentistry or dental surgery, within the State of Texas, after the passage of this Act, shall, before commencing such practice, make application to said Board, and upon payment of $25.00, which shall not be returned to said applicant, and upon presentation of satisfactory evidence of his or her good moral character, and upon presentation of a diploma from a reputable dental college, and upon undergoing a satisfactory examination before such Board on all the subjects pertaining to dentistry, or upon such subjects as the Board may in its judgment deem necessary, and having complied with all other requirements of this act, shall be granted a license to practice dentistry or dental surgery in the State of Texas provided that any person upon presentation of satisfactory evidence before the Board that he or she has been regularly engaged in the legal practice of dentistry in any State in the United States, for a period of three years next preceding said application, and upon complying with other requirements of this Act, shall be entitled to an examination without the presentation of a diploma; provided further that such colleges shall be considered reputable within the meaning of this act, whose entrance requirements and courses of instruction are as high as those adopted by the better class of dental colleges of the United States; and, provided that the Board appointed under this Act shall be the final judges of a reputable dental college.

Section 8. Any person who has heretofore been licensed, authorized, or granted permission to practice dentistry or dental surgery under the laws of this State, and who has so practiced under said license, authorization or permit, previous to the passage of this Act, and who desires to obtain a license of authority from the Board created under this Act, under presentation and surrender to the Board of said license, authorization or permit, and an affidavit that he is the same person to whom same was originally granted, shall be granted a license under this act, for which the Board shall receive a fee of $1.00, provided, however, that no person shall be required to surrender an old license for a new one except he so desires. Provided, also, that if any license issued under this or any other previous Act in Texas shall be lost or destroyed, the holder of said license may present his application to the Board for a duplicate license, together with his affidavit that the old license has been lost or destroyed, and upon further affidavit that he is the same person to whom said license was issued shall be granted a license under this Act. Provided that if the records of said Board fail to show that such person has ever been granted a license, the Board may have the power to exercise its discretion in granting such duplicate license, and for each duplicate license, granted the Board shall receive a fee of $1.00.

Section 9. Every person to whom license is issued by the Board of Examiners, shall, before beginning the practice of
dentistry in this State present the same to the County Clerk of the County in which he or she resides or expects to practice; who shall officially record said license in a book provided for that purpose, and said clerk shall receive a fee of fifty cents for each license so recorded.

Section 11. Any person authorized to practice dentistry or dental surgery, in this State either under this Act or any previous Act of any legislature of Texas, shall place his or her license on exhibition in his or her office where said license shall be in plain view of patients, and any person who shall do any operation in the mouth of a patient, or treat any lesions of the mouth or teeth, without having said license exhibited in his or her office in plain view, shall be deemed guilty of misdemeanor and upon conviction thereof shall be punished as provided in Section 14 of this Act; and each day so engaged shall constitute a separate offense; provided that nothing in this Act shall apply to students of a reputable dental college, who perform their operations without remuneration except for actual cost of materials in the presence of, and under direct personal supervision of a demonstrator or teacher, who has complied with the provisions of this Act, or has been legally authorized to practice dentistry in Texas under some other Act of Legislature of Texas; Provided further that nothing in this Act shall apply to persons doing laboratory work on inert matter only.

Section 12. Any person who has been granted a license to practice dentistry or dental surgery, in this State, who shall advertise or solicit business under any nom de plume, or corporation name, or any other than his or her proper and legal name, shall be guilty of a misdemeanor, and upon conviction thereof shall be punished as provided in Section 14 of this Act; and each day so engaged shall constitute a separate offense. Provided further that any person or persons now practicing dentistry or dental surgery under a nom de plume or corporate name, may use his or their personal name as successor to the name now used, for a period of two years from the time of the passage of this Act, at the expiration of which time, the use of such nom de plume or corporate names shall be discontinued.

Section 14. Any person who shall violate any provision of this act shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than $5.00 (five dollars) nor more than $100.00 (one hundred dollars), or by confinement in the County Jail of the county in which said conviction is had for any period of time, not to exceed six months, or by both such fine and imprisonment, for each offense; and it shall be the duty of the county or district attorney of any county of which any provision of this act may be violated to cause complaint to be filed against such person so offending and to prosecute the same.
Article 4544, Duty of Board, (Examination of Applicants)
Each person applying for examination shall pay to said Board a fee of twenty-five ($25.00) dollars, and upon passing a satisfactory examination before said Board on subjects pertaining to dentistry, shall be granted a license to practice dentistry in this State. The subjects on must be examined are: (1) General Anatomy (2) Histology and Dental Anatomy (3) Chemistry (4) Metabolurgy and Physics (5) Ethics and Jurisprudence and Hygiene (6) Prosthetics (7) Maternal Medicine and Therapeutics (8) Operative Dentistry (9) Pathology and Bacteriology (10) Oral Surgery and Radiology (11) Orthodontia and Pericorbitia (12) Physiology (13) Anesthesia (14) Diagnosis and Differential Diagnosis (15) Amalgam Filling (16) Gold Filling (17) Prophylaxis or Extraction (18) Set Up (19) Bridge and (20) Handling Patients; provided further, that the Board may examine junior students who have completed all requirements of the freshman and sophomore years of a reputable dental college in the subjects covered in those years and shall be authorized, if they comply with all of the Board's requirements to give them credit on license requirements, subject to further and complete examination and may charge a fee of fifteen ($15.00) dollars, for such examination of each junior student; provided there shall be only one such examination of each junior applicant, and that he shall pay an additional fee of fifteen ($15.00) dollars, upon his final examination.

Article 4544a, Reciprocal Arrangements
The State Board of Dental Examiners may, in the discretion of the Board in each instance, upon payment by the applicant for registration of a fee of Fifty ($50.00) Dollars, grant a license to practice dentistry to any reputable dentist who is a graduate of a reputable dental college or has qualified an examination for the certificate of dental qualifications for a commission as a dentist in the medical corps of the United States Army or Navy and to licensees of other States or territories having requirements for dental registration and practice equal to those established by this law. Applications for license under the provisions of this Article shall be in writing and upon a form to be prescribed by the State Board of Dental Examiners. Said application shall be accompanied by a diploma or a photograph thereof, awarded to the applicant by a reputable dental college, or a certified transcript of the certificate or license or commission issued to the applicant by the medical corps of the United States Army or Navy, or by a license or a certified copy of license to practice dentistry, lawfully issued to the applicant by some other state or territory; and shall also be accompanied by an affidavit from an executive officer of the medical corps of the United States Army or Navy, the President or Secretary of

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1 Laws of Texas, Vol. XIX, pp. 50-54
the Board of Dental Examiners who issued the said license, or by a legally constituted dental registration officer of the State or territory in which the certificate or license was granted upon which the applications for dental registration in Texas is based. Said affidavit shall recite that the accompanying certificate or license has not been cancelled or revoked except by honorable discharge by the dental corps of the United States Army or Navy, and that the statement of qualifications made in the application for dental registration in Texas is true and correct. Applicants for license under the provisions of this Article shall subscribe to an oath in writing which shall be a part of said application, stating that the license, certificate, or authority under which the applicant practiced dentistry in the State or territory from which the applicant removed, was at the time of such removal in full force and not suspended or cancelled; that the applicant is the identical person to whom the said certificate, license, or commission and the said dental diploma were issued, and that no proceeding was pending at the time of such removal, or is at the present time pending against the applicant for cancellation of such certificate, license or authority to practice dentistry in the State or territory in which the same was issued, and that no prosecution was then, or is at the time of application, pending against the applicant in any State or Federal Court for any offense which under the law of Texas is a felony.

Article 4546, (County Clerk to Record License; Fee)

Every person to whom a license is issued by the State Board of Dental Examiners shall, before beginning the practice of dentistry at any place in this State, present the same to the County Clerk of the county in which he resides and offers to practice, and to the County Clerk of each and every other county in which he may practice or offer to practice; said County Clerk shall record said license in a book provided for the purpose, and receive a fee of fifty (50¢) cents therefor. Absence of the records of such license in any place where such license is hereby required to be recorded shall be prima facie evidence in any court of this State of the want of possession of such license.

Article 4548, (License Required to Practice)

No person shall practice or offer, or attempt to practice dentistry or dental surgery in this State, without first having obtained a license from the State Board of Dental Examiners, as provided for in this law, provided that physicians and surgeons may, in the regular practice of their profession, extract teeth or make application for the relief of pain. Nothing herein applies to any person legally engaged in the practice of dentistry in Texas at the time of the passage of this law.

Article 4549, (Refusing Examination or License), Revocation of License

The State Board of Dental Examiners shall have authority to
refuse to examine any person or refuse to issue a license to any person for any one or more of the following causes:

(a) Proof of the presentation to the Board of any dishonest or fake evidence of qualification or being guilty of any illegality, fraud or deception in the process of examination, or for the purpose of securing a license.

(b) Proof of chronic or habitual intoxication or addiction to drugs on the part of the applicant.

(c) Proof that the applicant has been guilty of dishonest or illegal practices in or connected with the practice of dentistry.

The State Board of Dental Examiners shall have authority to suspend or revoke a dental license for any one or more of the following causes:

(a) Proof of insanity of the applicant or holder of a license, as adjudged by the regularly constituted authorities.

(b) Proof of conviction of the applicant or holder of a license for a felony involving moral turpitude.

The District Courts of the State shall have the authority, after a proper hearing, to revoke or suspend any dental license issued in the State of Texas for any one or more of the following causes:

1. That the holder thereof has been guilty of dishonorable conduct, malpractice or gross incompetency in the practice of dentistry.

2. That the holder thereof has been guilty of any deception or misrepresentation for the purpose of soliciting or obtaining patronage.

3. That the holder thereof procured a license through fraud of misrepresentation.

4. That the holder thereof is addicted to habitual intoxication or the use of drugs.

5. That the holder thereof employs or permits or has employed or permitted persons to practice dentistry in the office or offices under his control or management, who were not licensed to practice dentistry.

6. That the holder thereof has failed to use proper diligence in the conduct of his practice to safeguard his patients against avoidable infections.

7. That the holder thereof has failed or refused to comply with any of the provisions of this Act.

Proceedings to suspend or revoke a dental license on account of any one or more of the causes set forth in the preceding Article shall be taken as follows:

(a) Where the cause involves a criminal conviction or a conviction of insanity in some court of competent jurisdiction, the receipt by the Board of a certified copy of the records of the Court of Conviction showing a final conviction shall be sufficient evidence to justify and require such revocation by the State Board of Dental Examiners.

(b) Where the suspension or revocation is based upon any other cause set forth in Article 4649, the proceedings shall be
before a District Court of the State or the county in which the alleged offense occurred by complaint to the court and it shall be the duty of the several District and County Attorneys of the State to file and prosecute appropriate judicial proceedings in the name of the State on the request of any member of the State Board of Dental Examiners, and when complaint is made to the court, by any County or District Attorney as herein provided, said court shall order the accused dentist to show cause why his license shall not be suspended or revoked. Such complaint shall be made in writing. The charge and grounds thereof shall be set out distinctly and the same shall be subscribed and sworn to by the prosecutor and filed with the Clerk of the Court. Citation thereon shall be issued in the name of the State of Texas and in manner and form as in other cases and the same shall be served upon the defendant at least ten days before the trial date set therein. Upon the return of said citation executed, if the defendant shall appear and deny the charge, the cause shall be docketed for trial and conducted in the name of the State of Texas against the defendant. A jury of twelve men shall be summoned as in cases during the term time of the court when no regular jury is available and as prescribed by law and shall be impaneled unless waived by the defendant, and the cause shall be tried in like manner as in other civil cases. If the said accused dentist be found guilty or shall fail to appear and deny the charge after being cited as aforesaid, the court may by proper order entered on the minutes, suspend his license for a time or revoke and cancel it entirely and may also give proper judgment of costs.

Article 4549a, (False or Misleading Statements to Patients Prohibited; Posting of School Diploma)

Section 7. Provided further, that it shall be unlawful for any dentist, as defined in this Act, in the practice of dentistry to make any oral or other misrepresentation, or false or misleading statement to any patient or prospective patient within the office of such dentist or out of it; and, provided further, that each dental office shall have posted at or near the entrance thereof, the name, the degree or degrees, and the school or schools attended of each dentist who is practicing or offering to practice said profession in said office.

Article 4550, Record of the Board

Said Board shall keep a record in which shall be registered the name and residence or place of business of all persons authorized under this law to practice dentistry or dental surgery in this State.

Article 4550a, (Registration and Application therefor; Registration Fund; Secretary to the Board; Salary)

1. It shall be the duty of all persons now lawfully qualified and engaged in the practice of dentistry in this State, or who shall hereafter be licensed for such practice by the State Board
of Dental Examiners, to be registered as such practitioners with the State Board of Dental Examiners within sixth (60) days after the effective date of this Chapter, and thereafter to register in like manner annually on or before the first day of January of each year beginning the first day of January, 1956. Each person so registering shall pay in connection with such annual registration for the receipt hereinafter provided for a fee of Two ($2.00) Dollars, such payment to be made to said State Board of Dental Examiners. Every person so registering shall file with said Board a written application setting forth his name, his post office address, the county or counties in which his certificate to practice dentistry has been registered, and the place or places where he is engaged in practicing dentistry, and the number and date of his license certificate. Upon the receipt of such application, accompanied by such fee, said Board, after ascertaining either from its records or from other sources deemed by it to be reliable, that the applicant is a duly licensed practitioner of dentistry in this State, shall issue to the applicant an annual registration receipt certifying that he has filed such application and has paid the required fee; provided, that the filing of such application, the payment of such fee and the issuance of such receipt therefor shall not entitle the holder thereof to lawfully practice dentistry within the State of Texas unless he has in fact been previously licensed as such practitioner by the State Board of Dental Examiners, as provided by this law, and has duly recorded his license in the county or counties in which the same may be required by law to be recorded and unless said license is in full force and effect; and provided further, that in any prosecution for the unlawful practice of dentistry such receipt showing payment of the annual registration fee required by this Chapter, shall not be treated as evidence that the holder thereof is lawfully entitled to practice dentistry.

2. If any person required to register as a practitioner of dentistry under the provisions hereof shall fail or refuse to apply for such registration and pay such fee within sixty days after the time when such registration and such payment are required to be made under the provisions hereof, as hereinabove set forth, his license to practice dentistry previously issued to him shall thereafter stand suspended so that for thereafter practicing dentistry he shall be subject to the penalties imposed by law upon any person unlawfully practicing dentistry in this State; provided, that such license shall be reinstated at any time upon written application of the holder made to said Board accompanied by the payment of the annual registration fees in arrears and an additional fee of Five ($5.00) Dollars.

