1970

Dental Health Facts for Teachers (1970)

American Dental Association

DENTAL HEALTH FACTS FOR TEACHERS

TO THE TEACHER

This manual was prepared to help you teach about dental health. It can be used as a source of information about dental diseases and dental care. The information, based on research, is generally agreed upon by the dental profession. As research continues, new information and new techniques will become available.

CONTENTS

INTRODUCTION

Instruction concerning dental health should be part of the total health education program of the school.

The aim of such instruction is to help every child develop habits that will lead to optimum oral health. The child needs to (1) realize the importance of a healthy mouth, (2) appreciate the relation of dental health to general health and appearance, (3) recognize the value of oral health for all members of the community, and (4) understand the basic facts of dental health.

1

THE STRUCTURE AND FUNCTION OF TEETH

The deciduous (primary) teeth

There are 20 teeth in the first set, 10 in each jaw. The tooth buds begin to form about the sixth week of prenatal life. At birth a considerable part of the crowns of the deciduous teeth is already formed.

The table shows the approximate times primary teeth erupt and are shed. Some children's teeth erupt somewhat earlier or later.

All too frequently, parents think that, because the child will eventually lose his "baby" teeth, it is not important to take care of them. However, decay and infection of primary teeth—which often result from neglect—are just as harmful to health as is disease affecting the permanent teeth. Like the permanent teeth, the primary teeth are needed

1. For chewing
2. For good speech habits
3. For appearance

In addition, they preserve space for the permanent teeth. Many irregularities in the permanent teeth can be prevented if the primary teeth are retained in a healthy condition until they come out of their own accord.

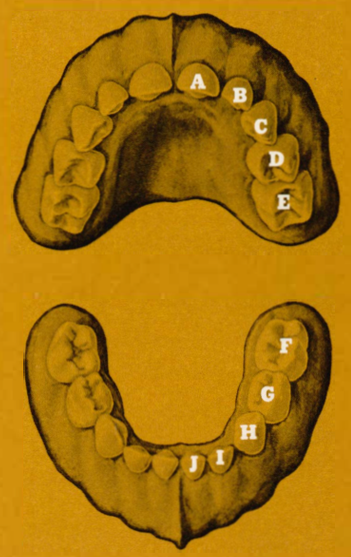
The permanent teeth

There are 32 permanent teeth, 16 in each jaw. The calcification of permanent teeth begins at birth with the first permanent molar. The other permanent teeth develop and calcify during the first years of the child's life.

The six-year molars are the first permanent teeth to erupt. There are four of these teeth, two in the upper jaw and two in the lower jaw. They appear when the child is about 6 years old and is beginning to lose his front primary teeth. These molars are the sixth teeth back from the center of the mouth. As they do not replace any primary teeth, they often are mistaken for deciduous molars. In fact, they are supposed to last a lifetime.

The position of the first permanent molars helps to determine the shape of the lower part of the face. Their condition affects the position and health of the other teeth.

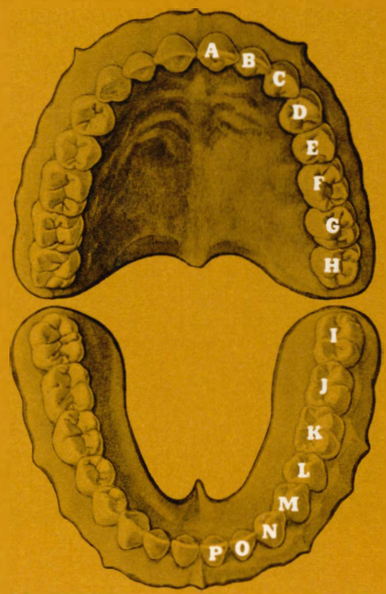
Six-year molars need special care. These teeth often are not brushed properly because they are difficult to reach. Cavities form easily in them because they have little grooves on the chewing surfaces that tend to hold food particles. For this reason it is important that a dentist check the six-year molars soon after they erupt. He may recommend a filling in one or more of the molars as a preventive measure.



ERUPTION AND SHEDDING OF PRIMARY TEETH

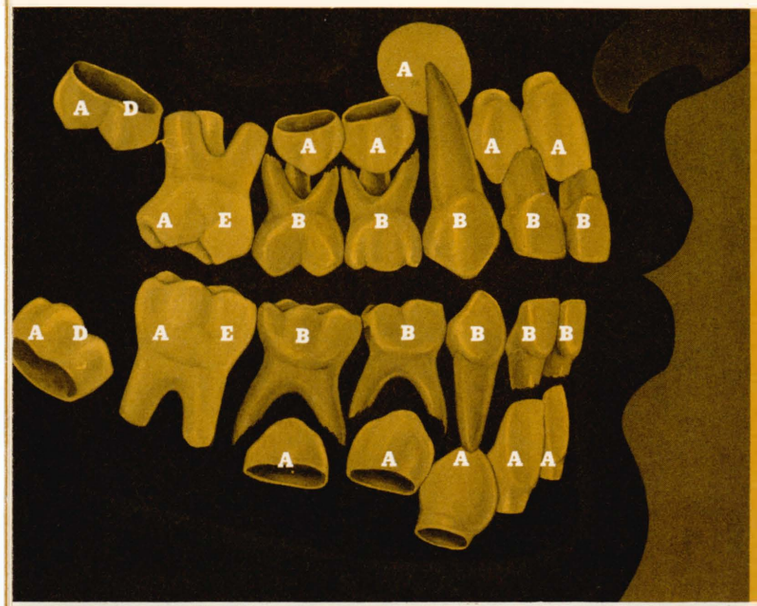
	UPPER	ERUPTION	SHEDDING
A	Central incisor	7½ mo.	7½ yr.
B	Lateral incisor	9 mo.	8 yr.
C	Cuspid	18 mo.	11½ yr.
D	First molar	14 mo.	10½ yr.
E	Second molar	24 mo.	10½ yr.
	LOWER		
F	Second molar	20 mo.	11 yr.
G	First molar	12 mo.	10 yr.
H	Cuspid	16 mo.	9½ yr.
I	Lateral incisor	7 mo.	7 yr.
J	Central incisor	6 mo.	6 yr.

Note: Primary molars are not shed until the child is 10 to 11 years of age. If a primary molar is extracted prematurely, a dentist should determine the necessity of maintaining the space for the incoming permanent tooth.



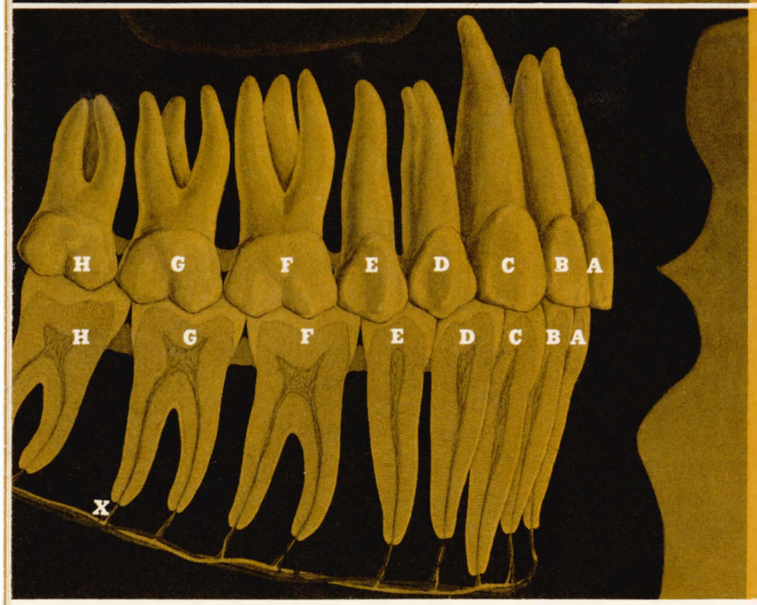
ERUPTION OF THE PERMANENT TEETH

	UPPER	
A	Central incisor	7- 8 yrs.
B	Lateral incisor	8- 9 yrs.
C	Cuspid	11-12 yrs.
D	First bicuspid	10-11 yrs.
E	Second bicuspid	10-12 yrs.
F	First molar	6- 7 yrs.
G	Second molar	12-13 yrs.
H	Third molar	17-21 yrs.
	LOWER	
I	Third molar	17-21 yrs.
J	Second molar	11-13 yrs.
K	First molar	6- 7 yrs.
L	Second bicuspid	11-12 yrs.
M	First bicuspid	10-12 yrs.
N	Cuspid	9-10 yrs.
O	Lateral incisor	7- 8 yrs.
P	Central incisor	6- 7 yrs.



