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CLASS TALK

THE DEVELOPMENT OF THE DENTAL APPARATUS WITH RELATION TO THE CRANIUM AND FACE

By L. H. Nofles, '36

THE development of the human individual is divided into two phases: the pre-natal and the post-natal. These two phases are further divided; the pre-natal into the period of the ovum, period of the embryo and the period of the fetus. The post-natal phase is divided into infancy, childhood, adolescence, and adulthood. The formation of the dental apparatus, cranium and face begin during the embryonic period, which is about the second week. At this time the head is composed of two portions: the neural, containing the brain, eyes and internal ears, and the visceral or facial portion containing the cephalic ends of the alimentary and respiratory tracts in a very rudimentary form.

During the third week five bar-like structures called the visceral or branchial arches make their appearance on each side of the cephalic segment or head. These arches are paired and within a short time begin to differentiate into various structures of the head and neck. At the same time that the branchial arches appear the olfactory pits make their appearance just above the stomodeum and lateral to the frontonasal process. The stomodeum or primitive oral cavity is a depression on the ventral surface of the head area beneath the brain vesicles.

The first pair of branchial arches later bifurcate longitudinally to form the maxillary and mandibular processes. The mandibular process grows ventrally and unites with its fellow of the opposite to form the lower boundary of the oral cavity, and develops into the lower jaw and the structures on the floor of the mouth, with the aid of the second arch. The olfactory pits deepen and divide the frontonasal process into paired lateral and median nasal processes. Presently the median nasal processes fuse, both with the maxillary processes, which are progressing toward the median line, and with each other to form the outlines of the roof of the oral cavity and the floor of the nasal cavities. Later a communication is made through this roof of the primitive oral cavity giving rise

to the primary palate. Directly posterior to the primary palates are the palatal processes of the maxillary portion of the first branchial arches which grow toward each other and unite in the median line with the nasal septum, forming the secondary or maxillary palate. The nasal septum, bridge of the nose, middle portion of the lip, and the intermaxillary bones develop from the medial portion of the frontonasal process. The alae of the nose and cheek area develop from the lateral nasal process.

In the development of the face the mandible varies in its relation to the maxilla. At eight weeks, now the fetal period, the profile shows a marked recession of the jaw, a pug nose and a very prominent forehead. At about nine or ten weeks, probably due to a more advanced development of the mandible, the profile presents a prominent forehead and a mandible which is decidedly prognathic. At the fourth month, the development of the mandible seems to have been retarded and is again micrognathic. After the fifth month, the mandible and lip grow faster than the maxilla and its lip, until at birth a normal mesio-distal relationship is attained.

About the sixth week development of both maxilla and mandible are completed, and at this time there is an ingrowth of solid epithelial plate lying just peripheral to each future upper and lower gum. This plate is called the labial lamina or lip furrow band. The furrow deepens to form the vestibule of the mouth, giving rise to the lips and portions of the cheek. Parallel and lingual to the labial lamina there is another epithelial plate called the dental lamina. This develops simultaneously with the labial lamina and soon becomes a horizontal shelf which extends inward at a right angle from the labial lamina and grows deeper into the substance of the primitive gum.

At intervals along the dental lamina there develops a series of bud-like thickenings called the enamel organs, which will form enamel and serve as a mould of the future teeth. Early in the third month, as the enamel organs develop, they contact a dense accumulation of mesenchyme cells which press against the under surface of the organ, causing it to grow cup-shaped. The accumulation of mesenchyme cells is called the dental papilla. The enamel organ together with the dental papilla make up the tooth germ; and there are ten such germs in a ten weeks fetus. These are the primordia of the deciduous teeth.

The cells lining the inner concave surface of the enamel organ transform it into columnar from the cuboidal type and function

thereafter in the formation and deposition of enamel. These cells are called the ameloblast cells, and each cell lays down enamel first in a fibrillar layer which then calcify in the form of elongated enamel prisms or rods, one prism for each cell. The enamel is first laid down during the fifth month at the apex of the crown and then downward toward the root until the crown is formed.

