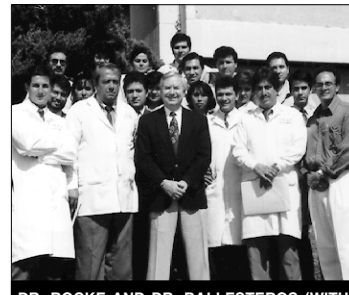


DRS. ISHIHARA, YAMANAKA AND ARIMA WITH DR. CHRIS KESLING AT THE JAPANESE TIP-EDGE SOCIETY MEETING IN TOKYO (SEE PAGE 4).



Published Quarterly In The USA



DR. ROCHE AND DR. BALLESTEROS (WITH FOLDER) AND HIS STAFF AT THE NATIONAL UNIVERSITY AT CUERNAVACA, MEXICO (SEE PAGE 4).

SPRING 1995

## EDGE LINES

MODIFICATIONS  
ESSENTIAL TO EDGE-  
WISE EVOLUTION:



History shows that changes were necessary to the edgewise appliance from its beginning.  
Cover Story.

### SNUG FITS ARE OUT:

Vertical slots must provide extra space for auxiliaries. Page 2.



### WHAT BRACKET PRODUCES THE FASTEST RESULTS?

Recent study suggests Tip-Edge is the winner—by 30%. Page 3.

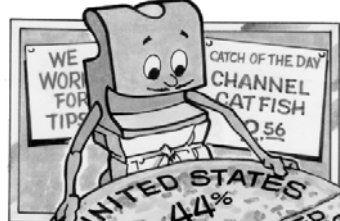


### TIP-EDGE SOCIETIES IN JAPAN AND MEXICO:



Enthusiasm for Tip-Edge spawns societies around the globe. Page 4.

## TIP-EDGE GRAPHIC



Tippy gets a look at The Pizza Pie Chart of his sales around the world.

# “Yes Mother Angle, There Was A Flaw In The Edgewise Mechanism”

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

Less than one year after Edward H. Angle died, it was necessary for two of his closest friends, Drs. Robert W. Strang and Charles H. Tweed, to tell his widow, whom they kindly referred to as Mother Angle, that the “latest and best” orthodontic appliance<sup>1</sup> had a fault. It was inefficient by not providing for mesiodistal movements in the buccal segments.



Mrs. Edward H. (Mother) Angle

The occasion arose because in 1931 Dr. Strang had read a paper<sup>2</sup> in which he advocated breaking the continuity of the archwires with loops (Figure 1). The purpose of the loops was to create spaces through anteroposterior movements in the buccal segments. Strang had been one of Angle's most faithful followers. He had mastered and treated with all of his previous appliances—the Expansion Arch (1900), Pin and Tube (1910), Ribbon Arch (1915), and had been using the new edgewise mechanism since 1928.

Mrs. Angle was upset by this suggested modification to

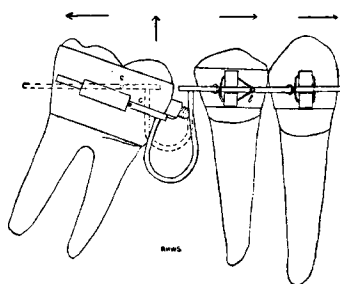


Figure 1. Dr. Strang suggested placing vertical loops in the edgewise archwire to create space in the buccal segments.

the edgewise mechanism—and so soon after her husband's death the year before. She could remember how much he was against vertical loops in archwires because he had seen the difficulties they had caused orthodontists in the past. She immediately wrote Dr. Strang and complained.<sup>3</sup>



Robert W. Strang

Dr. Strang replied with the following comments:

“I feel very certain that had Dr. Angle lived, his next development would have been the incorporation into this mechanism of some means of producing

anteroposterior movements in the buccal sections of the arch. How he would have solved this, of course, is problematical and that it would have been in a way that none of us could duplicate is just as certain...he would not have been satisfied to leave the appliance inefficient in this one particular.”

