In the sciences, scholars emerge from time to time to lay down principles and crystallize the information of their day. Such a scholar was Dr Robert Murray Ricketts (1920-2003) (Fig 1). His influence continues to contribute to our understanding of the biologic and mechanical enigmas that challenge us. His writings stimulate the student and promote advancements in his beloved specialty of orthodontics. Dr Ricketts commanded leading-edge knowledge and was a pioneer in early treatment and facial orthopedics, temporomandibular joint tomography and therapies, esthetics and golden proportions, orthodontic sectional biomechanics with biologic and physiologic emphases, lateral and frontal facial analysis (Fig 2), asymmetry, nutritional influences, airways, world conditions, music and the arts, anthropology, and more.

Robert Ricketts began his life humbly on a farm in Indiana, where unswerving persistence and achievement were expected and valued. He credited “the farm” for his work ethic, quick laughter, and earthy sense of humor. In that community he was an accomplished athlete, but once he decided to pursue a career in dentistry, he forged himself into a determined, accomplished scholar.

In January 1943, when Ricketts was in dental school at Indiana University, the world was at war; young doctors served in the military, and Dr Ricketts was no exception. LTJG Ricketts served in the U.S. Navy Dental Corps; during this time, he became fascinated with orthodontics. In 1947, when his service was concluded, he enrolled at the University of Illinois under Dr Allan G. Brodie, who had been an early student of Edward H. Angle, so the curriculum emphasized the edgewise technique. Ricketts wrote: “Dr. Brodie had the most exceptional proclivity to instill in his students a sense of the importance of orthodontics in their lives and to our whole culture. He expressed a love and respect for the profession.”

Ricketts earned his master’s degree from the University of Illinois Graduate School of Orthodontics in 1950.

Clinician and preceptor

After Ricketts’ orthodontic training, Dr Cecil Steiner encouraged him to move to Pacific Palisades, California, to start his practice. The practice flourished, and in 1959 Ricketts agreed to serve as a preceptor for Dr Ruel Bench, who joined the practice as a partner in 1970 and went on to lecture with Ricketts. Dr James Hilgers joined them in their clinic as well. In 1977, Ricketts and Bench amicably ended their practice partnership, and Ken Fischer and Richard Jacobsen joined it.

During those busy years of practice and teaching, Ricketts was honing his bioprogressive technique and appliances. Bioprogressive differs greatly from
traditional edgewise, Begg, and straight-wire philosophies in terms of the possibility doctrine and the modalities attending to it (rather than thinking with a doctrine of limitations).

He inspired and challenged other professionals to learn about biologic and progressive approaches to treatment. He developed key professional relationships and followers on all continents. He collected patient records and gradually convinced colleagues about his new-found approaches, innovations, and reliable results. He established the American Institute of Bioprogressive Education and was instrumental in establishing the Foundation for Orthodontic Research. Today, the Modern Bioprogressive Organization ([www.bioprogressive.org](http://www.bioprogressive.org)) provides a portal for debates and a place to share research and keep the principles alive. New technologies and materials have been integrated to develop hyperefficient orthodontic clinical therapies and biomechanical procedures to drive treatment to greater excellence.

Ricketts freely used the proceeds from his private practice to help finance his other endeavors, including a lengthy career in university and original research. He authored over 300 refereed articles, chapters, and textbooks on orthodontics, all derived from and paid for from his private practice, with support from Rocky Mountain Orthodontics, and personally thereafter.

**Areas of interest and accomplishment**

Ricketts was a noted authority and expert in craniofacial anatomy, physiology, and human facial development. He was a pilgrim of curiosity and inspired newness of the orthodontic eye, mind, passion, and soul. Some of his accomplishments include the following.

- Challenging the specialty to learn and understand facial anatomy and its growth with orthopedic influences on treatment decisions and biomechanics.
- Recognizing orthopedic potential and challenging us to “treat faces, not teeth”; he emphasized jaw orthopedics and selective cervical headgear for orthopedic correction.
- Developing a hierarchy of anchorage with recognition that facial growth, muscles, cortical anchorage, and tooth-based anchorage prevail in biomechanics.
- Developing a “root rating” scale to quantify optimal light forces to move teeth in any plane of space.
- Advancing temporomandibular joint (TMJ) analysis, imaging techniques, and jaw dysfunction therapies.