The peripheral cells of the dental papilla, which are at first in contact with the ameloblasts, become columnar in form and have then been assumed to produce the dentine and pulp. As the dentine is formed these peripheral cells, the odontoblasts, recede pulpward. When the crown is fully developed, the enamel organ disintegrates and, as the root continues to grow, the crown pushes to the surface, causing the compressed gum to atrophy and the tooth to break through.

The enamel organs of the permanent teeth which correspond to the deciduous teeth arise between the sixth and eighth months in another series along the free edge of the dental lamina, lying internally to the deciduous teeth. In addition, three molars not represented in the primary dentition are developed on both sides of each jaw from a backward growing free extension of the dental lamina. The primordia of the first permanent molars appear at the end of the fourth month after birth; those for the second molars at six months, while indications of the third permanent molars are not found until the fifth year.

The relationship between the facial development and dental development is of a very intimate nature. The framework of the face embraces not only the facial bones, but also the teeth and their supporting structures. The face is considerably smaller in relation to the cranium at birth, but later, due to more rapid growth of the face, augmented by the erupting teeth and developing alveolar processes, the proportion in size is greatly reduced. At birth this proportion is eight to one, whereas in adulthood it is two to one. This increase in the size of the face progresses in three directions or dimensions, namely, height, width, and depth.

Measurements in these three dimensions at various stages of development furnish an index to the rate and time of growth. Study of such measurements reveal that growth is not at a uniform rate at all times in all portions or in one portion at all times.

The development of the face has been divided into seven stages (Hellman), with the dentition as a basis:

- Stage I. The period of early infancy before completion of the deciduous dentition.
- Stage II. The period of late infancy when the deciduous dentition is completed.
- Stage III. The period of childhood, when the first permanent molar is erupting.
- Stage IV. The period of pubescence, when the remaining permanent teeth erupt (except third molars).
- Stage V. The period of adulthood, when the third molars have erupted.
- Stage VI. The period of old age, when the occlusal surfaces of the molars are worn down.
- Stage VII. The period of senility, when at least half of the crowns are worn off, and the loss of some of the teeth or maybe all of the teeth has occurred.

Changes in facial height occur from stage to stage. The face continues to increase in height from early infancy to old age, and decreases in senility. This takes place in two ways: (1) by actual growth of its bony framework, and (2) by wedging apart of the upper and lower face by the erupting teeth. By the upper face is meant that portion from the level of the nasion to the level of the prosthion superior, and the lower face is that portion from the prosthion inferior to the gnathion. In late infancy the face, that is the bony framework, grows faster than in childhood, still slower in old age, and in senility a process of degrowth takes place. Some idea of the relation in rate of growth in height during these stages is shown in the following percentages: In late infancy, seventeen per cent; in childhood, fourteen per cent; twenty-four per cent in youth; six per cent in adulthood, and four per cent in old age. There is a loss of eleven per cent in height during senility. The teeth contribute ten and seven-tenths per cent of the total facial height in childhood, after which the percentage is less and less. The bony framework grows with a combination of surface and suture growth with the maxilla growing downward and the mandible (body) upward.

The dimension of depth of the face increases through the backward growth of the mandible and maxilla to accommodate the erupting teeth. Before a tooth can erupt there must be sufficient

bone formed to provide space and support for it. This backward growth in the mandible occurs on the posterior border of the ramus and, as this growth proceeds, there is atrophy of the anterior border of the ramus, thus making the space for the erupting teeth. This backward growth pushes the face forward, creating more depth. The forward movements of the face occur at the highest rate in the lowest regions, and at intermediate rates in the middle regions. This growth causes a continual change in the relationship of the face and teeth to the cranium during the course of the development. The growth in depth shows the greatest increase during early and middle life and the least decrease in senility. The depth relation in the chin region tends to be maintained throughout senility due to the fact that as the teeth wear down, the chin, or rather the mandible, swings forward and though the face height decreases due to the closer approximation of the jaws, the depth in this region is but slightly altered.