3. All annual registration fees collected by the State Board of Dental Examiners under this Act shall be placed in the State Treasury, every thirty days as collected, to the credit of a special fund to be known as the "Dental Registration Fund," and all expenditures from this fund shall be on order of the State Board of Dental Examiners on warrants issued by the State
Comptroller for the purposes and in the amounts fixed by the Legislature in the general appropriations bills. On August 31, of each year all money in excess of Ten Thousand ($10,000) Dollars remaining in said "Dental Registration Fund" shall revert to the General Revenue Fund in the State Treasury. The State Board of Dental Examiners shall be authorized to employ and to compensate from such special fund employees and such other persons as may be found necessary to assist the local prosecuting officers of any county in the enforcement of all laws of the State prohibiting the unlawful practice of dentistry, and to carry out the other purposes for which said fund is hereby appropriated. Provided, that all such prosecutions shall be subject to the direction and control of the regularly and duly constituted prosecuting officers, and nothing in this Act shall be construed as depriving them of any authority vested in them by law.

To aid the Board in performing the duties prescribed in this Section the Board is hereby authorized to employ a Secretary, who shall receive a salary fixed by the Board, and who shall make and file a surety bond in a sum not less than Five Thousand ($5,000) Dollars, conditioned for the faithful performance of all the duties of his office and the safe keeping and proper disbursement of said "Dental Registration Fund" and all other funds coming into his hands; such salary shall be paid out of said "Dental Registration Fund" and shall not be in any way a charge upon the general revenue of the State. Said Board shall employ and provide such clerks and employees as may be needed to assist the Secretary in performing his duties and in carrying out the purposes of this Act, provided that their compensation shall be paid only out of the said "Dental Registration Fund." All disbursements from said "Dental Registration Fund" shall be made only upon the written approval of the President and Secretary of said Board and upon warrants drawn by the Comptroller to be paid out of said fund.

Article 4551, Fees and Expenses
Each member of the State Board of Dental Examiners shall receive for his service Ten ($10.00) Dollars per day for each day he is actually engaged in the duties of his office together with all legitimate expenses incurred in the performance of such duties. All per diem and expenses accrued hereunder shall be paid from moneys received by said Board from applicants for examination and from the "Dental Registration Fund" as provided in this law; no money shall ever be paid to any member of the Board from the "General Fund."

Article 4551a, Persons Regarded as Practicing Dentistry
Any person shall be regarded as practicing dentistry within the meaning of this Chapter:
(1) Who publicly professes to be a dentist or dental surgeon, or who represents himself as being able to diagnose, treat, remove stains or concretions from teeth, operate or prescribe for any disease, pain, injury, deficiency, deformity or physical condition of the human teeth, alveolar process, gums or jaws.
(2) Who shall offer or undertake, by any means or methods whatever to diagnose, treat, remove stains or concretions from teeth, or shall treat, operate or prescribe, by any means or method, for any disease, pain, injury, deficiency, deformity or physical condition of the human teeth, alveolar process, gums or jaws and charge therefore, directly or indirectly, money or other compensation.

(3) Any one who owns, maintains or operates any office or place of business where he employs or engages, under any kind of contract whatever, any other person or persons to practice dentistry as above defined shall be deemed to be practicing dentistry himself, and shall himself be required to be duly licensed to practice dentistry as hereinabove defined, and shall be subject to all of the other provisions of this chapter, even though the person or persons so employed or engaged by him shall be duly licensed to practice dentistry as hereinabove defined.

Article 4551b, Dentistry Defined

The definition of dentistry as contained in this act shall not apply to physicians and surgeons legally authorized to practice medicine as defined by the law of this State.

Article 4551c, Restraining Practice in Violation of Law; Duties of Attorney General, District or County Attorneys

The actual practice of dentistry in violation of the laws of this State shall be enjoined at the suit of the State, but such suit for injunction shall not be entered in advance of the previous final conviction in a criminal proceeding of the party sought to be enjoined. In such suits for injunction it shall not be necessary to show that any person is personally injured by the acts complained of. Any person who may be or is about to be, so unlawfully practicing or threatening to practice dentistry in this State may be made a party defendant in said suit, which must be filed in the county in which defendant is practicing or threatening to practice dentistry. The Attorney General, the District Attorney of the district or the County Attorney of the county in which the unlawful acts complained of are taking place shall have the authority and it shall be their duty and the duty of each of them, to file such suits and to represent the State therein. No injunction, either temporary or permanent, shall be granted by any court in such a suit except after final trial on the merits. If on final trial it be shown that the defendant has been unlawfully practicing dentistry or is about to practice dentistry unlawfully the court shall, by injunction, perpetually enjoin the defendant from practicing or continuing the practice of dentistry in violation of law; and disobedience of said injunction shall subject the defendant to the penalties provided by law for violation of an injunction. The procedure in such cases shall be the same as in any other injunction suit as nearly as may be. The remedy by injunction given hereby shall be in addition to criminal prosecution and
cumulative of all other remedies provided for the prevention of the unlawful practice of dentistry. Such causes shall be advanced for trial on the docket of the trial court and shall be advanced and tried in the appellate courts in the same manner and under the same laws and regulations as are applicable to other suits for injunction.

Article 747, Dentist to Obtain a License

It shall be unlawful for any person to practice, or offer to practice, dentistry in this State or hold himself out as practicing dentistry in the State without first having obtained a license from the State Board of Dental Examiners. Said license must be signed by all members of the Board and shall have a small photograph of the license attached therein which must be partially covered by the official seal of the Board.

Article 748, Must Comply with Law

No person shall extract tooth or perform any other operation pertaining to dentistry or dental surgery for pay or for the purpose of advertising, exhibiting or selling any medicine or instrument, unless such person shall first have complied with the provisions of the law regulating the practice of dentistry in this state.

Article 749, License Recorded by County Clerk; Fee

Every person to whom a license is issued by the State Board of Dental Examiners shall, before beginning the practice of dentistry at any place in this State, present the same to the County Clerk of the county in which he resides and offers to practice, and to the County Clerk of each and every county in which he may practice or offer to practice; said County Clerk shall record said license in a book provided for that purpose and receive fifty (50¢) cents therefor. Absence of the record of such license in any place where such license is required to be recorded shall be prima facie evidence in any court of this State of the want of possession of such license.

Article 750, Practice After License Has Been Revoked

No person whose license to practice dentistry in this State shall be revoked by any district court of this State shall practice or attempt to practice dentistry or dental surgery in this State after such license has been so re

Article 751, Shall Exhibit License

Any person authorized to practice dentistry or dental surgery in this State either under this or any former law of Texas, shall place his license on exhibition in his office where said license shall be in plain view of patients. No such person shall do any operation in the mouth of a patient, or treat any lesions of the mouth or teeth, without having said license so exhibited.
Article 752, Use of Own Proper Name Instead of Corporate or Trade Name; Practice as Partnership

It shall be unlawful for any person or persons to practice dentistry in the name of a corporation, company, association, or trade name; or any name except his own proper name, which shall be the name used in his license as issued by the State Board of Dental Examiners. It shall be unlawful for any person or persons to operate, manage, or to be employed in any room, rooms, office, or offices where dental service is rendered or contracted for under the name of a corporation, company, association, or trade name, or in any other name than that of the legally qualified dentist or dentists actually engaged in the practice of dentistry in such room, rooms, office, or offices; provided, however, this shall not prevent two or more legally qualified dentists from practicing dentistry in the same offices, as a firm, partnership, or as associates in their own names as stated in licenses issued to them. Provided, however, that any dentist practicing under his own license may be employed by any person, firm or partnership practicing dentistry under licenses issued to them. Each day of violation of this Article shall constitute a separate offense.

Article 752a, Violation of Regulations as to Practice of Dentistry

It shall be unlawful for any person, firm or corporation to publish, directly or indirectly, or circulate any fraudulent, false or misleading statements as to the skill or method of practicing dentistry of any person through the means of letters, bills, posters, circulars, cards, stereopticon slides, motion pictures, radio, newspapers, or other advertising agencies or devices; or in any way or manner whatsoever to fraudulently advertise that a given person is able to practice dentistry or render dental service without causing pain; or to fraudulently advertise in any manner or way that will tend to deceive the public, or to fraudulently claim superiority over other dental practitioners; or to publish or circulate fraudulent reports of cures of fraudulent statements of patients in any newspaper or to circulate same in any other way whatsoever; or to fraudulently advertise that he is using any anesthetic, drug, formula, medicine method or system which is either falsely advertised or misbranded, or to fraudulently advertise willingness to render free dental services or examinations; or to fraudulently advertise the prices or fees that any such person or persons is, or are willing, or proposes or propose, to charge for service or services in the practice of dentistry; or to fraudulently employ any person or persons to obtain or solicit patronage; or to fraudulently exhibit or use specimens of dental work, posters or any other advertising means directing the attention of the public to any such person or persons engaged in the practice of dentistry; or to fraudulently give a public demonstration of skill or methods of practicing dentistry for the purpose of
securing patronage; provided, that any duly licensed practitioner of dentistry may publicly announce by way of newspaper or professional card that he is engaged in the practice of dentistry, giving the kind or class of work that he does and his name, degree, office location, office hours, telephone numbers and residence address; and if he limits his practice to a specialty he may state same.

Article 752b, Unprofessional Conduct Defined

It shall be unlawful for any person, firm, or corporation to engage in or be guilty of any unprofessional conduct in the practice of dentistry, directly or indirectly. Any "unprofessional conduct", as used herein means and includes any one or more of the following acts, to wit:

(a) employing "Cappers" or "Steerers" to solicit and/or obtain business;

(b) obtaining any fee by fraud or misrepresentation;

(c) employing directly or indirectly or permitting any unlicensed person to perform dental services upon any person in any room or office under his or her control;

(d) circulate any statements as to the skill or method of practicing dentistry of any person through the means of bills, posters, circulars, cards, stereopticon slides, motion pictures, radios, newspapers, or other advertising agencies or devices;

(e) making use of any advertising statements of a character tending to mislead or deceive the public;

(f) advertising professional superiority or the performance of professional services in a superior manner;

(g) advertising prices for professional services in the practice of dentistry, or comparative values thereof;

(h) advertising bargains, cut rates, or special values in dental services or productions with or without specifying the time they shall apply;

(i) advertising any free dental work or free examination;

(j) advertising to guarantee any dental services;

(k) advertising to perform any dental operation painlessly;

(l) publishing or circulating reports of cases or statements of patients in any newspaper, or to circulate same in any other way whatsoever;

(m) advertising by any means, the using of any secret anesthetic, drug, formula, medicine, method, or system;

(n) employing any person or persons to obtain, contract for, sell, or solicit patronage, or making use of free publicity press agents;

(o) advertising by means of large display signs, or glaring light signs, electric or neon, or such signs containing as a part thereof the representation of a tooth, teeth, bridgework, plates of teeth or any portion of the human head, or using specimens of such in display, directing the attention of the public to any such person or persons engaged in the practice of dentistry;
(p) advertising dental plates, or restorations, or the materials used in their construction, under any fictitious, fancy, or unscientific names unapproved by the dental profession, or manufacturers of such materials and which cannot be identified by the patient;

(q) advertising to the public any commercial dental laboratory or dental clinic;

(r) giving a public demonstration of skill or methods of practising dentistry for the purpose of securing patronage;

(s) forging, altering, or changing any diploma, license, registration certificate, transcript, or any other legal document pertaining to the practice of dentistry, being a party thereto, or beneficiary therein, or making any false statement about or in securing such document, or being guilty of misusing the same;

(t) using any photostat, copy, transcript, or any other representation in lieu of a diploma, license, or registration certificate as evidence of authority to practice dentistry.

Provided, that any duly licensed practitioner of dentistry may publicly announce by way of newspaper or professional card that he is engaged in the practice of dentistry, giving his name, degree, office location where he is actually engaged in practice, office hours, telephone numbers and residence address; and if he limits his practice to a specialty, he may state same.

Article 752c, Licenses, Refusing, Revoking, Cancelling, and Suspending of Licenses

Section 3. The State Board of Dental Examiners shall be and they are hereby authorized to refuse to grant a license to practice dentistry to any person or persons who have been guilty, in the opinion of said Board, of violating any of the provisions of the Statutes of the State of Texas relating to the practice of dentistry, or any provisions of Chapter 7 of Title 12 of the Penal Code of the State of Texas, within twelve (12) months prior to the filing of an application for such license.

Revocation, Cancellation, or Suspension of License

Section 4. The State Board of Dental Examiners shall be, and it shall be their duty, and they are hereby authorized to revoke, cancel, or suspend any license or licenses that may have been issued by such Board, if in the opinion of a majority of such Board, any person or persons to whom a license has been issued by said Board to practice dentistry in this State, shall have, after the issuance of such license, violated any of the provisions of the Statutes of the State of Texas relating to the practice of dentistry in this State, or any of the provisions of Chapter 7, Title 12 of the Penal Code of the State of Texas, or any amendments that may hereafter be made thereto. Provided, however, that if a majority of such Board shall be of the opinion that any person or persons to whom a license has been
issued by said Board shall have violated any of the provisions of said Statutes or Penal Code, such Board shall first have an order entered in the Records of said Board declaring it to be the opinion of the majority of such Board that such person or persons have so violated the provisions of said Statutes or Penal Code, within twelve (12) months prior to the date of such order, and shall mail by registered mail to the last known address of such person or persons a copy of such order, together with notice that if such alleged violations of said Statutes and Penal Code are not discontinued by such person or persons within ten (10) days after the mailing of such notice, or satisfactory evidence produced showing such alleged violations did not occur, that such Board will proceed to revoke, cancel or suspend the license of such person or persons alleged to have violated said Statutes and Penal Code. Such order and such notice shall state the alleged violations of such Statutes and Penal Code as are to be relied upon by said Board as grounds for the cancellation of such license. If, from and after ten (10) days from the mailing of such notice, the person or persons to whom such notice or notices have been sent shall in the opinion of said Board have failed and refused to desist from the violation complained of and set out in said order and said notice, or failed to show satisfactory evidence that such violations did not occur, said Board shall proceed to set a time and place, not less than ten (10) nor more than thirty (30) days, for a hearing to consider the revocation, cancellation or suspension of such license or licenses; and a copy of such order shall be sent by registered mail to the person or persons alleged to have violated the provisions of said Statutes and Penal Code, not less than five (5) days prior to the date set for the hearing thereon. Such order and such notice shall likewise state the grounds alleged to have been violated, as provided in the first order herein. At the time and date set in said order and said notice for such hearing, the person or persons alleged to have violated the provisions of the Statutes of the State of Texas relating to dentistry, or the provisions of said Chapter 7, of Title 12 of the Penal Code, may appear before said Board and show cause, if any he has, why said license should not be revoked, cancelled or suspended. Such hearing shall be governed by such rules and regulations as may be prescribed by the Board. After such hearing, the Board shall enter an order in its minutes dismissing such charges or revoking, cancelling or suspending for a time to be fixed by the Board, not to exceed twelve (12) months, the license or licenses of the person or persons accused, as in the opinion of the Board the facts brought out at such hearing justify and require. Provided, however, that any order cancelling or revoking or suspending such license or licenses shall be signed by a majority of such Board and by all the members of such Board present at such hearing. Provided that when the license of such licensee is revoked or cancelled he shall be allowed to continue the practice of his profession
pending appeal upon his giving a superseded bond in such amount as shall be set by the District Court, conditioned to faithfully observe the law.