DENTITION OF SIX-YEAR-OLD CHILD

- **A** Permanent teeth
- **B** Deciduous teeth
- **D** Second permanent molars
- **E** First permanent molars



DENTITION OF AN ADULT

- **A** Central incisors
- **B** Lateral incisors
- **C** Cuspids
- **D** First bicuspids
- **E** Second bicuspids
- **F** First molars
- **G** Second molars
- **H** Third molars
- **X** Artery, vein, and nerve

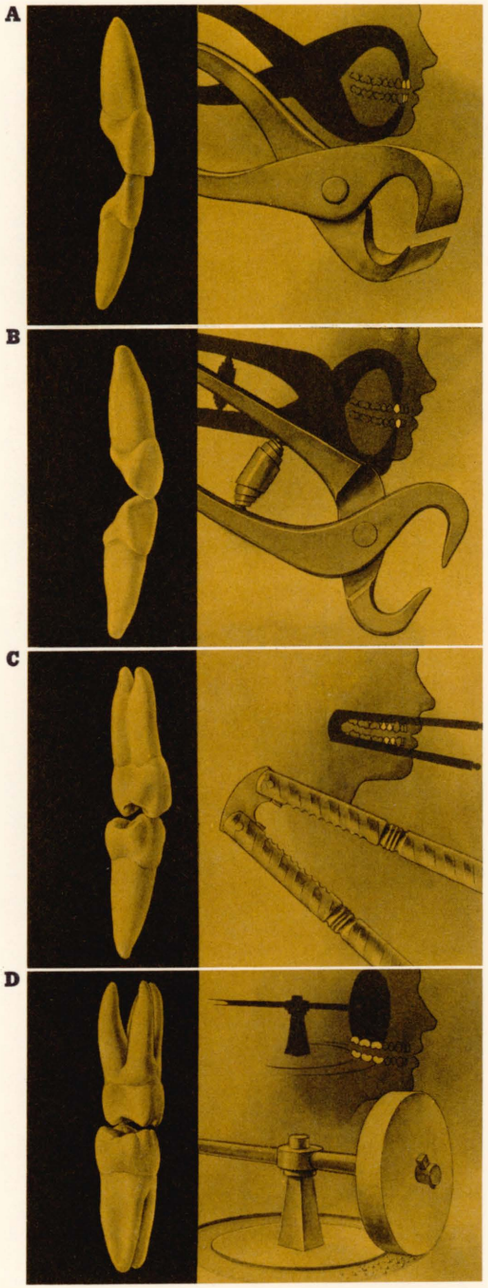
THE FUNCTIONS OF THE VARIOUS TYPES OF TEETH ARE AS FOLLOWS:

A THE INCISORS—located in the center front of the mouth—are used to cut or incise food.

B THE CUSPIDS—located at the corners of the mouth—have a long, heavy root and a sharp pointed crown. They are used to tear food.

C THE BICUSPIDS—located just back of the cuspids—have two cusps and one or two roots. They are used to tear and crush food.

D THE MOLARS—located in the back of the mouth—have several cusps and two or three roots. They are used to grind food.



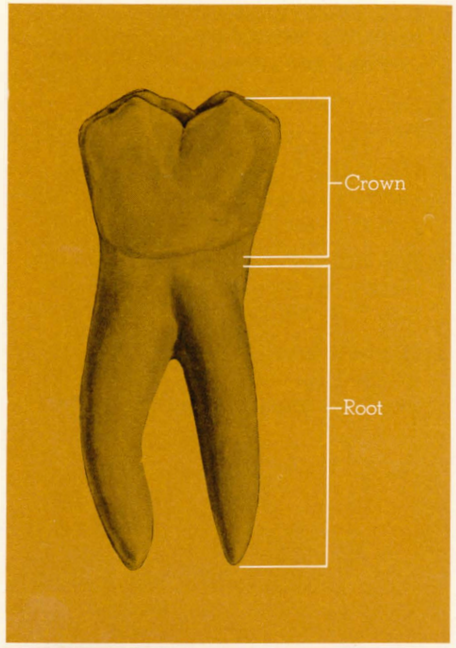
The structure of the teeth

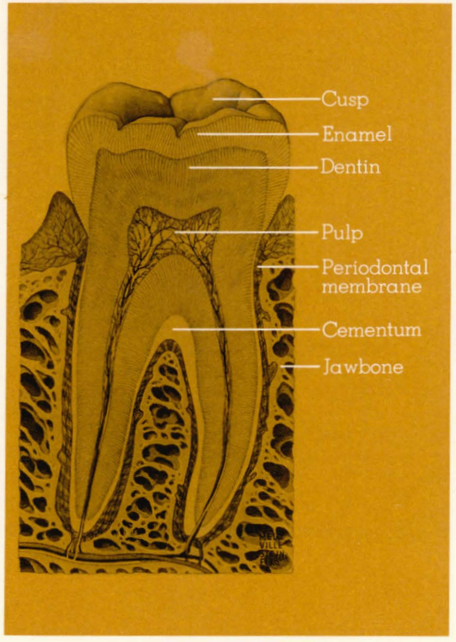
The teeth are hard, calcified structures fixed in bony sockets in the upper and lower jaws. Each tooth has a crown and a root portion. The root (or roots) anchors it in the jawbone. The crown is the part that is visible in the mouth.

Covering the root of the tooth and lining the wall of the socket in the bone is a layer of tissue called the periodontal ligament. It helps hold the tooth in place and lessens the shock as the teeth come together in the chewing process.

A tooth is composed of enamel, a hard glistening substance that covers the crown; cementum, a bonelike substance that covers the root; dentin, an ivorylike substance that forms the body of the tooth, and the dental pulp, which occupies the chamber in the center of the tooth.

The dental pulp is composed of connective tissue containing the nerves, arteries, veins, and lymph vessels. These enter through an opening at or near the apex of the root.





2

ORAL DISEASES, ABNORMALITIES, AND INJURIES

Dental caries[1]

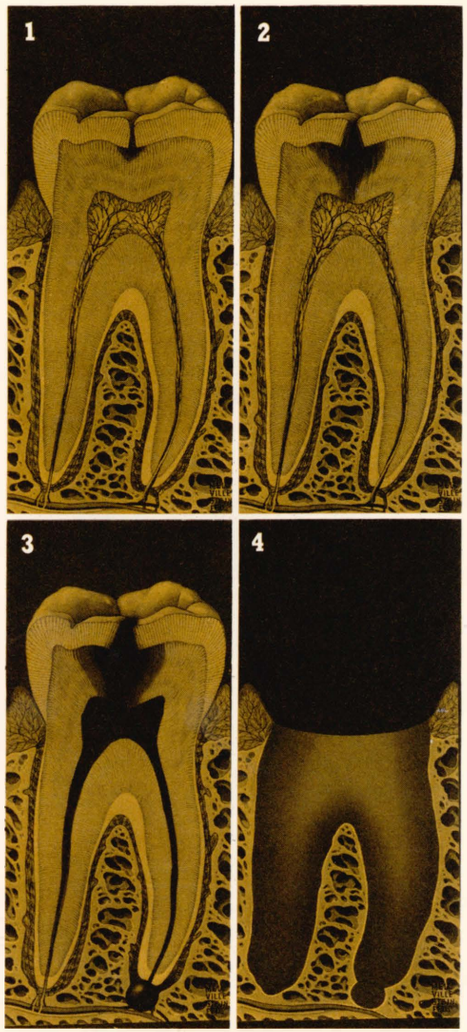
Dental caries, or tooth decay, is a disease that destroys tooth structure and thus produces cavities in the teeth.