Mrs. Angle, recognizing that she was not qualified to assess the truth in Strang's criticism of the “latest and best” turned to her close friend, Charles H. Tweed:

“...what I want especially to ask you is some accurate information that I can pass on to Bob Strang...it is impossible for me to believe that Dr. Angle had omitted to provide for ‘anteroposterior movements in



Charles H. Tweed

the buccal sections of the arch’.”

Dr. Tweed replied that there was a weakness in the mechanism for the opening of spaces. Of course, at that time

Continued on page 2

# Yes Mother Angle... Continued from page 1

he and most other disciples of Angle were treating all cases nonextraction. Several years later as Tweed and others began extracting teeth, this loop would be turned around in action to become a "closing loop."

Mrs. Angle was relieved to hear that "Charles" felt Dr. Strang was correct and hoped she could "...get (the loop) off my mind." Yet she agreed with Dr. Tweed in that whatever means Dr. Angle, himself, would have thought of to correct the problem, "...he would never have severed the arch."

Angle died without realizing the enormity of the problem—which in recent years has been compounded by preadjusted archwire slots which tend to move crowns mesially. This further complicates retraction for the correction of Class II or III interarch discrepancies and the closing of extraction spaces.

It's almost as if an albatross has been hung around the necks of orthodontists working within the confines of the conventional edgewise slot. A slot much like the ruts that often faced the automobiles of 1925, (Figure 2). Ruts that could predetermine the path of the automobile—even though the driver might have preferred a different route. However, unlike Coleridge's Ancient Mariner<sup>4</sup> this albatross is subtle, invisible and its "weight" has come to be taken for granted—as if unshruggable.



Figure 2. The edgewise slot as designed by Angle is similar in action to the ruts often found in the roads of 1925.

One of Angle's students, P. R. Begg, shook it off by abandoning the edgewise mechanism in 1928 and returning to ribbon arch type brackets. In this manner he gained the freedom of tooth movement required—rapidly and from relatively light forces. Begg died in 1983 still searching for a way to achieve final, positive, three dimensional control from a ribbon arch type bracket. He never looked at the edgewise bracket as the solution—he considered it the problem. More than once he told me: "Beware of the horizontal slot" or "Stay out of wide channel brackets."

## The Edgewise Appliance Today

The edgewise appliance with conventional, static archwire slots is the most popular in the world today. Yet, besides the original limitation pointed out by Strang and Tweed, there also are no provisions in the edgewise archwire slot to facilitate anteroposterior interarch corrections or anterior bite

opening. Also, torque from rectangular archwires often "round-trips" adjacent teeth.

However, in 1986 I modified the archwire slot to correct all these problems.<sup>5</sup> Of course, that modification is the removal of the opposed corners of the conventional edgewise archwire slot to permit either mesial or distal crown tipping, (Figure 3).

The design, action and advantages of the Tip-Edge archwire slot have been clearly explained in previous articles<sup>6,7,8,9</sup> and proven in the offices of orthodontists around the world.



Figure 3. The Tip-Edge archwire slot—could this be that single modification referred to by Dr. Strang?

Such modification of the slot could not have been considered by Angle because at the time there were no mesiodistal uprighting springs. They were created by Begg in 1960, to upright teeth in conjunction with ribbon arch type brackets. Without such springs the Tip-Edge bracket itself would not be practical.

Therefore a simple, graphic equation could be formulated to relate the main contributions that, I feel, have led to the

evolution of the edgewise appliance to its present state (Figure 4). Of course, this does not include refinements such as preadjustment of slots and varying heights of brackets that have helped to minimize modifications in the archwire.

I feel Drs. Strang, Tweed, Begg and even Dr. Angle himself, would approve of its simplicity and efficiency. Not only does it facilitate space opening or closing, it also enhances retraction in the buccal segments of one arch and automatically, through intermaxillary elastics, creates anchorage in the other.

It has been done, I think, as Strang felt Angle would have done it—by avoiding everything undesirable and adding just the necessary modification.

Other advantages not readily appreciated or understood include facilitated intrusion of teeth for anterior bite opening and the ability to torque and upright teeth without deflecting the archwires. Of course, these latter movements are powered by auxiliaries. This leaves the archwires relatively undisturbed to provide stability and molar control that exceeds that of any other type of edgewise appliance.