He stressed individualized treatment planning, keeping the planned outcome in mind. For his work, he received numerous national and international awards, including the Ketcham and Mershon Awards from the American Association of Orthodontists, a Merit Award from American Society of Dentistry for Children, awards in oral surgery, and a doctor of nutrition degree.

Although his interests were wide-ranging, he was perhaps most intensely interested in orthodontic innovations, the biology of occlusion, facial analysis and treatment predictions, TMJ anatomy, and stomatognathic dysfunction therapies. He analyzed total patient issues and recognized that function precedes form, since
it influences the biology of living and dynamic tissues—a paramount concept for contemporary orthodontists as true physicians of the face. In his 1-week comprehensive TMJ course, Ricketts vigorously taught the important biologic functions of human craniomandibular articulation and mechanical homeostasis for reflexes of the neuromuscular system. His work in this area lasted 43 years, and he produced 3 books devoted to orthodontic and TMJ topics.

By 1990, he had treated 6000 patients with temporomandibular disorders. The Ricketts' biotemplate was his most used “splint.” He championed orthodontic corrections with occlusally supported results as the most stable. He helped to develop the sectograph for corrected TMJ tomography (Fig 3); it could show TMJ space, structural surface changes, and limits of adaptability in the joint. He taught about muscular input derived from normal occlusion and function to help preserve the joint and create equilibrium.

He taught clinicians to be fully knowledgeable about facial growth and development, the interrelationships of occlusion, and the influences of musculature. Temporo-mandibular disorder was his remarkably consistent area of interest, expertise, and renown.

Innovations with Rocky Mountain Orthodontics

In the 1960s, Ricketts began what would become a lifelong association with Rocky Mountain Orthodontics.

They worked together to develop many useful products, including the following.

- Preformed bands and preadjusted brackets, which they first presented at the 1962 American Association of Orthodontists Annual Session in Los Angeles
- Self-ligating brackets (in the 1970s)
- The 0.018 slot early straight-wire bracket concept
- The snap-channel concept
- Ribbon archwires
- Tooth-colored premolar bands for lingual retainers.

Ricketts had always been interested in cephalometric analysis, and he collaborated with Rocky Mountain Orthodontics in this area as well. Their work led to the development of the following.

- Computer-aided cephalometric diagnostics (Rocky Mountain Data Systems)
- Ricketts' lateral and frontal cephalometric analyses, so that clinicians could compare patients with norms based on age, sex, and race
- A cephalometric diagnostic system to integrate growth (Fig 4) into treatment prediction, known as visual treatment objective with growth and long-term visual treatment objective. His summary analysis specifies these changes (Fig 5).
- “Composite tracings” to understand growth patterns in facial types (superimposition on the basion-nasion plane at the CC point and with the Frankfort horizontal plane)
- Growth prediction to maturity
- Four dimensions: adding the dimension of time to appliances and treatment parameters
Appliance differentiation based on facial type (mesofacial, brachyfacial, dolichofacial) and designed into brackets and tubes (first version of what became straight-wire appliances)

Five pentamorphic individualized arch forms

Following Dr Downs’ suggestions, he developed a technique of forecasting facial growth for a 2-year period from lateral radiographs. He researched facial growth and developed a computer-generated growth projection to maturity using his growth studies and those of Bjork, Moss, Scott, Petrovic, and others. Ricketts remained dedicated to prove his growth prediction system.

Rocky Mountain Orthodontics closely worked with Dr Ricketts to ensure that his vision became a reality. Archie and Martin Brusse and CEO Tony Zakhem supported his lectures on the bioprogressive technique in Arizona from 1997 to 2003. Rocky Mountain Orthodontics continues to work with bioprogressive teachers and clinicians around the world.

