In an article published in the American Journal of Orthodontics and Dentofacial Orthopedics (May 1992), I emphasized the need to raise the standard of care delivered by our profession. For orthodontics to succeed as a specialty, the following steps must be taken:

- Specific, comprehensive, universal treatment goals must be developed and adopted.
- Occlusion, TM joint function, facial esthetics and periodontics must receive greater emphasis in our graduate programs.
- The quality of orthodontic records must be upgraded to include diagnostic study models mounted in the seated condylar position.
- A comprehensive orthodontic classification system must be developed – one that will consistently reveal the true nature of the problem(s) as presented by each individual patient.
- Orthodontic diagnosis must become more accurate and treatment mechanics must be more specific, tailored to each individual patient and his/her diagnostic needs.
- Orthodontic treatment time must be minimized. There is nothing that orthodontists can do that will have a more favorable effect on the public than to decrease treatment time. This means making accurate, honest assessments of the problems and the potential mechanics to solve these problems. The key is to treat specific problems that can and should be corrected early while reserving treatment for other problems that should be corrected later. If appliances will need to be placed at a later date in the majority of cases, the indications for early treatment can be more specific in scope.

These are the issues as we approach the year 2000 – the future of orthodontic diagnosis, treatment planning and execution is just around the corner.

The issues that are important to our patients are:

1. An esthetic improvement (facially and dentally)
2. Increased longevity of the teeth and structures associated with the dentition (periodontium and TM joints)

These are achieved on a consistent basis through:

1. The application of specific, comprehensive orthodontic treatment goals in the areas of:
   - Facial esthetics
   - Dental esthetics
   - Periodontal health
   - Functional occlusion/condylar position.
Goals & Treatment

Orthodontic diagnosis is a three-dimensional exercise because the orthodontic treatment problems exist three-dimensionally. Two points are essential:
1. The skeletal, dental and functional (condylar position) relationships must be evaluated in three planes of space.
2. The skeletal relationships must be assessed individually, separate from the dental and soft-tissue relationships. Orthodontic assessment of patients has evolved as treatment goals have changed. Orthodontists need to be able to picture the ideal treatment goals (facial, skeletal, dental, functional, condylar position) clearly before tooth movement has begun. Once specific areas have been evaluated thoroughly, a problem list can be formulated that compares each patient’s conditions with the ideal. The problem list then determines patient-specific treatment mechanics.

Facial Esthetics
Esthetics has become extremely important in contemporary society. Unless he or she presents with pain or some other functional disturbance, the patient’s motivation to seek orthodontic treatment is primarily esthetic. Yet, the concept of beauty and what constitutes balance and harmony are highly subjective. Emphasis must therefore be placed on evaluation and description of the relationships between soft and hard tissue. Traditionally, orthodontic treatment planning has emphasized the relationship of the hard tissues (skeletal and dental). Contemporary orthodontic treatment places a strong emphasis on the facial analysis in the clinical exam, diagnosis, and treatment planning. This includes soft-tissue drape and its relationship to the hard tissues. Variations in tissue thickness and muscle tone/ function mean that soft tissues do not always exactly reflect the underlying skeletal structure. Since orthodontic treatment often creates changes in the soft tissue, treatment based solely on evaluation of the hard tissues may not produce esthetically desirable changes in the soft tissue. If there is disagreement between the soft-tissue and skeletal evaluations, the soft-tissue evaluation should take precedence. Also, when positioning the dentition within the face, it is better, given the choice, to finish fuller rather than flatter in an attempt to preserve the soft-tissue convexity as the face matures.

Dental Esthetics
Andrews’ Six Keys, which he developed by studying untreated ideal occlusions, are the ideal for static dental alignment. Dr. Andrews determined the occlusal characteristics that are common to all ideal occlusions found in nature. His pioneering research led to the development of the original patented Straight-Wire Appliance, which remains the standard of excellence in orthodontic appliances. It puts the beauty into the arrangement of teeth that Mother Nature designed. What separates the original patented “A” Company Straight-Wire Appliance from all other bracket systems is the ability to consistently deliver “The Look of Natural Beauty,” which is what patients want and what orthodontists want to provide for their patients (Figure 1).

The most important factor in the equation for
continued on following page
Case Study

This complex interdisciplinary case was selected to illustrate the integration of two essential principles:

- Application of specific comprehensive orthodontic treatment goals
- Use of a precision appliance system – the original patented “A” Company Straight-Wire Appliance

History

This patient presented as a transfer patient (having been in treatment three years previously) with the chief complaint of “unaligned jaws, overbite, spacing and daily facial muscle-tension headaches.”

Diagnosis

Facial Pattern:
1. Mesognathic, convex, mesofacial symmetric
2. Skeletal maxillary vertical excess manifested by gummy smile and posterior open bite
3. Lip strain and mouth breathing

Skeletal Pattern:
1. Skeletal Class II (mild maxillary protrusion and mild mandibular apical base retrusion)
2. Skeletal open bite/clockwise mandibular rotation
3. Maxillary vertical excess, anterior and posterior

Functional Assessment:
1. Daily facial muscle-tension headaches
2. A significant discrepancy between seated condylar position and habitual (MIC/CO) position of the condyle (dual bite) as shown by pretreatment mounting and condylar graph measurements
3. Dental relationship in habitual (MIC/CO) position: moderate Class II, division 1, deep bite
4. Dental relationship in seated condylar position: severe Class II, division 1, open bite with significant condylar distraction

Treatment

1. Presurgical Orthodontic Preparation (10 months)
   - Nonextraction.
   - Convert appliance to “A” Company .022 Roth SWA.
   - Level and align to presurgical archwires:
     - Upper .019 x .025 SS
     - Lower .021 x .025 SS

2. Surgery
   - Maxilla:
     - Anterior impaction, 3.5 mm
     - Posterior impaction, 4.5 mm
     - Setback/retrusion, 2.0 mm
   - Mandible:
     - Autorotation only

3. Postsurgical Occlusal Finishing (9 months)
   - Full-sized (.021 x .025) Memoflex™ (braided rectangular) archwires and short Class II elastics (3 months)

Results

The pretreatment and presurgical condylar distractions were reduced and symptoms were eliminated. Esthetics (facial, skeletal, dental) were improved. Total treatment time was 19 months.

What separates the original patented “A” Company Straight-Wire Appliance system from all other bracket systems is the ability to consistently deliver The Look of Natural Beauty™."
Pretreatment case continued on following page

Transfer models mounted in the seated condylar position. Note severe Class II, division 1, open bite with significant condylar distraction.

Pretreatment models prior to banding. Note moderate Class II, division 1, deep bite.

Transfer models mounted in the seated condylar position. Note severe Class II, division 1, open bite with significant condylar distraction.

Condylar graph measurement.
Dr. Cordray
continued from page 4

expansion) treatment. If sufficient attached tissue or bone support is present, the dentition may be brought forward slightly farther than the norm. In addition, soft tissue must be managed for stability (via frenectomy, circumferential supracrestal fiberotomy, free gingival graft, mucogingival stress relief, etc.) and esthetics (graft, crownlengthening gingivectomy, frenectomy, etc. [Figure 2]).

Functional Occlusion/Condylar Position
The essence of optimal TM joint form and function, according to texts by Okeson, Huffman and Sicher, is the seated condylar position defined as superior, anterior and midsagittal (centered transversely). The “gold standard” for the measurement of condylar position is condylar graph measurements taken from the articulated study casts of a deprogrammed patient mounted in the seated condylar position (Figure 3). These allow measurement of the mandibular functional shift from the seated to the unseated (occlusion-dictated) condylar position in all three planes of space to 0.2 mm. Diagnostic study models mounted in the seated condylar position are faster, easier, less expensive and more accurate than models trimmed in MIC/CO (the habitual position).

According to the text by Howat, Capp and Barrett, “A semi-adjustable articulator is the instrument of choice for diagnosis and treatment planning in both orthodontics and complete denture prosthetics. The use of an articulator is important, as inadequate diagnostic information may be obtained from hand-held models trimmed in MIC/CO or a clinical exam alone.” Bite disharmonies cannot be studied (or even consistently detected) in the functioning mouth because the muscles and nerve reflexes protect the teeth by overriding the joint’s guidance. When indicated, a repositioning splint is an extremely valuable, reversible and

Figure 2. This patient declined orthognathic surgery (maxillary posterior impaction, mandibular autorotation and advancement); instead she chose limited orthodontic correction (upper and lower alignment only) and a crown-lengthening gingivectomy 6-6.
Models mounted in the seated condylar position. Note dual bite. Mounting shows significant Class II open-bite relationship.

Condylar distraction has increased as arches have been prepared for surgery (full leveling and alignment, 7-7 upper and lower).

Figure 3. Articulated study casts mounted in the seated condylar position (above) and three-dimensional condylar graph measurements of condylar position (right).
conservative appliance that aids in the therapeutic, diagnostic and treatment-planning phases of orthodontic correction (Figure 4).