Decay begins with a small hole, usually between the teeth or in a fissure or flaw on the chewing surfaces of the back teeth. Left unchecked, it will penetrate through the enamel into the dentin. Because the dentin is not as hard as the enamel, decay progresses somewhat more rapidly and in time reaches the pulp, which contains the blood, lymph vessels, and nerves. These then become infected. An abscess may form either within the tooth or at the tip of the root. Soreness and pain usually accompany the abscess. As the infection increases, the face may become swollen, and there may be pulsating pain.

By taking x-ray pictures, a dentist can usually determine the extent of damage from decay and the type of treatment needed. Even after an abscess forms, it may still be possible to save the tooth, but sometimes the tooth must be extracted.

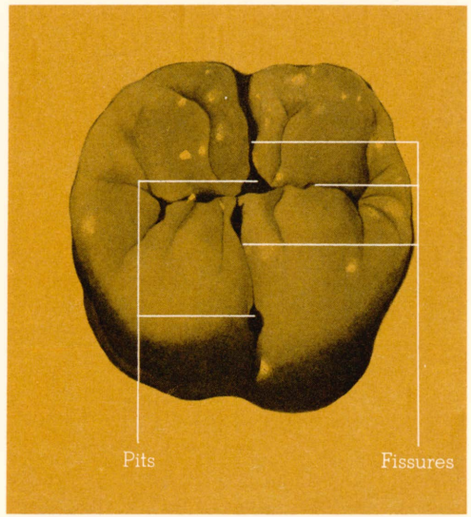
CAUSES OF DENTAL CARIES Recent research indicates that certain strains of bacteria called streptococci play a part in causing tooth decay.

These bacteria are always present in the mouth. When they come in contact with sugar, they form dextran. Dextran, a sticky, relatively inert and insoluble substance, enables plaque to adhere to the teeth. Plaque is a colorless and transparent film composed of material from the saliva and of bacteria and their products.



Progress of decay. (1) Early stage of dental decay. The enamel has been penetrated. (2) The softer dentin has been attacked. (3) The pulp has been killed and an abscess has formed. (4) The molar is extracted.

[1]For information concerning the prevalence of dental diseases in children, see Appendix 4, page 25, in The American Dental Association Dental Health Program for Children, American Dental Association, Chicago.



Structural flaws: Pits and fissures in the chewing surface of a first permanent molar.

Another by-product of sugar and the bacteria living in the plaque is acids that can dissolve susceptible tooth structure. When acids have dissolved tooth enamel, bacteria from the plaque invade the dentin to continue the destruction of the tooth.

Some studies have shown that, at least in some animal species, caries is a disease that can be transmitted from one animal to another.

PREVENTION AND CONTROL OF DENTAL CARIES What can be done to prevent dental caries? The individual can (1) cut down on sweets, especially between meals and (2) brush his teeth thoroughly with a fluoridated toothpaste after eating. In addition, he can have regular dental checkups so that any decay that may develop can be treated in the early stages.

On a community basis, fluoridation of public water supplies is the best measure for preventing decay. Where this is not feasible, other methods of obtaining protection from fluorides should be initiated.

Each of these measures will be discussed in the chapter on dental care.

Periodontal disease

Periodontal disease is disease of the gums and other supporting structures of the teeth.

Research in recent years has made it increasingly evident that bacteria in plaque play an essential role in causing periodontal disease. There is a close relationship between poor oral hygiene and periodontal disease.

As plaque accumulates along the gum line, irritants produced by the bacteria cause inflammation of the gum tissues and make them tender and likely to bleed. This condition is called gingivitis.

If plaque is not removed by toothbrushing but continues to accumulate, some of it is converted into a hard deposit called tartar or calculus. Calculus can be removed only by a dentist or a dental hygienist using special instruments.

As the disease progresses, the gums slowly separate from the teeth, leaving pockets or spaces between gums and teeth which become filled with bacteria and pus.

Eventually, the disease attacks the bone that supports the teeth. The teeth become progressively looser as their bony support is destroyed. Finally the teeth must be extracted.

Periodontal disease is often regarded as a disease of older persons because it becomes more severe with age. However, the early stages of the infection can usually be seen in children. Many young people have symp-

toms of the disease. The most frequent sign is swollen gums which bleed easily. As the disease usually starts early in life, the time to prevent it also is early in life.

Thorough regular toothbrushing and periodic visits to the dentist for an oral prophylaxis (cleaning of the teeth) are the best ways of helping to prevent the accumulation of plaque and calculus on the teeth. Plaque does re-form, but some is removed each time the teeth are brushed.

Other factors can also contribute to the development of periodontal disease:

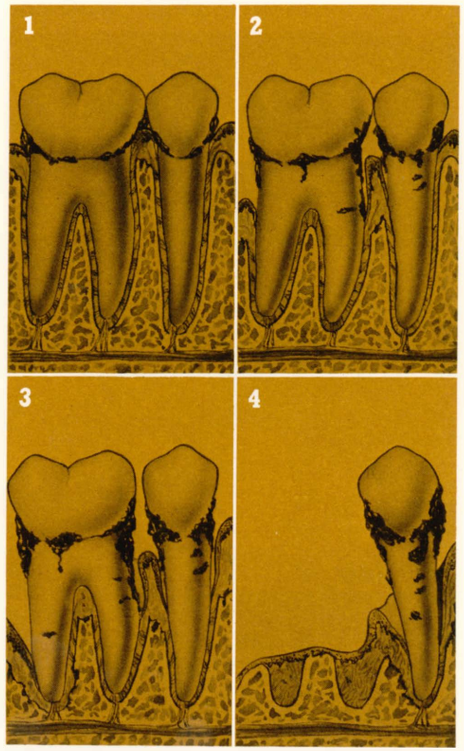
The gums can be irritated by worn-out fillings or crowns, the broken edges of badly decayed teeth, and bridges or partial dentures that no longer fit well because of changes in the mouth.

The loss of one tooth, if it is not replaced with an artificial tooth by a dentist, may result in the drifting of adjacent teeth into the vacant space. The drifting leads not only to the wedging of food into the spaces between the teeth but also to improper meshing of the teeth when the individual chews food or closes his jaws. The shock and uneven pressure resulting from these poor contacts between the teeth often cause damage to the periodontal tissues.

Teeth that do not come together properly when the jaws are closed, regardless of the cause, can be a factor in producing periodontal disease.

Some evidence suggests that inadequate nutrition may be a factor in the development of periodontal disease or in an unfavorable response to treatment. The texture of the food eaten is also important, as soft foods tend to collect between the teeth and around the gums.

Once periodontal disease has developed, only a dentist can treat it. Several



Progress of periodontal disease.
(1) Irritation causes swollen gums, which bleed easily and begin to withdraw from the teeth. (2) The gums withdraw farther, and the disease process reaches the bone. (3) Most of the bony support for the teeth is destroyed. (4) One tooth is lost. Another is weakened.

methods of treatment are possible, depending upon the condition of the patient's mouth. However, the dentist will always emphasize the importance of home care for control of the disease.