Appeal to Court

Section 5. If said Board shall make and enter any order cancelling or suspending any license or licenses as hereinabove provided, the person or persons whose license or licenses shall have been so cancelled and revoked or suspended may, within thirty (30) days after the making and entering of such order, take an appeal to the District Court of the county in which the alleged offense occurred by filing an appropriate petition for such purpose. Said cause shall be placed on the docket of said Court in the name of the party or parties filing same, as plaintiff, and the State Board of Dental Examiners, as defendant. It shall be the duty of said Board, upon the filing of a petition asking for an appeal and review of such proceedings of said Board by the person or persons issued and served as in other civil cases, to prepare and transmit to such District Court upon notice from such Court a transcript of the orders hereinabove provided for, the same to be certified as true and correct by the Secretary of said Board. Such District Court shall thereafter and under the rules of procedure applicable to other civil cases, proceed to set such cause for hearing as in other civil cases. Upon the hearing of such cause, if such Court shall find that the action of such Board, in cancelling or revoking or suspending such license or licenses is not well taken or that same would or might deprive licensee unjustly of his license to practice dentistry in the State, such Court shall by appropriate order and judgment set aside such action of said Board; but if such Court shall sustain such action of said Board in cancelling or revoking or suspending such license or licenses an order shall be made and entered in appropriate form sustaining and affirming the action of such Board, from which order an appeal may be taken to the Court of Civil Appeals, as in other civil causes. If no appeal be taken from such order of such Court within thirty (30) days, the same shall become final. If an appeal be taken from the District Court to a Court of Civil Appeals, the order of such court shall become final within thirty (30) days after the making and entry of such order by such Court of Appeals. Provided in all such cases of appeal that the Court shall give preference to same, and advance them on the docket of said Court so that speedy action may be had; providing also that trial in the District Court shall be de novo.

Additional Offices

Section 6. This act shall not be intended to prohibit any duly authorized, licensed and registered dentist from maintaining one additional office in town or city other than the town of his residence.
Penalty

Section 7. If any person or persons shall practice or offer to practice dentistry in this State, or hold himself out as practicing dentistry in this State after such order revoking or cancelling his license to practice dentistry shall have become final, as herein provided, or during the period of the suspension of such license after such suspension has become final, he shall be punished by fine in any sum not less than One Hundred ($100) Dollars nor more than Five Hundred ($500) Dollars, or by imprisonment in the county jail for not less than thirty (30) days nor more than six (6) months, or both such fine and imprisonment.

Cumulative Provisions; Conflicting Laws Repealed

Section 8. This Act shall be cumulative of all laws now in effect providing for the revoking, cancelling or suspending of licenses for the practice of dentistry or dental surgery in this State, except in so far as the provisions hereof may conflict with other laws now in effect. And all laws or parts of laws in conflict herewith are hereby repealed.

Article 753, Exceptions

Nothing in this chapter applies to students of a reputable dental college who perform their operations without pay, except for actual cost of materials, in the presence of and under the direct personal supervision of a demonstrator or teacher who has been legally authorized to practice dentistry in Texas, nor to persons doing laboratory work on inert matter only. Physicians and surgeons may in the regular practice of their professions, extract teeth or make application for the relief of pain. Nothing in this chapter applies to one legally engaged in the practice of dentistry in this State at the time of the passage of this law, except as hereinbefore provided.

Article 754, Punishment

Any person who shall violate any provision of this chapter shall be fined not less than Fifth ($50.00) Dollars, nor more than Three Hundred ($300) Dollars, or be confined in jail from one to six months or both. Each day of such violation shall be a separate offense.

Article 754a, Practitioners Under This Act

Any person shall be regarded as practicing dentistry within the meaning of this Chapter:

1. Who publicly professes to be a dentist or dental surgeon or who represents himself as being able to diagnose, treat, remove stains or concretions from teeth, operate or prescribe for any disease, pain, injury, deficiency, deformity or physical condition of the human teeth, alveolar process, gum or jaws.
(2) Who shall offer or undertake, by any means or methods whatsoever, to diagnose, treat, remove stains or concretions from teeth, or shall treat, operate or prescribe, by any means or method for any disease, pain, injury, deficiency, deformity, or physical condition of the human teeth, alveolar process, gums, or jaws and charge therefor, directly or indirectly, money or other compensation.

(3) Any one who owns, maintains or operates any office or place of business where he employs or engages, under any kind of contract whatsoever any other person or persons to practice dentistry as above defined, shall be deemed to be practicing dentistry himself, and shall himself be required to be duly licensed to practice dentistry as hereinabove defined, and shall be subject to all of the other provisions of this Chapter, even though the person persons so employed or engaged by him shall be duly licensed to practice dentistry as hereinabove defined.6

In order to further unify the State Dental Program a Mobile Dental Unit has been built and thoroughly equipped with the most modern dental equipment. This unit is dispatched from one district to another, and it becomes a part of the county health service while it is operating in a given county.

The purposes of this unit are as follows:

I. Purpose

Realizing that the incidence of dental disease is far in excess of the facilities and means for its prevention and correction, and believing that it is only through an adequate program of education that a reasonably satisfactory situation can ever be obtained, and further believing that it is only through a tangible realization of facts and experiences that education is most effective, the Texas State Department of Health has begun the following program as a demonstration for approval. It is the purpose of this program to demonstrate a practicable and economical method of teaching dental health to our youth and to the public with a view to the establishment of a higher evaluation of this requisite to health and happiness, and, incidentally, as a benefit to the dental profession.

6 Compilation of Texas Dental Laws, Texas State Board of Dental Examiners, September 1, 1936
II. General Plan
A. Half educational - half clinical
B. Personnel - a staff dentist is assigned to the trailer
C. Equipment
   (a) Large trailer with built-in cabinet features; drawn by panel truck. All white
   (b) New, modern chair, unit, cabinet, cabinet sterilizer, air compressor, water tank with air pressure, built-in seats, wash basin, necessary instruments and supplies, emergency foot engine, etc.
D. Available for
   (a) Counties having health units or nursing services affiliated with State Department of Health (county units preferred)
   (b) For rural and small town schools. Educational features for larger cities
E. Provided
   (a) The plan is approved by local dental society or dentists of county
   (b) Dentists appoint an advisory committee of local dentists as a governing body. This committee to have final voice in all activities
   (c) Local dentists agree to inspect all children of schools to be included
F. Procedure
   (a) Unit becomes a part of county health service while operating in a given county
   (b) County nurse or nurses assist in preliminary organization, records, screening, educational and clinical services
   (c) From list of lower elementary children with defects, a list of low-bracket indigent children is selected for free services of simple dentistry (amalgam and cement fillings, extractions, prophylaxes and necessary treatments.) These children must be unable to pay for services
   (d) The above screening is to be made by a local satisfactory bona fide welfare agency or agent agreeable to the advisory committee of dentists and to the Director of the county unit
   (e) The list of eligible children is to be presented to the dental advisory committee with the request that each member remove any or all doubtful names and then O.K. the remainder in writing
   (f) Cards are to be sent by teacher to parents or guardians of the eligible children for their signatures requesting that the necessary work be done
   (g) School is to be notified as to date and requested to invite patrons to the school the first day. At this program, motion pictures are to be shown, a dental health education talk given and program and
plans explained and an invitation extended to inspect the trailer. This serves to facilitate the procedure and elevate the evaluation of dental health in the community and to establish confidence and friendship

(h) Teachers are to be furnished with factual information and available materials to be used in teaching dental health. The method of teaching is to be left to them, following suggestions by the unit operator

(i) Teachers are given to understand that it is largely their program and responsibility. With the friendship that by now has been established, the teacher is impressed that the success of the program will be measured by his or her follow-up urge—by the number of children who are tactfully induced to go to their family dentist for necessary corrections and by the reduction of the incidence of defects by the close of school

(j) Clinic children are to be introduced to the clinic in small groups to observe the educational exhibits in the trailer and the operative procedure and for the psychological effect. (Actually, the whole program is to be educational, the clinical phase serves to round out and complete the educational)

(k) A nurse from the county unit is to be designated to assist the operator as much as possible. She is to assist in organization, operation, record keeping and general office maintenance

(l) The time to be spent in a given county is not to exceed six to eight weeks during the school term, thereby making it possible to reach a greater number of counties

(m) Through the school vacation months, the trailer is to be returned to the counties previously visited as a part of the summer round-up program of the county unit, when it is to take care of the pre-school children. This should greatly reduce the clinical needs of the first grade the following school year

C. Results

(a) A higher evaluation of dental health on the part of the public

(b) Relieve the practicing dentists of a part of their charity load

(c) Stimulate and produce a greater volume of paid dental service through the follow-up urge. Open new fields of children's dentistry in many communities

III. Resume

This program is experimental and is intended as a demonstration, subject to the approval of the dental profession, public health workers, the public schools and the public generally. In the main, the bulk of the value is to be derived from the educational features and therein the emphasis is placed. The most
valuable feature should be in acquainting the school child with "The Dentist" in the office and the establishment of friendship between dentist and child. It is hoped that it may prove to be at least a partial solution to the stupendous problem of the dental public health situation in Texas, and, perhaps, in other states—that it may prove to be a benefit not only to the public, but to the dental profession as well. It is hoped also that it will tend to satisfy the apparent demand for so-called socialization. At any rate, that seems to be the consensus of the far-sighted element of the dental profession in Texas.7

The following annual report of the State Division of Dental Health gives in a graphic manner the volume and variety of work done in Texas in the year 1938-39:

DIVISION OF DENTAL HEALTH*

Annual Report, April 1938 - March, 1939

Talks ........................................ 1,053
Attendance .................................... 56,101
Inspections in units .......................... 35,343
Correction in units ........................... 10,578
Patients ...................................... 6,854
Puppet shows given ........................... 442
Schools given show ........................... 432
Pupils seeing show ............................ 126,774
Teachers seeing show ......................... 4,649
Inspection material mailed .................... 194,073
Educational material .......................... 70,149
Patients and teachers seeing show 3 years 550,413

*State Department of Health, Austin, Texas

7 George W. Cox, State Health Officer, State Department of Health, Austin, Texas.
CHAPTER III

ANATOMICAL STRUCTURE OF THE TEETH AND DISEASES OF THE MOUTH

To better understand the need for dental hygiene, a person must know the structure of a tooth and how it is constructed. The writer of this thesis has included a cross-section of a tooth with a description of each part. A cross-section of a tooth showing all its parts may be found on page 44.

Structure of a Tooth

The part of the tooth above the gum is called the crown. The longer, claw-like parts below the gums are called the roots. The crown and roots join at the gum line to form the neck.

The story of how these parts are formed and how they grow is wonderful indeed. The pearl-like covering of the crown—that white, gleaming part which makes the smile so beautiful—is called the enamel. It is the hardest material in the body—far harder than bone. Its first duty is to protect the tooth from outward injury during the biting and grinding of a hundred different foods. Its next duty is to protect the inner portion of the tooth against germs that cause decay.

The substance beneath the enamel is known as dentine. It is softer and less dense than enamel—about as hard as a piece of hard pine wood. That is why decay spreads more rapidly when the softer material inside is reached.

The root is the part of the tooth below the gum line. Some teeth have one root; others have two or three. The root is covered by a thin layer of bone-like material called cementum.

At the end of each root is a small opening where the blood vessels and nerves are surrounded by a soft, spongy substance which, with the vessels and nerves, is called the pulp. The space in the center of the tooth which the pulp occupies is called the pulp chamber. The tooth gets its nourishment through the blood vessels. Through them it receives the lime and phosphorus that make it hard and strong and help it to resist decay.

Different teeth have different shapes, simply because they have different work to do. The front teeth, incisors, have sharp, cutting edges. When the jaws are closed, they cut food like a pair of scissors.
The Structure of a Tooth

Fig. 1 -- A Cross-Section of a Tooth
The teeth at the four corners of the mouth are called cuspids because they have but one cusp or point. Their job is to tear the food apart and to shred it.

Just behind the baby cuspids in the first set of teeth are the baby molars; behind the permanent cuspids in the second set of teeth are the bicuspids. They are called bicuspids because they have two points or cusps separated by a deep groove. In chewing, the upper and lower bicuspids should come together like a nut cracker, breaking and tearing food.

The back teeth are called molars because they have large, broad surfaces for grinding. They have four or five points or cusps, with deep grooves between. Just as milestones grind grain, so do the molars grind food into small pieces.

The baby teeth—there are only twenty—are for use when the jaws are still small. As the child grows older, the jaws grow larger, but the teeth themselves do not get any larger. Therefore, the twenty baby teeth are replaced by thirty-two larger and stronger permanent teeth. In that way the human "chewing machine" is made large enough for the adult needs.

One of the greatest evils today is the notion that baby teeth are not important. "As long as they come out anyway, why repair them?" ask so many parents. Such an idea is wrong—totally wrong. Here is the reason.

The baby teeth act as pathfinders for the second teeth. They help the permanent teeth to come in straight. They guide them into their proper places so that the permanent teeth in the lower jaw fit properly with those in the upper jaw. If baby teeth are missing, they cannot guide the permanent teeth into their proper places. And pay attention to this: Decayed baby teeth can damage the permanent teeth next to them.

As the permanent teeth gradually grow larger in the jaw-bone, a strange thing happens. Usually they press against the roots of the baby teeth, and this pressure causes the baby roots to be dissolved and disappear. By the time the permanent teeth are ready to push through the gums, only the crowns of the baby teeth are left. This makes the removal of baby teeth easy. In many cases, the child is able to lift them out himself. Sometimes they come out while the child is eating or is biting on something hard.1

The relation of diet to sound teeth and gums: If a tooth is to be well nourished it must be constantly supplied with minerals and vitamins. To understand the relation of nutrition to sound teeth and gums, it is first necessary to know about the circulation which provides nourishment to the normal tooth.

An artery and a vein run along each jaw. Branches of these blood vessels go through small openings in the root or roots of

---

each tooth and up into the pulp. Here they divide into the tiniest capillaries. A row of cells along the edge of the pulp take the nourishment from the blood in the capillaries and send it along the tubes of the dentine.