Records taken in the seated condylar position allow the joint and tooth relationships to be studied without interferences from muscles and nerve reflexes. Records in the seated condylar position consist of:

- Models of both upper and lower dental arches
- A centric bite registration to record the relationship between the upper and lower teeth when the condyle is seated
- A record of the axis of rotation of the condyle in relation to the upper teeth, made with either an estimated facebow transfer or a true hinge axis transfer.

When these records are transferred to an articulator, the relationships between the teeth and jaws can be studied accurately. The mandibular cast is mounted at a point on the seated condylar axis before first tooth contact occurs,

“The use of an articulator is important, as inadequate diagnostic information may be obtained from hand-held models trimmed in MIC/CO or a clinical exam alone.”
Condylograph measurements. Note reduction of pretreatment and presurgical condylar distraction with correction.
Applying general business and management principles to the practice of orthodontics confounds some of us, but with a little finagling, they can be easily applied. Ken Blanchard and Sheldon Bowles have provided us with such an opportunity in their diminutive tome Gung Ho! It’s a charming book about a plant manager who turned around an ailing company by applying principles gleaned from nature and taught to her by a Native American department manager. There are three principles to the Gung Ho! doctrine: the Secret of the Squirrel, the Way of the Beaver, and the Gift of the Goose. Let’s see what nature has to offer orthodontists!

**The Secret of the Squirrel**

Squirrels work hard. If they did not toil in the summer and fall, they would surely perish in the winter. To squirrels, therefore, their vocation is worthwhile. As people managers and motivators, we must convince our staff that their work is important. In orthodontics, the secret of the squirrel is easily applied. Worthwhile work is based on knowing that you make the world a better place with what you do. In orthodontics, we get the most wonderful sense that this is true on a daily basis as we watch our patients’ occlusions improve – along with their outlook and their self-esteem. The results of our hard work are much more measurable than is the case in other professions. Our team strongly feels that we make each patient’s world a better place. We may not perish if we don’t do this, but we sure flourish because we do.

**Everyone is working toward a shared goal.** All of us “squirrels” are aware of the goals for each individual patient, for each other, and for the office as a whole. Because of this ethic, I would much rather hire an inexperienced team player than a super-competent and experienced loner. The lone squirrel may provide for itself but won’t do much toward the good of the group. Ironically, the competent loner can mess up the whole team.

**Values guide all plans, decisions and actions toward that goal.** Almost every doctor I know has written a mission statement that includes values such as commitment, excellence and fun. What I’ve found is that translating those vagaries into day-to-day behavior...
Ho!” Your Office

takes more than hanging a framed statement in the reception area. For example, our receptionists have no real job descriptions (something that actually goes against all recent management philosophy). Instead, we call them “concierges” and have empowered them to do whatever it takes to turn our patients’ orthodontic treatment into a memorable experience. When I first wrote the statement, I dissected it word for word and then had the staff tell stories that exemplified its values. One of our favorites is about the middle-aged female patient who kept teasing that she wanted to have a Chippendale dancer perform for her on the day she had her braces removed. When that time arrived, we had it all set up. The dancer who arrived for the debonding was supposed to “strip” and end up looking like Tarzan. His build reminded us more of Fred Flintstone, but, no matter, our patient was very pleased and has since become a long-term ambassador for the practice (Figure 1). We watch and listen carefully for such opportunities, and I feel that through them we’re creating the folklore that guides new staff members and creates legendary service with our patients – service we feel matches the caliber of our clinical results.

The Way of the Beaver

Ever watched beavers at work? As you observe the construction of a dam or house, it becomes clear that no one beaver is the boss. All beavers are in charge of their part of achieving the goal. Beavers can thrive in orthodontic offices. Three principles apply.

The playing field must be clearly marked.
As manager and motivator, it is the orthodontist’s role to clearly define when, where, and how a particular job is to be accomplished to meet standards. Whether it’s reviewing a finished case and critiquing it based on Andrews’ Six Keys or defining what casual Friday dress should and should not include, it’s important that the rules be established. One easy way to help new assistants guide their own behavior is to remind them never to do anything that we ask patients not to do. If the rules are “no gum-chewing” and “being on time” for patients, we hold ourselves to the same standards.

Once the boundaries are defined and trained for, we must allow our staff to utilize their skills to the fullest. This can be tough at first because most of us suffer from the “no one can do this like I can!” syndrome. I had a life-changing experience when I visited Dr. Frank Lo in Prince George, British Columbia, and watched him for a few days. It was then I realized how much staff members can and want to do if they’re trained. I might still be a one-chair practice if it weren’t for Frank. And some of it was just as simple as learning to think out loud – talking through my mechanics with the staff all throughout the day. Then, when they’re ready, I ask them to make suggestions about next steps or to take a guess at my reasoning.

Now the joke is that I’m television’s Colonel Blake from M*A*S*H* and my staff is a group of Radar O’Reillys who can anticipate my every move. It’s a joke that makes them (and me) quite proud.

A structure must value employees as people. Blanchard and Bowles discuss the idea of having employees “bring their brains to work.” My partner and I encourage independent thinking and spontaneous action in our office, especially when it comes to patient satisfaction issues. “Do what it takes now; explain yourself later” is the guideline. The authors address this issue with another animal analogy: the eagle versus the duck. The eagle soars, resolving the situation with confidence and without fear of reprisal (the eagle’s leader, another eagle, has endorsed and empowered this). The duck reacts to a patient concern with “I can’t change that in the computer (quack quack),” “The doctor will kill me if I do that (quack quack),” “I’m not allowed to bend that rule (quack quack).” Whose fault is this? Not the employee’s; it’s the leader’s (a really BIG duck). When the leader does not have confidence in the employee’s judgment, the frontline person does not have the backup continued on page 29
Copper Ni-Ti: Lingual mechanics just got easier. Those hugely popular Copper Ni-Ti® archwires are now available in the classic mushroom configuration for the other side of the teeth. Introduced to labial orthodontics in 1994, Copper Ni-Ti is now the preeminent choice throughout the world for initial labial mechanics. Labial Copper Ni-Ti, in a choice of superelastic or shape-memory archwires by virtue of precise 27°C, 35°C and 40°C transformation temperatures, affords often-described, unchallenged advantages:

- A more constant force delivery on a larger field of activation
- A better resistance to permanent deformation
- A slower drop of the deactivation force (less hysteresis)

The result is a more consistent dental movement, because the wire is active during a longer period of time and stays in the optimal force range.

Copper Ni-Ti’s entry into lingual orthodontics came none too soon. All lingual practitioners are well familiar with the particular considerations of the technique, like wire placement and removal, smaller interbracket distance in the anterior segments and the need of a first order bend between cuspid and bicuspid. Their enthusiasm for the new Copper Ni-Ti lingual archwires will be tempered only by their puzzlement at why they were so long forthcoming.

Copper Ni-Ti Lingual Archwire Description & Characteristics

- Three sizes of both uppers and lowers are available in .017 x .017 square and .017 x .025 rectangular archwires in the popular 35°C transformation temperature. The archwires cannot be modified without heat treatment; however, they are adapted to most cases encountered.
- The wires are prebent between cuspid and bicuspid. The bends don’t always fit the necessary cuspid and bicuspid inset, but it is possible to carefully modify them or even add bends to the wire with a rounded-tip plier. It is then necessary to check the shape of the bends and the final arch form by placing the wire in hot water.
- Flaring of the upper incisors (due to contact of the lower incisors on bite planes) must absolutely be avoided by efficiently cinching back the archwire distal to the second molars or by using stops or crimpable hooks between the 1st and 2nd molars.

Copper Ni-Ti Advantages in Lingual Orthodontics

Chairtime saving: A single Copper Ni-Ti archwire can be used for alignment stages. (Severely crowded cases with partially blocked-out cuspids will still require a partial cuspid retraction with stainless steel wires.) And, as with the use of Copper Ni-Ti labially, the number of appointments during the alignment stage is significantly decreased.

Treatment time saving: The accelerated alignment stages and the ability to engage a rectangular archwire in all anterior attachments, even in crowded cases, directly contribute to a reduction in treatment time. The superior resilience of Copper Ni-Ti continued on page 27
The Inside Story

Nonextraction Case

Initial bonding with 35°C .017 x .017 Copper Ni-Ti archwire.

Two months into treatment.

Five months into treatment.

Extraction Case

Initial bonding with 35°C .017 x .017 Copper Ni-Ti archwire.

Five months into treatment: .017 x .017 TMA archwire.

Seven months into treatment: anterior retraction with .016 x .022 stainless steel archwire.
In my first article on matching the Herbst* to the malocclusion, I described the three types of stainless-steel-crown Herbst appliances I use in my practice.1 The article focused primarily on the use of the Type I Herbst in nonextraction cases. This article addresses how each Herbst type is used in extraction cases and also describes how the Type II Herbst is used for nonextraction cases. The protocol for the final finishing stage with the Orthos** appliance is discussed in detail.