Necrotizing ulcerative gingivitis

Necrotizing ulcerative gingivitis is a disease that attacks the gums and other parts of the mouth and throat. During World War I the disease was given the name of "trench mouth" because of its prevalence among soldiers.

Unhygienic mouth conditions and lowered resistance of the tissues of the mouth play an important part in the development of this type of gingivitis. The disease is not transmissable, although many times it occurs in a large group of people living under similar conditions. The disease most often occurs in teen-agers and young adults.

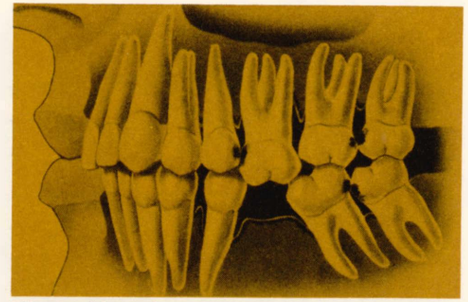
In its acute stage the infection is characterized by a foul odor, inflammation and ulceration of the gums, pain, bleeding, and increased flow of saliva. A dentist should be consulted immediately when these symptoms occur.

Malocclusion

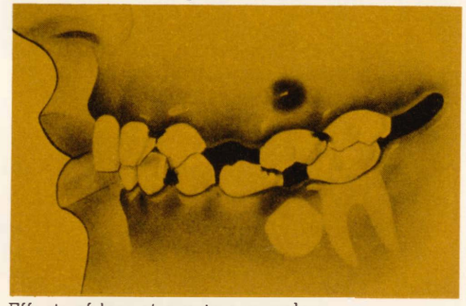
Malocclusion is the term applied to irregularities of tooth alignment and occlusion (the fitting together of the teeth on closing the jaws). Severe malocclusion left untreated may lead to deformities of the jaws and face.

There are two general causes of irregular teeth, inherited and acquired. The nature of malocclusion, however, is so complex that usually it is not possible to attribute the condition to only one cause.

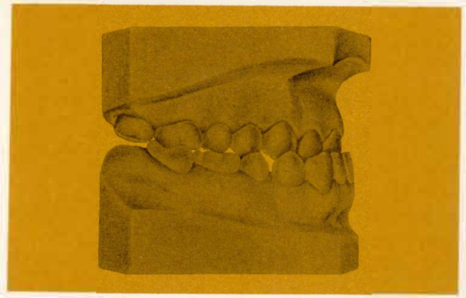
The size of the jaws and the size of the teeth are genetically determined. If the jaws are too small or the teeth are too large, malocclusion usually results.



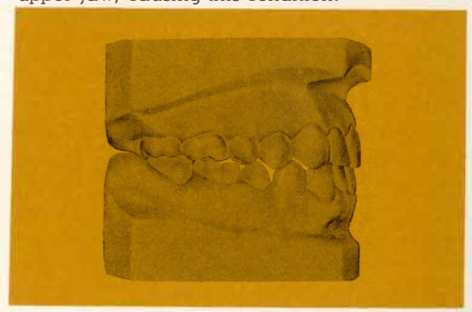
Effects of loss of a permanent molar



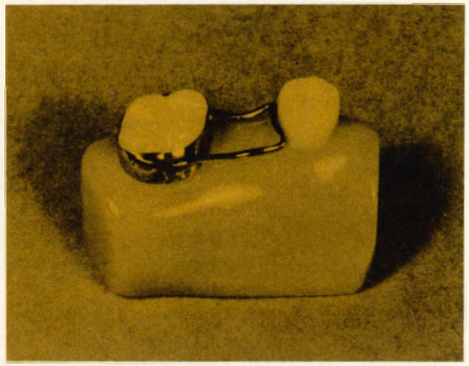
Effects of loss of a primary molar



The lower jaw may protrude beyond the upper jaw, causing this condition.



Same case after orthodontic treatment.



Space maintainer prevents shifting of teeth into space where permanent teeth will erupt.

Living bone is not hard and unyielding. It can be molded by the application of pressure. Consequently, thumbsucking, biting habits,and certain sleeping postures that produce prolonged pressure on the jaws may exert pressures that interfere with a good growth pattern. If there is an inherited tendency toward a dental or a facial deformity, such habits will be more harmful than they are in an individual with a normal growth pattern.

If the primary teeth are lost too early, the adjoining teeth may shift. Then there is not sufficient space for the permanent teeth to erupt in their proper position.

Malocclusion due to inherited causes can be intercepted in many instances so that it does not develop to any appreciable extent. The dentist can frequently halt certain conditions in the mouth, such as those related to mouth habits, premature loss of teeth, preservation of space for teeth which will erupt later, and extraction of teeth which have been retained past the time when they should have been shed.

Once malocclusion has developed, only a dentist can treat the condition, although the patient's cooperation is essential. How much improvement is possible varies with the individual. In many cases malocclusion can be entirely eliminated. In nearly all cases functions of the teeth and personal appearance can be improved.

Accidental injuries to teeth

It is possible to prevent many accidental injuries to the teeth by the use of such measures as safety belts in automobiles and mouth protectors for everyone engaged in contact sports, particularly football. Children can avoid dental injuries by observing safety precautions in running, playing games, drinking from water fountains, and using playground equipment.

If a tooth is bumped or injured, a dentist should be consulted. This is particularly important if a child's tooth is loosened or knocked out. If a tooth is knocked out, it should not be cleaned but should be wrapped in a wet cloth or placed in water. The child, with the tooth, should be taken to the dentist immediately.

In certain cases the dentist can replace the tooth in the child's jaw. Under favorable circumstances the tooth will in time be re-attached to the jaw and will again function normally.

3

DENTAL CARE

Fluoridation

Evidence of the benefits of fluoridation continues to mount. Reports from Europe indicate that the experience with fluoridation there is comparable to that in this country.

Children who drink fluoridated water from birth have up to 65 per cent less tooth decay. The benefits are lifelong. Fluoridation programs provide the most dental benefits to children because fluoride is incorporated into the structure of the enamel as it is being formed. The teeth become decay-resistant because the fluoride makes the enamel less susceptible to acid attacks.

Indirectly, fluoridation programs help reduce the incidence of malocclusion. Some malocclusion is the result of premature loss of deciduous teeth. With less decay because of fluoridation, fewer first teeth are lost too early. Fluoride also helps protect the important six-year molars.

In rural areas fluoridation may not be possible because of the lack of central water supplies. Recently some schools in rural areas have arranged to fluoridate individually their water supplies. These school fluoridation programs are helping to prevent tooth decay among the children.

Another way to obtain some of the benefits of fluoride is through topical application. A dentist or a dental hygienist cleans the teeth, dries them thoroughly, and then applies a fluoride solution for four minutes. The application should be repeated at the intervals the dentist recommends.

Recent studies have shown that topical applications of fluoride are of additional value in preventing decay even in communities with fluoridated water supplies.

A dentist or a physician may prescribe fluoride tablets for children in non-fluoridated areas. However, the success of this program depends on the child's taking the tablets daily over a period of some eight to 12 years.

The Council on Dental Therapeutics of the American Dental Association has recognized some toothpastes containing fluoride compounds as being of value for the partial prevention of dental decay. The authorized council seal or statement appears on the cartons of these toothpastes.

Further information concerning the benefits of fluoride may be obtained from the American Dental Association.