The increase in the width of the face is not influenced as much by the dentition as the height and depth. This growth is attained by surface and suture growth. The areas located farthest from the median line and those in the posterior region of the face widen at a faster rate than those closer to the median line and in the anterior regions. Therefore, the molar regions of the jaws widen faster than the anterior regions. In early infancy the growth in the width of the jaws is primarily for the purpose of accommodating the deciduous teeth.

A knowledge of the periods of rapid growth and retardation is of vital importance to such specialties in dentistry as orthodontia and prosthodontia. With such knowledge, the orthodontist can judge when the proper time for treatment is at hand, and also the type of treatment to use. The prosthodontist is interested in the process of senile atrophy of the alveolar ridges. The alveolar process atrophies twice as much in the molar regions as in the incisor regions, and atrophy is about one-third greater in the maxilla than in the mandible.

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THE TOOTHBRUSH OF SOME UNDERPRIVILEGED PEOPLES

By John K. Ragbir, '37

THE modern toothbrush is a veritable heritage of almost every individual in America, or in any other country of so-called Western Civilization. Dr. Isador Hirschfeld, of Columbia University, in a series of articles in "Dental Items of Interest" (1931 and following issue), unfolded, in a concise form, the history and evolution of the modern toothbrush.

It is the desire of the writer to transmit in this short paper some first-hand knowledge as well as some subjective experience concerning one of the so-called primitive or eastern methods of cleaning teeth that is still in vogue in some countries that have not been well impregnated with a western civilization. It is also the desire of the writer to give his arguments for and against the use of this method.

The method to which I refer is that used largely in India and in places where the method has been disseminated through Indian migration. The use of the "dathwan" (what Dr. Hirschfeld undoubtedly refers to as "Miswak" or "Siwak") is a question which needs some investigation, inasmuch as it involves the oral hygiene practised today by millions of people.

The "dathwan" is a brush made from the twig of a plant, the twig being about seven inches long, and usually from 0.3 to 0.4 inches in diameter. One end of the twig is chewed or hammered into a brush of fibrous bristles, usually from 0.25 to 0.5 inches in length. This device is used as a primitive toothbrush to clean the accessible surface of the teeth. There are certain select plants from which one prefers to obtain these twigs, their selectivity based on the following advantages:

- (a) The capacity to form an effective, fibrous brush.
- (b) The production of vegetable juices that are both pleasant to taste and of some pre-conceived beneficial action as a cleansing agent; and as a healthful stimulant to the oral mucosa.
- (c) The ability to be easily split longitudinally into two bilaterally symmetrical halves, so as to provide a pair of flexible gadgets for scraping off the coating from the interpapillary spaces of the tongue.

Among these plants the "hibiscus" is very popular and easy to obtain, but the twig of the "soap-vine" is supposedly "de luxe." This plant is so called because upon chewing the end of the twig into a brush, a froth similar to soap froth is formed in the mouth, the user believing that the soap-like product has a cleansing action on the teeth. The brush soon becomes soft and falls back on the unchewed supporting twig, and the operation of brushing becomes purely one of polishing the smooth surfaces in a manner similar to that obtained by the hand port polisher. The operation of brushing is seemingly difficult to the westerner, but one is amazed at the dexterity with which these primitive brushes are handled by one accustomed to using them. After the brushing operation is completed, the twig is split longitudinally into two halves, and the tongue is scraped gently, so as to remove any coatings.

In certain parts of India there is an economico-religious consideration which warrants the use of the "dathwan" or "chewstick." The typical easterner, with an eastern culture, generally abhors anything that is western. The pig is an animal abhorred by most Indians. One can understand why an Indian would say "No" a thousand times before consenting to put a brush made of pig's bristles in his mouth. Besides, in many sections of India, people are underprivileged, and it is not uncommon for a laborer to receive as little as two or four cents for a day's wage. One could not within reason expect such an individual to purchase a toothbrush for a dime.

The advantages of the "dathwan" or "chewstick" may be summarized as follows:

1. It provides an early morning grinding exercise for the molars.
2. It is economical.
3. It is very effective in polishing the smooth surfaces of the teeth, even more effective than a toothbrush.