**Type I Herbst Therapy for Extraction Cases**

The Type I Herbst is an excellent appliance for closing spaces while simultaneously correcting Class II skeletal and dental relationships. It allows freedom of mechanics mesial to the stainless steel crowns on the first molars due to the cantilever arms and associated archwire tubes. This design can be used with brackets bonded to the anterior teeth, which facilitates space closure (Figure 1).

The Type I Herbst is the appliance of choice for patients who present with a full permanent dentition with excessive crowding, necessitating the removal of all first bicuspid. While serial extraction cases can be treated with the Type I Herbst, I usually use a modified Type II Herbst. I will discuss the protocol for serial extraction cases later.

**Type I Herbst Design for First Bicupid Extraction Cases**

Most Class II malocclusions need maxillary transverse development to allow proper interdigititation with the mandibular arch. Therefore, an RPE is incorporated into the maxillary portion of the appliance. The mandibular portion has cantilever arms that extend to the distal aspect of the canines. Occlusal rests soldered to an .045

*Herbst is a registered trademark of Dentaurum, Inc.
**Products identified as “Orthos” are distributed in Europe as “Ortho-CIS.”
Herbst to the on: Part II

lingual holding arch are placed on the mesial of the second bicuspids. The rests serve as hooks for Power Chains that retract the mandibular canines and help resist the rotational moment produced by the Herbst rods. Construct the lingual wire approximately 5 mm lingual to the lingual surfaces of the lower incisors to provide room for lingual movement of these teeth during space closure. Place Orthos twin brackets on all incisors to allow archwire placement from .022 x .028 tubes on the occlusal of the mandibular cantilever arms and maxillary first molar crowns. Place bonded buttons on the distolingual surfaces of both mandibular canines. After maxillary expansion, insert the rods to activate the appliance. Initiate mandibular canine retraction by placing Power Chains from the occlusal rests to the lingual buttons. As the canines are retracted, shims can be added at each subsequent appointment to advance the mandible to correct the Class II skeletal and dental relationships. As the canines are tipped distally, the lingual wire and buccal cantilever arms create a trough that prevents canine displacement (Figures 2-3). Once the canines are fully retracted, place an .019 x .025 stainless steel archwire from the archwire tubes on the cantilever arms to the four mandibular incisors. Place crimpable hooks or tieback loops on the wire to allow placement of elastic Power Chains (Figure 4). Retract the lower incisors to the lower canines. During the incisor retraction process, advance the mandible progressively using 1 or 2 mm shims. Occasionally, it is necessary to asymmetrically advance the mandible by adding different-sized shims to either side. The goal is to maintain the maxillary and mandibular dental midlines to the facial midline.

To ultimately resolve the Class II relationship, it is essential to properly manage the torque of the maxillary incisors in both extraction and nonextraction cases. To maximize mandibular advancement, it is usually necessary to place brackets on the maxillary incisors.

All the treatment protocols presented in this article include the number of appointments and time allocated for:
- seating the patient
- performing the procedures
- treatment progress review with responsible party
- scheduling appointments
- cleanup and sterilization

Treatment Protocol for First Bicuspid Extraction Cases

Appointment #1 – 60 minutes
- Take records.
- Hold consultation and get contract signed.
- Take upper and lower full-arch impressions for indirect fabrication of the Type I Herbst.
- Place separators mesial to maxillary first molars.
- Mail extraction order with panoramic radiograph and treat-continued on following page
Dr. Smith
continued from preceding page

ment letter to dentist of record.

Appointment #2
(after 3 weeks) - 45 minutes
• Deliver upper portion of Herbst with RPE.
• Give instructions on RPE and number of turns.
• Place separators mesial to mandibular first molars.
• Provide oral hygiene instructions, toothbrush kit, fluoride Rx and office T-shirt.

Appointment #3
(after 3 weeks) - 60 minutes
• Deliver lower portion of Herbst.
• Add Herbst rods.
• Bond brackets to maxillary and mandibular incisors.
• Place bonded buttons on distolinguinal line angle of mandibular canines.
• Place either .016 Ni-Ti® or .019 x .025 35°C Copper Ni-Ti® archwires.
• Place Power Chains from hooks of lingual holding arch to buttons on mandibular canines.
• Review oral hygiene.

Appointment #4
(after 8 weeks) - 20 minutes
• Check Herbst and resecure wires.
• Replace Power Chains - continue canine retraction.

Appointment #5
(after 8 weeks) - 20 minutes
• Adjust Herbst – add shims and resecure.
• Continue incisor retraction.
• Remove RPE.
(after 8 weeks) - 35 minutes
• Adjust Herbst – add shims.
• Evaluate mandibular incisor position relative to the .045 stainless steel lingual bar. It may be necessary to remove lingual bar mesial to the occlusal rests on second bicuspids to allow additional retraction of incisors.

Appointment #6
(after 8 weeks) - 30 minutes
• Continue incisor retraction – evaluate maxillary incisor torque - if needed, place .022 x .025 stainless steel archwire with tieback loops.
• Adjust Herbst – add shims.

Appointment #7
(after 8 weeks) - 40 minutes
• Stop canine retraction and remove bonded button.
• Place .019 x .025 stainless steel archwires in both arches with tieback hooks 4 mm mesial to cantilever and molar archwire tubes - activate with Power 0's to begin incisor retraction.
• Adjust Herbst – add shims.

Appointment #8
(after 8 weeks) - 30 minutes
• Continue incisor retraction - evaluate maxillary incisor torque - if needed, place .022 x .025 stainless steel archwire with tieback loops.
• Adjust Herbst – add shims.
• Evaluate mandibular incisor position relative to the .045 stainless steel lingual bar. It may be necessary to remove lingual bar mesial to the occlusal rests on second bicuspids to allow additional retraction of incisors.

Appointment #9
(after 8 weeks) - 30 minutes
• Continue incisor retraction.
• Adjust Herbst – add shims.

Appointment #10
(after 8 weeks) - 45 minutes
• Remove Type I Herbst.
• Take full upper arch impression for a maxillary Hawley retainer (if necessary).

Appointment #11
(after 1 week) - 30 minutes
• Deliver Hawley retainer.
• Instruct patient and parent about the rest period and need for the final refinement phase with full braces.

Total treatment time in the Herbst for this particular plan is usually between 14 and 16 months. The final phase of occlusal refinement with the Orthos appliance is typically 8 to 12 months, with 10 to 12 treatment appointments. The protocol for final finishing with the Orthos appliance will be covered later. Treatment time for an extraction case using the Type I Herbst and the Orthos appliance for the final occlusal refinement is approximately 24 to 29 months, with 22 to 24 treatment visits.

Treatment Considerations with the Type I Herbst
Understanding the influence of the stainless steel crowns can improve treatment efficiency. The crowns infringe on the freeway space and impede eruption of the first molars. This attribute of the Type I Herbst can be beneficial in cases with a high mandibular plane angle or anterior openbite.\(^1\)

The distal forces applied to the maxillary first molars via the Herbst rods enhance anchorage for maxillary anterior retraction. I often begin cusp retraction on a .016 Ni-Ti archwire to provide room for incisor alignment. Retract maxillary canines only enough to provide room for incisor alignment. To prevent loss of incisor torque or unwanted changes in the occlusal plane, accomplish further retraction on a full-sized stainless steel edgewise wire. Because the maxillary second bicuspids are not bonded, use an .019 x .025 or .022 x .025 stainless steel wire with a tieback or crimpable hook 5 to 6 mm forward of the maxillary molar archwire tubes. Power Chains can be placed from the hooks on the maxillary first molar crowns to the hooks or tieback loops on the maxillary archwire to retract the anterior (Figure 5).

When maxillary second bicuspids are removed, the same treatment protocol is incorporated, with minor alterations. In the maxillary arch, brackets are usually placed on the first bicuspids to allow their retraction. It is usually necessary to retract the first bicuspids and canines to provide sufficient room for incisor alignment. This can be accomplished by placing a Power Chain from the hook extending from the first molar crown to the first cuspido bracket. Again, the objective is to retract the bicuspids sufficiently to allow alignment of the anterior. When the anterior are aligned, initiate en masse retraction of the maxillary anterior (continued on page 17).
and mandibular anterior segments on an .019 x .025 or .022 x .025 stainless steel wire.

The Herbst appliance places a mesial vector of force on the mandibular teeth, causing loss of lower anchorage and reducing the ability to maximally retract incisors. Therefore, don’t use the Type I Herbst in cases where maintaining lower molar anchorage is critical. Treat cases exhibiting severe crowding and dental protrusion with Class III elastics supported by headgear to the maxillary teeth. Avoid Class II elastics, since they cause loss of mandibular molar anchorage similar to the Type I Herbst. Another alternative is to use headgear with J-hooks attached to the maxillary and mandibular canines during anterior segment retraction. I have found the Type I Herbst to be useful in all other cases where lower anchorage is not critical.