There are little bundles of fibers in the enamel that show under the microscope. These fibers, according to some dental authorities, carry the nourishment from the cells in the dentine into the enamel. The dentine-forming cells along the edge of the pulp are continually forming dentine. They make a liquid which hardens much as jelly, "jells" or cement "sets" after it has been mixed.

When there is a poor supply of Vitamin C in the blood, this liquid becomes only partially set. If there is practically no Vitamin C in the blood, the dentine forming cells stop work, the pulp shrinks away from the dentine, the tooth becomes soft, and decays readily.

A diet lacking in Vitamin C makes the gums spongy and inflamed. Some pyorrhea is caused by this lack of Vitamin C in the diet.

If the teeth tend to decay quickly or if the gums are unhealthy, it is a good plan to drink daily one pint of orange juice, freshly made. In addition, other fruits and raw vegetables, especially cabbage and lettuce, should be eaten regularly in large amounts.

Vitamin A and D are most important where the teeth and jaws are forming. If the diet is lacking in these vitamins, the toothbuilding cells form a coarse dentine that is somewhat porous and more like bone than tooth structure.

If Vitamin D is lacking, rickets occur often accompanied by slow growth of the jaw bone and poorly formed, irregular teeth.2

Since diet plays an important role in the growth and development before and after birth, the writer has included the following theories:

Within recent years considerable evidence has accumulated showing that the development of sound teeth and maintenance of good dental health are dependent upon the eating of proper foods. There are varying opinions to the particular food factor or group of factors essential for these conditions. The fact remains, however, that when an individual receives a diet including liberal amounts of the protective foods: milk, fruits and vegetables, eggs, meat, fish, and liver and whole grain cereals, increased resistance to dental decay results. Many investigators attribute dental health not to any set of dietary factors but believe that it depends upon the general health of the body as a whole, which in turn is dependent upon a state of good nutrition resulting from a food intake approaching the optimum in all dietary needs.

1 Good Teeth, Prophylactic Brush Company, Florence, Massachusetts, pp. 22-23.
essentials. Therefore, "we should treat not the tooth, but the
child, and direct our attention toward the health of the
individual as a whole." It has been pointed out that "all body
cells are fed from the same blood stream, and, in general, may
be said to require all the dietary essentials, even if in
varying amounts. We cannot, therefore, be sure that we are supply-
ing the specific needs of any one part of the body unless we pro-
vide sufficient nutrients for all other parts as well. Thus, we
cannot consider the nutrition of the teeth in a limited way as
if they were independent structures, but must think of their
nutrition in connection with the nutrition of the whole organism."

Tooth building is a life long process which begins before the
child is born and continues until every adult life when the last
tooth emerges from the jaw. During all this period and continuing
as long as life lasts, repair and protective processes are also
in operation. Teeth are living parts of the body. Therefore,
even in adult life the teeth must be sustained and protected.
During pregnancy and lactation the diet of the mother must protect
her own teeth and help build those of her child. For the re-
mainder of life the individual must supply his own body with those
dietary essentials necessary to firm well built teeth.

The two theories of the effect of diet on teeth after formed
are:

1. **External theory**—Bacteria in the presence of carbohydrate
set up fermentation process with the production of acid which
dissolves the enamel of the tooth and initiates carious processes.
(a) Diet may favor dental caries by supplying easily fermentable
carbohydrates and (b) determining nature of the saliva. Evidence:
Caries develops in localities where stagnation occurs in pits,
crevices, and between the teeth.

2. **Systematic theory**—Dietary action by the blood stream.
The tooth is a living metabolizing organ like other body structure.
Therefore, it requires a constant supply of all materials needed
for its maintenance and repair. A diet of the lack in any needed
dietary factors, then, would cause a depletion of tooth structure
and render it susceptible to decay.

All stress the same types of diet in favoring and preventing
caries and only disagree as to mode of action of different dietary
factors. All recommend (1) liberal amounts of milk and other
dairy products including eggs, (2) fruits, (3) vegetables,
(4) certain sources of Vitamin D, (5) less sugar and highly
refined cereals.

The five dietary essentials generally agreed as being necessary
for dental health may be classified for convenience as follows:

1. **Tooth building materials**
   (a) Minerals, calcium, and phosphorus

2. **Food-stuffs in building teeth**
   (a) Vitamins A, C, and D.

The two mineral salts, calcium and phosphorus, are the chief
tooth building materials. These materials must be present in
proper amounts and in correct proportions if the teeth and jaws
are to be strong and well built. Any deficiency in the supply of calcium or phosphorus leads to faulty tooth construction, a condition which invites disintegration and decay. Since food is our only source of these elements, the dietary must include them in proper amounts and proportions if sound teeth is the result. We will discuss later the source, distribution, storage, requirement, etc., of these elements.

One of the most important food-aids in building teeth is Vitamin D. Figuratively speaking, Vitamin D tells the calcium and phosphorus to "go to work," for Vitamin D governs the balance of calcium and phosphorus deposition in teeth in such a way that their proper calcification takes place only when adequate amounts of this vitamin is present. Liberal amounts of Vitamin D from one of its various sources must therefore be present long with calcium and phosphorus.

Vitamin C is another food-aid which has been found to be essential for sound teeth. It is believed that in the absence of this vitamin, certain cells (odontoblasts) of the tooth become disorganized preventing the tooth from receiving proper nourishment from the blood stream thus causing decay. Some have attributed pyorrhea, which as you know is a disease of the bones, to be deficient in Vitamin C. Also due to lessened capillary resistance, the gums surrounding the tooth may become soft or unhealthy and the tooth in turn becomes loosened.

In the absence of Vitamin A from the diet of experimental animals, teeth become chalky, white, and brittle, owing to the weakening and disintegration of enamel with its orange colored pigment. This has been explained on the basis of the fact that the development of enamel is controlled by the enamel organ, a complex structure of epithelial vitality of epithelial tissue, this reasoning seems logical. Vitamin A is also necessary for the health of the soft tissue in which the tooth is imbedded.

We have said that tooth building begins with prenatal life and lasts until adulthood, and that the source of the tooth building materials in the food eaten. Therefore, let us consider what comprises an adequate diet during the five stages of growth and development of the individual.

1. Prenatal life
2. From birth to two years
3. Pre-school age
4. School age
5. Adolescence

Prenatal Diet—Prenatal life is perhaps the most important stage from the standpoint of insuring sound teeth, because, not only must the diet include material for foundation of tooth structure for the infant but also furnish these same materials in adequate amounts to meet the body needs of the mother.

A mother of a five year old boy attending a pre-school conference in Nolan County pointed out to the doctor and nutritionist the early signs of rickets, i. e., poor dentition,
After knowing the exact structure of a tooth, one can understand the growth and development of the teeth from the seventeenth week of embryonic life to the complete growth and eruption of the permanent teeth.

<table>
<thead>
<tr>
<th>17th week of embryonic life</th>
<th>40th week (at birth)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>20th week of embryonic life</th>
<th>5 months of age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>25th week of embryonic life</th>
<th>7 months of age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>30th week of embryonic life</th>
<th>9 months of age</th>
</tr>
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<tbody>
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</tbody>
</table>

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1 Outline of Instruction in Dental Health Education, "Dental Health for American Youth," Division of Dental Health, Reprinted through courtesy of Minnesota Department of Health.

Fig. 2--Growth and Development of the Teeth
Fig. 2--Growth and Development of the Teeth (Continued)

Unshaded teeth represent deciduous teeth
Shaded teeth represent permanent teeth
pigeon breast, beaded ribs, etc., stating, "He is getting the proper diet now and is improving under the care of a specialist in Dallas. This condition is due to my own diet during pregnancy." This mother has learned too late "What Builds Babies".

Tooth follicles begin to form by the fifth week; calcification at the seventeenth week and at birth all the twenty teeth of the first set are inside the jaw and their crowns completed. If there is not sufficient building material available, the mother's own body stores are drawn upon thus undermining the health of the mother. Since pregnancy is followed by six to nine months of lactation which requires even more building material for the infant during this rapid growing period, the mother's dental health is likely to be permanently damaged.3

TABLE 1

THE NUMBER OF ADULTS ENROLLED IN SEVEN INSTITUTIONS OF
THE UNITED STATES AND THE PER CENT WHO HAD
DEFECTIVE TEETH

<table>
<thead>
<tr>
<th>Institution</th>
<th>Number Enrolled</th>
<th>Per cent of Defective Teeth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Drexel Institute, Philadelphia</td>
<td>833</td>
<td>83.00</td>
</tr>
<tr>
<td>Oakland Plant of Montgomery Ward</td>
<td>2,469</td>
<td>100.00</td>
</tr>
<tr>
<td>University Students, Minneapolis</td>
<td>10,445</td>
<td>98.20</td>
</tr>
<tr>
<td>Employees of Metropolitan Life Insurance Company, New York</td>
<td>12,753</td>
<td>98.12</td>
</tr>
<tr>
<td>Women in University of California</td>
<td>11,117</td>
<td>23.00</td>
</tr>
<tr>
<td>Applicants at United States Navy Recruiting Station, Naval Reserve Armory, Indianapolis</td>
<td>1,244</td>
<td>29.10</td>
</tr>
<tr>
<td>Union Oil Company of California</td>
<td>5,378</td>
<td>20.00</td>
</tr>
</tbody>
</table>

*Incidence of Dental Defects in Adults, Compiled by the Committee on Economics of the American Dental Association, February, 1936; pp. 1-12.

3 Nutrition and Dental Health, Division of Maternal and Child Health of the Texas State Department of Health, pp. 1-5
In Table 1, a dental survey was made among adults of different occupations in the United States and compiled by the Committee on Economics of the American Dental Association. This survey showed the universality of dental defects regardless of social and economic situations.

In the following table, a survey of mouth hygiene among children was made in ten large cities of the United States and was compiled by the Committee on Economics of the American Dental Association. This survey showed the universality of dental defects among elementary children.

**TABLE 2**

THE NUMBER OF CHILDREN EXAMINED AND THE PER CENT OF CHILDREN NEEDING DENTAL ATTENTION IN TEN LARGE CITIES IN THE UNITED STATES *

<table>
<thead>
<tr>
<th>City</th>
<th>Number Examined</th>
<th>Per cent of Children Needing Dental Attention</th>
</tr>
</thead>
<tbody>
<tr>
<td>San Francisco</td>
<td>36,000</td>
<td>19.44</td>
</tr>
<tr>
<td>Chicago</td>
<td>75,000</td>
<td>96.00</td>
</tr>
<tr>
<td>Baltimore</td>
<td>46,784</td>
<td>75.00</td>
</tr>
<tr>
<td>Boston</td>
<td>102,000</td>
<td>44.11</td>
</tr>
<tr>
<td>Detroit</td>
<td>230,559</td>
<td>71.00</td>
</tr>
<tr>
<td>St. Louis</td>
<td>54,386</td>
<td>80.00</td>
</tr>
<tr>
<td>New York City</td>
<td>450,000</td>
<td>96.00</td>
</tr>
<tr>
<td>Cleveland</td>
<td>131,121</td>
<td>80.00</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>40,000</td>
<td>96.00</td>
</tr>
<tr>
<td>Milwaukee</td>
<td>35,380</td>
<td>90.00</td>
</tr>
</tbody>
</table>

One of the most common diseases in the mouth is tooth decay. This disease is described in the paragraphs as follows:

No other disease is so common among children as tooth decay. In the leading American cities, from 80 to 95 per cent of all school children have decayed teeth. A very large number have cavities in three or more teeth.

There are two main reasons why children's teeth decay. Either they are not strong and perfectly formed, or they are not kept clean. Usually decay results from a combination of both of these reasons.

Decay begins through flaws in the enamel. You have already seen how the diet, lacking lime, phosphorus, and Vitamin D, leaves the teeth open to decay.

If you could look through the microscope, you would see that enamel is made up of thousands of small, flat-sided rods. These rods are joined together like tiles on a bathroom floor. You know, from experience, that if the tiles on the floor do not fit as they should, the cement which holds them together washes out. The tiles break apart, leaving little holes and cracks in which the dirt collects. Cracks are seldom found in the center of the bathroom floor, because the tiles are properly fitted and closely cemented together with a thin but strong layer of cement.

Likewise, cracks are seldom found on the smooth sides of the tooth because the enamel rods in those areas are closely cemented together. But, in the grooves of a poorly built tooth, the rods do not fit together so closely, and the cement which holds them is destroyed easily. The enamel rods break apart, leaving holes and cracks on the tooth surfaces. Sometimes, they are far too small for the naked eye to see, but are easily seen under a microscope. Some are large enough for the dentist to find with his instrument (the explorer). The holes are often too narrow and deep that the food cannot be brushed out of them.

In time, this food will decay and will cause the tooth to decay also.

When once decay has started, it eats its way through the enamel, and into the dentine beneath. Unless the decay is removed, the grooves cleaned out their full length, and the cavity and grooves filled with permanent fillings, the tooth may be lost.

The Tragedy of Tooth Decay

In the saliva is a substance known as mucin. It coats the teeth and collects between them and on the grinding surfaces in jelly-like patches which dentists call mucin plaques.

Mucin plaques catch bits of food. They hold them in the spaces between the teeth and in the grooves on the chewing surfaces, where the tooth-brush cannot easily reach.

Millions of germs are found even in a healthy mouth. When the mouth is not kept clean, the number of germs is increased
Dental caries or decay is the most prevalent disease in mankind. It is the major cause of loss of teeth in early life. Dental decay can be controlled by:

A. Proper diet
B. Rigid dental prophylaxis (Daily home care and frequent visits to the dentist.)
C. Early placement of a dental filling when the lesion occurs. 1

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1 Outline of Instruction on Dental Health Education, "Dental Health for American Youth", Division of Dental Health, Texas State Department of Health, Courtesy of Minnesota Department of Health

Fig. 3--A Decayed Tooth
many, many times. Most of these goms are harmless. However, certain types of more harmful goms are held against the tooth surfaces by the mucin plagues. They form acids by their action on the bits of food. These acids eat away enamel, just as other acids burn holes in wood or cloth.

First, the acid makes a little hole no bigger than a pin-point. But once it has broken through the defense wall of enamel into the softer dentine beneath, the acid works more rapidly. Soon the pulp is reached. When it becomes infected, the life of the tooth is destroyed.

This is the simple story of how most teeth are lost. Now you can see why it is so important to remove mucin plagues every night and morning. Eat plenty of coarse, raw fruits and vegetables; brush the teeth, and always keep in mind that beautiful, natural teeth, once lost, can never be duplicated.4

THE APICAL ABSCESSE

(The apical abscess is an abscess occurring at the root end of a tooth.)

