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The magazine that covers the whole range of your interests — professional and personal.

"GOOD TEETH AND GOOD HEALTH GO TOGETHER"
SUCCROSE CONTENTS OF COOKIES

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<th>Product</th>
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PHYSICAL EVALUATION OF THE PATIENT

A top legal official of the American Dental Association has said that dentists "may have a legal responsibility to screen patients for high blood pressure as part of the patient's physical examination." Because of certain state dental laws and court rulings resulting from malpractice suits the need for the dentist's physical evaluation of patients including the presence of hypertension has arisen. In an article in Dental Abstracts dentists were urged to join in a national program to record high blood pressure of patients as part of their routine examination. In California, Pennsylvania, and Michigan, under state dental laws, dentists are authorized to conduct physical examinations.

The need to protect the patient as well as the dentist in cases of failing health because of treatment when high blood pressure is present is evident. Under four court rulings it is clear that the failure of dentists to take a complete physical history may make him legally vulnerable. Of course, the dentist who takes a blood pressure reading of a patient and finds it high may not prescribe for the condition but should refer the patient to his physician. Many dental schools now in taking is advisable and it should be more extensive for patients who are not in good health, who are handicapped or who are 65 years of age or older.
Understand the Patient

Such situations must be avoided if at all possible. By understanding our patients we can create an atmosphere of trust that will enable them to accept our treatment and respond successfully. Too often emotional upset and frustration on the part of the patient is followed by distrust and impatience, ending in a rejection of the appliance. At the same time, we must be able to recognize the patient who is beset with deep personality problems, the patient who will not wear a removable appliance despite all our efforts and understanding. These patients should be rejected by us and referred to specialists who may be better equipped to handle them.

Partial and partial dentures can mean much more to the patient than an aid to mastication. To some patients they may mean a new job, elevated social status, or even sexual rejuvenation. The full-denture patient in particular, says Dr. Dewey Bell of Richmond, Virginia, is "confronted with a host of new experiences: physical, emotional, social, psychological, and functional." Added to these difficulties, most patients are totally ignorant of the nature of the treatment sought or what to expect. Patients should be prepared for removable appliances before impressions are taken. But be careful that the enthusiasm generated by a handsome down payment doesn't compel you to make any promises you cannot fulfill. To put it simply, the dissatisfaction of a denture patient will depend, to a great degree, upon the extent of the difference between that which the patient is led to expect and that which he actually receives.

However, not telling the patient what he can expect from his dentures can be as disastrous as exaggerated promises. In these cases the patient will usually expect the results his friends have had, or even his friends' friends. These are rarely cases he knows firsthand and are reported dental experiences totally devoid of any accuracy or clarity. For example, if his lower full dentures move, he will swear to you that his friend has one that never moves. His friend told him so. But what his friend forgot to tell him was that his lower denture was clasped to three molars. No malocclusion existed on the part of the friend; he just didn't think it made any difference.

There is then the patient who has teeth made and the very next day was graying away on chicken bones without the slightest discomfort. That particular patient has been wearing dentures for 30 years and remembers every detail of the day after insertion, but ask him what he had for breakfast two days ago and his mind goes blank.

How to Know the Patient

After the examination and diagnosis, preparing the patient for partial or full dentures necessitates a knowledge of the patient himself. A song from the King and I suggests the approach we should take—getting to know him, getting to know all about him. But since we are not trained psychologists, how are we to accomplish this? We cannot spend hours delving into the patient's past and his personal problems. However, we can get a good insight into the patient's make-up, physiology and mental, by a good medical history and consultation, provided we ask the right questions and are observant. These questions should convey to the patient our concern and interest in his wellbeing. And they should be phrased so as to elicit information as to his general health and behavior patterns relative to wearing removable dentures. From the third or fourth hour after death and is completed by the fifth or sixth hour. After the rigidity of the eyelids the facial muscles are the next to stiffen. . . . In a pretrial hearing of a murder case last year, the legality of taking impressions of the mouth of the suspect was upheld in an effort to ascertain if the bite marks on the victim were those of the suspect. . . . The strength of barnacle cement has been compared favorably with polycarboxylates. It's added superior resistance to moisture might make it most desirable for dental use. . . . In Sweden the average lifetime of a toothbrush is 4.5 months. It was also discovered that persons with lesser income wore their brushes out faster than the more affluent Swedes. Wonder why? . . . The rationale of foe setting still seems to be up in the air with professional groups. A study of physician and lawyer fees schedules made in Canada showed that the most common factor in determining fees was "whatever the traffic will bear." . . . The importance of hormones brought to the attention of the medical profession by Starling in 1903 was described by Hippocrates as vital secretions that had the "effect of arousing the body." The Greek verb hormao meant "to arouse" or "set in motion."
Guided Eruption
(Continued from Page 6)
crowded cases, a serial extraction procedure (which may be adequate treatment) can be carried out. Ideal handpiece is recommended, and entry into the nerve can be carried out with full-banded appliances in as little as six to nine months time. Never, never try serial extraction on anything other than solid Class I crowded malocclusion!