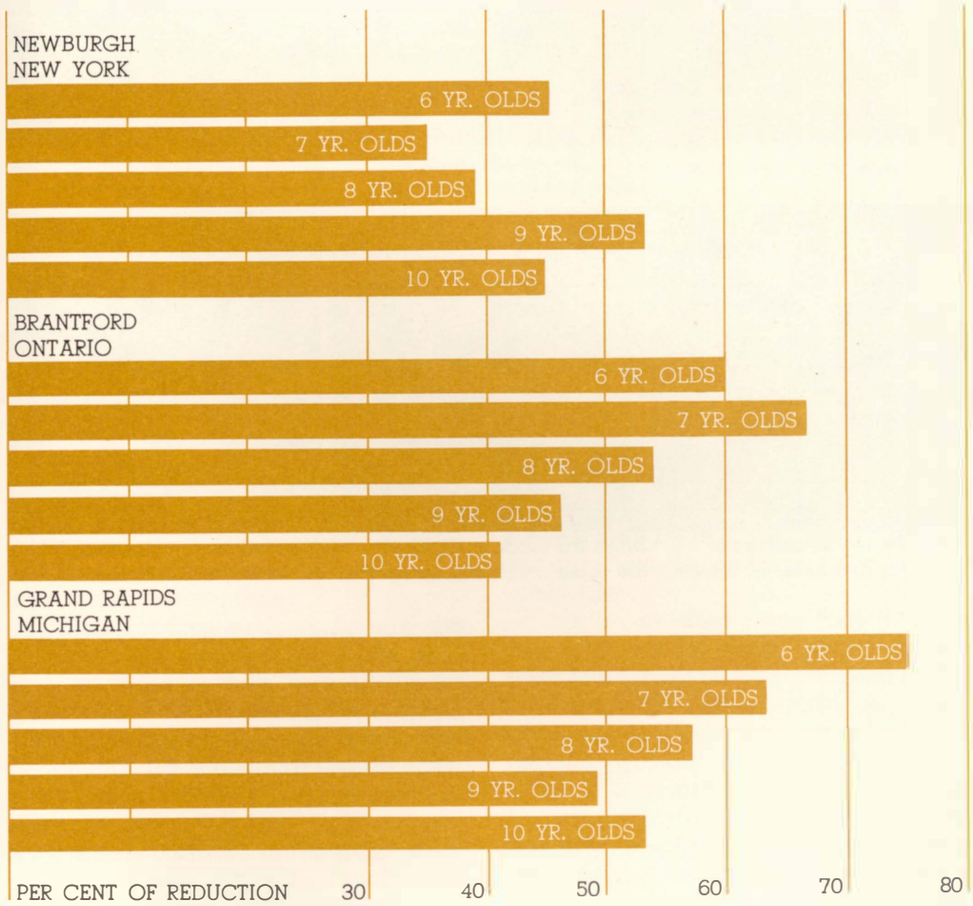
Toothbrushing

Toothbrushing immediately after eating helps remove some food particles before the bacteria turn the sugar into acids. Thorough brushing removes some plaque, thus helping prevent periodontal disease.

All accessible surfaces of the teeth should be cleaned with the toothbrush. Toothbrushing can be the most effective method of helping keep teeth clean. When it is not possible to brush the teeth after eating, it is advisable to rinse the mouth thoroughly with water to help remove food particles.

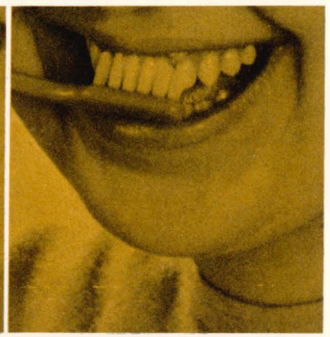
No one toothbrushing technique is best for everyone. An individual's own dentist can show him the method of toothbrushing that is best for him. One generally accepted method is this: Brush the teeth of each jaw separately, the way they grow, down on the upper teeth and up on the lower teeth. Place the side of the brush against the gums, press hard, and then carefully sweep the brush over both gums and teeth so that the bristles go between the teeth. Clean the grinding surfaces of the molars with a vigorous scrubbing mo-

REDUCTION OF DENTAL CARIES IN PERMANENT TEETH OF CHILDREN IN CONTINUOUS RESIDENCE IN THREE AREAS AFTER 10 YEARS OF FLUORIDATION

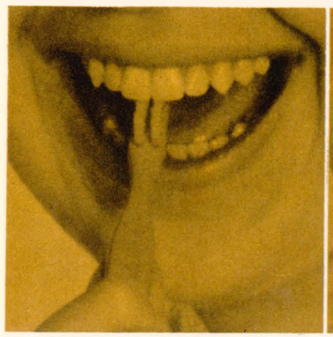


Place the bristles of the brush pointing toward the roots of the teeth. Rotate the brush so that the bristles sweep down over the gums and teeth in the direction of the biting or grinding surfaces.

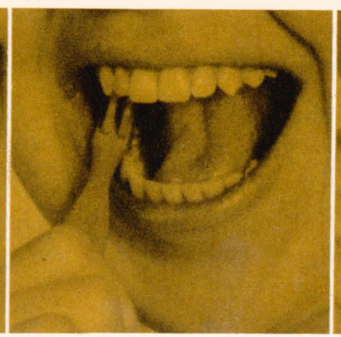
Brush the outside surfaces of the upper and lower back teeth.



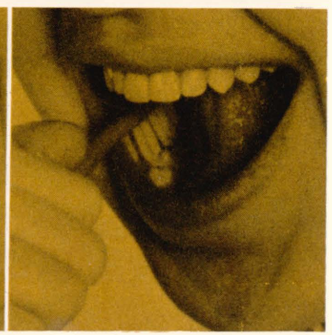
Brush the outside surfaces of the upper and lower front teeth.



Brush the inside surfaces of the upper and lower front teeth.



Brush the inside surfaces of the upper and lower back teeth.



Brush the chewing surfaces of the upper and lower teeth.

tion. Brush each area at least 10 times.

It is advisable to use one of the toothpastes containing fluoride recognized by the American Dental Association.

A toothbrush should be kept clean and in a place where it will dry quickly. Everyone should own two brushes so that each can dry thoroughly between brushings.

A good toothbrush should have

- ☐ a flat brushing surface.
- ☐ firm, resilient bristles.
- ☐ a head small enough to permit access to the surfaces of all the teeth. (Young children need smaller brushes than those designed for adults.)

Toothbrushes should be replaced before the bristles become frayed, soft or loose. No one can clean his teeth well with a wornout toothbrush, and he may injure his gums by using one.

Various studies have confirmed the effectiveness of electric toothbrushes. The dentist is the best person to give advice about the use of an electric toothbrush, as well as of oral irrigating devices and dental floss.

Both children and adults can use red disclosing tablets to show how well they are cleaning their teeth. (A dentist can advise where to obtain the tablets.) After brushing his teeth as thoroughly as possible, the individual should chew a disclosing tablet. If he has cleaned properly, there will be almost no red color on the surfaces of his teeth. If he has not cleaned correctly, the plaque and the bits of food left on his teeth will be colored bright red. He should brush until the red is completely gone from his teeth.

Those who are not cleaning their teeth effectively should ask a dentist for advice.

Cutting down on sweets

"It is not realistic to expect patients to eliminate all sweets from their diet. Foods high in sucrose, however, can be limited. 'All the sweets you wish *once* a day' is a reasonable compromise and one that many people will accept, whereas highly restrictive programs are not likely to be followed. In addition, one can suggest some of the following items as snacks: pretzels, corn and potato chips, whole grain wafers, fruits, nuts, vegetable slices, unsweetened milk, and sugar-free confections, soft drinks, and other beverages."[2]

Eating foods containing sugar between meals increases the number of acid attacks the teeth are subjected to. As intense bacterial activity occurs for some minutes after eating, frequent snacking encourages the bacteria to grow rapidly and to form more plaque.

It is folly for schools to teach the need for reducing sugar intake while, at the same time, making candies and sweetened beverages available in lunchrooms or through dispensing machines.