4. It affords the poor a paradoxical luxury—that of being able to afford a new toothbrush each day.
5. The vegetable juices supposedly have a stimulating and beneficial action on the oral mucosa.
6. It permits the daily removal of any coated plaques from the tongue, a practice which is applicable but which is woefully neglected in the routine use of the modern toothbrush.

The disadvantages are:

1. It is inconvenient to obtain and manipulate.
2. The operation calls for too much time expenditure.
3. Inaccessibility of the softened brush to the embrasures and the fissures.
4. If not used carefully, it can be very destructive:
 - (a) To the gingival tissue and the epithelial attachment.
 - (b) It may destroy, or injure, the sense organs contained in the papillae of the tongue.

In conclusion, the writer is of the opinion that the modern toothbrush if used properly and if used also to cleanse the tongue daily, is much more effective than the "chewstick." However, while viewing the question of economics, some underprivileged people do a very good job with the primitive substitute. For those who can afford to purchase toothbrushes, I am of the opinion that they should do so, remembering, however, to brush the tongue also.

DENTISTRY, MEDICINE AND FOCAL INFECTION

By Sol Gingold, '38

IN the light of comparatively recent discoveries pertaining to dentistry and medicine, there has been a rather great migration of these professions toward each other. In most of the ancient and medieval writings it is stated that both oral and general systemic disturbances were diagnosed, as well as treated by the "medicine man" of those days. Somewhere during the process of civilization a breach was established between the oral and general physician. One of the factors which tends to dissolve the breach and to create a closer relationship between the professions is the recent advances in the study of focal infection.

After long continued and numerous painstaking experiments,

the facts of focal infection were established. Stated briefly, focal infection is defined as "the setting up of secondary infections at a distance from the primary focus, by transportation of the original infection via the blood stream." Evidently most of the credit for the progress of this theory belongs to the whole-hearted and unselfish efforts of its pioneers. Probably the greatest contribution in support of this modern idea of infection was donated by Dr. C. H. Mayo, of the Mayo Clinic, in Minnesota. He, who is considered one of the greatest living physicians, recently stated that it was his belief that seventy per cent of all systemic diseases are insidiously produced from some focus of infection, especially from the oral cavity. Recent investigators have also added their observations to show the concurrent existence of dental and systemic disease.

It is now apparent that many pathological conditions that were previously diagnosed as obscure in origin and incurable are due wholly, or in part, to a chronic primary infection. We, as future oral surgeons, should qualify to treat these initial infected foci and to prevent, or retard, the progress of the subsequent systemic involvement. From a diagnostic viewpoint, the chronic periapical infections, pyorrhea alveolaris, and infected pulps, should be most thoroughly surveyed during oral examinations.

The periapical infection is regarded by the majority of dentists and physicians as potentially the most important source of focal infection in the mouth. This root end infection is painless, and in nearly all the cases, symptomless as far as clinical observations can ascertain. It can be detected only by means of the X-ray, which alone warrants the necessity of an X-ray examination in order to arrive at an accurate diagnosis. Arthritis is probably the best known lesion arising from such abscesses. It is a known fact in pathological anatomy that all pus sacs and abscesses have a blood and lymphatic supply, which affords the infected material a chance to get into the general circulation and localize into the joints. During a recent routine examination of arthritic patients in a hospital, it was found that from 65-70% of them gave evidence of recent periapical infection. The bacteriological evidence in support of this theory was the finding of the same type of organisms in the root abscess that was found in the joint lesion.

The primary foci in the mouth may also be concerned with various heart conditions. The most serious types of heart diseases

said to arise directly from a primary focus, are acute and sub-acute bacterial endocarditis. These disturbances, differing mainly in their degree of pathogenicity, occur at the site of a defective heart valve, usually the mitral valve. The prognosis in a fully developed case is practically hopeless, but recovery may occur in the earlier stages. Therefore, we readily see the need as well as the benefits of careful observations and eradication of all foci of infection, whenever possible.