Noncooperative patients constantly challenge our ability to accomplish our treatment goals. Obviously, if the patient refuses to wear headgear, the Herbst offers a practical alternative. While it may not provide maximal retraction of anterior teeth, it will help correct the Class II skeletal and dental relationships. After the Herbst is removed, the Class II malocclusion and crowding is typically reduced to a simple Class I molar and cuspid relationship requiring minimal orthodontic refinement.

**Herbst Appliance Selection for Serial Extraction Cases**

When an orthodontist is able to follow a patient’s dental development from an early age, the sequential removal of primary and permanent teeth can be done at the appropriate time to intercept severe crowding. In cases where serial extraction is necessary, it is best to allow the second bicuspids and canines to erupt prior to initiating Herbst therapy. I use two Herbst appliance designs for serial extraction cases. For those cases with significant spaces to close after bicuspid and canine eruption, I use the Type I Herbst design (Case 1, page 18). The same treatment protocol is used, except for fewer appointments during the retraction phase. If there is little or no space to close, I use a modified Type II Herbst design. In first-bicuspid extraction cases, the modified Type II design incorporates stainless steel crowns on the mandibular second bicuspids. The crowns have short cantilever arms that extend mesially to the distal aspect of the canines (Figure 6). The short cantilevers are necessary to provide adequate rod length to prevent unwanted disengagement of the Herbst rods during jaw movements. Because there is no significant space closure to complete, the treatment protocol is the same as the nonextraction Type II Herbst design described later in this article.

**Type III Herbst with the Extraction of Mandibular Second Bicuspsids or First Molars**

When extracting second bicuspids or first molars in the mandibular arch, I use the Type III Herbst. This design uses the action of the Herbst rods to direct a mesial component of force to support the mandibular anterior anchorage as the molars are moved mesially. This is useful in cases where it is desirable to maintain lower incisor anteroposterior position (Figure 7). The Type III Herbst can be used in both Class I and Class II cases. In Class II cases, the duration of Herbst therapy is four to six months longer. Additional months in the Herbst appliance are necessary to ensure correction of the Class II relationship.

I often treat the maxillary arch on a nonextraction basis if there is good dental alignment with pleasing facial esthetics. The resultant occlusion in either a Class I or Class II case where second bicuspid spaces are closed is a Class I canine and Class III molar relationship. If the maxillary arch is treated on a nonextraction basis, I do not place brackets on the maxillary teeth. I delay placing the Orthos appliance until the final refinement stage. If extraction of the maxillary first or second bicuspids is necessary, I use the same protocol as outlined in the Type I Herbst extraction case reviewed earlier.

**Type III Herbst Appliance Design and Treatment Protocol**

The Type III Herbst has stainless steel crowns on the maxillary first molars and mandibular first bicuspids. Unlike the Type II Herbst, there are no lingual wires connecting the mandibular molars to the first bicuspids. Place buccal archwire tubes with elastic hooks and lingual buttons on the mandibular first molars and first bicuspids crowns. The archwire tubes allow the placement of closing loop wires to move the first molars mesially. Place Power Chains on the lingual buttons to augment space closing (Figure 8).

There are two distinctive treatment protocols when using the Type III Herbst. In cases with moderate to continued on page 19
Case 1

Pretreatment - The patient (male, age 12 years, 1 month) presented with a Class II, division 1, malocclusion in the early mixed dentition. Serial extraction of all first bicuspids was done to relieve the crowding.

Facial and intraoral views prior to placement of Herbst appliance.

Case in progress - After the eruption of the bicuspids and canines, a Type I Herbst was placed to resolve the Class II relationship.

Herbst placed.

In-progress Herbst treatment.

In-progress Herbst treatment.

Tx in progress - Following 19 months of Herbst therapy, the Orthos appliance was used to refine the occlusion.
severe crowding in the mandibular arch, first align the lower arch with the Orthos appliance. It is necessary to do some space closure in the mandibular arch to unravel incisor crowding and align the first bicuspids prior to inserting the lower portion of the Type III appliance (Case 2, page 21). This is particularly true if the bicuspids are malaligned. Place bands on the mandibular molars and bond brackets to the remaining teeth. I typically use sliding mechanics to retract the first bicuspids and canines to allow sufficient room for anterior alignment. After the teeth are aligned, remove the mandibular first bicuspids and take impressions for the fabrication of the Type III Herbst appliance. To ensure adequate rod length to prevent rod disengagement during mandibular movements, I usually request a short cantilever extending mesially from the first bicuspids crowns to the distal of the mandibular canines.

To facilitate archwire placement, place an .022 x .028 tube under the Herbst axle. This tube allows placement of either a continuous mandibular archwire or short closing-loop archwire segments to facilitate space closure. If hygiene is poor, I typically remove all bonded brackets during the Herbst phase of treatment.

Dr. Smith
continued from page 17

Posttreatment - The final result after 25 months of treatment. The patient had 23 visits from separators to insertion of retainers.

Dr. Smith

Treatment Protocol for Cases with Moderate to Severe Crowding

Appointment #1 - 60 minutes
- Take records.
- Hold consultation and get contract signed.
- Place separators mesial and distal to the mandibular first molars.
- Send treatment letter and extraction order to the dentist of record.

Appointment #2 (after one week) - 60 minutes
- Band lower first molars and bond remaining mandibular teeth.
- Place either an .016 Ni-Ti or .016 x .022 35°C Copper Ni-Ti in the mandibular arch.
- Place Power Chains from the molars to the first bicuspids to gain room for anterior alignment.
- Provide oral hygiene instructions, toothbrushing kit, fluoride Rx and office T-shirt.

Appointment #3 (after 8 weeks) - 20 minutes
- Retie brackets as needed.
- Continue bicuspid retraction with Power Chains.

Appointment #4 (after 8 weeks) - 30 minutes
- Place either an .016 x .022 or .019 x .025 35°C Copper Ni-Ti in the lower arch.
- Discontinue space closure when there is adequate room to align anteriors.

Appointment #5 (after 8 weeks) - 20 minutes
- Remove mandibular first bicuspids brackets.
- Place separators mesial and distal to the mandibular first bicuspids and maxillary first molars.

Appointment #6 (after 1 week) - 45 minutes
- Fit and cement the mandibular second molars if they are fully erupted.
- Take maxillary and mandibular full arch impressions for Type III Herbst fabrication.

Appointment #7 (after 1 week) - 45 minutes
- Cement the maxillary crowns and mandibular Type III appliance. If there is a Class I cuspid relationship, place the rods to position the mandible to an end-to-end incisor relationship. If there is a Class II cuspid relationship with greater than 8 mm of overjet, protract the mandible to establish an ideal overbite and overjet with the incisors. At future appointments, in both Class I and Class II cases, position...
tion the mandible into an end-to-end incisor relationship. I do not, however, recommend positioning the patient into an anterior crossbite.

- Place either a continuous .019 x .025 stainless steel wire or an .019 x .025 TMA segmental closing loop archwire between the mandibular first bicuspids and molars.
- Place Power Chains on the lingual buttons between the mandibular molars and first bicuspids to aid space closure.

Appointment #8
(after 10 weeks) – 20 minutes
- Activate lower closing loops and replace Power Chains.
- Add shims to activate the Herbst appliance.

Appointment #9
(after 10 weeks) – 20 minutes
- Activate lower closing loops and replace Power Chains.
- Add shims to activate the Herbst appliance.

Appointment #10
(after 10 weeks) – 20 minutes
- Activate lower closing loops and replace Power Chains.
- Add shims to activate the Herbst appliance.

Appointment #11
(after 10 weeks) – 20 minutes
- Assess space closure and canine positions. If the canines are in a good functional relationship, remove the Herbst at the next visit.
- If necessary, continue space closure and add shims to activate the Herbst appliance.

Appointment #12
(after 12 weeks) – 60 minutes
- Remove the Type III Herbst.
- Educate the parent and patient on the next stage of treatment with full braces.

In cases with mild crowding, it is not necessary to align the lower arch prior to Herbst placement. Therefore, the protocol is shortened by approximately four appointments. Final alignment is accomplished in the final phase of treatment with the Orthos appliance.

Treat Nonextraction Cases with the Type II Herbst

The Type II Herbst is the most frequently used Class II corrector in my office. The design is hygienic and durable, as well as comfortable for the patient. If the appliance is placed at the appropriate time, most mild-to-moderate Class II corrections can be accomplished in 12 months. Severe Class II malocclusions may require 14 to 16 months of Herbst therapy. The typical final phase of occlusal refinement with the Orthos appliance is 10 to 14 months. Combining the Herbst appliance with the Orthos system has been the most important enhancement to my treatment regimen for Class II malocclusions.

With the Type II Herbst, there are two protocols for crowded cases, depending on severity. With moderate crowding, it may be necessary to align the first bicuspids and anteriors prior to fabricating the mandibular portion of the Herbst. Of course, this requires additional visits as outlined in the Type III treatment protocol. If the case has mild crowding, I wait until completing Herbst therapy before correcting the dental crowding. I usually incorporate a maxillary palatal expander to develop the maxillary arch prior to Herbst insertion.

