

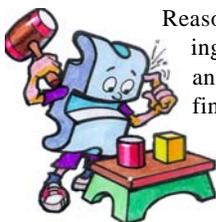
DR. RASHID CHAMDA OF BLOEMFONTEIN, SOUTH AFRICA, SECOND FROM LEFT, AND MEMBERS OF THE KESLING AND ROCKE GROUP DURING TIP-EDGE COURSE NOVEMBER, 1997, PAGE 5.



SUMMER 1998

EDGELINES

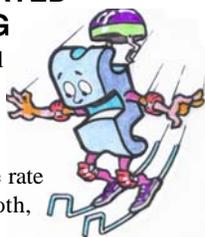
RECTANGULAR OR ROUND?



Reasons for selecting round or rectangular wires for finishing are discussed in detail. Cover Story, Page 1.

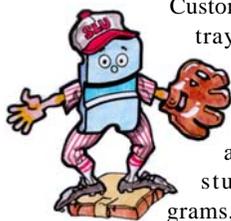
ACCELERATED TORQUING

An Individual Root Torquing (IRT) auxiliary is used to accelerate the torque rate of a single tooth, Page 4.

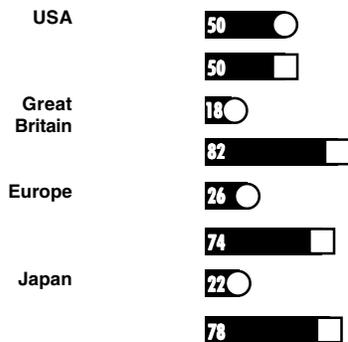


COVERING THE BASES IN TRAINING CAMP

Custom instrument tray covers facilitate Tip-Edge treatment at graduate student programs, Page 4.



PERCENT OF CASES FINISHED WITH RECTANGULAR OR ROUND WIRES



Data based on survey of orthodontists using Tip-Edge brackets and the D.S.A.T.



Published Quarterly In The USA



DR. RICHARD PARKHOUSE DEMONSTRATES DIRECT BONDING DURING RECENT COURSE IN THE PHILIPPINES, PAGE 6.

COVER STORY

Rectangular or Round Wire In Stage Three

By Peter C. Kesling, D.D.S., Sc.D.

When approaching the end of stage two in the Differential Straight-Arch® Technique, one has to make the decision whether to finish the case with round or rectangular archwires. Continuing with round wires can simplify treatment for the operator—no need for more archwires. In other cases the use of rectangular archwires can provide automatic torque to all teeth that require it, from an anchor molar to a lingually positioned mandibular lateral incisor.

A recent survey of offices using Tip-Edge brackets indicates varying preferences around the globe from 18% round and 82% rectangular in Great Britain to 50% each in the United States. Choices are affected by previous appliances—Begg or Edgewise—and length of time since last Tip-Edge course. The trend is definitely away from round wires and toward rectangular. However, there remain indications and advantages for each.

Indications for Round Archwires

In severe anteroposterior skeletal discrepancies, round arch-

wires may be the wires of choice for stage three. During stages one and two they permit the maxillary and/or mandibular anterior teeth to assume compensating la-

scenarios the choice of torquing auxiliary might reflect the operator's background. Those with Begg in their blood may prefer a looped auxiliary, those with edgewise—a Torque Bar for maximum aesthetics, Figure 1.

Torque Bars require Deep Grooves in the central and lateral incisor brackets. However, this combination also eliminates the need for Side-Winder springs on the central incisors and often the lateral incisors as well. Deep Grooves

are also helpful when torquing

CHOICE OF WIRES FOR STAGE THREE	
RECTANGULAR	ROUND
<ul style="list-style-type: none"> ○ For Molar Or Premolar Torque. ○ To Eliminate The Need For An Anterior Torquing Auxiliary. ○ For Automatic Canine Torque. ○ To Align Mandibular Anterior Roots. ○ For Maximum Vertical And Horizontal Control. ○ With Ceramic Brackets, When Central And Lateral Incisors Require Torque. 	<ul style="list-style-type: none"> ○ For Treatment Simplicity (Fewer Archwires) When There Are Minimal Torque Requirements. ○ When Compensating Anterior Inclinations In Severe Skeletal Discrepancies. ○ For Maximum Torque Rates: <ul style="list-style-type: none"> A. Torque Bar. B. Looped Auxiliary. C. IRT (Individual Root Torquing Auxiliary). ○ With Ceramic Brackets, When Only The Central Incisors Require Torque.