Types—Acute

Chronic

Causes: 1. Result of pulp exposure by decay
          2. After root canal fillings have been placed
          3. Traumatic injury to tooth, causing death of pulp

Acute Abscess

The acute abscess pushes a tooth out of the socket slightly by rapidly forming edema and exudate at root end. The tooth is slightly loosened and sore to touch. Extreme pulsating pain may result from the pressure within end abscess. Bone tissue breaks down in the abscessed area and the infection spreads to perforate the bone. The periodontum is raised from the bone and more pus accumulates. Added pain and soreness results. Face swells.

Periodontum is finally penetrated, pus discharged into the mouth spontaneously, unless abscess is lanced. Discharge of pus brings relief of pain but not the elimination of the abscess. Abscesses may be acute, however, and not burrow through the bone to the gum tissue.

If permitted to remain, the abscess becomes chronic. Tooth should be removed and area curetted. Radiographs are essential, but may not reveal an abscessed area until sufficient bone is disturbed.

Chronic Abscess

By far the most common dental abscess. In spite of the absence of local subjective symptoms, these lesions present

Apical Abscess Draining into Mouth

Abscess Fistula
Opening onto gum

Decay exposing and infecting pulp

Small But Dangerous Apical Abscess

Abscess

Bone under destruction

Peridental membrane (Muscular fibers which attach tooth to bone)

Root canal filling

Tooth and root canal filled after pulp exposure

Large Abscess Enclosed in Sac

Apical abscess (Area shows bone destroyed by the infection)

Abscess sac

Teeth may abscess:
1. As a result of exposure of pulp by decay - top illustration
2. After root canal fillings have been placed - middle illustration
3. Without a cavity or filling in a tooth - as a result of a blow or some force causing rupture of blood vessels in the pulp which causes putrefaction and formation of an abscess - bottom illustration

Fig. 4--Stages of an Abscessed Tooth
one of the chief sources of danger to the general health of the patient. They are seldom discovered without the use of the X-ray.

The chronic abscesses are evidenced in several ways:

Diseased teeth in close relation to the maxillary sinus may result in a sinusitis.
The chronic abscess may be a slight enlargement of the space at the apex of the root or it may grow to the size of a cherry stone. One may be as dangerous to health as the other. Size does not measure the danger.

PYORRHEA

The old theory that pyorrhea was a hopeless disease and that the teeth involved must be removed holds no longer for the majority of teeth afflicted. Pyorrhea in most cases can now be successfully treated and the case arrested and cured.

Pyorrhea is due to the combined action of several outstanding factors, such as, first - mechanical irritants including traumatic occlusion, calculus, poor contact points, rough fillings, broken crowns and chewing habits; second - improper home care; third - infrequent dental attention; fourth - systemic disturbances such as diabetes; fifth - nutritional disturbances.

Traumatic occlusion results from an irregular bite. When the lower teeth strike the upper teeth in function, some teeth receive too much stress. The chewing pressure is unevenly distributed. The constant pressure is a prominent factor in 65% of pyorrhea cases.

Pyorrhea when too far advanced cannot be cured and extraction is indicated.
The normal gum tissue is a coral pink. Deviation from this color indicates disorder.

Bleeding gums indicate that a disturbance in function is present and steps should be taken to correct the condition.

When gum circulation is impaired the undernourished tissue is more susceptible to disease, not only pyorrhea but Vincent's disease as well. A large majority of people have one or more pyorrhea pockets in supposedly healthy mouths.

Four out of five after forty is just about a true saying to the extent of pyorrhea. Most teeth are lost because of pyorrhea than from any other cause. Pyorrhea pockets yield the typical Vincent's organisms and yet no Vincent's may be present. Pyorrhea is seldom discovered without the use of radiographs (X-rays).

Exploring instruments used along and between the molar roots should supplement the radiographic examination because the roots hide many pockets in the radiograph.

In an advanced case of pyorrhea the teeth may move like piano keys.
Under proper treatment loose teeth will tighten and remain tight if the patient follows instructions.

No much hope can be held for a pyorrhea case where a systemic disturbance such as diabetes is involved.

Pyorrhea is the popular name for the disease, but it is more properly called "Periodontitis" or "Periodontal disease" -- "peri" meaning around and "dental" meaning teeth. Pyorrhea -- "pyo" meaning pus and "rrhea", running.

In many cases of pyorrhea there is no bleeding of gums or apparent pus present -- even under pressure.

Bone loss always precedes gum recession.

Gum recession does not always follow closely to bone recession. The bone may be destroyed the full length of the root of the tooth, yet the gum tissue may look quite normal.

A practice of having at least bitewing radiographs (X-rays) taken once a year of children and adults is the greatest aid to prevention of serious decay and a serious case of pyorrhea by early discovery.

No medicines, vaccines, tooth pastes or mouth washes are indicated in the treatment of pyorrhea.

The patient cures the pyorrhea himself after receiving the following services at the hands of the dentist and employing his recommendations:

1. Eating foods featuring fruit and fruit juices, vegetables and milk in combination with a general mixed diet.
2. Home care which requires (a) the thorough mechanical cleansing of the full circumference of each tooth; (b) the brushing of the tongue and roof of the mouth; (c) interproximal (between the teeth) gum massage twice a day with a suitable device such as a World's Fair round, tapered, polished toothpick used in a tooth-totter fashion to massage the gum tissue between the teeth; (d) the twice a day use of a stiff bristle brush two rows wide and six rows long in such a manner as to create a pressure and release the gum tissue on both sides of the teeth, covering a gum tissue area of at least one quarter inch wide next to the teeth. A blanching and blushing artificial stimulation of the blood circulation is most essential. This establishes a good drainage in the tissues and permits proper nourishments because of an enlivened circulation.

An artificially stimulated blood circulation induced by gum massage is pyorrhea's medicine, but is effective only after stresses and abuses are corrected.

Teeth which strike too hard in function causing a jar on the tooth and a slight movement of the tooth in its socket must be ground by a dentist to relieve the excessive stress. This excessive stress on teeth is known as traumatic occlusion -- (injury producing occlusion). Occlusion is the coming together of the upper and lower teeth - the bite.

Calculus (tartar) must be removed from the full circumference of every tooth which has it.

There are two kinds of calculus - (1) salivary which comes from the saliva; (2) serumal, the darker type, which is deposited from the serum of the blood.
PYORRHEA

Two of the Causes of Pyorrhea

1. Excessive Stress  2. Calculus

Tooth under excessive stress
Note that it is the only one striking in the forward bite.

Calculus under gum tissue
Gum recession always preceded by loss of bone

Pyorrhea in Three Stages

Calculus
Receded bone crests
Bone

Normal gum line
Normal bone line
Bone loss
Receded gum line
Infected tissue between roots replacing lost bone

Tooth on left in first stages of pyorrhea - can be saved.
Middle tooth in second stage of pyorrhea - can be saved.
Tooth on right in the hopeless stage - must be extracted.

Fig. 5--Pyorrhea in Three Stages
Overhanging fillings, rough edges of crowns, edges of cavities, rough areas of any kind must also be removed from the tooth. The tooth must be smooth or the gum tissue will rebel.

Gum tissues around tooth require "breathing space" with a possibility of normal blood circulation.

Gum tissue needs natural massage from foods we eat so teeth embasures (spaces around the contact points of the tooth) must be normal to permit excursion of food over the gums.

Teeth themselves must have normal spillways and grooves to let the food products out of the masticating machine. Like a kitchen meat grinder, there must be proper "escapes" provided for the product to be ground.

Grinding the natural teeth to a functional balance (smooth working machine with equal distribution of biting stresses) is a delicate job but is essential to success.

Crooked teeth, crowded and out of line, aggravate a pyorrhea case.

Missing teeth, unreplaced, which causes tipping and extrusion of others is a common cause of pyorrhea.

Food impaction against gum tissue between teeth usually starts a pyorrhea pocket.

A pyorrhea pocket is the pocket between the gum tissue and tooth where bone has been lost.

Pyorrhea is not contagious and is not caused by a specific germ.

Pyorrhea is dangerous to general health, much more so than generally realized. It is practically as dangerous as abscessed teeth.

Early recognition and treatment is not common enough.

It is impossible to cure pyorrhea unless the patient follows instructions minutely and massages his gums to health.

VINCENT'S INFECTION
(Trench Mouth)

Sloughing of the marginal tissue and destruction of the gum tips between the teeth are characteristic of this disease.

The formation of a grayish or greenish-yellow pasty slough or pseudomembrane (false membrane) covers a very red sensitive surface which readily bleed when the slough is rubbed off.

The breath has a distinct and peculiarly offensive odor.

The gum tissues are usually very painful, which often interferes with masticating food.

The onset is sudden.

The saliva is uncomfortably plentiful and may be bloody from hemorrhage of the gum tissue.

The patient has a sensation of a "coppery" or metallic taste.

Inflammation between the teeth causes a wedging sensation.

Lymph nodes in submaxillary region and neck are sometimes enlarged.
The general symptoms are malaise, rise in temperature, accelerated pulse rate, pallor of the skin, mental depression, insomnia, vertigo and restlessness.

"The Dental Office Treatment -- Patient should be seen daily during acute phase which may last from three to five days.

1. The teeth should be cleaned carefully, as well as possible without injuring the gum tissue.

2. Cleanse gum tissue and mucous membrane with dilute peroxide and water solution, preferably in a spray bottle under about thirty pounds pressure. Neurotic tissue in interproximal areas should be carefully removed by cottonwood toothpicks in the peroxide solution.

3. Apply aerochrome or oxidizing agent to affected tissue after it has been dried. Caustics should be avoided. The following substances appear to give the most successful result:

- Arsenicals: salvarsan in glucose solution, five per cent, or neosalvarsan in glycerin, freshly prepared.
- Aniline dyes: acriviolet, 1 per cent aqueous solution, Bervick's solution (brilliant green and crystal violet, 1 per cent in 50 per cent alcoholic solution). Remove stains from teeth by applying sodium hypochlorite solution if necessary.
- Adam's Treatment: Use only on secluded areas resistant to the above types of therapy, e.g. flaps over partially erupted teeth; interdental tissue between lower second bicuspid and second molar approximating each other after first molar has been missing for some time.

Technique:

1. Dry tissue and apply Churchill's iodine.
2. Apply 35 per cent silver nitrate solution. Silver iodide is precipitated in tissues.

HOME CARE -- The constancy of use of a mouthwash and gargle is more important than its ingredients. Every half-hour is not too often when the condition is acute. The following three formulas should suffice and should be interchanged if treatment is prolonged:

1. Sodium perborate . . . . . . . . . . . . . . . 4 ounces
   Sodium bicarbonate . . . . . . . . . . . . . . . 1 ounce
   Sodium chloride . . . . . . . . . . . . . . . . . 1 ounce
   Oil of peppermint . . . . . . . . . . . . . . . . . 3 minimis
   Vanillin . . . . . . . . . . . . . . . . . . . . . . . . . . 2 grains
   (Use one teaspoonful to a full glass of warm water as rinse and gargle.)

2. Bichloride of mercury in peroxide 1 to 1000 solution. Rinse with one teaspoonful in a quarter of a glass of water. (Do not swallow.)

3. One teaspoonful peroxide and one-half teaspoonful of salt in full glass of water.
VINCENT'S INFECTION

The Clinical Picture of Vincent's

Deep red line of highly inflamed and sensitive gum tissue

Gray or greenish-yellow ribbon-like slough

These lesions may be confined to local areas between the teeth. Single areas here and there, or as illustrated.

Areas of Incubation of Vincent's Organisms

Gum flap

Partially erupted wisdom tooth

Cavities as incubators

Incubators

These incubators must be eliminated before case can be cured.

Fig. 6--Illustrations of Vincent's Infection
Sodium perborate should not be used over a prolonged period of time because it is an etiological factor in the production of hairy or furry tongue.

The following directions should be given the patient:

1. Use mouthwash as instructed, rinsing the mouth thoroughly with entire contents of glass each time, forcing it between teeth. Gargle as well as rinse.
2. Take saline purgative e. g., citrate of magnesia or epsom salts.
3. Have light, corrective diet including milk, soft boiled eggs, egg nogs, orange juice and other fruit juices, chicken broth, beef broth, pureed or strained fresh vegetables, etc.
4. No hot, hard, coarse or spicy foods; no smoking; no alcohol; no fried foods.
5. Use your own dishes, drinking glass, handkerchief, towels, etc; Vincent's infection is contagious.
6. If necessary, stay home from work. Rest as much as possible.
7. Stop toothbrushing until advised to continue and then only with new toothbrush.

The Causes of Crooked Teeth

It is easy to understand why so many permanent teeth come in crooked when baby teeth are lost so soon. If the baby molars decay and are removed before they should normally come out, they leave empty spaces. These may cause the sixth-year molars, which come in right behind them, to slant forward. They lean into the spaces left by the baby molars that should support them. In time, this may cause the sixth-year molars to become loose and the gums sore.

When the sixth-year molars tip forward, they take the space that should be occupied by the permanent teeth (bicuspids) which replace the baby molars. This usually causes the bicuspids to come in out of line. Sometimes the tipping forward of the sixth-year molars causes the bicuspids to be pressed tightly against the baby cuspids just ahead of them. Therefore, just as the sixth-year molars take up part of the bicuspids' space, so do the bicuspids occupy part of the spaces needed by the permanent cuspids. Then the cuspids are crowded out of line and are forced to come in above the other teeth. They are called "buck" teeth.

Sometimes the baby molars on one side of the mouth are so badly decayed that they must be pulled. Then the child must chew on the other side of the mouth until the permanent teeth come in. This may cause the jaw to be larger on the side where the chewing is done. It detracts from the child's appearance.
You have often heard your dentist refer to your "bite." He means the way in which your upper and lower teeth fit together. When teeth fit properly, the child has a good bite, but when the teeth are lost or crooked, the child has a poor bite. The scientific name for a poor bite is "malocclusion."

Bad Habits Often Cause Crooked Teeth

Crooked and irregular teeth may be caused by such bad habits as thumb-sucking, lip-biting, and the use of pacifiers. Every effort should be made to keep children from forming wrong habits. When they are formed, they must be broken.

Other causes of crooked teeth are enlarged adenoids, enlarged tonsils, and mouth breathing. When tonsils and adenoids are so enlarged that they block the nose and throat, they should be removed.6

Mottled enamel may be classed as a condition in which there is a pitted or rough surface with a certain degree of stain. Surveys have been made in regard to the cause of mottled enamel and its prevention. The Committee on Mottled Enamel of the Texas Dental Society in collaboration with the Texas State Department of Health has prepared the following information:

As early as 1916, Dr. Frederick S. McKay described a condition affecting the teeth, in certain well defined areas of this country. During his investigation, he noted communities suffering 100 per cent affliction of mottled teeth, and others, not more than four to five miles apart, which were totally immune. The astonishing selectivity of this condition is another phase of its unique character, since only such enamel of the permanent teeth, or such portions of the enamel as are grown or developed during residence in an afflicted district, are affected.