Evidence does show that there is more to decay than candy. Some scientists do dental research with germ-free animals. From birth on these animals are kept in specially built cages to protect them from all germs. Some of these animals, such as certain strains of rats and hamsters, are particularly susceptible to decay. Even when they eat diets high in sugar, none have dental decay as long as their mouths are free of germs.

In some studies bacteria have been deliberately placed in these animals'

[2]Keyes, Paul H., Present and Future Measures for Dental Caries Control. Journal of the American Dental Association 79:1395 December 1969.

IMPORTANT DAILY FOODS FOR ADEQUATE NUTRITION

MILK GROUP—Two to three cups for children under 9: three or more cups for children 9 to 12: four or more cups for teenagers; two or more cups for adults.

MEAT GROUP—Two or more servings—beef, veal, pork, lamb, poultry, fish, eggs, with dry beans and peas and nuts as alternates.

VEGETABLE-FRUIT GROUP—Four or more servings, including a dark green or deep yellow vegetable, important for vitamin A, at least every other day. A citrus fruit or other fruit or vegetable, important for vitamin C, daily. Other fruits and vegetables, including potatoes.

BREAD-CEREALS GROUP—Four or more servings—whole grain, enriched or restored.

Information for the above chart was obtained from "Food for Fitness—A Daily Food Guide," Leaflet No. 424, U.S. Department of Agriculture.

Most persons need more than the minimum amounts of food to provide additional food energy and to meet nutrient needs.

mouths. Within a few short weeks the animals' teeth begin to decay. On the other hand, some animals susceptible to decay are fed through stomach tubes. Even though there are bacteria in these animals' mouths, they have no decay as long as no sugar enters their mouths.

As a result of such studies, scientists have learned that both bacteria and sugar are necessary for decay to occur.

Scientists are cautious about considering these experiments in relation to human beings. Obviously the studies cannot be duplicated with human subjects because no person could or would live all his life in a germ-free cage.

It is tempting to think that the solution is not for the individual to cut down on sweets but for scientists to discover some practical way of removing all the bacteria from human mouths. However, even if this were possible, it might not be desirable. Some of the bacteria may be necessary for the health of the mouth.

Though thus far only fluoride has been proved to help build decay resistance into the teeth, there is another possibility—for the future. Scientists have learned that adding certain soluble phosphates to animal diets rich in sugar gives some protection against decay. This may be through a local action in the mouth, rather than being a systemic effect involving the body's digestive system. If people react the same way, it may some day be possible to reduce caries by adding phosphates to sweet foods. The results of some trials with phosphate-fortified breakfast cereals for children have been encouraging. The evidence is not yet conclusive, but this is a hopeful area for research.

In general, it can be said that a diet adequate for general health is adequate for dental health. The chart on page 22 indicates the foods necessary for good nutrition.

One word of warning: The trend in America is toward eating more highly refined and overcooked soft foods. These foods tend to catch between the teeth and cling to their surfaces. Fibrous or granular foods, such as apples, oranges, cucumbers, celery, and carrots, on the other hand, literally sweep between and around the teeth during the chewing process.

Children, particularly, should be helped to substitute milk, nuts and fresh vegetables for much of the sweetened drinks, candies and pastries they now eat. Such a change in diet would help in developing good eating habits as well as in reducing the prevalence of tooth decay.

Regular dental checkups

When an individual has regular dental checkups, his dentist can discover at an early stage any decay that develops. He can then remove the decay and fill the tooth before extensive damage is done.

Also, the dentist or his dental hygienist can clean the patient's teeth as frequently as necessary to help prevent periodontal disease. If gum problems do develop, the dentist can take immediate steps to prevent the disease from progressing.

Sometimes the family dentist sees signs that a child is developing malocclusion. He can then provide the necessary treatment or suggest that the child go to an orthodontist if that is advisable.

A child should make his first visit to the dentist at the age of 2½ or 3 years, or at least by the time all his

primary teeth have erupted. He should continue to have checkups at the intervals the dentist suggests.

The person who goes to the dentist only for emergency care, rather than for regular checkups, is likely to continue to have dental emergencies until all his teeth are gone. The person who is concerned with his dental health and seeks professional care, in addition to proper care at home, is likely to keep his teeth for his lifetime.

The dentist checks for signs of all oral diseases. He usually is the first person to discover oral cancer. If this lesion is discovered early, it may be possible to spare the patient disfigurement and even death. Each year 7,000 persons die of oral cancer, often because the disease has been detected too late.

The dentist also may be the first person to note the oral symptoms of such systemic diseases as diabetes and leukemia. He then refers the patient to a physician.

For some patients dental checkups have literally been the means of saving their lives.

4

A DENTAL HEALTH EDUCATION PROJECT

In a successful project in an English school, the children were encouraged to discover the basic principles of dental health for themselves.

The class of 10 and 11 year olds was divided into groups of five or six. In each group every child ate a chocolate cookie or a piece of licorice. The first child acted as a control. The other children observed how long it took for the remnants of food to disappear when his teeth were not cleaned after eating.

Each of the other children in the group tried a different method of cleaning—eating apples, using a toothbrush, with and without toothpaste, and rinsing their mouths with water. The children observed one another's mouths to see how effective each method of cleaning was.

The children discussed the results with one another and then wrote individual accounts of the experiment. When a dentist was present for a class discussion, he found that the youngsters had discovered for themselves most of the points that would have been included in a lecture on dental health. Any faulty reasoning was usually corrected by another class member.

Other projects developed from the original one. In some cases the teacher or the dentist set assignments, but most of the children followed their own lines or joined their friends.

One group had become interested in the use of various detergents for cleaning the feathers of wild birds caught in oil spilled into the sea. These children investigated the detergent action of toothpastes.

Other children, who had successfully excavated a local Romano-British site, compared the teeth and the diets of ancient and modern man.

Some youngsters made graphs to show such information as which toothpastes the children used, how often they brushed their teeth, and what percentage of their pocket money they spent on sweets.

Before the project began, the teacher asked the children how often they brushed their teeth. A similar survey was made a term after the project had been completed. Many children in the later survey said they brushed their teeth twice a day, as against once a day formerly. By then, all the children in the class cleaned their teeth, while, before the project began, 18 per cent had not brushed their teeth at all. However, so small a number of children was involved that no general conclusions can be drawn from the survey.[3]

SUGGESTED APPROACHES TO DENTAL HEALTH EDUCATION

Grades 1, 2, 3

1. In these grades, the shedding of deciduous teeth and the eruption of permanent teeth offer opportunities for dental health instruction.

The eruption of the first permanent molar (six-year molar) is an event of great importance in the life of a child.

Oral hygiene habits should receive considerable emphasis during these years.

2. The school lunch program provides an excellent device for bringing in a discussion of the importance of diet to general health and dental health.

3. A field trip to a dentist's office can generally be arranged. For those children who have not already been to the dentist, the field trip will provide an opportunity to acquaint them with the dental office and equipment and to dispel any fears that might exist. The children may also ask the dentist questions.

4. A child may report on one of his regular visits to the dentist. The teacher should probably hear the story first in order to avoid the possibility of a statement that might frighten the other children.

5. Many schools use a dental card system to encourage children to go to the dentist for an examination and any dental care that is needed. When the cards are handed out, there is an opportunity for a discussion of the importance of regular visits to the dentist.

Grades 4, 5, 6

1. The amount of dental decay ordinarily increases during the years children are in these grades. That decay increases can be brought out through discussions of the children's visits to the dentist. The need for proper toothbrushing can be discussed, and the teacher, a dental hygienist, or the school nurse can demonstrate on a large model of the teeth how to brush.

2. Children will ask why teeth decay. The basic causes of tooth decay can be explained, with the use of pictures, charts, and films.

3. As the children shed their primary cuspids and molars and the bicuspids erupt, the class can discuss the different types of teeth and their functions (see page 9).