biolinguinal inclinations. Subsequent anterior torque adjustments are often unnecessary—even contraindicated. Rectangular archwires would demand third order fine tuning—an unnecessary complication to treatment.

Round archwires would also be the obvious choice when the patient does not require molar torque or selective labiolingual root positioning of canines or mandibular incisors. The requirements of stage three would then be limited to mesiodistal root uprighting and/or group torquing of maxillary incisors. Side-Winder springs provide the uprighting forces and anterior auxiliaries, the torque. With this

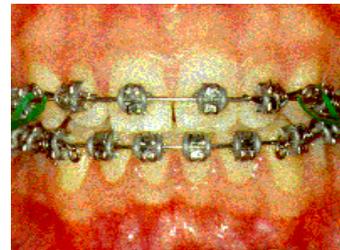


Figure 1. Round wire stage three with maxillary torque bar in Deep Grooves. Side-Winder springs on maxillary lateral incisors can be removed in one or two visits as bar settles into Deep Grooves.

with two or four looped auxiliaries—more activation (force) is achieved as the base sections

Please see COVER STORY next page

COVER STORY

Rectangular or Round . . . *Continued from page 1*

of the auxiliary are held closer to the teeth, Figure 2.

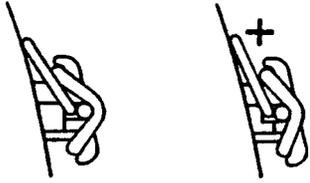


Figure 2. Torque force from torque spur is increased if auxiliary is placed in Deep Groove.

The only disadvantage of Torque Bars and looped auxiliaries is that they are not self-limiting and overtorque could occur. However, this may be offset by the fact that they provide the most rapid rate of root torque—3 to 4 degrees a month, with the Torque Bars being the fastest.

When only the maxillary central incisors require torque and the brackets are ceramic, a round archwire would be indicated. Individual Root Torquing (IRT) auxiliaries, which are nearly invisible, could be used to torque the central incisors. The round archwire enhances such third order movement, as the ligatures do not have to “flow” over the edges of the archwire as the tooth torques.

Some may consider that finishing with round archwires simplifies treatment—two less archwires. However, if teeth other than the maxillary anteriors require torque, this could prove “round wise and rectangular foolish.”

Finally, to achieve and maintain proper rotational positions of the anchor molars with round wires, it is necessary to place molar offsets to compensate for the horizontal play within the occlusal .022" x .028" molar tubes and the .022" archwires, Figure 3.

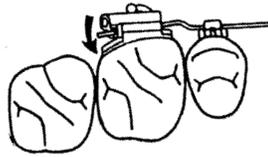


Figure 3. Buccal offsets are required in round archwires to compensate for horizontal play within the tubes.

Indications For Rectangular Archwires

Generalized and individual torquing requirements are the strongest indications for utilizing

rectangular archwires in stage three. These would include the torquing of molars, canines and/or mandibular incisors. If round archwires were used, each of these needs would have to be addressed separately and one, i.e. molar torque, would be nearly impossible to accomplish.

When zero degree, full-size rectangular archwires are inserted into the occlusal tubes, the molars will automatically be torqued, as necessary. The forces delivered to the molars from the .0215" x .028" rectangular archwires are extremely light and long-lasting. This is because the “interbracket” distance is actually from molar to molar—not between each individual tooth in the arch, Figure 4.