In addition to the conditions originating in the oral cavity, there are various diseases and symptoms of diseases which may be recognized by the dentist while in their early stages. He plays, therefore, an important role in their early recognition and more immediate control. Among the more common maladies which are discoverable while yet early in their courses are: *Scarlet Fever*, the first symptom being a sore throat and a dry tongue which bleeds easily; *Measles*, the epithelium in the mouth is thickened and in places shows foci of fatty degeneration, giving rise to the white dot which forms the center of Koplick's spot, the pathognomonic sign of measles, which appears two to five days before the skin eruption; *Vincent's Angina*, characteristic gingival appearance, and the finding of a fusiform bacillus and the spirochete of Vincent in a simple smear, which will confirm clinical observations; *Chickenpox*, red areas appear on the mucous membrane of hard palate before the rash develops; *Diabetes Mellitus*, a tendency for dryness of the mouth, with an increased desire for liquids, there is also an area of boils on the back of the neck, which are recognizable; *Various Metal Poisonings*, especially lead poisoning, which is characterized early by a "blue line" on the gum. A dentist must always be aware of the venereal disease, since 10% of syphilitic and gonorrhoeal conditions have their primary lesion in the oral cavity.

The above-mentioned conditions are only a small portion of the diseases which are first recognized by a dentist. From clinical and experimental evidence we conclude, therefore, that for an ultimately clearer concept of the "ills of humanity" there should exist a close understanding between the general physician and the dentist.



Great deeds cannot die; they, with the sun and moon, renew their light forever, blessing those that look on them.—*Tennyson*.

A BRIEF REVIEW OF THE HISTORY OF DENTISTRY

By William K. Collins, '39

THE history of the ancient peoples affords us some of the most inspiring tales of the achievements of men. The Babylonian law-givers, the conquering armies of Egypt, Greece, and Rome, the architecture of Egypt, Assyria, and Persia, are but some of the works of ancient men to which our modern civilized nations may yet look for guidance. Certainly the enlightened peoples of today can point with pride to their achievements in medicine and its allied professions as an addition to the entire field of man's advances, that far outshadow in value to humanity any of the more glamorous deeds of men who carried on civilization some several thousand years ago.

Study of the healing arts and practices of all the ancient peoples reveals in its totality that true medicine, and dentistry especially, have really been born long since the dawn of modern history. As man has had to blunder into all of his store of knowledge and, more often than not, to pay a terrible price for it, we cannot turn our backs in disdain on the works of our predecessors, since the development of our knowledge has come only because their practices failed. In fact, some of the works of ancient physicians, who frequently incorporated in their work the practice of dentistry, are still used as a basis for the more highly evolved modern practices of dentistry of today.

That writings on medicine and dentistry are available in the works of men who lived in the more elevated periods of ancient civilizations is perhaps explained by the fact that man seems to show inherently, a desire to comfort and to cure his fellowman in cases of illness. More than likely these earliest attempts were of a surgical nature, followed later by additional products drawn from man's surroundings, such as herbs, plants and animal drugs.

As civilization seems to have advanced hand in hand with some sort of religion, it naturally followed that diseases were regarded as a recompense for sinful deeds and it devolved upon the priesthood to guide the wary away from such pitfalls, and to retrieve those who had been so unfortunate as to be thus punished. Thus began, perhaps, the first of any sort of medical profession, for we are assured that some of the priests became specialized in this line of activity. The less cultured races depended upon the curing of

their diseases by conjurors, who concocted various potions as cures for the ills of their fellowmen.

Dental medicine did not exist in any sort of distinction from medical therapeutics as far as most of the ancient writings show, the two being inseparably interwoven. The writings of ancient Babylonians, Hindus, Hebrews, Greeks, and Romans only incidentally mention teeth and their care. Among the laws of Hammurabi, famous law-giver of ancient times, we read: "if one knocks out a tooth of one of his caste, his own tooth shall be knocked out, while if it is the tooth of a freeman, he shall pay one-half mine silver." Egyptian medical history is adequately presented in the papyri of Ebers and Brugsch, covering the thirty-eighth to the sixteenth centuries B. C. One commentator on the writings of the ancient medical historians states amusingly: "When the condition was serious, treatment was naturally more vigorous. If a patient appeared in a bad way, a mixture of fresh oil, sea salt, human urine and dung from the donkey, cat and pig, along with other ingredients, was made. This was then burned and the patient exposed to the vapors. Obviously, anyone who did not declare himself greatly improved after this treatment was very sick indeed." The dental remedies found in these writings consist largely of powders, plasters, pastes, etc., including honey, sage seed, St. John's bread, and other unidentified plants. Treatment of abscesses, caries, and loose teeth also is mentioned.