In the second phase of space management it will be necessary to slice away a portion of the mesial surface of the deciduous second molar, although one must be careful to leave enough of this tooth to maintain space for the later eruption of the permanent second bicuspids. The same long, tapered, diamond drill is used in making the second slice. If the slice involves the nerve, again a pulpotomy must be performed. For this second pulpotomy, a No. 6 bur with a straight tip should be from the mesial surface. Again, only a heavy mixture of ZOE is pressed into the pulp cavity; no other filling being necessary. This cavitation may be as early as five or six years. By sighting and helping to convert these abnormal molar relations to Class I in the very early years, we are subsequently able to conserve the "E" space for the anteriors.

Many children on whom this slicing procedure has been used will still need full orthodontic treatment, although some Class I border-line crowded cases will have been provided the marginal space needed by discriminatory use of the "E" space. When full orthodontic treatment is required—because of rotations, improper jaw relations, etc.—it is still preferable to utilize the "E" space by slicing rather than restoring to outright extraction of deciduous cusps which precipitates flaring and a weakened anterior position. Any dentist who accepts children into his practice should be acquainted with the growth and development of facial and oral structures and the impending problems these present. In the past, there has been considerable neglect in assuming responsibility in this area. Space control is an integral part of dentistry for children; it behooves us to practice it.

space to the anterior teeth. However, if the child has an "end-to-end" or Class II molar relation, it will then be necessary to use a headgear or other appliance on the upper arch to obtain a Class I molar relation since the lower six, obviously, cannot move into the "E" space to gain this relation. Many appliances for correction of Class II can be successfully used on a child as soon as he is able to handle the apparatus, which, in some cases, may be as early as five or six years. By sighting and helping to convert these abnormal molar relations to Class I in the very early years, we are subsequently able to conserve the "E" space for the anteriors.

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Preparing the Patient
Since the mouth is probably the most emotionally charged area of the body, it often reflects other body disturbances. Such symptoms as unaccountable burning, pain, irregular movements, muscular tension, grinding, among others, may be more systemic or mental in origin than local. Problems which prevent the patient from adapting to changes in the mouth can easily spell failure. Even after we make positive changes in oral function, changes that we consider an achievement, to the patient these are body changes to which he must adapt. Failure to adapt to changes in the mouth because of the introduction of an appliance can lead to great anxieties compelling the patient to remove the bridge.

The so-called normal patient must be prepared for the insertion of a partial or full denture by telling him of the initial fullness, possible discomfort, needed adjustments, change of bite and chewing habits, movement, tongue or lip displacement, initial increase of saliva, and so forth. It is the unexpected, especially when disagreeable, that is most difficult for the patient to cope with. Particularly, in the case of full dentures, tell him that the artificial dentures are exactly that—artificial. He will no more be able to eat as well or feel as well with them as compared with his "own" than he would be able to walk as well with an artificial limb as compared to his own limbs. Dentures are, after all, oral crutches. But by all means be encouraging with the end result of your work. Assure him that, with his cooperation, he will have a denture, adjustments, that will be comfortable, functional, and esthetic. He is to understand that the teeth will never feel like his own, although in time they may well seem to be an indispensable part of himself. How pleasant it is to have a patient return a week after he receives an appliance and say, "Doc, I didn't have any trouble at all!" This has happened to all of us. And when the properly prepared patient returns with some discomfort you find that he too is not unhappy or discouraged; it is probably not as bad as he might have expected.

The time one takes in trying to understand the patient who is a candidate for removable appliances is probably more important than the actual work performed. In an atmosphere of pleasant communication and trust you will find greater success with your denture patients and eliminate annoying complaints, adjustments, and remakes.