The simple placement of Side-Winder springs on all other teeth will not only result in their crowns uprighting mesiodistally, but their roots torquing labially

or lingually without any conscious, specific “instructions” from the operator.

The second order power delivered by the Side-Winder springs is translated into third order movements by the internal geometry of the Tip-Edge slot. The resulting torque forces are physiologic and automatically stop when the teeth have reached predetermined inclinations. Each tooth is torqued without disturbing its neighbors along the arch. Such a means of torquing is a luxury afforded by no other appliance and results in beautifully torqued canines and the automatic alignment of labiolingually displaced anterior tooth root apices (especially mandibular) for maximum posttreatment stability, Figure 5.

Ceramic brackets are another indication for rectangular archwires when the maxillary central and lateral incisors require

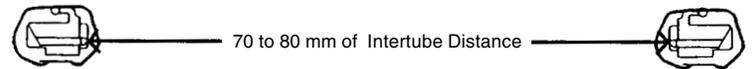


Figure 4. Tip-Edge brackets create an effective “interbracket” distance between tubes, not brackets. This is because the brackets’ slots enlarge and become ineffective in the second and third orders.

Q's and A's

Q. *I have been noticing teeth rotating during stage three. Do you have any suggestions?*

Surrey, U.K.

A. We assume the teeth that are rotating are being uprighted by Side-Winder springs. If these springs are deformed when placed or subsequently by the patient, their activation coils may be deflected labially. This would change their action from mesiodistal toward rotational.

Remember to always insert the springs from the incisal, so their coils will be forced against the bracket (not away) by occlusal forces.

It is important to place the elastomeric ligatures in the proper sequence; *before* regular Side-Winders and *after/over* invisible Side-Winders. For maximum control, ligatures should be replaced after three months and be of the highest quality. Molded ligatures seem to have more strength than those cut from tubing, which provide less control.

Q. *I have a patient whose maxillary lateral incisors were originally palatally displaced. In order to quickly torque their roots labially I plan to use two IRT's (Individual Root Torquing Auxiliaries). Should I cross their tails at the midline or run each distally?*

Hershey, Pennsylvania

A. To avoid having to contain three wires in the central incisor and canine archwire slots, the IRT tails should go distally, ending between the premolar and first molar. Remember the legs that pass through the vertical slots can also influence mesiodistal inclinations as desired.

Q. *After I changed from a .016" to a .022" round archwire, a space developed between the maxillary central incisors in one month. What is the cause?*

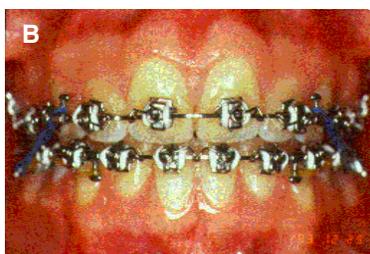
Bacolod, Philippines

A. If the case originally had anterior crowding and the first premolars were removed, the teeth may have been in the late stages of unraveling when you changed archwires. This involves not only rotations and labiolingual corrections of the central and lateral incisors but distal tipping of the canines as well. In the absence of cuspid ties in extraction cases the momentum of such alignment can result in anterior spacing. The change in archwires may have been only coincidental. This is assuming the intermaxillary circles of the new .022" wire were not pressing on the mesial of the canine brackets—which could also cause spacing.

Rectangular or Round . . . *Continued from page 2*



BEFORE



AFTER

Figure 5A-C. A) Pretreatment mandibular cast showing severe lingual displacement of lateral incisors. Initial alignment of the crowns with round wire leaves such teeth labially inclined with their roots relatively undisturbed. B) Rectangular archwire and Side-Winder springs on mandibular lateral incisors automatically torque their roots labially. C) Posttreatment cast shows lateral incisors have been torqued to same axial inclinations as central incisors.

torquing. A Torque Bar, the most aesthetic means of torquing four incisors, cannot be considered since ceramic brackets do not have Deep Grooves. A four looped auxiliary in conjunction with a round archwire may not be appreciated by a patient who chose ceramics for the “invisible look.” Therefore, torque via Side-Winders and a rectangular archwire would be indicated, Figure 6.