Hindus record the use of tooth powders, washes, and the tooth cleaner, "rinacarya," as necessities. Toothpicks of bitter tasting wood were also used and, when these were chewed a fibrous bundle was formed which was used for brushing the teeth and gums.

Among other nations, disagreeable tasting drugs of the animal kingdom were used, and Pliny in his writings states: "If one wishes to be free from toothache, one should eat a whole mouse twice a month."

The practice of medicine and dentistry among the Romans, in the early Christian era, was regarded as a sort of handicraft below the dignity of a Roman citizen. It was carried out, therefore, until the advent of more learned Greek physicians, by the slaves or by a "servus medicus," one especially designated to perform these works in the larger estates, who, over a period of time, acquired a routine knowledge of medical therapy in the more common ills. Later, these representatives of the healing arts

commenced to combine their knowledge and the records of their findings are extensive. We are indebted to Celsus, Pliny, and Cato for some of our most interesting knowledge of the works of their contemporary lay practitioners.

The Romans evidently were quite intent on keeping their teeth in perfect condition and the work of the dentists of this period must have been of a high type. In the Law of Twelve Tables (450 B. C.), is found this paragraph: "Neither add gold (to a corpse), but if anyone shall have teeth bound with gold, it shall be no offense to burn or bury him with it."

Specimens of Roman and Etruscan dentistry have been found in burial places in the form of crown, bridges, bands, etc. Martial, the great satirist, mentions Cascellius, a dentist, "who has grown rich like a senator among the belles dames, and who cures the tooth diseases; and how he can extract!" Myrrh, imported from Asia Minor and Egypt, seems to have been used as a mouth preparation among Roman women. In Martial's works we read: "How do I explain it that your kiss smells of myrrh?"

Also, artificial teeth were fashionable with Roman women, and we read:

"Without shame you make show with bought teeth and hair; but what about the eye, Laelia; can one buy this, also?"

One of the most interesting and valuable accounts of ancient dentistry, affording a complete knowledge of dental therapeutics of the time, is that of Pedanios Discorides, who lived in the latter half of the first century A. D. He was a surgeon of the Roman army legions, visited many countries, and was deeply interested in botany. It is he who is responsible for coinage of the term "materia medica," for in a work of his so entitled is found a description of nearly a thousand vegetable drugs, many animal drugs, and mention of several mineral compounds which served as a guide to medicine for some sixteen centuries afterwards. So well described are the plants mentioned in Discorides' works that they have all except a few been found in their respective countries. In this work of Discorides may be found over a hundred mentionings of tooth diseases and cures.

Dental historians usually cite the works of Scribonius Largus whose "de compositiones," among other things, gives an account of many prescriptions for tooth powders and drugs for allaying tooth pains. Discorides' works, however, far outshadow those of Scribonius Largus.

The works of the more well-known Greco-Roman authors are drawn from the works of Discorides. Galen, Oribazius, Celsus, Aurelianus, Paulus Aegineta, and others, all found the foundation for their works in Discorides' writings.

After the fall of the Roman Empire, medicine and dentistry lost what little advancement they had obtained along scientific lines. The work of medieval historians is but a repetition of the earlier superstitious accounts of ancient times, with a heavier admixture of charlatanism and necromancy. As late as 1310, for example, we read in the works of John Gaddesden of Merton College, Oxford, of a "mixtum compositum" to ward off dental pain, consisting of "the gall of a cow, wormwood, alum, pepper, nutgalls, cloves, pitch, mustard seed, the heart of a magpie, the fat of mice, cow dung, plantain and lice."