**Teaching, publishing, and lecturing**

During the 1970s, Ricketts made writing, lecturing, and developing his thoughts and ideas his priorities. He recognized that by promoting his ideas widely he would also be opening himself to challengers, but he believed in what he was doing and he persisted. With expansive and brilliant teaching influences by world-wide teachers, and with the help of Ruel Bench and Carl Gugino, Ricketts’ ideas spread around the world. Their message emphasized thorough differential diagnosis and individualized treatment, based on the degree of difficulty and delivered in a systematic approach. Ricketts was a perceptive man, a prolific writer, and a vigorous lecturer. In many of his books, he aimed to establish, transform, and improve the bioprogressive philosophy and therapy. He wrote *Bioprogressive Therapy* with Drs Bench, Gugino, Hilgers, Schulhof, and Engel. He published an exhaustive book, *Provocations and Perceptions in Craniofacial Orthopedics*, in 1989, with 2 volumes cosponsored by Rocky Mountain Orthodontics.
His writings on cephalometrics, growth, and biomechanics have become standards for aspiring orthodontists. His 2-week in-office course was almost a rite of passage for orthodontists in the 1970s and 1980s. He taught by neutralizing students to accepted core truths and rebuilding them with new knowledge and heightened curiosity. It became the stuff of true believers.

He was concerned about the roles that facial beauty and proportionality should play in the treatment of dental and skeletal problems. After discovering facial gnomic growth and axial growth of the mandible, he became fascinated by geometrics and mathematics. He visited Dr. Melvin Moss in New York and was inspired to learn more about the Divine Proportion and Fibonacci numbers and to apply those principles to his work. In 1980, Ricketts began to lecture about this to orthodontists and plastic surgeons.

Dr. Ricketts is vividly remembered by orthodontists around the world as a thought-provoking lecturer (Fig 6). He inspired his audiences to think, seek the truth in all things, and verify beliefs through clinical studies. He emphasized education and broad experience, awareness and self-discipline, inquisitiveness, and persistence in the search for truth. He challenged traditional thinking, claiming that it was good to disagree, but never to be disagreeable; and that it was good to criticize the topic, but not to condemn the person. He was quick to replace old knowledge with new but stood strong on core principles that do not change. His captivating delivery captured the hearts and minds of those in the audience and instilled in them a desire to pursue knowledge with an open mind, because once stretched by a new idea, a mind will never return to its original dimension.

**Mentor and friend**

“Rick,” as he was known to friends, was a giver, driver, wise thinker, researcher, and master philosopher; he was an explorer, innovator, processor, inspirer, and musical crooner; he was all of these things and a unique character indeed. He thirsted for knowledge throughout his life. He loved people and readily shared his friendship and respectful love. His passion for orthodontics was unmatched as he piqued interest in a most alluring way. Noteworthy were his hearty laugh, sharp sense of humor, and authentic joy for life.

This universal mentor and mind took colleagues on his shoulders and elevated them to higher levels with his nondogmatic thinking, teaching, and innovations. Rick loved to regale his passionate followers with stories of Angle, Brodie, Downs, Tweed, Steiner, and the other orthodontic giants he knew, respected, and often disagreed with. He was a strong clinician with imagination and innovation, an inquiring researcher who was brilliant to the end. Ricketts was a quintessential and sometimes controversial figure; he was bold, sometimes slightly arrogant, provocative, lofty, and incisive at times, but also genuinely warm, loving, and nurturing toward others. Colleagues can still sense him teaching; hear his gusto and laughter, his directives and bold convictions, his singing and cephalometric superimpositions; and remember his style and personality, his moments of tender grace and intimate concerns, and his love and consideration.

He captured the imagination. When Rick smiled, people smiled back. He sang well, and danced, and was often heard crooning “I did it my way,” “Unforgettable,” or “Smile” during a lecture. While lecturing in Brazil, he won a professional talent show, singing “New York, New York.”

**CONCLUSIONS**


Throughout his life, he was quick to replace old knowledge with new, and yet he defended and stood...
strong on the principles that do not change. He led orthodontists on a relentless pursuit of knowledge and truth. His innovations were many, and his influence will be felt by generations to come. He indelibly influenced our lives and thinking, and shaped hearts, careers, and lives to reach higher personal levels, with professional advancements and contributions. We smile because of his heartfelt life, his ardent teachings, and his clinical methodology. He taught us to love our patients and to treat with grace, style, and class.

Don’t cry because his life is over; smile because he happened.