Rectangular archwires .0215" x .028" provide more vertical and horizontal control than .022" round archwires. This is due to their increased cross sections and

can be appreciated by their relative degrees of stiffness—248 for rectangular and 115 for round.¹ They would be preferred to maintain bite opening in deep bite cases during incisor torquing and to hold expansion—



Figure 6. Stage three with .0215" x .028" archwires. Horizontal elastic closing residual posterior space while all torquing and uprighting accomplished with Side-Winder springs.

while simultaneously moving the roots of posterior teeth buccally to enhance posttreatment stability.

In summation, the chart on page 1 lists the indications for either round or rectangular archwires for finishing.

It seems quite obvious that rectangular archwires would provide the most controlled and automatic stage three, but as with all else in orthodontics, the whims and preferences of each individual operator will prevail.

References

1. Thurow R. Personal correspondence March 1998.

Vertical Slot Video

A new 16-minute video has just been released explaining the versatility of vertical slots. Beginning with the first vertical slots in Angle's ribbon arch brackets of 1915, it follows their evolution to becoming essential components of today's preadjusted edgewise brackets.

Uses of vertical slots from the beginning of treatment, to aid in direct bonding, to final torquing and tipping are graphically demonstrated.

The application of various auxiliaries designed to fit within vertical slots and the resulting tooth movements are shown through computer animation. The concepts of recovering lost torque with conventional archwire slots and full range torquing with Tip-Edge archwire slots are fully demonstrated.

101-946 NTSC (United States)

101-947 SECAM

101-948 PAL

CASE REPORT

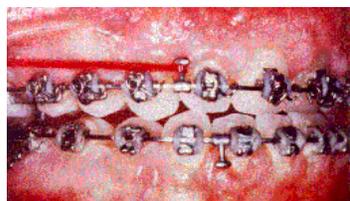
This 21 year old female exhibited a full step Class II malocclusion with 9 mm of overjet and slight spacing in both maxillary and mandibular anterior segments. The position of the mandibular incisors, 2 mm ahead of the A-Po line, coupled with the spacing contraindicated the extraction of teeth in the mandibular arch. Both maxillary third molars were present and well positioned for successful eruption. The maxillary first, and mandibular third, molars were extracted prior to starting treatment.



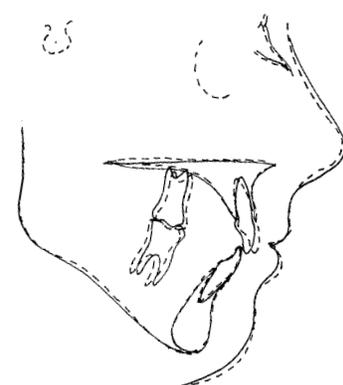
Stainless steel (high tensile) archwires with mild bite opening bends and light Class II elastics. Pre-stretched E-Links from maxillary wire circles to second molars.



Maxillary .022" archwire, Side-Winder springs as brakes on canines and premolars. Mandibular .016" archwire engages premolars for pre-stage three.



Stage three with .0215" x .028" archwires. Horizontal elastic closing residual posterior space while all torquing and uprighting accomplished with Side-Winder springs.



J.W. Female, 22 Years
 Class II, Division 1
 Extractions U66, L88
 Archwires Used 6 (4U, 2L)
 Treatment Time 23 Months
 Retention Perfector®

Cephalometric Changes:

	Start-Dotted	Finish-Solid
1 A-Po	+2.0 mm	+1.5 mm
Wits	+1.0 mm	.0 mm
SN-MP	42.0°	41.0°
SNA	82.0°	79.0°
SNB	75.0°	79.0°
ANB	7.0°	5.0°
1-SN	98.0°	86.5°

IRT's Helpful to Accelerate Torquing

When using rectangular archwires during stage three of Tip-Edge treatment, an individual tooth may, on occasion, be found to be torquing slower than others. In this situation an IRT (Individual Root Torquing) auxiliary can be used to accelerate the torquing of the desired tooth. To accomplish this a 90-degree bend is placed in the IRT at the junction of the tail of the auxiliary and the u-shaped portion which engages the vertical slot of the bracket, Figure 1.

