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ANGLE'S SHADOW

From classification of malocclusion to edgewise bracket, through organized orthodontic specialty education, Angle's imprint on the first century of orthodontics is indelible. In 1999, it is still sobering to see how far his mind had reached at the turn of the century. Before the days of sophisticated periodontal and orthognathic surgery, the potential of these disciplines was in Edward Hartley's thinking, on the pages of the Seventh Edition.

Like many who stood on his shoulders, Angle built on the achievements of others. He may not have seen the full impact of his legacy, as he was able to recognize greatness in others. "He is orthodontic's greatest genius", Angle said of Norman Kingsley.¹

Angle has been called "father of modern orthodontics", an "experimenter [who] gave the basic tools"², a genius, a giant. All of that and maybe more, or somewhat qualified in some people's opinion. As we close this century, it is time to say to Edward Angle, and so many of the minds and hands of orthodontics that helped define and facilitate this century of orthodontics, thank you. Beyond all appropriate vocabulary and Angle etiquette, it is just nice to know that the paths of so many of us crossed ways and alleys you envisioned, that our thoughts touched your minds.

1. Shackland WM. The biography of a specialty organization. St. Louis: The American Association of Orthodontists, 1971
 2. According to Kingsley, same reference.



"LIVING WITH TANGIBLE EXAMPLES"

These pictures of "significant mementos of orthodontic history" are courtesy of Carla Evans who is the curator of innumerable gifts at the University of Illinois at Chicago. Edward Angle's Headgear, by the S.S. White Dental Manufacturing Company and Robert Strang's Angle Table are two prized possessions. Carla states: "Reading about important orthodontic advances doesn't have the same impact as "living" day-to-day with tangible examples of prototype instruments and equipment." Carla continues:

Strang's Angle table was a gift of Dr. Perry M. Opip of Milford, Connecticut. This is a particularly interesting piece for the University of Illinois because of Dr. Strang's position as a critic of dental arch expansion during orthodontic treatment.¹ The intense extraction-nonextraction debates continue here today in the presence of Strang's table.

Another treasure in the same classroom is the Broadbent-Bolton Roentgenographic Cephalometer, Series B1939, No.1, built in the Anatomical Laboratory,

EDWARD H. ANGLE SOCIETY OF
ORTHODONTISTS
EASTERN COMPONENT

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EDITOR'S NOTE

The name and logo of our newsletter were widely accepted and officially adopted at the March 1999 annual meeting. Thank you for your comments and contributions. Any of our products reflects our abilities. Please keep your contributions to AngleEast forthcoming.

2000 BERMUDA MEETING ADVANCE SCHEDULE*

Tuesday, April 4

6:00 Affiliate and Guest Cases due in Case Room

Wednesday, April 5

6:00 - 10:00 Examining Committee meets to study cases
Executive Committee Meeting (Dinner)

Thursday, April 6

8:00 - 12:00 SCIENTIFIC SESSION
12:00 Executive Committee Meetings
Examining Committee interviews

Friday, April 7

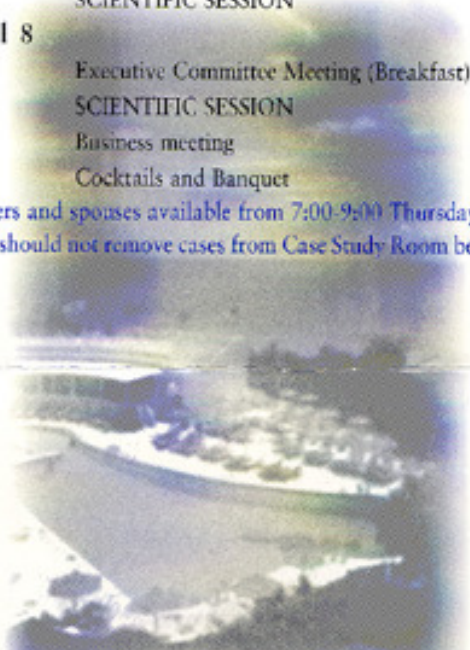
8:00 - 11:30 SCIENTIFIC SESSION
11:30 - 12:15 Business meeting
1:30 - 3:30 SCIENTIFIC SESSION

Saturday, April 8

7:00 - 8:15 Executive Committee Meeting (Breakfast)
8:30 - 11:30 SCIENTIFIC SESSION
11:30 Business meeting
Evening Cocktails and Banquet

Breakfast for members and spouses available from 7:00-9:00 Thursday thru Saturday.