The name, "Mottled Enamel," was given to this peculiar marking, due to the fact that the teeth presented a mottled or spotted appearance.

As investigations continued, various theories were advanced as to the cause of mottled enamel. It was thought to be caused by malnutrition and faulty calcium metabolism, or, that the mucous membranes secreted certain acids that affected the enamel.

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thus producing the mottling. The other theory of note was that the cause could be found in the water supply. It had been observed that often the communities affected secured their water from artesian wells, and, in some instances, from warm springs.

By 1830, enough proof had been gathered to definitely establish the fact that mottled enamel was caused by fluorine contained in the water where the concentration was above one part per million parts of water.

The country as a whole is indeed fortunate in that the larger centers of population secure their water from rivers and lakes, and this type of water is rarely contaminated with fluorine. On the other hand, there are thousands of communities and smaller cities that secure their water from artesian water wells or deep water wells. It is this type of water that very often contains fluorine in varying concentrations, from one part per million, upward. It may be found in relatively shallow wells and springs.

Description of Mottled Enamel

Mottled enamel is a condition in which the enamel portion of the tooth presents a pitted or roughened surface, and displays varying degrees of permanent stain, ranging from black, brown, gray, or, may be, chalky white. The injury is caused by the absence of the cementing substance which binds the enamel rods together. The tooth is lacking in luster and often has a chalky or dead appearance.

Normal tooth enamel is not built as a homogeneous mass, but is made up of microscopic, prismatic rods, which are cemented together with a so-called cementing substance. This gives a shining, lustrous surface to the teeth and adds beauty to the face.

Ages of Children at Which Mottled Enamel is Produced

The tooth enamel is a peculiar tissue, in that, at the completion of its formation, which occurs prior to the eruption of the tooth into the mouth, it is cut off from all sources of nutrition, which means that it is deprived of all defensive mechanisms against agencies that threaten its destruction. Thus it can be readily seen that mottled enamel is produced in a child only during that period when the enamel portion or crown of the tooth is being formed.

The accompanying chart shows the ages at which time the permanent tooth begin to form (calcify), the time the enamel portion of each tooth is completed, and the time when each tooth erupts into view.
<table>
<thead>
<tr>
<th>Name of Tooth</th>
<th>Begins to Form</th>
<th>Enamel Portion Complete</th>
<th>Erupts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Incisor</td>
<td>2 to 3 months</td>
<td>5 years</td>
<td>6 to 7 years</td>
</tr>
<tr>
<td>Lateral Incisor</td>
<td>1 year</td>
<td>5 years</td>
<td>7 to 8 years</td>
</tr>
<tr>
<td>Cuspid</td>
<td>3 to 4 months</td>
<td>6 years</td>
<td>12 years</td>
</tr>
<tr>
<td>First Bicuspid</td>
<td>1 1/2 to 2 years</td>
<td>6 years</td>
<td>11 to 12 years</td>
</tr>
<tr>
<td>Second Bicuspid</td>
<td>2 to 2 1/2 years</td>
<td>7 years</td>
<td>12 years</td>
</tr>
<tr>
<td>First (Sixth Year) Molar</td>
<td>At Birth</td>
<td>3 years</td>
<td>6 years</td>
</tr>
<tr>
<td>Second Molar</td>
<td>2 1/2 to 3 years</td>
<td>7 years</td>
<td>11 to 12 years</td>
</tr>
<tr>
<td>Third Molar</td>
<td>8 to 9 years</td>
<td>12 to 16 years</td>
<td>16 to 22 years</td>
</tr>
</tbody>
</table>

By the end of about the seventh year of life, the crowns of all the permanent teeth, except wisdom teeth, are fully formed. Therefore, after that age, seven years, the whole status of mottled enamel is settled; your child already has it or will never be afflicted with this disfiguring defect.

The deciduous or foundation teeth, the crowns of which are formed before birth and during the first few months of life, are not affected with mottled enamel, regardless of whether or not, the mother uses fluorine contaminated water.

Prevention of Mottled Enamel

The prevention of mottled enamel is so simple, and the means so inexpensive, that it is nothing short of a crime that thousands of children, born each year in the afflicted districts throughout the country, will have this disfiguring defect.

If you are living in a community where the water that is used for cooking and drinking purposes shows, on a reliable chemical analysis, that it contains fluorine in concentrated form of more than one part per million, and your children, from birth to seven years of age, use this water for drinking, and eat foods cooked or prepared in this water, you may expect a child that will be as definitely marked, as though he had a brand upon his forehead. You will have a child who, when his permanent teeth have erupted, will be ashamed of his appearance and may develop an aggravated inferiority complex. This mottling, when it occurs, is fixed in the permanent teeth for life. On the other hand, if you live in one of these afflicted districts, and provide for your child, either distilled water or surface or shallow well
water that is definitely known to contain no fluorine, you will spare your child this disfigurement. It should be borne in mind that boiling fluorine contaminated water only increases the fluorine content of the water, and thereby increases its damaging effects.

The solution is so simple, no child in this enlightened country should ever have mottled enamel in the future.

Recapitulation

Mottled Enamel: a very unsightly disfigurement of the enamel portion of the permanent tooth.

Cause: consumption of water containing more than one part of fluorine per million parts of water, from birth to the end of the seventh year of life, or during the period that the crowns of the permanent teeth are being formed.

Area: endemic in 24 counties of Texas—south plains and Panhandle, a wide belt, north to south, through east-central Texas, and scattering areas over the state, and in various other districts of the United States.

Treatment: very little or none.

Prevention: provide non-fluorine water for growing children.

The fluorine afflicted districts of Texas may be seen in Figure 7.

A recent article makes a more vivid picture of fluorine and dental caries problem; therefore, the writer has included important statements of this report.

Only passing attention can be given to such suggestions prior to, say, 1951, interesting as they may be historically, as they were made without accurate knowledge of the fluorine content of enamel, with no proof of a difference in fluorine content of sound and of carious enamel, and with no evidence in series of a difference as correlated with the intake of fluorine. On the other hand, observations on dental caries in mottled enamel cases are of significance for at least two reasons: (1) it is now known that ingestion of fluorine is not only the cause of mottling of enamel, but is also effective in the reduction of the dental caries incidence, and (2) it is plain that fluorine alters enamel structure.

The Effects of Fluorine Contaminated-Water on the Teeth of Growing Children, Committee on Mottled Enamel of the Texas Dental Society In Collaboration with the Texas State Department of Health.
Fig. 7—Map Showing the Fluorine Content of Public Water Supplies in Texas

LEGEND

△ Less than 1.0 ppm.
□ 1.0 to 1.9 ppm.
○ 2.0 to 4.9 ppm.
◆ 5.0 ppm or greater

TEXAS STATE DEPARTMENT OF HEALTH

FLUORINE CONTENT OF PUBLIC WATER SUPPLIES IN TEXAS
McKey has contended that structure plays no part in resistance to caries because mottled enamel is not more subject to caries. He has himself observed less caries in mottled enamel, and the evidence of Dean, Jay, Arnold, McClure, and Elvove is conclusive that in mildly mottled enamel, or in the teeth of children in mottled enamel districts in which the dystrophy is questionable, there is less caries. This fact better supports the view that structure does play an important part in caries. The fact that severely mottled enamel is subject to caries is additional supporting evidence, as in that case the very poor structure suffers decay.

Dean, Jay, Arnold, McClure and Elvove confined their survey to 12, 13 and 14 year old children. If, now, their data were supplemented by a study of the teeth in Galesburg erupted before 1919, the time of drilling of the first artesian well, and those of a similar age group at Quincy, data would be available for deciding between the oral and the structural factors. The data could be supplemented with different age groups by observing teeth in Monmouth, Ill., that erupted prior to 1925, the date of drilling the first well for that city, and by comparison with equal age teeth of Quincy.

If the data from the foregoing procedure support the structural theory, study of lower age groups analysed in view of the time of calcification would yield information on how late in tooth life fluoridization can be initiated with positive effects. If the data should support the local environment theory of protection by fluorides, this supplementary study would be without point.

Under any theory of the action of fluorine in reducing the ravages of dental caries, it is advisable that fluorides be present in water at the most effective level. If fluorides act by the formation of caries-resistant teeth, fluorine must be present continuously for the requirements of a definite age group of a normal community. If the action is by reduction of the activities of bacteria or any other oral conditions attributable to the direct effects of the ingestion of water or to the immediate return of the fluorine via secrétion into the mouth, fluorides must be present for all age groups. In the latter case, it would be disastrous for victims of mottled enamel to have their fluoride supply reduced to a level at which they have no protection, as their teeth then would certainly decay very rapidly.

There are certain special groups to whom it is a crucial matter whether the action of fluorine is by structural or by oral means. If structural, it would be useless to supply fluoride-bearing water to the personnel of labor groups, armies and navies. In fact, special precautions to avoid fluorides in any amount, however small, might be advisable in such cases.

Also it is important to individuals to know the mechanism of fluorine prevention of dental caries. If the mode of action is by construction of caries-resistant enamel, adults cannot
expect any effects in modification of their caries status by
the ingestion of fluorides. But, if the anti-caries action
is through oral environment, adults may expect amelioration
of tooth decay by the judicious use of fluorides. If the way
in which fluorine acts is not clearly determined, harm may be
done by improper applications, and the adoption of the correct
practice may be delayed.

It is not enough to say that enamel structure is a factor
in resistance to dental caries, but some suggestion as to how
it may be effective is desirable. If resistance to caries is
based on structure, initiation of caries is, by implication,
a failure of structure. This suggests that mechanical forces
produce the breach in the enamel that permits colonization by
micro-organisms. The initial openings would be of the order
of size of bacteria, and further development along the lines
indicated by the usual oral environment theories. Resistance
to caries then would be dependent on structural features,
principally at the tooth surface, which would not yield to the
ordinary forces of mastication.

Such a theory of the traumatic initiation of caries readily
accounts for the varying incidence of caries. On curved
surfaces, both concave and convex, irregularities in rod and
den formation would be expected more frequently. It is at
such sites that decay appears, and, as such curvatures also
provide recesses, stagnation of food occurs. Because of the
differences in incidence between interproximal and but and
fissure caries, some greater or lesser influence of contour
itself may be included in such a theory.

It is well known that traces of impurities markedly modify
crystalline structure in inorganic substance. If, to this
action, is added the influence of the fluorine on the organic
structures which form this enamel, it is readily conceivable
that a few parts per million of fluorine can make the difference
in structure that affects the difference in susceptibility
to decay.

A structural theory of resistance to caries is singularly
objectionable to many. It requires that steps be taken at the
beginning of tooth formation to insure that the proper structures
are formed and gives cold dental to the present generation of
suicidal from the troubles associated with dental caries. The
oral environment theories have had the field and can only assert
that their procedures may arrest decay. None can claim to have
prevented the initiation of caries by any procedure subsequent
to the eruption of the teeth. Abstention from fermentable
carbohydrates is probably only a regimen that keeps minute
cavities from being enlarged to the size at which they may be
detected and caries be said to exist. A caries-resistant tooth
is one that does not decay under any circumstances. 8

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8 Gerald J. Cox, "The Fluorine and Dental Caries Problem,"
Other than fluorine-contaminated water causing mottled enamel, the following information tends to prove that children's diseases help to cause mottled enamel.

The ineffective theories in the past regarding the cause or causes of mottled enamel have developed a bunglesome form of treatment and effacement, a porcelain jacket crown. This restoration is at least a poor substitute for nature's provision and is a crude practice when employed as "treatment" for mottled teeth.

The logical and only effective treatment is to bleach the stained tooth areas, affecting a permanent and effective obliteration. This procedure is obvious when we correlate the causes of mottled tooth enamel and the histology of the tooth.

Briefly, a tooth is created through calcification, or impregnation of lime salts into the albuminous medium of the tooth tissues, in the process of its construction. This lime being obtained from organic sources through the digestive process, is carried to the tooth constructive cells in a colloidal form, where it is regularly fixed into microscopic crystals—each tooth differing only "en masse" and in hue.

Since crystallization always assumes a definite character with invariable regularity, any talk of the effect of heredity on tooth enamel structure is insane. At the instant of enamel crystallization, all communication with nutritional sources are severed. Thus, any discussion as to the effects of nutrition thereafter in the tooth enamel would not be founded upon fact.

Acid is the only factor that will affect the surface of a tooth. This, plus the permeability of the tooth enamel at the time of eruption, can cause fixed interstitial—enamel surface, discoloration defects; such as mottled enamel when certain health disturbances take place.

A health disturbing germ colony and its correlative acid waste matter together with excreta from the mucous glands may occur at the tooth eruptive areas due to some primary childhood health disturbance, such as diseases of the respiratory tract, together with any of its appendages, or, any of the exanthemata diseases, such as varicella (chicken pox), measles, typhoid fever, and others. Then, that eruptive gum area which acquires that acid reaction, will etch lines of individualistic demarcations on the tooth enamel parallel with the gum—at the time of tooth eruption. And this is especially true where such colony—mucous excreta remains undisturbed for a reasonable length of time, by the saliva or the tongue, influences which usually prevent enamel mottling on the lingual surfaces.
Each disease germ or causative factor may or may not (but usually does) give off its own recognizable colony color; chicken pox, leaves a light brownish band; whooping cough, a darker brownish band; measles, a tinted brownish series of banded pits; tonsillitis, a series of white broken lines in band form; influenza, a deep white unbroken band.

To interpret later in life the disease or diseases causing one or more mottled enamel areas, and the time of life when such mottling took place, all one has to do is to compute the age the child would have been if the eruptive gum line and the affected tooth area were coincidental, that is, occupying the same relative position in unity of time. It is also necessary to note the individual demarcations of teeth of such an area. Then, the age and the disease causing the mottling of any tooth or teeth will be discernable and determinable regardless of present age.

This brief resume explains any one could have mottled teeth; why they could have certain teeth mottled during the periods of tooth eruption; why mottling is in direct proportion to susceptibility to childhood diseases during that period and, why mottling happens, regardless of tooth eruptive age, race, sex, location or so-called endemic areas.