The development of orthodontic appliances is an ever-changing, evolutionary process. Forward thinking orthodontists must have an open mind,

*Continued on page 3*

## Q's and A's

**Q.** I have noticed that there is not a snug fit between the various Tip-Edge auxiliaries and the vertical slots in the brackets. Are any steps being taken to correct this?

GRANGER, INDIANA

**A.** No. As a matter of fact the slots are intentionally "oversized." With over thirty years experience in making brackets with vertical slots, TP learned long ago the benefits of a loose fit. All slots are .020"x .020"—even more on high profile brackets such as maxillary lateral incisors and mandibular anteriors. If the slots were smaller, it would be *extremely* difficult to place or remove the auxiliaries. Also, it would be impossible to slip an elastomeric thread through as is often indicated for lingually displaced teeth. Be assured the loose fit is there for a purpose and that is to make your life easier.

**Q.** Some of the Tip-Edge enthusiasts in Northern Ireland have noticed that the upper lateral incisors seem to become long in the

early stages of Tip-Edge therapy. In some patients the incisal edges of the laterals are at a lower level than the centrals. Our three questions are: Does this happen frequently, why does it occur, and is the discrepancy always corrected as treatment proceeds? We use jigs.

BELFAST, IRELAND

**A.** Palatally displaced maxillary lateral incisors *do* tend to elongate when moved labially with vertical loops. Offsetting the bracket areas between the loops gingivally will take care of the problem.

Subsequent use of a plain (no loop) archwire will return/hold them in the vertical positions determined by their bracket heights.

It is sometimes advisable (severe crowding) to bond the lateral brackets at the same level as the central brackets. This will ensure adequate overlapping of the lateral incisors to prevent relapse toward their original positions. This is just another example of over-correction which should always be done as soon as possible and maintained until the appliances are removed.



## Yes Mother Angle... Continued from page 2

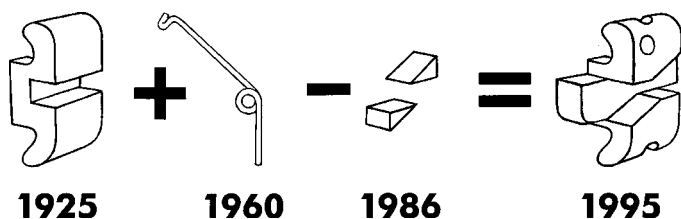


Figure 4. Graphic equation represents essential factors that have produced the Tip-Edge bracket.

carefully assess the new and be willing to discard the old when it is in the best interest of their patients.

Angle might have unknowingly dropped an albatross around the necks of orthodontists but he would, I believe, be one of the first to shake it off by adopting new ideas—including Tip-Edge.

In 1925, when introducing the edgewise mechanism, he not only praised its practicality and efficiency but he had a few words for those who might not readily accept it. He referred to them as, "...in a rut and contented."

His thoughts were prophetic and remain perceptive—even after 70 years. ■

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## Study Suggests Tip-Edge Faster Than Begg

A study evaluating the effects of practice modifications on treatment times was recently published.\* Treatment was performed in a private practice by a Board certified orthodontist treating to ABO ideals. All malocclusions were Class I and treated nonextraction.

One group (28 patients) was treated with the standard Begg technique and conventional office procedures. The other group (25) was treated with the Tip-Edge appliance along with additional motivation and modified finishing techniques. The Tip-Edge group had an average treatment time of 12.8 months compared to 20.9 months for the Begg treated group.

Both groups were treated with round, steel archwires, light elastics and auxiliaries such as rotating springs, uprighting springs and torquing auxiliaries. The frequency of appointments was the same. Neither rectangular arches nor extraoral forces were used in either group.

The authors feel the reductions in treatment times for the Tip-Edge patients were due to one or more of the following variables:

1. Relative ease and efficiency of treating with Tip-Edge.
2. Increase in experience—skill of the operator. (Begg cases were treated first.)
3. Practice modifications—motivation, per visit, and completion targets.