Treatment Protocol for Type II Cases with Mild to Moderate Crowding

Appointment #1 – 60 minutes
- Take records.
- Hold consultation and get contract signed.
- Place separators mesial to maxillary and mandibular first molars and mandibular first bicuspids.

Appointment #2
(after 1 - 2 weeks) – 35 minutes
- Fit mandibular first molar bands.
- Take maxillary and mandibular full-arch impressions for fabrication of the Type II Herbst.
- Place separators mesial to maxillary and mandibular first molars and mandibular first bicuspids.

Appointment #3
(after 1 - 2 weeks) – 60 minutes
- Deliver maxillary portion of Herbst with RPE.
- Deliver lower portion of Herbst.
- Give instructions on RPE and number of turns.
- Provide oral hygiene instructions, toothbrush kit, fluoride Rx and office T-shirt.

Appointment #4
(3 weeks later) – 30 minutes
- Add the Herbst rods. If overjet is 8 mm or less, advance the mandible to an ideal overbite and overjet relationship.
- Review oral hygiene.

Appointment #5
(12 weeks later) – 20 minutes
- Check and activate Herbst by adding shims. Advance the mandible to an end-to-end incisor position.

Appointment #6
(12 weeks later) – 20 minutes
- Add shims as needed.

Appointment #7
(12 weeks later) – 30 minutes

“Combining the Herbst appliance with the Orthos system has been the most important enhancement to my treatment regimen for Class II malocclusions.”

continued on page 22
A severely crowded Class II, division 1, malocclusion (limited growth male, age 15 years) where the maxillary first bicuspids and mandibular first molars were extracted.

(left) After partial space closure and alignment of the dental arch, the Type III Herbst was placed on the mandibular first bicuspids. An .022 x .028 slot under the axles of the first bicuspids allows placement of a continuous archwire.

(left) The mandibular second molars were closed mesially with Power Chains on an .019 x .025 stainless steel archwire.

The case prior to removal.

Superimpositions show substantial mesial movement of the mandibular second molars with little lower incisor retraction.
Dr. Smith continued from page 20

- Remove RPE.
- Add shims as needed.

Appointment #8
(12 weeks later) - 30 minutes
- Remove Type II Herbst.
- Educate patient and parents on the next phase of treatment with full braces.
- Determine if a maxillary retainer is needed to maintain the molar position.

“Treatment protocols are the fundamental building blocks for effective staff and patient education, communication and scheduling.”

Finishing with the Orthos Appliance
Following removal of the Herbst appliance, I typically place the patient on recall until the second molars have erupted. In a previous article, I discussed the advantages of waiting for the eruption of the second molars.

Using the Orthos appliance has improved clinical outcomes and increased my overall efficiency. I have made several enhancements to the appliance system. First, to ensure proper torque for the maxillary incisors and canines, I use two different torque prescriptions for the incisors and three for the canines. I have found that many cases demand either more or less torque for these teeth. For example, the three torque prescriptions for the maxillary canines are +7°, 0° and -7°. In most cases, I use the 0° prescription. However, in first bicuspid extraction cases, I typically use +47° of torque on both maxillary canines. The additional lingual root torque counteracts the typical lingual crown-tipping associated with space closure. In cases where a canine is palatally or labially impacted, I use -7° and +7° brackets, respectively. If a full-sized .021 x .025 35°C Copper Ni-Ti or TMA wire is used, the canine(s) can be favorably positioned with fewer appointments for third-order bends.

I use two prescriptions for maxillary incisors:
- Torque Average High
  - Maxillary Central Incisors +15° +22°
  - Maxillary Lateral Incisors +9° +14°

The obvious advantage of these two prescriptions is the versatility it provides to ensure proper torque for the anteriors. In most extraction cases, I use the high-torque prescription. The orthodontist should carefully evaluate each case prior to bonding to ensure that the best torque prescription is applied.

Another important modification to the system is in the welding height of the maxillary and mandibular first and second molar attachments. To ensure proper bracket height between maxillary first and second molars relative to the bicuspid, it is best to weld the maxillary molar brackets to the most occlusal aspect of the bands. Because maxillary molar buccal cusps are nonfunctional, placing the brackets more occlusally does not present a problem. This welding change reduces the chances for a bracket-height discrepancy between the bicusps and molars that necessitates either wire bends or rebonding. To accomplish the same goal in the mandibular arch, weld the molar brackets 0.5 mm more to the occlusal. Because the mandibular buccal cusps are nonfunctional with the maxillary molars, it is not possible to weld the brackets more occlusally. These modifications in bracket height will make a tremendous improvement in treatment efficiency.

Another important modification was adding additional buccal root torque to the maxillary second molars. I was not satisfied with the second molar position with the standard Orthos second molar torque of -10°. There were instances of balancing interferences between the maxillary and mandibular second molars, so my current prescription has -22° torque on the maxillary second molars. To eliminate the need for tying Kobayashi hooks or bending loops in the archwire, I have hooks placed on all brackets except for maxillary and mandibular incisors.

My goals during the final phase of dental alignment are to use the fewest archwires over the shortest possible time with the smallest number of appointments.

Typical Dental Alignment Protocol

Appointment #1 - 30 minutes
- Take Phase II update records (video images and radiographs).
- Place separators mesial and distal to the maxillary and mandibular first molars.

Appointment #2
(after 2 weeks) - 100 minutes
- Band maxillary and mandibular first and second molars.
- Bond brackets on remaining teeth.
- Place .016 Ni-Ti archwires in both arches.
- Give oral hygiene instructions.

Appointment #3
(after 10 weeks) - 20 minutes
- Check and retie braces.

Appointment #4
(after 10 weeks) - 30 minutes
- Place .019 x .025 35°C Copper Ni-Ti archwires in both arches.
- Initiate Class II elastics, if necessary.

Appointment #5
(after 10 weeks) - 45 minutes
- Take panoramic radiograph to evaluate root alignment. Take periapical radiographs of the maxillary and mandibular incisors to evaluate root integrity.
- Reposition brackets or bands to improve alignment. Avoid wire bends, if possible.

Appointment #6
(after 10 weeks) - 20 minutes
- Check braces.
- Place either .019 x .025 or .021 x .025 TMA archwires in both arches.
- Continue Class II elastics, if necessary.

Appointment #7
(after 10 weeks) - 30 minutes
- Check braces.
- Hold debanding consultation. Review financial responsibilities and remaining visits to finish orthodontic care.
Discuss Your Herbst Appliance Requirements with the Experts - AOA

Dr. Bob Smith has earned a worldwide reputation for his expertise in hyperefficient orthodontics. He relies heavily on noncompliance appliances and through his clinical experience has developed the Three Types of Stainless Steel Crown Herbsts to ideally match the Herbst to the malocclusion (see C.I., Vol. 7, No. 2, for the first part of Dr. Smith's comprehensive presentation). Allesee Orthodontic Appliances (AOA) is playing a key role in furthering the advancement of the Herbst appliance by working closely with its leading proponents to meet their specific design requirements. In this capacity, AOA has the expertise to provide you with Type I, II and III Herbsts meeting Dr. Smith's exact specifications.

AOA also provides Clinical Management of Crown Bite Jumping Herbst Appliances, which reviews Dr. Smith's designs as well as those of other leading authorities.

The book also covers prefabrication of and preparation for the Herbst, instructions for delivering and removing the appliance, and treatment sequence with suggested activations. In addition, AOA will forward shipping cartons and related mailing supplies for your convenience in utilizing their services.

To order the book or to discuss Dr. Smith's designs or your particular Herbst requirements with the experts, call AOA at (800) 262-5221 or fax to (414) 886-6879.
Financing An Efficient

Most orthodontists approach the education of their referring general dentists from the standpoint of teaching them “what and when to refer.” Dr. Mart McClellan has added a new dimension: ensuring that dentists with whom he works understand how he can help patients make orthodontics affordable as well as making the general public aware of creative financing for braces. In an interview with Clinical Impressions, Dr. McClellan explains some of the creative ways he helps patients fit braces into their budgets.

Clinical Impressions: Why did you decide to make affordability a key focus in your marketing approach to your referring dentists?

Dr. McClellan: I’ve been straightening teeth for over eight years and realized many years ago that people are intimidated by the costs associated with braces. It does not matter whether or not you practice in an affluent area, it is still an issue. Referring dentists tell me that parents are almost always concerned with price when braces are recommended for their child, creating an unnecessary apprehension when they enter our office. With my financial-planning background, I knew I could offer people information so they could afford braces without sacrificing the quality of care. The managed care influx also influenced me because it’s important that a child be seen by someone they feel comfortable with and not someone who simply comes from a list. I felt that if I could help my referring dentists understand the options and feel confident that I could assist their patients in making braces affordable, it could only mean more referrals for our practice.