Affiliates and guests should not remove cases from Case Study Room before 11:30am on Saturday.



Anticipated Speakers in Scientific Sessions:

Barone, Nicholas	Air-rotor stripping
Briss, Barry	Maxillary dental arch width response to HG/Lip Bumper
Cangialosi, Tom	Anterior openbites revisited
Giannelly, Anthony	Role of maxillary lip position in diagnosis and treatment planning
Greco, Peter	Inhalation risks in orthodontic practice
Korn, Marcel	Maxillary molar rotation in diagnosis and treatment planning
Laine-Alava, Maija	Diagnosing nasal impairment during growth
Minter, Matt	Adult lateral cephalometric standards/Meta analysis of dental arch form
Peck, Sheldon	Interrelated dental anomalies and their orthodontic significance
Cole, William	Reported versus measured compliance with cervical headgear
Vanarsdall, Robert	Periodontal attachment response to air rotar stripping in the adolescent male macaque rhesus

*Preliminary program courtesy of Program Chair William Northway

ANGLE'S WIRES AND DIVINE PROVIDENCE

Sheldon Peck

This tiny state indirectly had a powerful influence on an aspect of orthodontic practice from our specialty's earliest days

The American Standard Wire Gauge [...] based upon a "regular geometrical progression," was a break from the British and Continental standards of the time

Angle's 23-gauge slot (0.022") might have been 0.024" under the old British Imperial Standard were it not for "divine" Providence

March 1999 was the first time the Angle Society ever convened in Rhode Island. Our AngleEast meeting in Providence was a very memorable mix of learning and camaraderie. But there is an older connection between Angle and Rhode Island. Few Anglers realize that this tiny state indirectly had a powerful influence on an aspect of orthodontic practice from our specialty's earliest days. Here's the historic story, finally told.

The middle of the nineteenth century was the time when "orthodontia" was beginning rapid evolution as a biomechanical discipline. In orthodontics, as in most other emerging fields, American progress was becoming an important global force. By mid-century, the flourishing manufacturers of America were eager to set their own technical and industrial standards, apart from those used in the "Old World."

A few decades later, innovative American orthodontists, such as Kingsley, Farrar and Angle, developed tooth-moving appliances using wires or bars made of gold alloys, and sometimes platinum or silver alloys. These pioneers in clinical orthodontics described the wire sizes they employed according to the newly established American Standard Wire Gauge, a die-tool for precise measurement and drawing of round wires (Table 1).

The American Standard Wire Gauge was introduced in 1857 as an improved measurement system for wire diameters based upon a "regular geometrical progression," according to its developer Joseph R. Brown, co-founder of the 150-year-old Brown and Sharpe Manufacturing Company in Rhode Island. Brown, a member of the family who founded the eponymous university in Providence, broke away from the British and Continental standards of the time, a bold move for the fledgling manufacturer of measurement instrumentation for industrial USA, which had yet to establish its Bureau of Standards.



Table 1. American Standard Wire Gauge and corresponding orthodontic wire sections

American Standard Wire Gauge Numbers	Diameter of wire in inches (to three decimal places)
16	0.051
17	0.045
18	0.040
19	0.036
20	0.032
21	0.028
22	0.025
23	0.022
24	0.020
25	0.018
26	0.016

As a common feature of all integer wire gauge systems, the higher the gauge number, the smaller the wire diameter. From this excerpted table of the "American Standard," an orthodontist will recognize most of the dimensions customarily associated with present-day orthodontic wires and appliances.

Thus, Angle's 23-gauge slot (0.022 inches) might have been 0.024 inches under the old British Imperial Standard were it not for "divine" Providence. As fate and Angle's irrepressible influence would have it, orthodontists today around the world are employing unknowingly Rhode Island's "American Standard" in everyday practice. However, international standardizing changes are on the way. With the globalization of metric measures, the 0.022-inch "American" orthodontic standard may soon be expressed as a "0.55-millimeter" slot in Providence, as it is already in Paris.