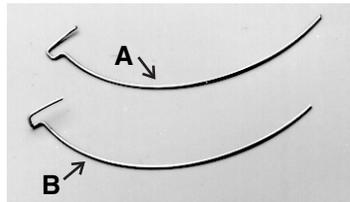


Figure 1. A) Original IRT. B) IRT modified to allow engagement over base archwire. Ninety degree bend is placed between tail and segment of auxiliary that is engaged in vertical slot.

This allows for the engagement and ligation of the auxiliary over, rather than under, the base archwire. Since the placement of this bend also creates a "right" or "left" auxiliary, it should be modified in such a way that the tail of

the auxiliary will extend distally from the bracket to which it is engaged.

The use of an IRT with rectangular archwires delivers torquing forces through two distinct actions. The arm of the auxiliary inserted in the vertical slot delivers torque in the same manner as when used with round wires. When employed with rectangular archwires, torque is also generated through the mesiodistal uprighting force delivered by the IRT. As the tooth uprights, the Tip-Edge archwire slot closes tightly against the flat surfaces of the rectangular archwire.

IRT's accelerate the torque rate during rectangular stage three due to the combined effects of this uprighting component of force (stronger than that produced by Side-Winder uprighting springs) and the application of direct torquing force from within the bracket's vertical slot.

The effectiveness of IRT's used with rectangular archwires is well illustrated through intraoral photographs taken during treatment of the patient featured in this issue's case report. During stage three the

maxillary right central incisor, which had been endodontically treated prior to orthodontic treatment, was torquing more slowly than the adjacent central incisor. To enhance the rate of torque for this tooth, a modified IRT was inserted through the vertical slot from the incisal and engaged over the rectangular archwire, Figure 2.

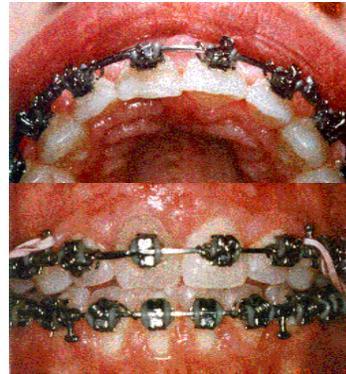


Figure 2. IRT engaged over rectangular archwire to accelerate torque rate for maxillary right central incisor.

Two appointments later (12 weeks) the axial inclination of the maxillary right central incisor approximated that of the adjacent left central incisor, Figure 3.

Two IRT's can be used in tandem with rectangular archwires

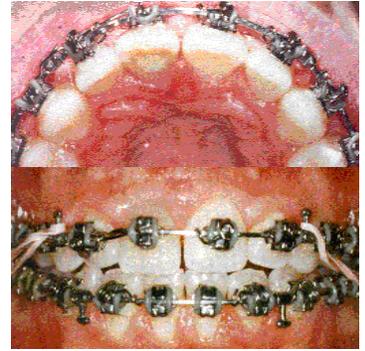


Figure 3. After 12 weeks maxillary right central incisor torqued to match buccolingual inclination of adjacent central incisor.

with their tails extending distally to accelerate torquing of both central incisors during stage three if desired. Maximum braking forces could be achieved using this approach to protract posterior teeth.

The torquing effectiveness of conventional edgewise archwire slots might also be enhanced using IRT's. This would occur through their direct torquing action as well as with their ability to fully upright the teeth mesiodistally, which eliminates the "slop" that exists between full size rectangular archwires and archwire slots due to manufacturing tolerances.

Tray Covers Designed To Facilitate Checking Tip-Edge Patients In Graduate Orthodontic Programs

Custom tray covers help organize and prepare graduate students to efficiently care for Tip-Edge patients. Each instrument required, including pliers, 4 ounce tension gauge, annealing torch and Straight Shooter is outlined and identified.