Clinical Impressions: What do you feel is the most common misperception about the cost of braces?

Dr. McClellan: Most people think they can’t afford braces because they think they must pay a large fee all at one time. As we all know, it’s hardly ever that way. The problem is that parents discuss what they paid for their child’s braces (i.e., the total fee) with their friends but not how we worked within their budget to help them afford those straight teeth. Braces almost always come out of a family’s discretionary income, just like paying for furniture or a TV set. Many patients assume that because they pay their dentists in lump sums for things such as bridges and implants, that is how we do it in orthodontics. The recent AAO study on the dentist/specialist relationship substantiated similar misperceptions among dentists. Most are not aware of how we assist the patient to afford braces. I know dentists refer patients to us because they feel comfortable saying that our office will work with them to make braces fit into their budgets. So we need to coach our referring dentists about not only what and when to refer but also how flexible we are in working with patients.
Orthodontics: Marketing Tool

Clinical Impressions: What are the types of things you want your referring dentists to know?

Dr. McClellan: Besides educating them about what to look for in a malocclusion, that we run on time and that their patients will be treated in a warm and friendly environment, I want them to know that we will do anything we can to fit braces into their patients' financial plan. Most orthodontists in the U.S. offer an interest-free payment schedule at least for the term of the care. I don't know of anyplace else where you can get an interest-free loan for $3,000 to $5,000 over a two-year period. And with interest rates ranging from 8 percent on home-equity loans to 18 percent on credit cards, your patients can save several hundred dollars. This is a great benefit. Many doctors will accept credit card payments for the down payment and for monthly installments, and some doctors will even split the down payment into two or three installments with the monthly payments beginning only after the down payment is satisfied. Most will develop monthly payments to fit into a patient's budget. Since affording the initial down payment is one of the primary stumbling blocks for most people, our referring dentists should be aware of whatever accommodations we can make for it. A convenient option that we should all consider is setting up automatic deductions from a patient's bank account. This flexibility is something we need to market to our referring dentists and their hygienists so that they feel comfortable in sending referrals.

Clinical Impressions: What are some of the more creative ways you share with dentists for helping patients make orthodontics affordable?

Dr. McClellan: One method that families use for general medical expenses that they may not think about for braces is a “flexible spending account.” Over one half of the nation’s largest companies offer these tax-favored savings accounts. Depending on an individual’s tax bracket, a person can save between 15 and 40 percent by using them.

Clinical Impressions: How do these plans work?

Dr. McClellan: If the patient's employer offers the plan, each employee decides how much money to set aside for medical expenses that are not covered by their regular medical insurance for the coming year (up to a limit that the employer determines). The employer then divides the amount into equal installments which are deducted from the employee's paycheck before taxes are taken out. This money is not reported as income and accumulates tax-free in a savings account until the end of the year. It can be used throughout the year for any legitimate medical expense, including orthodontics. The “catch” to the system is that any money that is not dispersed is lost. The benefit of using such an account for orthodontics is that our fees are highly predictable and can easily be factored into the savings plan a year in advance. In fact, marketing orthodontics at year-end to people whose employers offer these accounts can be highly successful. People can use up their savings at the end of a calendar year with a down payment for orthodontics. Doctors can even offer discounts to patients who sign contracts at year-end who will then fund their accounts for the following year.

Clinical Impressions: What happens if, in a particular year, the money in the account runs out before the patient's monthly payments do?

Dr. McClellan: Oh, that's simple. Just have the patient pay the remainder of monthly payments with a credit card and fund the account the following year for the remainder of the orthodontic fees. Then, when the credit card bill arrives, they can simply pay off the orthodontic expense in full. They may even receive frequent flyer miles or free gas for using their credit card.

Clinical Impressions: Since it is mostly the larger companies that offer “flexible spending accounts,” are there opportunities for doctors in communities where there are few or no large companies?

Dr. McClellan: The fabric of our society is made up of small to medium-sized businesses that would benefit greatly from a new type of tax-favored savings account called a Medical Savings Account (MSA). These accounts are available to self-employed individuals or employees of a business with 50 or fewer employees. These plans are new as of 1997. An MSA acts like an individual continued on following page
Dr. McClellan

continued from preceding page

retirement account (IRA) where the money grows tax-deferred, but the assets are used for medical purposes, including orthodontics. The contributions made to an MSA are deductible from an individual’s federal gross earnings and are not subject to withholding taxes or Social Security. In order to qualify for an MSA, the company or self-employed individual must have high health insurance deductibles – between $1,500 and $2,250 for individual coverage and $3,000 to $4,500 for families. Unlike flexible spending accounts, MSA contributions are not lost at year-end. The main advantages of MSAs are that they reduce taxes, save money due to the high-deductible/lower-premium health insurance and do not infringe on an individual’s freedom of choice of their health care provider in the use of the monies. They also act as a mini-retirement account, since the monies continue to accumulate until age 65 if they’re not used. (Any money not used in an individual year continues to grow tax deferred and can even be invested in equities.) At age 65, you can withdraw the money as if it were a retirement account and use it in any way you choose.

Clinical Impressions: How likely is it that small employers are now offering MSAs?

Dr. McClellan: Since MSAs have only been available since 1997, their popularity will continue to grow as more and more small businesses learn about their benefits. Unfortunately, there is not a huge incentive for insurance agents to promote MSAs, since high-deductible insurance means lower premium payments and lower commissions. Every business needs to take advantage of any tax benefit the government offers, especially related to health care. In my opinion, most, if not all, orthodontists should set up an MSA. We must also not forget about the excellent direct reimbursement plans that the ADA and the AAO promote.

Clinical Impressions: What are some other creative ways people can finance braces?

Dr. McClellan: Getting the word out about creative financing is one of my missions in life. There are many nontraditional ways to pay for braces. If they are structured properly, the patient can have straight teeth for little out-of-pocket expense. One way to finance orthodontics is to borrow against a life insurance policy, either whole or variable life, that has accumulated cash value. When withdrawing money from these accounts, the owner of the policy is essentially loaning money to himself, then paying it back with interest. If you have to pay interest on a loan, why not pay yourself? There is even a way to deduct this interest. Some variable life insurance policies offer no-cost loans where the policy holder can access the money for any purpose, including orthodontics, interest free.

Another creative opportunity is to use the “gifting mechanism” that reduces estate taxes. Grandparents are excellent candidates for this idea, especially when they’re reminded that orthodontics is one of the main expenses that parents incur on behalf of their children.

Clinical Impressions: How does gifting work?

Dr. McClellan: According to the tax code, a person can gift any family member up to $10,000 annually free of the recipient’s paying income tax. People gifting money to children or grandchildren will reduce their taxable estate, potentially keeping more of the inheritance in their children’s hands. Currently, estates worth more than $625,000 can be taxed from 37 to 60 percent, so with some reliable tax planning, a family may be able to save money and give a wonderful gift to their offspring. For those people with large estates, money can be given either to grandchil-

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Brace$avers: A Cost Effective Complement to Your Referral-Base Marketing Plan

AAO research indicates that most of our referring dentists are not aware of our fees and flexible payment plans. We also know that many of our patients’ orthodontic apprehensions are financial. Dr. Mart McClellan has written a clear, concise booklet, Brace$avers, addressing these issues. Brace$avers is written in an easy-to-read format for the parent or adult patient who is unaware of the creative ways in which braces can be financed. It also shows unique methods for saving time and money. In addition, it will broaden the dentist’s knowledge of orthodontic financing plans and treatment, as well as our profession’s commitment to the highest quality orthodontic care.

The marketing strategy that Dr. McClellan has proven to work is to give referring dentists and prospective referral sources a copy of Brace$avers for their waiting rooms. It alleviates the dentist’s having to give certain explanations, and every time a patient asks about the booklet, the dentist is reminded of your practice and how you work with patients to fit braces into their budgets.

Brace$avers addresses four key areas of concern for the orthodontic patient:

• How I/we can afford braces.

• How I/we can fit orthodontics into our busy schedule(s).

• How to save money and reduce stress during treatment.

• Retention and the commitment to a lasting smile.

For further information, visit www.bracesavers.com or contact: Forest Publishing, 1133 Edgewood Road, Lake Forest, IL 60045. Phone: (877) 939-SAVE. E-mail: martmcc@aol.com
Clinical Impressions: What is the most difficult aspect of financing orthodontics for the patient?

Dr. McClellan: The down payment. That's why programs such as OFP (Orthodontic Fee Plan) are nice. Although the patient is paying interest and we pay a certain percentage to OFP for getting our money up front, it's an option that most patients and, therefore, most of our referring dentists should know about if you use it.

Clinical Impressions: One last question. How best can an orthodontist's referring dentist promote orthodontics?