*Historical, Eastern Component





Birte Melsen

MEETING ABSTRACTIONS

EXTRADENTAL INTRAORAL ANCHORAGE

Birte Melsen

The number of adult patients with degenerating dentition and lack of several permanent teeth is an increasing component of the patients presenting to the orthodontic office. Many of these can benefit from extradental intraoral anchorage. Implants can be used in a conventional manner as part of the reconstruction following treatment. The implants can also serve as anchorage before being used for reconstruction or in some cases even serve only as anchorage. Wires around the zygomatic arch can also be used as anchorage for incisor intrusion and retraction.

Onplants on the palate have been suggested as an alternative to headgear. Lately, the use of miniscrews, the Aarhus micro anchorage, has been demonstrated as an easy way of obtaining anchorage. The Aarhus micro anchorage is a biocompatible screw which is easy to insert, that can be loaded immediately, with a "head" in the form of a 0.022" slot bracket, and that can be removed easily by the orthodontist. The advantages and disadvantages were discussed, and the appliance design in relation to the necessary force systems was illustrated. Other types of unconventional types of anchorage such as occlusal splints were mentioned, and advantages and disadvantages were discussed. The different anchorage systems were illustrated with case demonstrations.



CAN WE PREDICT FUNCTIONAL PROBLEMS IN ORTHODONTIC PATIENTS FROM EARLY CHILDHOOD TO ADOLESCENCE?

Maija T. Laine-Alava

Associations between orofacial functions and different malocclusions, and their implications in treatment planning are obscure. This longitudinal study followed the same 187 children, 91 girls and 96 boys, from the age of seven years until the age of fifteen for occurrence of malocclusions and speech disorders, problems with fine motor control of the orofacial muscles, mandibular mobility and signs and symptoms of TMD. The aim of the study was to examine changes in orofacial functions during growth, especially in relation to malocclusions, testing the hypothesis that different dysfunctions are related to each other.

Logistic regression models were used to analyze how different dysfunctions at the ages of 7, 10 and 15 years were associated with each type of malocclusion at the age of 15 years, considering the effects of other malocclusions, age, gender and previous treatment. Adolescents but not young children with sagittal occlusal anomalies physiologically had a different mandibular movement capacity. Children with Class III and anterior cross bite had hypomobility and those with Class II and large overjet exhibited hypermobility of the mandible. Deviations in mandibular movement capacity were a good predictor for later functional problems. Too anteriorly produced speech sounds were persistent in children with increased overjet from 10 years on and in those with anterior open bite tendency through all age groups. Combination of several signs and symptoms and problems in fine motor control when cumulated in the same children were an excellent predictor for later functional problems. Functional problems were specific for different types of malocclusions.



THE 2001 MEETING OF THE EASTERN COMPONENT OF THE ANGLE SOCIETY IN PHILADELPHIA

*Message From President-Elect
William Northway*

The Meeting will be held at the Rittenhouse Hotel, Rittenhouse Square, MARCH 8-11





S. Jay Bowman

FACIAL ESTHETICS AND THE EXTRACTION DECISION

S. Jay Bowman

Current trends in orthodontic care emphasize nonextraction treatment, despite a lack of support from the refereed literature for many of the proposed alternatives to the extraction of premolars. In addition, anecdotal reports published in non peer-reviewed journals have called into question the esthetic effects of extraction treatment. This investigation was designed to compare the esthetic impact of extraction and nonextraction treatments. Panels of 58 laypersons and 42 dentists evaluated randomly presented pre- and post-treatment profiles of 70 extraction and 50 nonextraction Class I and II Caucasian patients. The two samples were similar at the outset; however, at the end of treatment, extraction had produced faces that were on average 1.8mm "flatter" than the nonextraction alternative. These extraction results also tended to be preferred by both panels, dentists more so than laypersons. In general, nonextraction treatment was seen as having had little effect on the profile, whereas the perceived impact of extraction was a statistically significant function of initial soft tissue protrusion- the greater the initial protrusion, the greater the benefit. The point at which a reduction in protrusion would produce a perceived improvement was explored by way of regression analysis. Both panels saw extraction as being potentially beneficial when the lips were more protrusive than 2-3mm behind Ricketts' E-plane. It is concluded that extraction can produce improved facial esthetics for many patients who present with some combination of crowding and protrusion.