ALL TIED UP
Her Dental appointment was Monday at ten. But the nurse phoned and changed it to three. A subsequent shift made it Wednesday at four. Without an apology.

On Wednesday, the date was postponed for a day. Since appointments were running behind. Again she was counseled to: Make it next week. And iconvoked. Did she mind?

She cannot change dentists. Her reasons make sense. Yet such scrambling of dates throws her life, And why does she say this merry-go-round? She's the dentist's wife!

DOROTHY R. MCWOOD
On a breakout of the health care dollar, this is how it was spent for dental services:

1960 7.4 cents
1967 7.2 cents
1971 6.1 cents
1972* 6.9 cents
1973* 6.7 cents

In 1972, the per capita expenditure for health care in the United States was $343.89. Of this, the dental services costs $23.86.

In 1973, per capita health care spending was $375.41, of which $25.25 was for dental services.

Of the $23.86 which each American spent for dental care in 1972, $22.65 was paid for by private funds and $1.21 by public funds.

In that year, the per capita figure for hospital care was $154.51, of which $71.57 was paid for by private funds and $82.94 by public funds. Physician fees in 1972, on a per capita basis, were $78.58, of which $65.88 was from private funds and $17.70 from public monies.

In 1973, this was the breakdown, per capita:
Hospital care, $169.77, $79.50 by private funds and $90.28 by public funds; physician services, $84.61, $65.65 by private funds and $18.95 by public funds.

By age group, this is how the per capita expenditures for dental services were broken down for the two years:

<table>
<thead>
<tr>
<th>Year</th>
<th>Under 19</th>
<th>19-64</th>
<th>65 and over</th>
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<tbody>
<tr>
<td>1972</td>
<td>14.98</td>
<td>30.86</td>
<td>16.95</td>
</tr>
<tr>
<td>1973</td>
<td>16.21</td>
<td>32.27</td>
<td>17.87</td>
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The U.S. Dental Economy Today:

THE DENTAL DOLLAR

(American's spent 6.7 cents of their health care dollar in 1973 for dental services, a drop of two-tenths of a cent from 1972.)

And on a per capita basis, in 1973 the average American spent $25.25 per person annually to keep his teeth healthy.

Costs for dental services were way down the list of this nation's health care expenditures, ranking a distant fourth behind hospital care, physician services, and drugs and drug sundries.

In Federal fiscal year 1973—from July 1, 1972, to June 30, 1973—Americans spent $80,048,000 to protect their health. Of this, dental services accounted for $5,385,000.

In Federal fiscal year 1972—the same 12 months of the year before—health care expenditures in the United States came to $72,761,000, with dental services representing $5,048,000.

These figures were compiled by the United States Department of Health, Education, and Welfare.

Amazingly enough, the 6.7 cents of the health care dollar of fiscal 1973 was less than the 7.4 cents spent in 1973 for dental services, a drop of two-tenths of a cent from 1972.

In that year, dental care ranked fourth behind hospital care, physician services, and drugs and drug sundries.

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As a result of his work with "incorruptible teeth," Fonzi's fame spread throughout Europe. In 1815, he was called to the Bavarian Court at Munich to treat the royal personages there. This engagement was soon followed by service to the family of the Czar of Russia, with whom he remained for two years. Then, yearning for the Mediterranean-land of his youth—and despite Alexander I's entreaties to remain in Russia, he left for Madrid where he became the court dentist and had an annual pension bestowed upon him by the Spanish Bourbons.

In later years, he turned to other business ventures but suffered reverses and lost his fortune as well as his health. In 1840, Giuseppangelo Fonzi, at the age of seventy-two, died while enroute to Barcelona to board ship to visit his family in Italy.

Although the greater part of his life was devoted to the dental profession, Fonzi also spent much of his time investing, writing, and authoring epic poems, religious works and volumes of history. The great dental historian, Vincenzo Guerini, said of Fonzi: "His marvelous imagination showed him to have been chosen by nature as a poet. But fate diverted the course of his life to other channels."
of the Egyptians and the Phoenicians to the "restorative" type. They demonstrated exquisite techniques in the use of gold, in the carving of artificial teeth out before signed for the extraction of teeth, was kept in the temple of Apollo at Delphi. Hippocrates, the father of medicine, separated religious practices from the treatment of disease in his teachings. He included dentalills and he prescribed remedial measures in his writings. Thus, beginning with the heritage of Hesi-Rê, and the generations of Egyptian dentists who came after him, the practice of surgery, dentistry, and science spread throughout the Mediterranean basin as well as into the Near East.

