The era of rapid tooth movement, decreased patient discomfort and precise finishing in orthodontics is upon us. It has been known that teeth move faster and easier with less patient discomfort using light forces. Not until the development of the tip edge bracket was this knowledge able to be utilized in such a dynamic and controlled fashion.

The edge wise bracket was developed by Dr. Edward Angle in 1925. Since that time the edge wise appliance has become the most popular orthodontic appliance in the world. Dr. Raymond Begg, an assistant to Dr. Angle during this development period, realized the benefits of positive control and accurate finishing the channel type bracket allowed albeit the short comings such as high force values, difficult tooth movement, anchorage strain and utilization of extraoral forces and removables during treatment. The negative outweighed the positives and in 1928 Dr. Begg returned to the theory of light forces and the ribbon bracket design. This would allow the teeth to tip in the direction of skeletal and dental correction, with light forces, and also provide a means of root angulation for final finishing. His theory of light force values and rapid tooth movement with the ribbon bracket was sound and effective but somewhat demanding on the operator especially during the finishing stages.

It was inevitable that these two techniques would someday sympathetically collide in a bracket that would allow the precise finishing and control of the edgewise with the rapid tooth movement of the light force technique.

The tip-edge bracket does just that. Developed by Dr. Pete Kesling of Westville, Indiana, in 1986, tip-edge is here today producing excellent results with minimal demands on the operator and patient. Free crown tipping followed by controlled root uprighting is possible through the advantages of differential tooth movement and mechanics to enhance anchorage in one part of the arch and encourage rapid tooth movement in another.

The unique design of the tip-edge bracket which allows free tipping in one direction without archwire deflection, also permits the use of larger archwires without flexing or bending. This is possible because as the crowns tip, the archwire slot increases from .022 to greater than 0.028 yet closes to .022 during the finishing stage of treatment for precise control. The tip-edge operator routinely progresses directly from .016 to .022 round or even .0215 x .028 square for final uprighting and torquing. This feature enhances patient comfort and reduces operator workload allowing most cases to be treated using only 4 to 6 archwires.

The same brackets are used on Class II, Class III, nonextraction, and extraction cases with only minor adjustments. The tip-edge slot permits distal tipping of all crowns. If, for example, the first bicuspids are extracted because of severe crowding and/or severe skeletal discrepancies, the brackets on the second bicuspids would be reversed to allow mesial tipping of these teeth.

This differential straight arch technique is divided into three distinct stages of treatment.

1. Translate the maxillary anterior teeth to an edge to edge relationship.
o Open or close the bite as needed.
  o Correct anterior crowding, spacing and rotations and gain bracket engagement.
  o Correct molar relationships and crossbites

*Length - up to six months.

2. Maintain all the first stage corrections with .022 archwires.
  o Close any posterior spaces.
  o Correct bicuspid rotations and gain their bracket engagement towards the end of
    the second stage.

*Length - up to four months

3. Maintain all of the first and second stage corrections and over-corrections.
  o Correct the axial inclinations of all teeth to ideal mesiodistal and labiolingual
    inclinations

*Length - up to twelve months for severe discrepancies.

A unique mesiodistal uprighting spring called a sidewinder is used to correct the axial
inclinations of the tipped teeth in the third stage - when all the spaces are closed.

The custom designed spring is placed on the labial surface of the bracket for esthetic and
hygienic benefits. The spring leg is inserted into the vertical slot, behind the bracket face, from
either the incisal or gingival (usually incisal) and is self retaining. The spring arm is then hooked
over the archwire to activate the concentric power of the coils.

Spring power, which is used to achieve desired final crown tip, can also be used for torquing
when applied against a flat .022 x .028 archwire. Crown tip is limited in both directions by the
flat surfaces of the bracket. The use of .022 base archwires in the third stage of treatment do not
allow any flexing or distortion from the uprighting spring arms or torquing devices.

Each bracket has a prescription of torque and tip angles built in for final finishing. These
prescriptions are answered when utilized with a flat .0215 x .028 archwire and sidewinder
springs in the third stage of treatment.

Torquing and uprighting can also be accomplished in the final stage of treatment using round
.022 archwires and sidewinder uprighting springs coupled with a 30 degree titanium torque bar.
This is placed out of sight behind the main archwire, if torque is needed. The titanium torque bar
is not removed for reactivation, but left in place to torque the maxillary anterior teeth to the
proper angulation. This feature is possible because of the unique feature of the tip-edge bracket
whereas a small pin in the face of the bracket is removed to expose an edgewise slot in which the
titanium torque bar is seated.
There are other torquing options utilizing .022 round base archwires such as two spur, four spur, recipical torquing wires and kitchton, all which are preformed and easily placed virtually right from the box. Also available is a very effective and invisible (after placement under the main archwire) one tooth torquing wire that is preformed and simple to use. Depending on the direction of insertion into the vertical slot (gingival or incisal) it will torque the roots of the intended tooth either labially or lingually.

The manipulation of the tip-edge appliance has been simplified for the operator through advantages of preformed archwires and auxiliaries. There is little wire bending and usually only reshaping to customize the appropriate archwire to the patient. The molar bands come with attachments already in place and usually can be fitted and seated with just finger pressure and a single band pusher. If preferred, the molar tubes can be bonded the same as the brackets on the other teeth using a no mix, one to one, or light cured paste.

By eliminating the interlock cuspal interference, present in malocclusions during the first stage of treatment, the potential for mandibular growth and repositioning is encouraged. Since the preliminary correction simulates orthopedic changes and functional appliances - these devices are not necessary when differential tooth movement is used. Pain present at the start of treatment from occlusal interference or temporal mandibular joint dysfunction routinely disappears with no need for preliminary occlusal splint therapy.

The tip-edge bracket was born from edgewise. It allows the teeth to tip distally under light forces and place the crowns of the teeth in proper relation to the dental arches. At the same time the upper and lower arches themselves are placed in proper relationship to each other and the skeleton. These two stages of treatment are then followed by a final stage of root uprighting and anterior root torquing correcting the axial inclinations of all the teeth to each other. The end result is the lower incisor over the basel bone at the desired relationship and all the other teeth in occlusion and in balance with the forces of the oral environment. The profile and smile appear as a born with perfect teeth appearance. All this would have been accomplished with little strain on the anchor molars and no external force or functionals for either vertical or horizontal control.