Dr. McClellan: By promoting the long-term value of orthodontics. The value of one's orthodontic experience stays with them long after the price has been forgotten. For pennies a day over one's lifetime, anyone can have a beautiful smile with well-functioning teeth that last a lifetime. I'm always amused by our society's obsession with cars and how people will not hesitate to make high monthly car payments but might cringe at an orthodontic monthly payment - and cars only last about ten years! Our referring dentists can make these points far better than we can, and if they are assured that we'll do all we can to make the financing possible, they're more likely to make that referral. Patients will appreciate a dentist who refers them to an orthodontist to have a space closed and have the entire dentition aligned in lieu of a localized bridge that may cost nearly the same as comprehensive orthodontics. Patients whose dentists make them aware of such options may be more receptive to other restorative procedures in the future - a win-win-win situation for the patient, dentist and orthodontist.

Dr. McClellan presents his knowledge as a means of piquing your interest about specific financing opportunities that may be available to your patients. Before pursuing any investment or tax-advantaged opportunity, consult your attorney or tax advisor.

Japan Lingual Orthodontic Association Holds 1st International Congress on Lingual Orthodontics in Tokyo, March 28-30, 1999

The Japan Lingual Orthodontic Association (JLOA) has invited lingual orthodontists throughout the world to attend its first international meeting. The meeting features seminar-type lectures by leading orthodontists for both beginners and experienced lingual practitioners. The Organizing Committee of the Congress is composed of Drs. Yasunori Mori, Chairman; Didier Fillion, Vice-Chairman; and Courtney Gorman (USA), Massimo Ronchin (Italy), Mario Paz (USA) and Giuseppe Scuzzo (Italy), Committee Executives. In addition to the committee members, other leading lingual orthodontists speaking include Dr. R. Romano from Israel and Drs. Masami Sakayori, Toru Inami, Yoshihide Suda, Kenji Mioyshi, Kyoto Takemoto, and Hitoshi Koyata of Japan. The JLOA has grown to over 150 members since its conception in 1987 and inception in 1988. At our press time, the large number of preregistrants from around the world attests to the worldwide growth of the lingual technique - the only orthodontic appliance affording the ultimate in both final results and in esthetics during treatment.

Nonextraction Case with Anterior Crossbites

Initial bonding with 35°C .017 x .017 Copper Ni-Ti archwire.

Two months into treatment.

Dr. Fillion continued from page 12

makes it possible to implement torque control during the first stages of treatment. Better expression of torque: The torque that is programmed into the attachments by their positioning in the laboratory can be expressed more quickly and successfully due to the light, consistent force generated by Copper Ni-Ti arches. Increased patient comfort: Patients enjoy a more comfortable adaptation stage due to the reduced force levels afforded by Copper Ni-Ti.

Points to Remember

- To avoid flaring of the upper incisors, be sure to check the efficiency of your cinchbacks.
- Copper Ni-Ti archwires are not recommended for retraction. Their use can result in a deformation of the dental arch (bowing effect).

continued on following page
Dr. Didier Fillion is honored to serve as Editor, Journal of Lingual Orthodontics, a new English language publication dedicated to furthering the lingual technique. Associate editors for the quarterly journal are Drs. Courtney Gorman, Frank Andolino and Kyoto Takemoto. Peer-reviewed, each issue will contain articles on all aspects of the technique, detailed case reports documenting the latest studies and clinical outcomes, and product reports evaluating the range of tailored appliances and equipment developed in response to growing demand. To subscribe, publish or obtain information, contact the publisher: Decker Europe LTD, 1st Floor, 36-38 Rochester Place, London, NW1 9JX England; phone +44 (0)171 428 9469; fax +44 (0)171 428 9467; e-mail Decker.Europe@btinternet.com

Announcing the Launching of the Journal of Lingual Orthodontics

Dr. Didier Fillion is expanding his leading role in the worldwide resurgence of lingual orthodontics through increased activities in lecturing, teaching and publishing:

Courses Currently Scheduled for 1999
• March 25-26 in Seoul, South Korea – Full-participation, hands-on lingual orthodontic course with typodont exercises. Contact Dr. Kung Sung Chung: Phone (02) 3443 2875; Fax (02) 3443 2870.
• May 15 in Coronado, California, USA – Practical technique and marketing to incorporate lingual orthodontics into your practice. Contact Ms. Juanita Smith: phone (504) 362-0499; fax (504) 362-1104.
• June 21-23 in Paris, France – Full-participation, hands-on lingual orthodontic course with typodont exercises. Contact Dr. Fillion: phone – 331 47042793 fax – 331 47551833 e-mail – didier.fillion@elos-lab.com address – Avenue Georges Mandel, Paris, France 75116.

Dr. Fillion Initiates an In-Office Lingual Orthodontic Educational Program
The one-year program is presented in Paris in one 2-day session held in January and two 4-day sessions held in July and December. Included in the program are:
• A basic course with two typodont exercises
• Two “advanced” courses
• Two days assisting at chairside
• Two days studying participating patient cases in treatment
• Analysis of more than 60 cases in detail on the computer
• Ongoing Internet assistance for treatment planning and sequencing.
For additional information about this forthcoming learning opportunity, contact Dr. Fillion.
needed to make people happy. All those ducks make such a mess!

People must be challenged. It doesn’t do anyone any good to make their job too easy or routine. Several of my staff have described daylong “out-of-body experiences” in previous jobs, especially in general dentistry. I am so pleased that we are able to provide an environment for them where they can really “get into” their work and use their own good judgment in many situations. The key to this? Training – continual and never-ending. Keep the beavers away from the duck pond.

The Gift of the Goose
Geese are noisy. How come? They’re cheering each other on! Goose behavior is very much encouraged in our office (Figure 2). The lead goose will honk the loudest by doing the following things.

Catching people doing something right!
In many organizations, employees act mainly to stay out of trouble. They feel they’re doing a great job if they “haven’t been chewed out in a week.” Why not positively reinforce a job well done? How about a simple and sincere “thank you?” How about a gift certificate for actions above and beyond the call of duty? How about naming an “employee of the moment” for a particularly positive or outrageous act of caring? Such recognition can be just as motivating and satisfying to a team member as a raise in salary. To me, the glass is always half full. Even with a marginal employee, if there is a glimmer of hope that reinforcing appropriate behavior will pay off, I’ll catch them doing something right and remark about it. I had always thought that money is the primary motivator for people, but all the studies indicate that most people prioritize intangible rewards before money (a sense of belonging, worthwhile work) and that a little recognition goes a long, long way. Of course, we all know that the best way is to hire for the right personality and self-motivation. You can teach orthodontic skills; you can’t teach those things.

In our office we have devised a system to do just that. We keep the goal’s simple and visible – nothing formal – just a little graph that we keep in the staff lunch area that we update on a monthly basis with numbers. Since our year-over-year revenue growth has plateaued somewhat now (after six years), the score we are presently monitoring is overhead control. This has several facets that the staff understands: maximizing gross income, minimizing expenses, and a few less intuitive factors such as using appliances that will allow us to finish on-time with the best results (despite a higher initial cost) and keeping people very happy in our practice, resulting in more production and less stress!

Doing all this gives the staff a sense of ownership, and I make sure that their efforts come back to them in material ways. Given our tax structure in Canada, it’s crazy to give them cash because the government takes so much away. One thing I’ve done is add to their tax-deferred retirement plan based on overall practice performance. Most of my staff are now “30 something,” so they’re a little more interested in this kind of thing than when they were in their twenties. I had a financial planner come in to demonstrate the magic of compounding. Once the staff got the concept, the benefit package has meant much more to them, but I also link making our goals with fun trips, like Charlene White’s “Cruise-and-Learn” seminars (Figure 3). Our goal now is 53 for 3 (which translates to keeping the overhead percentage to 53 percent or under for the next three months). The big companies have nothing on us when it comes to motivational slogans. The gift of the goose can truly lay the golden egg for your practice.

Gung Ho! offers a terrific set of principles learned from some of nature’s most industrious creatures that can be readily applied to revitalize your staff and inject some magic into your orthodontic practice. I recommend you read the book, do some thinking, and then get busy turning your office on to greater success as you steer your way into the twenty-first century.
using an interocclusal record to relate it to the maxillary cast. This is necessary to prevent a centric premature from deflecting the mandible upon closure, which in turn allows for precise diagnosis of the problems, planning of treatment, prediction of results, and occlusal finishing at the end of treatment that is not possible with hand-held models trimmed in MIC/CO.

Conclusion
In conclusion, the standard of care delivered to our patients is enhanced by the application of specific comprehensive orthodontic treatment goals and the use of a precision appliance system: the original patented “A” Company Straight-Wire Appliance (SWA). Adoption of these two principles makes orthodontic correction faster, easier and more predictable for both the patient and the orthodontist, and comprises the foundation for state-of-the-art orthodontic treatment in the 21st century.