OUTCOME ASSESSMENTS

James J. Brennan

Outcome assessments is a topic of concern to the orthodontic community. It affects research, quality control, standards and guidelines, group programs, treatment mechanics, and several other areas related to health and practice. The purpose of this paper was to investigate the existence of a scientific method an individual practitioner could use to assess and monitor his own treatment outcomes. Standards of care in the United States today are determined by the patient through government, industry, third party carriers, managed care entities, the courts, and other institutions. To the public, standards of care include not only clinical outcome, but the amenities of treatment, social fulfillment, and cost-benefit issues. No scientific method was established to assess outcome of these parameters, but they can and should be tracked in a private office and are facilitated by a properly designed exit survey. Although clinical outcome can be evaluated with indices such as the PAR index or the American Board of Orthodontics' Objective Grading System, these indices have limitations. They do not measure all areas of concern to orthodontist and patient, such as soft tissue change, nor are they precise enough to clearly differentiate between a good treatment and a better one. At present, no scientific process exists for complete monitoring of any of the components that society demands that the clinician continue to improve, namely amenities, social fulfillment, cost-benefit ratios, and clinical outcome of treatment. The conscientious and attentive practitioner, although subject to his own bias, remains the best assessor of treatment outcomes.



The papers of Birte Melsen and S. Jay Bowman were voted best papers at the 1999 annual meeting in Providence.

CLASS II CORRECTION UTILIZING HERBST AND EDGEWISE APPLIANCES: CEPHALOMETRIC AND SOFT TISSUE APPRAISAL

Michael Costanza

In the late 1970's, Hans Panherz reintroduced the Herbst appliance to treat Class II malocclusions. He claimed that the appliance was most suitable in patients with retrognathic mandible and retroinclined mandibular incisors. Independent of the anchorage system inherent to the appliance, the main disadvantage was excessive mandibular incisor proclination. However, the advantages included the continuous effect (24 hours/day) of a cemented appliance, the immediate improvement in the patient's profile upon insertion, and short active treatment (i.e. 6 to 8 months).

Class II malocclusion cannot be treated to a perfect result with the Herbst appliance exclusively. In contemporary dentofacial orthopedics, the appliance is part of a multiphase treatment approach that includes the use of fixed appliances.

The literature is replete with studies of skeletal changes, cephalometric analysis, and statistical evidence to support or refute findings associated with Herbst correction of Class II. But little information exists on soft tissue relationships and facial balance following the combined Herbst-edgewise treatment. The aim of this study was to investigate both skeletal/dental and soft tissue changes after such treatment.

Material: cephalometric records of 28 (20 females, 18 males; average age 12.59 + 1.88 yrs) consecutively treated patients who underwent treatment for Class II, division 1 malocclusion with the Herbst appliance and a standard bracket edgewise appliance. Inclusion criteria were at least end to end molar relationship, normal midfacial development, and pleasing appearance with normal lip competence when the mandible was positioned forward. Cephalometric measurements included: FMA, IMPA, L1 to Apo, SNB, Anb, mandibular length, facial height index, Merrifield's Z angle, Ricketts' E line to lip, and Holdaway H-line and angle. **Results and discussion:** Skeletal changes Dentoalveolar changes Soft tissue changes

SNA	SNB	ANB	FMA	WITS	IMPA	L1-APo	Z >	E line	H line	H >
-1.8°	0.86°	-2.96°	-1.71°	2.39mm	1°	1.5mm	75.71°	-285mm	521mm	10.29°

The facial height index increased (0.70-0.75), demonstrating a favorable response (optimal range range of 0.65 to 0.75), consistent with the increase in mandibular length (4.82mm; 3.79mm in the vertical direction). For mandibular length to improve, the force system employed must control vertical expansion in the posterior and anterior dentition. The results indicate such control.