4. Some children's teeth may be erupting out of position. The youngsters may show some concern about the irregularity, thus providing an opportunity for the importance of regular dental care to be emphasized.

It may be possible to have a dentist or a dental hygienist come to the classroom to answer the children's questions, especially if they have been studying dental health. The teacher probably will wish to discuss with her own dentist how to arrange for a dentist as a speaker. Many dental societies have speakers bureaus. If not, arrangements can be made through the dental society's secretary.

Grades 7, 8, 9

1. With the aid of a dentist, the pupils can perform some experiments that will teach them about teeth. One simple demonstration shows the protective benefits of fluoride. A fresh egg is immersed overnight in a 10 per cent stannous fluoride solution. This egg is then placed in a dilute acid solution. Another egg, without the protective coating of fluoride, is also placed in a dilute acid solution. The effect of the acid on the shell of the second egg is dramatic.

2. In schools today, much emphasis is placed on community problems. Dental disease is a problem in almost all communities of the world. The pupils can study various dental health measures that are effective in the prevention and control of dental disease. Among these are fluoridation of community water supplies and topical application of fluorides.

3. Ninth graders are beginning to think about their future occupations. They can be given information about careers in dentistry, dental hygiene, dental assisting, and dental laboratories. A dentist or a dental hygienist can be asked to discuss the requirements for and the advantages of these occupations.

[3]Maddick, Ian H., and Downton, David, "Teach Yourself Dental Health," Dental News (London, England) 5:1 October 1968.

Grades 10, 11, 12

1. Students entering science fairs can be encouraged to plan projects in dentistry. (Information concerning science fair projects may be obtained on request from the American Dental Association.)

2. More specific information concerning careers in the dental field should be made available for interested students in the school library.

3. Before long, many senior high school students will be leaving school and entering society as married men and women. They will need to know something about the care of children's teeth so that their own children can benefit from the experience and knowledge they have obtained.

These suggestions are by no means a comprehensive list of approaches that may be used by teachers in presenting units of dental health education. They serve only to point out possible methods of stimulating interest by indicating techniques that have been used successfully by others.

APPENDIX

Dental Health Publications for Teachers and Pupils

A number of pamphlets and books suitable for use in schools are available from the American Dental Association. One sample copy of most of the booklets will be sent on request without charge; there is a charge for all materials in quantity.

A catalog of publications is issued annually. The catalog may be obtained free on request.

Most state health departments also have free or inexpensive pamphlets on dental health. U.S. Government publications may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington D.C. 20402.

16 MM FILMS

Films and filmstrips are frequently available from local or state health departments or in local school film libraries. If they are not available locally, the films and filmstrips listed here may be rented from the Bureau of Audiovisual Service of the American Dental Association. Rental requests should be made as far in advance as possible.

Films and filmstrips are rented for a two-day showing period. The loan period can be extended to seven days at no extra charge if the extension is requested at the time of booking and approved by the Bureau of Audiovisual Service. The rental rate for longer periods of use will be furnished on request. Films not received on the due date back are subject to additional rental charge. The borrower must pay return transportation.

Information concerning the purchase of films and filmstrips may be obtained from the Bureau of Audiovisual Service.

DHTV15 BILLY MEETS TOMMY TOOTH—black and white, sound, 4½ min. (1959). Billy dreams about Tommy Tooth, a lost tooth that explains the need for care for the new tooth that will grow in. (For primary and elementary school children) Rental $2.00

DHTV16 CASE OF THE MISSING TOOTH—color, animated, sound, 4½ min. (1959). Henry Whortle sees how a missing stone can cause the collapse of a bridge. He also sees how a missing tooth can lead to dental disaster. (For high school and adult groups) Rental $2.00

DH50 LAURIE LEARNS A SECRET—color, sound, 17 min. (1960). Laurie, a young adult, learns from her dentist the difference between brushing and cleaning her teeth, after viewing plaque from her teeth under a microscope. After a discussion of periodontal disease, a disclosing solution is used to demonstrate the need for effective cleaning with a good toothbrush. (For high school and adult groups) Rental $3.50

DH51 MATTER OF CHOICE—color, sound, 27½ min. (1960). Jim and Marilou talk about college. Marilou remembers a dental checkup, and Jim gets in on a discussion of deciduous and permanent teeth, dental disease and how teeth can last for a lifetime. The choice for the future must be made now. Jim returns for dental examination, restorations and more discussion of dental decay and proper care of the teeth. (For high school and adult audiences) Rental $3.50

DH57 PROJECT: TEETH—DENTAL HEALTH AND CLASSROOM SCIENCE—color, sound, 14½ min. (1961). In a fifth grade classroom, an experiment involving the diet of white rats prompts two new experiments. Part of the class discovers why cavities develop in teeth, while the other members of the class, with the help of an orthodontist, learn about tooth growth and why straight, healthy teeth are so important. (For upper elementary grades) Rental $3.00

DH56 WHAT DO WE KNOW ABOUT TEETH?—color, sound, 14½ min. (1961). Using the actual pupils, teacher and school nurse, this film was made to motivate children in the primary grades to learn more about their teeth and oral health, to give some factual information that will lead the children to search for more knowledge and to provide the classroom teacher with some ideas which she may find useful in teaching dental health. (For lower elementary grades) Rental $3.00

DH62 BLOCK THAT KICK (in the teeth)—color, sound, 15 min. (1962). The film briefly outlines the need for mouth protection, available statistics on effectiveness in injury prevention and techniques for making and fitting mouth protectors. All types of protectors—custom fitted, mouth formed and stock—are pictured in place and during fitting. A latex protector is fabricated, two types of mouth formed protectors prepared and fitted, and a stock type demonstrated. (For high school and adult audiences) Rental $2.00

DH55 LEARNING TO BRUSH—color, sound, 9½ min. (1962). This film shows second graders learning how to brush their teeth. A unit on dental health develops naturally from a "show and tell" experience in a typical classroom. Freddy's story of a visit to his dentist and his surprise at learning he had a cavity when he "had done everything I was supposed to" leads to careful teaching of effective tooth-brushing and other aspects of home dental care. (For primary school children) Rental $2.00

DHTV23 NO PLACE LIKE HOME—color, sound, 4½ min. (1962). This film emphasizes that, for the development of proper health habits, the most important educational institution in the world is the home. (For high school and adult audiences) Rental $1.50

DHTV24 THE SMILE OF HEALTH—color, sound, 4½ min. (1962). Malocclusion can lead to emotional as well as health problems in a child. This film points out that the condition can usually be corrected orthodontically. (For high school and adult audiences) Rental $1.50

DH63 A DENTIST IN THE CLASSROOM—sound, color, 14½ min. (1963). Fourth graders find their interest in dental problems extends beyond the information in their textbooks. A dentist is invited to visit the classroom. Dr. Hampton brings with him models and other aids to help the children find the answers to questions concerning dental caries, malocclusion and dental injuries. (For upper elementary school children) Rental $3.00

DHTV39 BROTHERS MAKE SENSE—color, sound, 4½ min. (1964). Because of his orthodontic treatment, a boy realizes that cleaning teeth properly and practicing good dental health habits are essential for health, appearance and popularity. He emphasizes this to his attractive sister, who has been so busy preparing her clothes and grooming herself for a party she has not "had time" to brush her teeth. He demonstrates a good toothbrushing technique, and his sister admits that "brothers do make sense—sometimes!" (For junior high school students) Rental $1.50

DH68 SET THE STAGE FOR DENTAL HEALTH—color, sound, 28 min. (1964). In this film a dentist, with the use of a number of types of visual aids, presents many of the basic dental health facts all adults should know. (For high school students and adults) Rental $3.00

DH70 THE STORY OF DR. LISTER—color, sound, 28 min. (1964). This historical film portrays the life of the famous English surgeon, Dr. Joseph Lister, known for his development and use of antiseptics in surgery, and Jordan Lambert, St. Louis pharmacist who developed the mouthwash that bears Dr. Lister's name. This film will be well received on any program concerned with the history of health sciences. (For junior high, high school and adult audiences) Rental $1.50

DH69 WHY FLUORIDATION?—color, sound, 14½ min. (1964). This film was produced to provide basic information on the safety, effectiveness and feasibility of fluoridation of the community water supply. Some of the questions answered are: What is fluoridation? How do we know it is safe? Why is it preferable to the topical application of fluoride to the teeth? Why is it not as effective to provide fluoride in milk or in dentifrices? The facts are presented in a noncontroversial fashion. (For adult groups) Free loan

DHTV46 THE BEAVER'S TALE—color, sound, 4½ min. (1965). A stylized puppet film. Bobby Rabbit, about to make his first visit to the dentist, asks Mr. Beaver what the dentist will do. Mr. Beaver explains, in terms a youngster can understand, what, generally he can expect to happen.