Water has often been erroneously cited as the cause of tooth mottling, that is, true mottling with stained enamel demarcations on certain teeth, usually paired, and whose stains always parallel the eruptive gum-line. Water that is not acid in reaction has no effect upon the tooth enamel. Water which is sufficiently acid in reaction, such as drinking waters containing fluorine or fluoric acid, will not cause true chromogenetic mottling, with parallel gum-line demarcations upon individual teeth in certain members of a family. It will simply declasify irregular areas upon any of the exposed surfaces of the erupted teeth in the members of a family. Acid drinking waters will give all the teeth exposed a more or less chalky, whitish, lifeless, etched appearance, with a tooth enamel surface that is non-resistant to a cutting instrument. This is quite unlike the surfaces of true mottling involving stains.

Mottled teeth in comparison to teeth with declasified surfaces due to acid drinking waters, have parallel markings with the gum-line at time of tooth eruption. The mottled areas are tinted and marked in various aspects. Certain teeth are mottled only. The mottled ones are usually paired if eruption has been normal. The mottled tooth areas are quite natural in resistance, by comparison to the remaining portions of an affected tooth, or unaffected ones; mottled areas are just as caries immune as unmottled areas—except when measles have caused stained pits. Mottling never takes place after teeth are fully erupted, but can take place during the periods
of eruption in deciduous or permanent teeth. And, not all of the teeth in a mouth, nor all the members of a family are necessarily affected, as is more or less the case with acid drinking waters.

Observation discloses that certain diseases at certain periods of tooth eruption, cause certain types of true mottling, as attested by the parent for interpretative correctness. Observation discloses that water cannot account for individualism, either in tooth area affected, or family members so affected. Nor can acid waters account for parallel demarcations with the gums in their various tinted aspects. Observation discloses that twins have exactly the same teeth, with broadness of bands affected similar—providing of course, they both had the same sickness at the same time, which is the usual case with twins.

Observation in South Dakota discloses endemic areas in regions where childhood hygienization was and is far below the average such as areas where certain foreign nationalities predominate. These are areas noted for lack of general as well as oral hygiene, and, where children's diseases are very prevalent.

Removing acid drinking waters will of course prevent tooth decalcification from this source. Preventing childhood diseases during the periods of tooth eruption will prevent tooth mottling. A precautionary method is to paint all buccal-labial tooth surfaces of all erupted teeth, at the gum line, with some adhesive water resisting paint or varnish, several times during the sickness season. It should be applied under the free gum margin especially.9

CHAPTER IV

SURVEY OF DENTAL DEFECTS

A survey of dental defects of children was made in the Wolflin Elementary School, Amarillo, Texas, in March, 1940; 200 children of the fourth, fifth, and sixth grades were subjected to a dental inspection by a local dentist, and other facts were gathered by means of a questionnaire. This study was made possible by the cooperation of the dentist and the school nurse with the health and physical education teacher.

Special effort was made to arouse the interest of the children in their teeth. They were encouraged to learn more about the teeth by carving teeth from soap, by studying the history of toothbrushes, and by taking pictures of teeth. Several weeks were spent in discussing the kinds of teeth, their importance, and their care. Teaching materials such as "The Dentist's Creed," "Six Rules to Make Teeth Last a Lifetime," and "The Teacher Creed," which will be found in the appendix, were used as teaching aids.

The following tables were presented to show the personal history of the 200 children and the effects of certain local conditions on their teeth. These tables show group records of the seasons of children's births, the length of time they had lived in Amarillo, the childhood diseases they had had, their average heights and weights as compared with other children of the same age, whether they drank Amarillo water when babies, number of visits made to a dentist since September, 1939,
and percentages of decayed teeth. This study shows that the items listed in the preceding paragraph, either directly or indirectly, influenced the growth and the development of the teeth.

### TABLE 3

**THE AVERAGE HEIGHT OF THE PUPILS OF EACH AGE IN EACH GRADE**

<table>
<thead>
<tr>
<th>Grade</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
</tr>
<tr>
<td>Fourth Grade</td>
<td>53</td>
</tr>
<tr>
<td>Fifth Grade</td>
<td>57</td>
</tr>
<tr>
<td>Sixth Grade</td>
<td>56</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
</tr>
<tr>
<td>Fourth Grade</td>
<td>54</td>
</tr>
<tr>
<td>Fifth Grade</td>
<td>57</td>
</tr>
<tr>
<td>Sixth Grade</td>
<td>56</td>
</tr>
</tbody>
</table>

Table 4

The average weight of the pupils of each age in each grade.*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td></td>
</tr>
<tr>
<td>Fourth</td>
<td>67</td>
</tr>
<tr>
<td>Fifth</td>
<td>79</td>
</tr>
<tr>
<td>Sixth</td>
<td>77</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td></td>
</tr>
<tr>
<td>Fourth</td>
<td>69</td>
</tr>
<tr>
<td>Fifth</td>
<td>80</td>
</tr>
<tr>
<td>Sixth</td>
<td>73</td>
</tr>
</tbody>
</table>


Table 5

The average height and average weight of pupils of certain ages

<table>
<thead>
<tr>
<th>Item</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
</tr>
<tr>
<td><strong>Boys</strong></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>55</td>
</tr>
<tr>
<td>Weight</td>
<td>67</td>
</tr>
<tr>
<td>Weight*</td>
<td>67</td>
</tr>
<tr>
<td><strong>Girls</strong></td>
<td></td>
</tr>
<tr>
<td>Height</td>
<td>54</td>
</tr>
<tr>
<td>Weight</td>
<td>67</td>
</tr>
<tr>
<td>Weight*</td>
<td>69</td>
</tr>
</tbody>
</table>

*Bird and Wood, "Weight-Height-Age Table", pp. 365-367.
TABLE 6

THE AVERAGE HEIGHT AND THE AVERAGE WEIGHT OF THE PUPILS IN EACH AGE IN EACH GRADE*

<table>
<thead>
<tr>
<th>Grade</th>
<th>Age</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Fourth Grade</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>Fifth Grade</td>
<td>57</td>
<td>56</td>
</tr>
<tr>
<td>Sixth Grade</td>
<td>56</td>
<td>59</td>
</tr>
</tbody>
</table>

Height of Boys  Weight of Boys

| Fourth Grade | 54 | 55 | 54 | 69 | 74 | 70 |
| Fifth Grade | 57 | 56 | 60 | 59 | 80 | 78 | 95 | 90 |
| Sixth Grade | 56 | 60 | 60 | 78 | 95 | 100 |

*Baldwin and Wood, "Weight-Height-Age Table," pp. 366-367.

TABLE 7

THE AVERAGE HEIGHT AND THE AVERAGE WEIGHT OF THE PUPILS OF EACH AGE, IN EACH GRADE, IN THE WOLF-LIN SCHOOL, AMARILLO, TEXAS

<table>
<thead>
<tr>
<th>Grade</th>
<th>Age</th>
<th>Age</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>Fourth Grade</td>
<td>53</td>
<td>55</td>
</tr>
<tr>
<td>Fifth Grade</td>
<td>57</td>
<td>56</td>
</tr>
<tr>
<td>Sixth Grade</td>
<td>56</td>
<td>59</td>
</tr>
</tbody>
</table>

Height of Boys  Weight of Boys

| Fourth Grade | 54 | 55 | 54 | 67 | 70 | 65 |
| Fifth Grade | 57 | 56 | 60 | 59 | 87 | 77 | 81 | 83 |
| Sixth Grade | 56 | 60 | 61 | 71 | 87 | 91 |
The height, weight, and age of each of the two hundred local boys and girls have been compared with a survey of the same type made by Baldwin and Wood. The Baldwin and Wood Weight-Height-Age Tables were made on a much larger scale than were the local survey tables; however, there was little variation of weight and height according to age in the local survey. Thus, it was concluded that the local boys and girls were average in weight and height according to age and could be used, as a group, for an accurate study of the average dental health of children. Tables 3, 4, and 6 show the results of the Baldwin and Wood survey, and Table 7 shows the results achieved in the local survey. In Table 5 a general average of height and weight in tables 6 and 7 was made in order to secure a general comparison of the local children with those included in the Baldwin and Wood Survey.

<table>
<thead>
<tr>
<th>Diseases</th>
<th>Ages in Fourth Grade</th>
<th>Ages in Fifth Grade</th>
<th>Ages in Sixth Grade</th>
<th>Total Number</th>
<th>Total Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8 9 10</td>
<td>9 10 11 12</td>
<td>10 11 12 14</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bronchitis</td>
<td>3 7 3</td>
<td>3 13 5 1</td>
<td>1 17 3</td>
<td>56</td>
<td>61.54</td>
</tr>
<tr>
<td>Chicken pox</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group</td>
<td>1 1</td>
<td></td>
<td></td>
<td>2</td>
<td>2.19</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>1 1</td>
<td></td>
<td></td>
<td>1</td>
<td>1.10</td>
</tr>
<tr>
<td>Dey fever</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impetigo</td>
<td>2 1</td>
<td></td>
<td></td>
<td>5</td>
<td>5.49</td>
</tr>
<tr>
<td>Influenza</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.00</td>
</tr>
<tr>
<td>Kidney infection</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>.00</td>
</tr>
<tr>
<td>Malaria</td>
<td>1 1</td>
<td></td>
<td></td>
<td>2</td>
<td>2.19</td>
</tr>
<tr>
<td>Mastoiditis</td>
<td>1 1</td>
<td></td>
<td></td>
<td>2</td>
<td>2.19</td>
</tr>
<tr>
<td>Measles</td>
<td>4 12 4</td>
<td>4 14 6</td>
<td>1 320 6 1</td>
<td>75</td>
<td>62.42</td>
</tr>
<tr>
<td>Diseases</td>
<td>Ages in Fourth Grade</td>
<td>Ages in Fifth Grade</td>
<td>Ages in Sixth Grade</td>
<td>Total Number</td>
<td>Total Per cent</td>
</tr>
<tr>
<td>---------------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Boys</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mumps</td>
<td>6</td>
<td>1</td>
<td>5</td>
<td>14</td>
<td>5</td>
</tr>
<tr>
<td>Pink-eye</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rheumatic fever</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rheumatism</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Scarlet fever</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Smallpox</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Streptococci</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Tonsillitis</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Whooping cough</td>
<td>2</td>
<td>8</td>
<td>3</td>
<td>7</td>
<td>3</td>
</tr>
<tr>
<td>Total Number of Each Age</td>
<td>5 18 5 5 14 8 1 3 25 6 1</td>
<td>91</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bronchitis</td>
<td>3</td>
<td>1</td>
<td>4</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Chicken pox</td>
<td>3</td>
<td>16</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Diphtheria</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Hay fever</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Impetigo</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Influenza</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Kidney infection</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Malaria</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mastoiditis</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Measles</td>
<td>4</td>
<td>19</td>
<td>2</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Mumps</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Pink-eye</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rheumatic fever</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Rheumatism</td>
<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Scarlet fever</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Smallpox</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Streptococci</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Tonsillitis</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Whooping cough</td>
<td>3</td>
<td>15</td>
<td>2</td>
<td>3</td>
<td>16</td>
</tr>
<tr>
<td>Total Number of Each Age</td>
<td>6 23 3 4 25 1 2 8 23 4 1</td>
<td>109</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Of the twenty-one diseases in Table 5, measles was found to be predominant. Of the girls, 30.33 per cent and of the boys, 30.42 per cent in Wolflin Elementary School had had this disease.

Chicken pox ranked second, since 36.97 per cent of the girls and 61.54 per cent of the boys had had this disease.

Whooping cough ranked third with an average of 61.46 per cent for the girls and 48.85 per cent for the boys.

Mumps, scarlet fever, and pneumonia followed with a much smaller percentage. All other diseases listed had small percentages. Few individuals were affected by them.

It is interesting to note that mumps is the only disease in the above group in which the percentage of boys who had had the disease exceeded that of the girls.

No definite reaction to childhood diseases was found in relation to the growth of the teeth of these children.

TABLE 9

The number of children in each grade who were born in each season and the per cent that were born in each season

<table>
<thead>
<tr>
<th>Seasons Born</th>
<th>Fourth Grade</th>
<th>Fifth Grade</th>
<th>Sixth Grade</th>
<th>Total Number</th>
<th>Total Per cent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring</td>
<td>9</td>
<td>10</td>
<td>10</td>
<td>29</td>
<td>31.87</td>
</tr>
<tr>
<td>Summer</td>
<td>9</td>
<td>3</td>
<td>9</td>
<td>21</td>
<td>23.02</td>
</tr>
<tr>
<td>Fall</td>
<td>7</td>
<td>9</td>
<td>6</td>
<td>22</td>
<td>24.18</td>
</tr>
<tr>
<td>Winter</td>
<td>4</td>
<td>6</td>
<td>9</td>
<td>19</td>
<td>20.88</td>
</tr>
<tr>
<td>Seasons Born</td>
<td>Fourth Grade</td>
<td>Fifth Grade</td>
<td>Sixth Grade</td>
<td>Total Number</td>
<td>Total Per cent</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>-------------</td>
<td>--------------</td>
<td>----------------</td>
</tr>
<tr>
<td>Girls</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spring</td>
<td>9</td>
<td>13</td>
<td>14</td>
<td>36</td>
<td>33.03</td>
</tr>
<tr>
<td>Summer</td>
<td>8</td>
<td>9</td>
<td>7</td>
<td>24</td>
<td>22.01</td>
</tr>
<tr>
<td>Fall</td>
<td>11</td>
<td>6</td>
<td>15</td>
<td>32</td>
<td>29.36</td>
</tr>
<tr>
<td>Winter</td>
<td>4</td>
<td>4</td>
<td>9</td>
<td>17</td>
<td>15.60</td>
</tr>
</tbody>
</table>

The birth dates of ninety-one boys and 109 girls were grouped according to seasons. Results showed that birth rates varied as much as 13 per cent during the annual four seasons. Spring births were greatest: thirty-six or 33.03 per cent girls and twenty-nine or 31.87 per cent boys. Fall births were thirty-two or 29.36 per cent girls and twenty-five or 34.18 per cent boys. Summer births were: twenty-four or 22.01 per cent girls and twenty-one or 24.06 per cent boys. Winter births were: seventeen or 15.60 per cent girls and nineteen or 20.88 per cent boys.

In this survey, it was found that only 8.18 per cent of the children who were born in the summer season had cavities in their teeth. Of those born in the fall, 11.11 per cent had cavities, and of those born in the spring, 13.84 per cent had cavities. Though fewer children were born in winter than in any other season, there was a greater number of cavities for this group than for any other season. Of the children born in the winter, 27.77 per cent were found to have cavities.
Table 10

The number of children enrolled, who had been to dentist, who had serious malocclusion, who had cavities, who had mottled enamel, who needed teeth cleaned, who needed dental care, who had had corrections since the last inspection and the total number and total per cent of the children included in each item.