John Hunter was born in Scotland on February 13, 1728. Evincing a high level of manual skill and an inclining toward mechanics, he spent a brief period early in his life as an apprentice cabinetmaker. However, John had great pride in his elder brother William Hunter for being the best practical anatomist of the age. Scientists men sought his acquaintance, and students came to him from all countries because of his competency. These contacts allowed Hunter the great advantage of being informed about advances in physiology and pathology. This knowledge enabled him to conduct research in the most desirable areas.

Thus, beginning with the heritage of Hesi-Rê, and the generations of Egyptian dentists who came after him, the practice of surgery, dentistry, and science spread throughout the Mediterranean basin as well as into the Near East.

In 1771, John Hunter published a masterpiece entitled Natural History of the Human Teeth, and seven years later he produced a monograph, Practical Treatise on the Diseases of the Teeth. These writings initiated a new epoch in dentistry, especially in Great Britain where rigorous scientific observation finally took the place of blind empiricism. At the time when Hunter wrote his Natural History of the Human Teeth, the treatment of teeth was still consigned to the hands of mechanics whose knowledge was limited to the extraction of teeth, the manufacture of substitutes for lost teeth and some rude methods of filling the cavities produced by decay.

The importance of the teeth is such that they deserve our attention as well with respect to the preservation of them when in a healthy state as the methods of curing them when diseased. They require this attention not only for the preservation of themselves as instruments useful to the body but also on account of other parts with which they are connected, for disease in the teeth is apt to produce disease in the neighboring parts, frequently of very serious consequence.

Crowding is one of the most frequent problems in the permanent dentition of American children. The underlying causes of this condition are many, but the crux of the matter is there is not enough space in the dental arch. Since there will be no growth in the basal bone mesial to the first permanent molars, all bicuspids, cuspids and anteriors will be accommodated—or imposed—in this existing space. Consequently, early crowding in the arch between the six-year molars signifies continual crowding in this area, as well as in the distal portion of the dental arch when wisdom teeth develop. However, if available space in the dental arch is properly utilized as the child develops, the problem can be greatly reduced.

Ideally, a child should be seen as early as two and one-half to three years of age. At this age it is possible to predict whether or not the patient will have adequate space for his permanent dentition. Ironically it is the child with the well-aligned deciduous teeth, without spaces; who is most likely to have a crowded situation a few years hence.

Unfortunately, the dentist often does not see a child until the lower permanent molars have begun to erupt. If these teeth are lapped or erupting lingually to the deciduous centrals, the child is an obvious candidate for eruption guidance and space control. A panoramic x-ray, to observe the size of the permanent teeth and their eruption path, to determine anomalies (e.g. supernumerary teeth, developing ectopic cuspids) to drift to a corresponding undesired mesial position.

in turn this allows the first and second bicuspids to drift to a corresponding undesired mesial position. To provide adequate space for erupting permanent laterals, a prevalent practice is to remove the deciduous cuspids. Unless over one-half of this cuspid space is needed for the incoming permanent laterals, eruption of the deciduous cuspids is not desirable. If the deciduous cuspids are removed when less than one-half of this cuspid space is needed, the four anterior teeth will, almost without exception, flare out. In this position they are easily pushed aside by the erupting permanent cuspids, allowing these cuspids to assume an undesired mesial position.

This prevents the lifting and holding of the anterior in position and so they can be brought into the erupting force of the permanent cuspids, it is recommended that these teeth be allowed only enough space in which to erupt straight. Such space can often be provided by a pragmatic, two-phase slicing technique. The success of this technique depends on careful space analysis and timing with the child's growth and oral development.

After the laterals have begun to erupt, the exact space needed is calculated using adequate x-rays and study models. If the lacking space for the erupting laterals is one-half or less of the deciduous cuspid
space, it can be provided by slicing the mesial of the deciduous cuspsids in lieu of extracting them. The slice is made with a long, tapered diamond drill approximately six to eight mm long and one-half mm in diameter at its tip. It is not desirable to use a disk for slicing because:

1. A concave slice must frequently be made; (2) the desired length of the slice cannot be attained with a disk without cutting buccal and lingual tissue; and (3) possible damage to the crown of the erupting permanent tooth may be caused by a disk slice. (See Figure No. 1.)