The characters are lively and interesting to children aged 4 to 7. (For primary school children) Rental $1.50

DH77 HEALTHY TEETH, HAPPY SMILE—color, sound, 22 min. (1965). Designed to teach good oral hygiene, regular dental care, and proper eating habits, this film stars a prominent Negro dentist and a young patient who—in real life—won the Smile Championship of a large city school system. Sally, a high school student, is motivated as a result of a school dental examination to practice good grooming habits as related to oral hygiene and proper dietary rules. (For junior high and high school students) Rental $1.50

DHTV67 BRUSH FOR BEAUTY—color, sound, 4½ min. (1966). Because she is having difficulty finding a summer job, Janet asks her aunt, a beauty editor, for advice. Aunt Vicky points out that good grooming consists of more than smart clothes and attractively arranged hair. Health is important; healthy, well-cared-for teeth are essential for an attractive smile. (For high school and college girls) Rental $1.50

DHTV57 MAXWELL, BOY EXPLORER—color, sound, 4½ min. (1966). Three boys (colorful stylized puppets) find the lost civilization of No-De-Kay deep in the jungle. They decipher the hieroglyphic-like inscriptions on the pedestal of the jeweled toothbrush and so discover that the secret of No-De-Kay is proper toothbrushing. The boys are heroes when they return home with their discovery. (For primary school children) Rental $1.50

DHTV56 THE THINGS THAT REALLY COUNT—color, sound, 4½ min. (1966). Designed for teenagers, the film shows that there are many things about appearance that can be improved quite easily, such as clothing and hair styles. But, "if you want to keep that pretty smile, you have to take care of your teeth. You have to keep working at it." (For junior high and high school students) Rental $1.50

DHTV76 NO TIME TO LOSE—color, sound, 4½ min. (1967). Designed to motivate parents and children to seek dental care, this film features Gale Sayers of the Chicago Bears football team. The film points out that dental care for children is available at the community level, but it is the family's responsibility to seek it out. The importance of dental health as part of physical fitness is emphasized. (For elementary, high school and adult groups) Rental $1.50

DH79 TEETH ARE FOR LIFE—color, sound, 15 min. (1967). Three children, two ten-year-old girls and the younger brother of one of the girls, are the main characters in this interracial film. It was produced to teach young children preventive oral care and to foster among children favorable attitudes toward dentistry. By means of conversations between the girls and their dentists, the functions of the incisors, molars, cuspids and bicuspids are explained and demonstrated. The relationship between food and dental health is discussed, as well as how the dentist helps us to maintain healthy teeth. (For primary and upper elementary grades) Rental $1.50

DH80 THE SHOW THAT ALMOST WASN'T—color, sound, 14½ min. (1968). A class in a Head Start school cannot make its scheduled appearance on a television show because one of the youngsters has a toothache. When Stevie returns, the youngsters discuss how to take care of their teeth in order to prevent cavities. The children's show is re-scheduled for the television program. Filmed with the children from an actual Head Start class. (For primary school children) Rental $3.00

DH81 LABORATORY OF THE BODY—color, sound, 28½ min. (1968). The constantly expanding scope of dental research and its relation to today's scientific community are described. The film's basic purpose is to describe the challenge of dental research to senior high school students and college students who are interested in science. It is designed to attract the student who will become a biologist, physicist, biochemist, so that he may investigate the challenges in dental research. (For junior high, high school and college students and adults) Free loan

DHTV94 MERLIN'S MAGICAL MESSAGE—color, sound, 6 min. (1969). This animated film, with Merlin and King Arthur as the characters, points out the importance of home dental care, especially brushing, in preserving good dental health. (For children and adults) Rental $1.50

DH82 TEETH—color, sound, 12 min. (1969). This film for teenagers uses some of the new photographic techniques to make the dental health message interesting and place it in perspective in the lives of today's young adults. (For junior high and high school students) Rental $3.00

DHTV99 DUDLEY THE DRAGON—color, sound, 4½ min. (1970). A delightful fable of Dudley, the village dragon, who is misunderstood as well as disliked because he has dirty, ugly teeth. A village boy who has learned about good dental health in school visits Dudley and teaches him how to care for his teeth through proper brushing. Soon the entire village comes to visit Dudley. He shows the villagers how to brush properly and is loved by all. (Written in verse for preschool and primary grade children) Rental $1.50

FILMSTRIPS

FS5 YOUR TEETH AND THEIR CARE—63 frames, color (1951). Three stories, What the Teeth Do, How Teeth Are Formed and Taking Care of Your Teeth, with review questions for each section, are presented. (For junior and senior high school students) Rental $1.50

FS8 TALE OF A TOOTHACHE—35 frames, color (1955). Proper toothbrushing, dental care and nutrition are illustrated in a cartoon story. (For elementary school children) Rental $1.50

FS10 LET'S VISIT THE DENTIST—42 frames, color, guide (1957). Shows the friendly relationship between patient and dentist. The dentist explains good dental health practices, which include toothbrushing, diet and regular visits to the dentist. (For primary school children) Rental $1.50

FSA BILLY MEETS TOMMY TOOTH—40 frames, color (1959). Billy loses a tooth that is put under his pillow. In a dream he meets Tommy Tooth, his lost tooth, who prescribes a program of care for the new tooth that will grow in. (For primary and elementary school children) Purchase only $1.25

FS12 CUTTERS, TEARERS, CRUSHERS AND GRINDERS—56 frames and 33-1/3 RPM record, color, guide (1959). The functions of the different teeth of animals are noted and related to human teeth. Diet and dental care are explored. (For primary and elementary school children) Rental $1.50

FSB WINNING FIRST WITH TEETH—51 frames, color (1962). For her Science Club Project, a junior high school girl decides to investigate why teenagers have more tooth decay than any other age group. The facts she discovers during her investigation are presented as part of the filmstrip. (For junior high school pupils) Purchase only $1.25

FS17 MICHAEL AND THE DENTIST—23 frames, color, accompanied by 45 RPM transcription (1963). This filmstrip and record are designed to introduce the preschool and primary school child to the sights and sounds of the dental office, thus preparing him for his first visit. (For primary school children) Rental $1.50

FS19 DONALD VISITS THE DENTIST—23 frames, color, guide (1966). This filmstrip introduces the child to the dental office and shows him what to expect during his visit. It also uses a story about a polar bear to teach the children why personal and professional care are necessary. (For primary school children) Rental $1.50

FS20 WHAT'S IMPORTANT ABOUT TEETH—32 frames, color, guide (1966). Tooth decay and related dental diseases are pointed out as products of civilization. The process of decay, its causes and prevention are described. Necessary home care and professional treatment are stressed in order to maintain good oral health. (For upper elementary grades) Rental $1.50

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Printed in U.S.A.