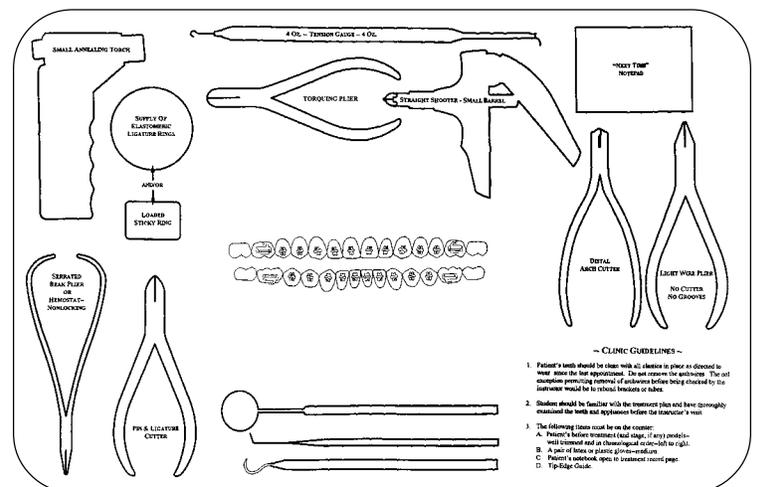
When the students have "all the bases covered," no time is lost looking for instruments asked for by the clinical instructors. The instructors' time is also better utilized. They can quickly reach for and pick up an instrument to demonstrate a particular point.

Labiobuccal drawing in center depicts all teeth and attach-

ments. This aids in illustrating the insertion of auxiliaries as well as the design and placement of sectional wires for the eruption of impacted canines, anterior alignment or correction of second molar crossbites.

Clinic Guidelines are listed in the lower right hand corner. These include reminders to have the patient's teeth clean, elastics in place and the original models readily available for review.

Original artwork is available from TP Orthodontics at no charge. Ordinary placemats can then easily be printed at local "quick" print shops. Call 1-800-TIP-EDGE.



Tip-Edge Articles Published

"Early Experiences with the Tip-Edge Appliance"

Jayne E. Harrison, B.D.S., F.D.S., M.Orth., M.Dent.Sci.

British Journal of Orthodontics, February 1998

In this article, which in essence is two case reports, Dr. Harrison relates her experiences in first being trained in the "Straight Wire Appliance" and then in Tip-Edge at the Glan Clwyd Hospital, Wales by Dr. R. Parkhouse.

The first case report is of a 14-year-old girl with an extreme dental and skeletal Class II malocclusion. The thirty months of treatment, which involved the extraction of the maxillary first and mandibular second premolars, is well documented by color intraoral photos and cephalometric information. The final occlusion and lip balance are excellent though the latter somewhat overtaken by unexpected growth of nose and chin.

The second patient was also female, age 12½ but had a Class III malocclusion with a bilateral crossbite. Treatment included extraction of the maxillary and mandibular second premolars and expansion of the maxillary arch with a quad-helix appliance. Again, color intraoral photographs clearly show the progress of differential tooth movement through the three stages of treatment.

Side-Winder springs were used as brakes in stage two and then, in conjunction with passive .0215" x .028" wires, to provide the power required for all individual tooth uprighting and torque. The results, achieved in 25 months, are excellent and camouflage the Class III skeletal base relationship. Such changes would not have been so relatively easy to obtain without the benefits afforded by differential tooth movement. This well written article is yet another to add to the growing evidence of the benefits to be gained from the preadjusted yet permissive Tip-Edge archwire slot.