Tissue should be retracted from the crown of the lateral when it is not clearly visible. At times the erupting permanent lateral will cause resorption of a portion of the root of the deciduous cuspid, allowing it to erupt into the path it has eaten away. Upon reaching the enamelized crown of the deciduous tooth the resorption cannot continue, the unerupted crown of the lateral is blocked and eruption ceases. Adequate tissue retraction makes it possible to determine the exact position of the lateral crown.

The slice, with the recommended diamond drill, is made on a line parallel to the distal border of the permanent lateral, slicing through the nerve of the deciduous cuspid if necessary. Up to two-thirds of the deciduous cuspid crown can be safely sacrificed. The same long, tapered diamond drill is used to remove the nerve. Because of the danger of an embolus, air is never used in this procedure. A small stream of water is adequate. The nerve canal is then packed with a thick mixture of ZnOE, nothing more. At this time further aid can be provided the erupting teeth by surgically removing small wedges of gum tissue on the sides to which movement is desired.

The first phase of slicing can be carried out on both upper and lower arches, if necessary. However, because of the nature of distal borders of the upper laterals to erupt labially to the mesial border of the deciduous cuspsids, it may not be necessary to carry out such a procedure on the upper anteriors. The curved nature of the upper deciduous cuspsids allows the upper laterals to come in straight, even though a crowding condition may exist. It is important to keep parents informed and cooperating along with their child's oral development, for the patient in a space-guidance program should be seen at frequent intervals while the teeth are erupting. If all noxious habits are under control the upper and lower four anteriors will, almost without exception, come in straight utilizing the space provided by slicing the deciduous cuspsids. (See Figure No. 2.)

The second phase of the slicing procedure is carried out as soon as either the lower deciduous cuspid or deciduous first molar is lost. At this time the remaining C or D is always extracted. Another space analysis is now made, with the aid of x-rays and a new set of study models, to determine if it is at all possible to bring the remaining three permanent teeth into the existing space between the six-year molars and the laterals. If the space is determined to be adequate, then we can proceed with the second phase of our slicing technique. (Only if there is marked space discrepancy—an obvious lack of room—do we resort to extracting the permanent bicuspids.) (Continued on Page 14)

The First Known Dentist—Hesi-Re (ca. 3000 B.C.)

Some primitive form of dental treatment came into being in antiquity as soon as man began to experience pain in his teeth. Since teeth, and especially their enamel coverings, are the hardest and most durable substances formed by the living body, the finding of dental disease in ancient societies and the attempts to treat it is quite common. Many early peoples believed they could beautify themselves by filling or otherwise changing the appearance of their teeth. Thus, man has very likely been concerned with his teeth throughout his existence on earth.

The earliest known "professional" concern with dentistry has been found in Egypt. A papyrus containing medical diagnostic procedures accumulated between about 3700 B.C. and 1550 B.C., discovered by Professor George Ebers at Thebes in 1875, listed eleven dental prescriptions. About 500 B.C., Herodotus observed that dentistry in Egypt was practiced as a medical specialty. He wrote that, "Egypt is quite full of doctors: those for the eyes, those for the head, some for the teeth..." One such doctor was Hesi-Re, known as the first dentist. Analysis of hieroglyphic signs indicate that his title was "Chief of the Toothers and Physicians."

Hesi-Re lived about 3000 B.C., during the reign of King Zoser. He was the official chief of dental practitioners and physicians in King Zoser's palace. He is portrayed on the accompanying art medal as the earliest known individual practicing the dental art in antiquity. This chronologically first medal in the Medicial History of Dentistry is representative of the ancient practitioners not only in Egypt but also in the other lands of antiquity.

The oldest comment on dental disease is probably that made in a Sumerian text titled The Legend of the Worm. This cuneiform tablet, dating from about 2500 B.C., was unearthed in the Euphrates River Valley and contains advice on medicinal and mechanical treatment of toothache. Toothache was believed to be caused by small gnawing worms within the aching tooth.