That dentistry, with medicine, can have come from such an abundance of ignorance and superstition, to attain in such a comparatively short period of time, such a respected position as it does today gives us a justifiable belief that the future of dentistry yet holds the promise of supplying supreme benefits to humanity.

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THE LIFE OF A DENTAL HYGIENIST

(Dedicated to the Class of 1937)

By Miriam A. Lewis, '36

THE life of a dental hygienist may be divided into three important aspects. First, that of the professional woman; second, that of the doctor's assistant, and third, that of a human being. It seems strange that one should place that of the human being last, but in a sense it ranks last in a hygienist's life.

Upon delving into the life of the professional woman, we find that all else has been cast aside for the sake of her profession. She must acquire a certain amount of dignity, self-assurance, independence, and the will to do. To these things a hygienist must aspire in order to make good in her profession.

The second aspect of a dental hygienist's life is that of being a doctor's assistant. This, of necessity, embraces a mass of duties.

It is the assistant's duty to be almost a "right hand" to her doctor. The importance of his position must constantly be kept in mind. Her relationship with him in the office is as important to her as her education; and as worthy of her complete attention as the acquisition of her profession. A good assistant should have a soundness of character and a correctness of life if she expects to stand out in her position and in the mind of her doctor. She should extend the sphere of her vocation by exalting its standards and upholding its honor and dignity. In acquiring the dignity most essential to the assistant, a poise that cannot be ruffled by the stress and strain of a day's work must be assumed. The assistant should strive for an ultimate goal and that goal can only be reached by perseverance, application and courage. In this way she may attain the glory of achievement and a pride in having the power to do that which she sets out to do.

Strangely enough, in placing the human being last it becomes harder to talk about. Maybe because this role is filled so naturally in the capacity of a professional woman or an assistant, but I believe it should be placed in a category all its own. So often the layman forms the false conclusion that professional people are cold and heartless. The hygienist may be one to revise these statements by giving advice to mothers, words of comfort to children and rays of confidence to calm the fear of all patients. She may play the role of an adviser and comforter to a large "family" and in this way endear herself to her patients and all others with whom she may come in contact. It is a known fact that people have a constant fear of a dentist's office. When a patient enters the room in this frame of mind, as they often will, the hygienist may play her role of a real human being by talking to them and diverting their minds and so putting them in a position to be an excellent patient.

These three aspects of the life of a dental hygienist are equally important. Surely they all require the same amount of work and faith. Work denotes effort, either physical or mental. Fear paralyzes effort—faith sustains it. Work and faith make up life—the life of a Dental Hygienist.



Glory is like a circle in the water which never ceaseth to enlarge itself, till, by broad spreading, it disperses to nought.—*Shakespeare*.

“IF”

*(For the next class of dental hygienists;
with apologies to Kipling)*

By Eleanor Davis, '36

If you can see the cheating about you,
And never yield to deal in “Ponies” too;
If you can bravely smile when professors flunk you,
And never question, in turn, their right to do;
If you can keep a calm, unruffled spirit
In spite of “broken teeth” or failed “unknowns”
And tho’ you know what’s meant by hypoplastic,
You’ve got to know the name of every bone.

If you can see your marks, believing
Deep down inside you’re going to pass;
If you can get by without deceiving,
You’ve gone a long, long way, my lass.
If you can learn *Materia Medica*,
And know drugs and their therapeutic use;
If you can digest enough *Histology*
To know the embryonic structure of a tooth;

If you can keep within your heart the power
To say that firm, unconquerable “No”;
If you can brave a present shadowed hour
Rather than “cut” to build a future woe;
If all your *Foodstuffs* you remember,
And, in *Chemistry*, your *RHO*;
If you understand electrical power,
Then to the clinic you may go.

If you can learn to respect instructors,
And their lessons promptly do;
If at the hospital you do your best,
And you’re in the clinic exactly at two,
When you have learned the art of being
A *Public Speaker*, *First Aider*, as well as all the rest;
Then, and only then, my dear, will you
Be a DENTAL HYGIENIST!