Also of interest were the pre and posttreatment positions of the mandibular incisors to the APo line. The Tip-Edge incisors moved lingually from 6.64 mm to 4.7mm. The incisors of the Begg group moved forward from 5.68 mm to 6.3 mm. All malocclusions were matched for age, skeletal patterns, overbite, overjet and severity. This suggests there may be more inherent anchorage in the Tip-Edge appliance than the Begg. ■

\*Shelton CE, Cisneros GJ, Nelson SE, Watkins P. Decreased treatment time due to changes in technique and practice philosophy. *Am J Orthod Dentofac Orthop* 1994;106:654-657.

## CASE REPORT

A 22-year old female presented with a Class I bimaxillary protrusion. The mandibular incisors were crowded and 4.5 mm ahead of the APo line. To enhance posttreatment stability and improve the profile, four first premolars were removed. Tip-Edge brackets (CeramaFlex® in the maxillary) were bonded in both arches and Tip-Edge tubes banded to the four first molars.



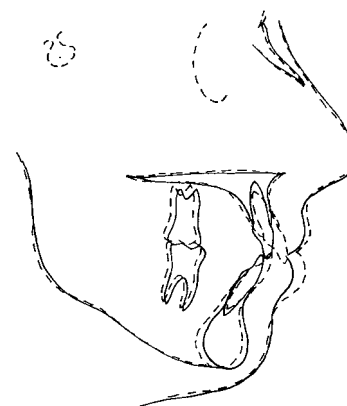
Initial .016" preformed archwires with strong bite opening bends. Light Class II elastics pulling two ounces on each side were worn 24 hours a day to open the bite. Note premolars are *not* attached to the archwires.



Rectangular archwires (.0215" x .028") in place at start of Stage III. Side-Winder springs exert continuous, uprighting and torquing forces with no danger of fracturing the ceramic brackets.



After the bite was opened, .022" stabilizing archwires were placed. Tip-Edge slots have "opened up" to readily accept these larger archwires. E-Links® in place to close posterior spaces.



J.D. .... Female, 22 Years  
**Class I**  
**Extractions** ..... U44, L44  
**Archwires Used** ..... 7 (4U, 3L)  
**Adjustments** ..... 16, Time: 23 Months  
**Retention** ..... Positioner

### Cephalometric Changes:

	Start - Dotted	Finish-Solid
1-APo	+4.5 mm	0 mm
Wits	+4.0 mm	+2.0 mm
SN-MP	35.0°	33.5°
ANB	7.0°	5.5°
SNA	83.0°	81.0°
SNB	76.0°	75.5°
1-SN	103.0°	90.0°



## Tip-Edge In Japan

Two Tip-Edge courses were recently held in Japan. The one in Tokyo had 37 participants, the other in Sapporo had 20 in attendance.

The lack of flouridation in drinking water in Japan, coupled with a high incidence of dental protrusions and severe crowding, combine to produce much more severe malocclusions as compared to those seen in the U.S.

The Tip-Edge appliance is well suited to treat such cases because differential mechanics allow for selective anterior retraction or posterior protraction, depending on the need of each patient.

During the meeting of the Tip-Edge Society in Tokyo, one of the participants presented a successfully treated case that originally exhibited an arch length/tooth mass discrepancy of over 30 mm. Because of such versatility, Tip-Edge is gaining in popularity. The Japanese Tip-Edge Society has already exceeded 100 members. 📷



Dr. Chris Kesling (center) and members of the sixth Japanese Tip-Edge Course held in Tokyo, Japan, November 1994. The seventh course was held the next week in Sapporo.

## Professor M. Ballesteros First President Mexican Tip-Edge Society

In January the Mexican Tip-Edge Society with Dr. Ballesteros as its first President was founded. Inaugural ceremonies were held at National University in Mexico City with 68 founding members.



Preceding this inauguration, Dr. Thomas Rocke (center above) presented a Tip-Edge course in Mexico City. The course was oversubscribed with 61 participants. Dr. Mauricio Ballesteros, Chairman of the Department of Orthodontics at National University at Cuernavaca, his staff and Dr. Tomas Mendoza helped in the presentation. 📷



Dr. T. Rocke examines progress of Tip-Edge patients at National University at Cuernavaca.

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