A Sankrit record, the Agurveda, of the late first millennium B.C., records dental knowledge and practice in ancient India. It includes a description of the anatomy of the mouth and its pathology and treatment as well as the need for oral hygiene. The Hindus cleaned their teeth with a rudimentary brush made from twigs. They also used tooth pastes and powders and often decorated their teeth with jewels. The latter practice required that holes be drilled through the body of the crown without injuring the pulp. Lignating the teeth was performed by jewelers, Dental surgeons with well-designed tools removed tartar, extracted teeth and treated pyorrhea.

Between about 1000 B.C. and about 400 B.C., the Etruscans in the Italian peninsula advanced the science of dental prosthetics from the "rententive" type
The Dental Health Education Exhibit at Chicago's Museum of Science and Industry

"Good Teeth and Good Health Go Together"

by Richard W. Janson, D.D.S.

Chicago Dental Society

A comprehensive dental health education exhibit was opened January 30, 1974, at Chicago's prestigious Museum of Science and Industry. Entitled "Good Teeth and Good Health Go Together," it was built at a cost of $180,000 and financed equally by the Chicago Dental Society, the Illinois State Dental Society, and the American Dental Association.

The 1,600 square foot exhibit is the result of four years of planning. Various components within the exhibit explore the approaches the individual can personally institute to prevent the necessity for extensive dental service. Basic structure and functions of teeth are explored as well as information about soft tissue and oral health.

According to Olaf Harringer, exhibits manager for the Museum, the dental health project is the 14th exhibit to be established there by professional health societies and institutions. Other health exhibits include those relating to heart, arthritis, kidney, anesthesia, fetal development, and cancer, as well as a full-size operating theatre.

The Museum of Science and Industry is a world-renowned education institution. Each year approximately 3.3 million people visit the facility. These individuals come not only from Chicago and surrounding towns in Illinois. On any given day, 44 states and 10 foreign countries are represented. More than 600,000 school children are bussed to the Museum annually.

The Chicago Dental Society took the initiative for the exhibit when it was pointed out to them that the Museum did not have one relating to dentistry. The group's dental health education committee was given the responsibility for building a rationale for such an exhibit. In preparing a presentation for the Society's board of directors, the committee composed the following questions and answers:

1. Why should such an exhibit be built?
   Because the public is woefully ignorant about the art and science of dentistry. Socio-economic status does not change the widely-held view that all persons must lose their teeth eventually. The average individual has no comprehension of the four basic parts of the tooth or how it is attached to the bone, making it difficult for the dentist to plan treatment with a patient. The closest analogy to this communication problem that I can think of is the "generation gap" whereby parents and children have such a different frame of reference that understanding is literally impossible. Thus, we zeroed in on one of our goals, to raise the public's dental I.Q. and thus alleviate which keep individuals away from the dentist.

2. What should the exhibit try to do?
   We decided to keep it simple and began with a four-part premise: (a) You do not have to lose your teeth; (b) you and your dentist can save your teeth comfortably; (c) most dental problems can be prevented; and (d) dentists treat people not teeth. These themes were interwoven into all the individual presentations. Since studies disclose that the average individual's attention span is between three to six minutes, the presentations of the various units are within that time frame.

3. What message do we want the viewer to retain?
   The most important concept of all is that fact that man can retain his teeth if he and his dentist work at it. And, that good oral health permits men and women to be healthier individuals.

For example, the most important message the viewer gets from the endodontics unit is that there is an
alternative to extraction. Thus, the exhibit explains simply and clearly how endodontia rescues a tooth from the forceps. That is the main message, not how the root canal treatment is accomplished, even though this is shown most clearly.

4. How to finance the exhibit and who will sponsor it?

We came to the conclusion that dental societies should be responsible for financing and sponsoring this exhibit. If we don’t care then who else should? For instance, if an insurance company sponsored such an exhibit, would they translate the basic dental health message to the public? Because we are professionals, we have a responsibility to make the public aware of the various aspects of dentistry.

With this background, the committee commissioned the construction of a scale model and brought the concept to the attention of the Chicago Dental Society’s officers and directors. Subsequently that organization provided the committee with $3,700 for a content study.

5. How is an exhibit constructed and scripted?

This is where the work really began. The committee worked with an exhibit firm writing a broad text outline. As new concepts were added to the outline, changes were made in the model. (There were stages where the text changed the design and where the design changed the text—both exhilarating and frustrating.) Ultimately, the committee and designers reached a point of agreement which utilized every available inch of space.

The Final Problem: Costs

Finally, we were faced with projecting the costs of building the exhibit. Since we were “breaking new