References

Dr. Cordray continued from page 8

Uncompromised Precision

“A” Company Straight-Wire® Appliance's unrivaled accuracy is available in a wide choice of interchangeable bracket systems (.018 or .022, Andrews or Roth prescriptions) that are totally compatible with all “A” Company buccal tubes. Each system affords the unique advantages of the Straight-Wire appliance:

• Compound contour for easier, more exact adaptation to the tooth surface.
• Torque in base for level slot alignment.
• Bracket design based on Andrews’ “Six Keys to Normal Occlusion.”
• Cast appliance for tighter tolerances and smoother, more comfortable finish.
• Compatibility of brackets from different Straight-Wire systems for routine or case-specific mixing and for use with all “A” Company buccal tubes.
• Exact Andrews or Roth prescription, not a substitute “modified version.”

The Andrews Extraction Appliance
Full-size translation twin brackets and anterior sets and translation buccal tubes meet specific extraction-case requirements.

The Damon SL Appliance
Self-ligation bracket (Roth Rx) maximizes practice efficiency. Virtually friction-free appliance facilitates faster tooth movement, shortens treatment times, reduces the risk of root resorption and increases patient comfort with the use of biologically sound light-wire forces.

Dr. Larry Andrews' Nonextraction Rx & Dr. Ron Roth’s Specific Straight-Wire Rx are available in the Straight-Wire Systems shown below:

Full-Size Twins
Maximal control; larger pads for improved retention; broad selection of specialty brackets and cuspid and bicuspid hooks.

Tru Straight-Wire (Roth Rx) & Classic (Andrews Rx)
Midsize – Mini-Twin esthetics (reduced occlusogingivally) and Full-Size Twin control; Ultra Lock pad for superior retention; lower profile for patient comfort; rectangular shape for easy placement; deeper tie-wings for easy and secure ligation.

Mini-Twin
Reduced size for superior esthetics, comfort and hygiene; rhomboidal shape for bracket placement and tie-wing strength; broad selection of specialty brackets.

Attract
The Straight-Wire appliance for single-width bracket esthetics and mechanics; rounded tie-wings enhance esthetics, comfort and hygiene; the mechanical advantage of greater interbracket distance; compatible with Straight-Wire twin brackets, i.e., Attract brackets on anteriors for superior esthetics or on posteriors for increased interbracket distance.

Starfire
The ultimate in Straight-Wire esthetics – crystal-clear, mono-crystalline synthetic sapphire plus Straight-Wire precision; compatible with all metal Straight-Wire brackets with no compromise of precision.

See your Ormco/“A” Company representative or distributor for more details or for order information on the full range of Straight-Wire Appliances.

Tru Straight-Wire
Residency-to-Retirement: Our Commitment to a Lifelong Relationship

This program is designed for orthodontic residents and graduates (up to five years) to augment their business and clinical knowledge beyond their academic curricula. For information about this program, contact Kathi Carpenter at (800) 854-1741, Ext. 7272.

### Lecture/Course Schedule at a Glance – Through August 1999

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<th>Lecturer</th>
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<td>4/17</td>
<td>Rodney Littlejohn/Lynn Remington</td>
<td>Orange, CA</td>
<td>Rodney Littlejohn/Lynn Remington</td>
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### Lecture/Course Schedule at a Glance – Through May 1999

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### Lecturer | Title/Subject

- **Rodney Littlejohn**
  - Breaking the Ice with General Dentists and Five-Year Plan to a $1 Million Practice – Cost-Effective Internal & External Marketing

- **Bruce McFarlane**
  - Maximizing Profitability While Balancing Your Personal Life: Internal Marketing, Staff Training and New Patient Procedures

- **Lynn Remington**
  - How to Get There From Here: Fiscal and Practice Management 101 and the Primary Role of an Orthodontist

- **Straty Righellis**
  - Clinical Excellence: From Ivory Tower to Private Practice – Goal-Oriented Diagnosis and Treatment Planning

- **Lynn Sinicropi**

- **Michael Swartz**
  - Orthodontic Bonding: Achieving a 97 Percent Success Rate and Reducing Treatment/Chairside Time

### Date | Lecturer | Location | Subject

| 4/1      | Mario Paz       | Seoul, Korea        | "Lingual Orthodontics: Dealing with the Adult Patient" |
| 4/1      | Kyoto Takemoto  | Seoul, Korea        | "Lingual Orthodontics: Present and Future"            |
| 4/1-4/2  | Wick Alexander  | St. Petersburg, Rus. | Dental-Kompleks; Dr. Gerasimov 7-812-210-7667; Alexander Discipline: Advanced Course |
| 4/8-10   | Jerry Clark     | Amelia Island, FL   | OMG; Nancy (800) 621-4664; Ortho Practice Forum – Practice Management |
| 4/9-10   | Jose & Luis Carriere | Barcelona, Spain | AOSM; Josiane 31-1-4859-1617; The Inverse Anchorage Technique |
| 4/9-10   | Larry Hutta     | Worthington, OH     | Ormco/A; Paula Allen-Noble (800) 990-3485; In-Office Herbst Course* |
| 4/11-12  | F. Bassigny/J. M. Bonvarlet | Paris, France | AOSM; Josiane 31-1-4859-1617; "Breaking Barriers – Level 4" |
| 4/12-16  | Michael Marcotte | Tehran, Iran        | Sixth Intern Dental Congress; Dr. Kowsari (fax) 98-21-826-9592; “Goals of Ortho Treatment” |
| 4/12-16  | Michael Marcotte | Tehran, Iran        | Sixth Intern Dental Congress; Dr. Kowsari (fax) 98-21-826-9592; “Deep Overbite Correction” |
| 4/12-16  | Michael Marcotte | Tehran, Iran        | Sixth Intern Dental Congress; Dr. Kowsari (fax) 98-21-826-9592; Making Correct Preactivation Bends |
| 4/15-16  | Silvia Geron    | Istanbul, Turkey    | Ormco Europe; Prof. Erverdi 2-12-234-0894; Lingual Orthodontics Course* |
| 4/16     | K. Black/L. Sinicropi | New Orleans, LA | Ormco/A; Meredith (800) 854-1741, Ext. 7573; “Consultations That Convert” |
| 4/16-22  | Luis Batres     | Panama City, Pan.  | Dr. Batres 50-7-260-4660; Alexander Discipline Comprehensive – Tyodont Course* |
| 4/23-24  | Terry Dischinger | Lake Oswego, OR    | Dr. Dischinger; Carrie (503) 635-4439; In-Office Comprehensive Hands-On Herbst Training* |
| 4/23-24  | Joe Mayes       | Frankfurt, Germany  | German Assn. of Ortho; Dr. Gross 49-2-0224-5220; Simplified Treatment Mechanics & CBJ* |
| 4/28     | Duane Grummons  | Philadelphia, PA    | MASO; Betty (888) 892-6276; Lecture – “Fine-Tuning the Orthodontic Practice” |
| 5/6-8    | Stanley Braun   | Leuven, Belgium     | Prof. Willems 32-1633-2439, (fax) 32-1633-2435; Tyodont Course – “21st Century Biomechanics”* |
| 5/10-11  | Mario Paz       | Orange, CA          | Dr. Paz; Shelly (310) 278-1681; Hands-On Lingual Ortho with Tyodonts & Patients* |
| 5/14     | Mario Paz       | San Diego, CA       | ALOA; Kaci (800) 522-2562; Annual Lingual Ortho Update* |
| 5/14-15  | Richard Boyd    | San Diego, CA       | AAO Annual Session; Technology Conference – “Taking Your Practice Into the Year 2000” |
| 5/14-15  | Michael Swartz  | San Diego, CA       | AAO Annual Session; Technology Conference – “Practice Promotion in the New Millennium” |
| 5/15     | Paula Allen-Noble | San Diego, CA     | AAO Annual Session; Lecture – Hands-On Clinical Management of Crown/Banded Bite Jumper Appliance* |
| 5/15     | Jim Eckhart     | San Diego, CA       | AAO Annual Session; Lecture – "The MARA – Simplicity in a Fixed Class II Corrective Device" |
| 5/15     | Didier Fillien  | Coronado, CA        | Fillion Lingual Ortho Seminars; Juiana (504) 362-0499; “Incorporating Lingual Ortho in Your Practice” |
| 5/15     | Doug Toll       | San Diego, CA       | AAO Annual Session; Lecture – "MARA: Optimum for Perm. Elimination of TMD & Class II Malocclusion" |
| 5/16     | Joni Beedle     | San Diego, CA       | AAO Annual Session; Lecture – "Being the Master of Your Ship" |
| 5/16     | Randall Bennett | San Diego, CA       | AAO Annual Session; Lecture – "The Agony and the Ecstasy": Modern Ortho Team Challenges & Solutions |
| 5/16     | Jerry Clark     | San Diego, CA       | AAO Annual Session; Lecture – "Learn How to Earn – Maximizing Your Practices Profit" |
| 5/16     | Joan Garbo      | San Diego, CA       | AAO Annual Session; Lecture – "Prosperity in Practice" |
| 5/16     | Tom Pitts       | San Diego, CA       | AAO Annual Session; Lecture – "Creating the Fun and Profitable Practice with Quality Results" |

continued on back cover