The slight average increase in IMPA and L1-APo do not reflect the average mandibular incisor proclination reported in the literature. Edgewise mechanics and the sequence of applying directional forces probably affected the results in this study.

Changes in soft tissue measurements were within the optimal range of values (Z angle: 72° to 78°; Holdaway line: 3 to 7mm; Holdaway's angle of convexity: 7° -15° for convexities of -3 to +4 mm; E line to lip: 0 + 3mm).

In conclusion, proper mechanics, regardless of which appliances and techniques are used, and focus on facial esthetics, not just the dentition, provide the basic ingredients for successful treatment.



CLINICAL AND CEPHALOMETRIC EVALUATION OF BUCCAL SHIELDS

Kambiz Moin

Progress records were taken on 28 patients (own private practice) who were treated with a buccal shield (modified lip bumper) for various amounts of time before bracketing. The records included a cephalometric radiograph, lower impression and photographs. Arch width was measured between cusp tips and cervical margins of deciduous canines (c) first (D) and second (E) molars; corresponding permanent canines (C), first premolars (PM1), second premolars (PM2); and first molars (M1). Mandibular incisor axis to mandibular plane angle (IMPA) was measured on the cephalogram. Statistical analysis showed that there was no statistical difference between expansion at the cusp tip and cervical margin for canine and first premolar. A marginal significance was noted for the second premolar. Treatment time was not a predictor of the amount of expansion. Average expansion at the cusp tip for canine, PM1 and PM2 was 2.2, 4.8 and 2.8mm, respectively. A wide range of changes were noted on IMPA from -6° to +9°.



Treasurer's Report March 1999

Michael E. Kelly

Opening Balance	
March 31, 1999	\$35,569.11
Receipts (February 28, 1999)	19,175.00
Interest from checking accounts	230.61
BALANCE	\$52,524.72
Expenses	
Rite Carlton, Boston	\$24,874.48
Newsletter	1,026.70
Admission Manual	214.00
Deposit, Elbow Beach Club	
(2000 meeting)	1,000.00
Conference call- Exec. Com	
4/14/98	342.15
Program	187.22
Postage	187.22
Speaker at dinner	300.00
Spouses luncheon	458.79
Local arrangement manual	168.55
Printing	813.22
Office expenses	
(Secretary/Treasurer)	315.58
	\$30,151.08
BALANCE	\$22,373.64
Anticipated receipts/ 1999 Meeting	5,000.00
BALANCE	\$27,373.64
Anticipated expenses/ 1999 Meeting	\$11,392.14
Harvey Peck Memorial Fund	\$3,403.00
TOTAL WORKING CAPITAL 1999	\$12,578.50

A special session on Saturday afternoon was dedicated to a series of short presentations on the happening at some of the universities represented by members of the Eastern Component. The speakers included: Barry Briss (Tufts University), Robert Vanarsdall (University of Pennsylvania), Olivier Nicolay (Columbia University), Robert Binder (University of Medicine and Dentistry of New Jersey), Lysle Johnston (University of Michigan), Carla Evans (University of Illinois at Chicago), Leslie Will (Harvard University).

Following the information session, a general membership discussion focused on the issue of "Gaining and Retaining Qualified Orthodontic Faculty- The Other Side." Comments were made on the cause of the problem, which varied in nature and degree between institutions, particularly between private (usually with more budgetary restrictions) and state schools. Nevertheless, common themes emerged: debt load upon graduation, non-competitive salaries with private practice, moderate to delinquent commitment by dental school administrations regarding investment in research infrastructure.

Solutions were thought to need time and concerted efforts engaging both academia and organized orthodontics. The generous contributions by the American Association of Orthodontists Foundation to alleviate financial problems were praised, and stressed was the need for academic leadership to deal with this crisis by defining priorities at scholarly and administrative levels and facilitating development opportunities to young faculty. As one member commented, "we are where we are because of the academician".

Following are excerpts from Dr. Lysle Johnston's exposé of What's new at the University of Michigan.