"Tip-Edge: Differential Forces and Variable Anchorage Control"

Dr. Georges Mauran, Professor a la Chirurgie Dentaire - Montpellier, France

Dr. Helene Mauran-Plas, Dento-Faciale C.E.C.S.M.O. - Montpellier, France

Dr. Frederic Plas, Dento-Faciale C.E.C.S.M.O. - Montpellier, France

Informations Orthodontiques - Vol. 2 No. 1

This article covers the development of the Tip-Edge archwire slot and the advantages it offers. The application of forces from archwires, elastics and auxiliaries in each stage of treatment are clearly explained by text and illustrations. The successful nonextraction treatment of a Class II Division 1 malocclusion is covered in detail through plaster casts, x-rays, cephalometric tracings and facial photographs.

This well organized article should do much to promote the understanding and appreciation for Tip-Edge brackets and the Differential Straight-Arch Technique to all French speaking orthodontists. 📌

Tip-Edge Paper in India

Dr. B.N. Sunilkumar, post graduate in Faculty of Orthodontics, KLES Institute of Dental Sciences Karnataka, India presented "Merging philosophies, expanding horizons—DSAT" at the 32nd Indian Orthodontic Conference held in Goa October 16th-18th, 1997.

In his presentation he elaborated on the appliance evolution, history, treatment with Tip-Edge brackets and their introduction to



India with the help of eight well-documented cases treated with the Differential Straight-Arch Technique.

His scientific paper was selected from a total of 84 papers submitted for presentation during the Orthodontic Congress in Goa, India. 📌

Kesling and Rocke Group Gives Two Graduate Student Tip-Edge Courses



The first course was held November 14th and 15th, 1997 at the Orthodontic Center in Westville, Indiana. Fifty-two graduate students and faculty members from the following universities participated: Case Western Reserve, Columbia, Montefiore Medical Center, Saint Louis University, State University of New York at Stony Brook, University of Mexico and the University of Missouri at Kansas City.

Seven practicing orthodontists also attended. For some it was their first introduction to Tip-Edge brackets and the Differential Straight-Arch Technique. To others it served as a refresher. Instructors for this course were members of the Kesling and Rocke Orthodontic Group.



The second course, February 27th & 28th, 1998, brought 45 participants to the Orthodontic Center. Practicing orthodontists as well as students and faculty members from the following universities were in attendance: Boston University, Indiana University, Montefiore Medical Center, State University of New York at Buffalo, University of Medicine & Dentistry of New Jersey, University of Tennessee and the University of Western Ontario. 📌



During the February course Drs. Peter and Chris Kesling review a treated case with Drs. Igor and Marina Yelistratov from Khabarovsk, Far East Russia. Igor plans to implement the Tip-Edge technique at the University of Khabarovsk. Dr. Doyle Baldrige (right) of Shreveport, Louisiana has given courses in Khabarovsk and was instrumental in the Yelistratovs visiting the Center.

Dr. Parkhouse “Bonds” with Philippine Orthodontists

On February 12th and 13th Dr. Richard Parkhouse of Clwyd, Wales, U.K. gave a Tip-Edge course in Manila. In spite of the devaluation of Philippine currency that occurred before the course, attendance and interest was high with over fifty orthodontists attending.

A vast number of the participants were women and several thought Dr. Parkhouse resembled James Bond. Because of this he kept their attention, especially through the intricacies of Side-Winder torquing. Rachel Parkhouse accompanied her husband and helped keep his feet on the ground. The course ended on a high note with requests for a refresher next year.



Dr. Parkhouse, center, with participants during February 1998 Tip-Edge Course in Manila, Philippines.

Belgium’s 4th Tip-Edge Course

Chateau du Lac, outside Brussels, proved an idyllic location for Belgium’s fourth Tip-Edge Course, conducted by Dr. Richard Parkhouse in November, 1997. The 23 participants reflected the wide variety of techniques practiced on the European continent, with previous Begg and straight wire orthodontists represented. The two days of lectures and typodonts proved intensive and enthusiastically received, capably supported by TP’s exclusive Sales Representative to Belgium, Mr. Werner Bervoets.



Shirley Stanley, TP Orthodontics’ Senior Director of International Sales, and Dr. Parkhouse (front row left) and members of Belgium Tip-Edge course. Photo taken at the Chateau du Lac near Brussels.

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