<table>
<thead>
<tr>
<th>Item</th>
<th>Fourth Grade</th>
<th>Fifth Grade</th>
<th>Sixth Grade</th>
<th>Total Number</th>
<th>Per cent of All Children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number</td>
<td>Number</td>
<td>Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Per cent</td>
<td>Per cent</td>
<td>Per cent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number enrolled</td>
<td>62</td>
<td>65</td>
<td>73</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Have been to a dentist</td>
<td>60</td>
<td>59</td>
<td>65</td>
<td>184</td>
<td>92.00</td>
</tr>
<tr>
<td>Had serious malocclusion</td>
<td>8</td>
<td>22</td>
<td>9</td>
<td>59</td>
<td>19.50</td>
</tr>
<tr>
<td>Had cavities</td>
<td>52</td>
<td>58</td>
<td>57</td>
<td>167</td>
<td>82.50</td>
</tr>
<tr>
<td>Had mottled enamel</td>
<td>57</td>
<td>61</td>
<td>64</td>
<td>182</td>
<td>91.00</td>
</tr>
<tr>
<td>Needed teeth cleaned</td>
<td>55</td>
<td>63</td>
<td>72</td>
<td>190</td>
<td>95.00</td>
</tr>
<tr>
<td>Needed dental care</td>
<td>62</td>
<td>63</td>
<td>73</td>
<td>198</td>
<td>99.00</td>
</tr>
<tr>
<td>Who had correction since inspection</td>
<td>13</td>
<td>14</td>
<td>12</td>
<td>39</td>
<td>19.50</td>
</tr>
</tbody>
</table>

The high percentage of children with defective teeth and the number of defective teeth per child found in this dental inspection were startlingly high. Of these 200 children, 91 per cent had teeth with mottled enamel. Figure 8 represents an example of mottled enamel. It was found that 85 per cent of these children needed to have their teeth cleaned, 19.50 per cent of them had serious malocclusion, and 99.00 per cent of them needed dental care.
The most common dental defect was the cavity. Few parents seemed to realize the seriousness of minor defects in early childhood. In the following table, figures are given which show that 14.45 per cent of these 200 children had one or more teeth partly destroyed by cavities.
Boy - Age 13

Girl - Age 13

Fig. 8 -- Illustrations of Mottled Enamel Among Amarillo Children
TABLE 11

THE NUMBER OF CHILDREN OF EACH AGE, IN EACH GRADE, THAT HAVE CAVITIES IN THEIR TEETH, THE NUMBER THAT HAVE NO CAVITIES IN THEIR TEETH, THE TOTAL NUMBER OF CAVITIES FOR EACH AGE, AND THE TOTAL PER CENT

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The above figures show that some steps have been made to correct defects which can be corrected by braces. From the examination of ninety-one boys, it was found that thirteen, or 14.29 per cent of them, had been fitted with braces for the teeth. Ten, or 9.17 per cent of 109 girls, had been fitted with braces. However, this is far from the number needed to eliminate dental defects of this kind.
Tables 13, 14, 15 and 16 give in detail the amount of dental correction which has been accomplished among the 200 children in the Wolflin Elementary School, Amarillo, Texas, for 1938-39.

Table 14 indicated the average number of children who had been under the attention of a dentist this year. This table showed that 58.56 per cent of them had paid a visit to their dentist. The local questionnaire indicated that 99.00 per cent of these children needed dental care this year. Of the children who needed dental care, 40.34 per cent did see a dentist this year.

Table 15 showed that 42.30 per cent of the 200 children studied had their teeth cleaned after September 1, 1939. According to the dental inspection chart, 95.00 per cent of them needed their teeth cleaned.

Another step toward the elimination of dental trouble has been the filling of teeth before they are completely destroyed by decay. Table 13 showed that an average of 30.70 per cent of the dental cavities had been filled in the teeth of the group studied.

During this survey, it became apparent that a large number of parents seemed to have the attitude that no corrective measure was necessary until the caries of a child's teeth became painful. Thus, the condition of a large number of children's teeth escaped notice simply because the attention of their parents had never been attracted to it. Other parents were ignorant of the importance of regular practice of dental hygiene. Many were impressed for the first time during the local dental survey with the relation of good teeth to good health.
TABLE 13


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| Total Number Visits to Dentist | 59 | 66 |
| Total Number of No Visits to Dentist | 32 | 43 |
| Total Number Visits Made | 266 | 235 |
| Total Per cent Visits Made | 54.63 | 62.50 |
| Total Per cent No Visits | 35.17 | 37.50 |
| Average Visits for Each Child | 2.22 | 2.05 |
Table 15

The number of children of each age, in each grade, who had had their teeth cleaned since September, 1939, the number who had not had their teeth cleaned, the total number and the total per cent who had had their teeth cleaned and who had not had their teeth cleaned.

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**Total Number Who Drink Amarillo Water:**

- Boys: 89
- Girls: 108

**Total Per cent Who Drink Amarillo Water:**

- Boys: 97.60
- Girls: 99.08
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Total Number Lived in Amarillo Part of Life: 32 / 45
Total Number Lived in Amarillo All of Life: 59 / 64
Total Per cent Lived in Amarillo Part of Life: 64.34 / 55.72
Total Per cent Lived in Amarillo All of Life: 35.16 / 41.28
TABLE 18

The number of children of each age, in each grade, who drank Amarillo water when a baby, the number who did not drink Amarillo water when a baby, the total number and total per cent who did and did not drink Amarillo water when a baby.

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Total Number That Drank Amarillo Water When a Baby: 56
Total Number That Did Not Drink Amarillo Water When a Baby: 48
Total Per cent That Drank Amarillo Water When a Baby: 61.54%
Total Per cent That Did Not Drink Amarillo Water When a Baby: 38.46%
Table 17 determines the number of years the children who were studied in this survey had lived in Amarillo, Texas, in relation to the number who had mottled enamel on their teeth, shown in the dental inspection chart, and the amount of time they have drunk Amarillo water.

In Table 16, it was found that of the total number of boys and girls, 61.78 per cent of them have lived in Amarillo, Texas, all their lives. Those moving here after birth and ranging from birth to ten years averaged 31.56 per cent. In Table 16, the total percentage of boys and girls who drank Amarillo water when they were babies was 61.04 per cent.

One boy thirteen years of age moved here when he was six years old and has been here for seven years. He does not show to have mottled enamel on his teeth. Of the remaining children that have moved here after birth, only seven boys and eleven girls show to be free of mottled enamel. The children who moved to this place after birth either drank Amarillo water before the permanent teeth came through or they lived in fluorine-contaminated water districts before they moved here. In every case, children who have lived here from birth to the age of six years show to have mottled enamel on their teeth.

Listed below are opinions given by some parents concerning the importance of teaching dental hygiene in the elementary schools of Amarillo, Texas:

1. The fluorine-contaminated water seems to be the cause of stain appearing on the teeth of children. Research in this field and the teaching of the care of teeth will do much for health and happiness in later years.
2. Dental hygiene will train children to care for teeth. This is very essential to good health. It is particularly important because of the tendency of many children to develop discolored teeth in this area.

3. Childhood is habit forming time, and dental knowledge and care are necessary for health and good appearance.

4. The teaching of dental hygiene will assist parents in stressing the importance of proper care of teeth and is of great assistance to children receiving no such education at home.

5. Defective teeth are a menace to good health and can cause many different physical handicaps such as eye and throat trouble. Teeth defects may impair the health of a child even more than some chronic ailment which shows symptoms, in that the condition of the teeth often give no warning that something is wrong.

6. Good health, to a large extent depends on good teeth. It is, therefore, important for a child to learn in school as well as at home about teeth and their care.

7. Proper care at this age goes a long way toward assuring sound teeth in the adult, the lack of which causes nervous and digestive disorders. All school children should be taught dental hygiene either at home or at school, but this is especially necessary in Amarillo because of the water which seems to affect children's teeth.

8. Dental hygiene is doubly important in this area because of the brown stain the local children have on their teeth.
9. Dental hygiene is important because some parents feel that their children's teeth are in perfect condition when they really are not; therefore, if a child has his teeth checked often, it is a help to him as well as to the parent.
CHAPTER V

CONCLUSIONS

From the foregoing study the following conclusions are presented:

1. That by comparison with the Baldwin-Wood Scale in age and type the children of the fourth, fifth and sixth grades of Wolflin Elementary School of Amarillo, Texas were found to be average in height and weight.

2. That the children who had been subject to childhood diseases had no higher average of stained teeth than those who had had no diseases.

3. That from the inspection made by the dentist and the nurse it was discovered that 184 or 92 per cent had been to the dentist; thirty-nine or 19.50 per cent had serious malocclusion; 187 or 83.50 per cent had cavities; 182 or 91 per cent had mottled enamel; 190 or 95 per cent needed teeth cleaned; 198 or 99 per cent needed dental care; and thirty-nine or 19.50 per cent had had correction since inspection.

4. That 123 of the 200 children studied had lived in Amarillo all their lives and had drunk Amarillo water when babies; all of them had mottled enamel.

5. That children who were born in the summer had fewest cavities in their teeth, those born in the fall ranked second, and those born in the winter had the greatest number of cavities in their teeth.
6. That children who lived in Amarillo before cutting their permanent teeth usually have a mottled stain on their teeth.

7. That as a result of this survey, the children and the parents became more conscious of dental health and made a real effort to have the children's teeth properly cared for.
APPENDIX
THE TEACHER CREED

The teacher is a prophet.
He lays the foundations of tomorrow.

The teacher is an artist.
He works with the precious clay of unfolding personality.

The teacher is a builder.
He works with the higher and finer values of civilization.

The teacher is a citizen.
He is selected and licensed for the improvement of society.

The teacher is a pioneer.
He is always attempting the impossible and winning out.

The teacher is a believer.
He has abiding faith in the improvability of the human race.¹

THE DENTIST'S CREED

To respect my profession, my reputation and myself. To be honest and fair with my patients as I expect my patients to be honest and fair with me; to think of Dentistry with loyalty, speak of it with praise, and act always as a custodian of its good name. To be a man whose word carries weight with my fellow-citizens; to be a booster, not a knocker; a pusher, not a kicker; a motor, not a clog.

To believe in my proposition heart and soul; to carry an air of optimism into the presence of possible patients; to dispel ill temper with cheerfulness, kill doubts with strong convictions, and reduce active friction with an agreeable personality.

To base my expectations of reward on solid foundation of

¹Anonymous
service rendered to be willing to pay the price in honest
effort. To look upon my work as opportunity to be seized
with joy and made the most of, and not as painful drudgery
to be reluctantly endured.

To remember that success lies within myself, in my own
brain, my own ambition, my own courage and determination. To
expect difficulties and force my way through them; to convert
hard experience into capital for future struggles.

To make a study of the professional and business sides of
Dentistry; to know both sides in every detail from the ground
up; to mix brains with my efforts, and use system and method
in my work; to find time to do everything needful by never
letting time find me doing nothing; to make every hour bring
me dividends in fees, increased knowledge, or healthful
recreation.

To save money as well as earn it; to cut out expensive
amusements until I can afford them.

Finally, to take a good grip on the joy of life; to play
the game like a gentleman; to fight against nothing so hard
as my own weakness; and to endeavor to grow as a dentist, and
as a man with the passage of every day of time. 2

Six Rules to Make Teeth Last a Lifetime

1. Give your child tooth-building foods, such as milk,
vegetables, whole-grain cereals, and fruits, and cod-liver
oil. Let him get sunshine on every day possible.
2. Give him tooth-protecting foods, such as cod-liver oil
and milk, oranges, and tomatoes.
3. Serve tooth-cleansing foods, and foods that exercise the
gums and jaw muscles. Such foods are hard breads, raw vegetables,
and fruits.
4. Teach the child how to keep his teeth clean, by brushing
them regularly in the right way morning and night.
5. Guard his general health; protect him against the
various childhood diseases, and see that he gets plenty of
exercise and sleep.
6. Look at the child’s teeth often and, if you think any-
thing is wrong, take him to the dentist at once. In any event,
be sure he sees the dentist at least every six months.

2 American Dental Society

TEXAS STATE DEPARTMENT OF HEALTH
Division of Dental Health

To the Parents or Guardian of ______________________________

Date ________________

An inspection of your child's mouth has been made at school and checked for all apparent defects. According to the inspection, it appears that your child Does ___ Does Not ___ show need of immediate attention by your family dentist.

It is known that children's teeth often decay very rapidly, and in order to maintain good teeth, we urge you to have a dentist examine your child's mouth every four to six months. Dental Health is necessary for general health.

The temporary, as well as the permanent, teeth require regular care. Good mouth health is essential to general health. Sound Teeth and clean healthy mouths mean much to the child's health, happiness, development and success. Dental care if health care. Requisites of good teeth are: proper food, thorough chewing exercises, careful cleaning and frequent visits to your dentist.

When you have read this, please sign, and have your child return it to the teacher.

If dental work is necessary, upon completion of it, ask your dentist to sign the certificate below and have it returned to the teacher.

____________________________
Teacher

Signature of Parent of Guardian ______________________________

I have completed all necessary work for __________________________

Child's Name ______________________________

____________________________
Date

____________________________
Dentist

Dental Notice to Parents No. 717
Dental Inspection Chart

Name_________________________________________ Grade_________

Age_________________________________________ Date_________

(Check Yes or No)

1. Has child ever been to dentist? 1. Yes____ No____

2. Serious malocclusion? 2. Yes____ No____

3. Cavities in teeth? 3. Yes____ No____

4. Cavities in one or more sixth-year molars? 4. Yes____ No____

5. Mottled Enamel? 5. Yes____ No____


7. Does mouth show need of dental care? 7. Yes____ No____

8. Name other unusual conditions_________________________________________

_________________________________________

_________________________________________

(Return this chart to school principal for file and school report to Dental Division of the State Department of Health, Austin, Texas.)

Teachers should repeatedly remind children with defects to go to their family dentist for correction.
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**REMARKS:**
(Teacher will fill in tabulation from Dental Inspection charts and deliver to school principal, preferably between thirty and sixty days after inspections are made.)

Form No. M79
QUESTIONNAIRE

Name of Pupil

Age, September 1          Date of Birth

Parent's Occupation

Parent's Name

Height of Pupil          Weight

Locality of Living Now          How Many Years Lived Here

(City)

Locality of Living Before Moving to Amarillo

How many visits to dentist from September 1939 to 1940?

How many filled teeth does child have now?

How many teeth with cavities? Does your child wear braces for correction of teeth? If so, state how long he has been wearing them.

Does your child drink Amarillo Water?

Did he or she drink it when a baby--if you lived here?

Have your child's teeth been cleaned this school year?

List diseases that your child has had and stage age when each was had:

________________________________________________________________________

________________________________________________________________________

Give your opinion why you think dental hygiene is important in the elementary schools of Amarillo:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________
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