"The past year, our 75th, has seen a number of events that will have a far reaching impact on the School and which underscore the importance of support from the alumni and other friends of the Department. Dr. Jim McNamara has been named the first Drs. Thomas M. and Doris Graber Endowed Professor of Dentistry. [...] This endowed professorship, the Department's second (the other being the Robert Browne Professorship), is a signal honor for us and a great source of strength and opportunity.

Construction has begun on new clinics for both Orthodontics and Pediatric Dentistry. They will occupy two floors of a \$13,000,000 addition to the Kellogg Institute of Graduate and Postgraduate Dentistry Building and will be a major step forward for graduate dental education at Michigan. It is expected that these state of the art clinics will cost about \$5,000,000 and will be finished late in 1999. It will be a great day for dentistry's first degree granting, university based specialty program.

Each year, North American orthodontic residents meet for a weekend of education and collegiality at the Graduate Orthodontic Residents' Program (GORP). The program was developed at Michigan and is held here every other year. This year was our turn, and approximately 300 residents attended what turned out to be a wonderful meeting, both educationally and socially. [...] the real beauty of the event is the fact that the residents assume responsibility for almost every aspect of the meeting. The faculty just does what it is told.

As would be expected of a department in a modern research university, the Department conducts a broad spectrum of funded research, ranging from molecular genetics to finite element analysis to prospective and retrospective studies of treatment outcomes. This high level investigative activity also is a major strength of our graduate program: in addition to several recent Awards of Special Merit, our students have won the last three Harry Sicher First Research Awards from the American Association of Orthodontists.

Finally mention should be made of several honors accumulated by our faculty during the past year. Jim McNamara [...] delivered the Fred West Memorial Lecture at the University of the Pacific. In a like vein, Lysle Johnston delivered the Salzmann Memorial Lecture at the Dallas AAO meeting, The Lewis Memorial Lecture at Ohio State, and the T.C. White Invitation Lecture at the Royal College of Physicians and Surgeons of Glasgow. He also was appointed to the AAO Council on Scientific Affairs and was named associate editor of *Clinical Orthodontics and Research*, Munksgaard, Copenhagen.

It has been an eventful year."

NEWSLINE

• 1999 Biennial meeting: Lysle Johnston, Eastern Component Director to the Central Body, delivered the Angle Memorial Lecture at the 33rd Biennial Meeting (August 21-25) at the Sunriver Resort, Sunriver, Oregon. The meeting focused on "A Century of Orthodontics" and the "New Millennium."

• Update on the Angle Orthodontist: Dr. Robert Isaacson was selected new Editor. The search committee included two members of the Eastern Component, namely Sheldon Peck and Lysle Johnston.

Lysle wrote in his annual Director's report: "1999 will see more pages (16 per issue), more articles, and a new format. Unitek's sales of the AO CD-ROM are brisk. The price has been reduced to \$399.00, of which the foundation gets a ponderable share (10%)."

This is a particularly interesting piece for the University of Illinois because of Dr. Strang's position as a critic of dental arch expansion during orthodontic treatment.

TANGIBLE EXAMPLES

continued from cover

Western Reserve University, Cleveland. It was still working at Forsyth Dental Center until it was dismantled and put into storage about ten years ago. Knowing that this cephalometer was used for the natural head position experiments and twin studies by Moorrees and his colleagues gives intense realism to articles from journals.

Other notable gifts to the Department are the stereophotogrammetry apparatus by Dr. Samuel Berkowitz, the pommeter by Dr. Aaron Posen, a divine proportions divider from Dr. Robert Ricketts, gold Angle brackets and archwires from the Brodie practice given by Dr. Howard Spector, and manuscripts from Dr. Jack Thompson. Also, in our display case, [in addition to] an S.S. White Angle headgear, a variety of hand instruments, and a Cetlin lip bumper made by Dr. Norman Cetlin during a demonstration here. Dr. Raymond Thurow pledged the prototype for his design acquired by the Wehmer Company."

Tangible examples—Preserving history to ensure the future.

* I. Strang RHW. The following of denture expansion as a treatment procedure. Angle Orthod 1949; 19:12-22.



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