"It was a fantastic experience"
Part II

By Norman Wahl, DDS, MS

When Dr. Edward H. Angle closed the doors of The Angle College of Orthodontia in 1927, leaders at the University of Illinois worked to fill the void he left. On a dreary February morning in 1930, the Graduate Department of Orthodontia of the University of Illinois was officially opened. Now, nearly 60 years later, author Norman Wahl has a "meeting of the minds" with teachers and students of that era. All remarks in this roundtable discussion are direct quotes from personal interviews or from published comments of the speakers. The participants are:

Fred J. Angel, Class of 1935
Alan G. Brodie, Former Chairman, Department of Orthodontics
Lawrence L. Furstman, Class of 1934
Abraham Goldstein, Class of 1932, later an instructor
Robert R. McGonagle, Class of 1948
Ernest Myer, Class of 1931, later an instructor
Frederick B. Noyes, Angle graduate and Former Dean, College of Dentistry
George H. Prewitt, Class of 1935
Chester F. Wright, Class of 1931

II.

Didactics. Technics. Misconceptions. The staff and VIPs. "That great day"

Moderator: Dr. Myer, what was a typical day like?

Dr. Myer: The first hour-and-a-half or two were spent on the subject of Head and Neck Anatomy. We were held strictly accountable for the factual material and the correlations were worked in by Dr. Brodie as only he can do it.

Dr. Allan G. Brodie, Head of the Department of Orthodontia, 1930-1966. Courtesy University of Illinois at Chicago. The University Library. University Archives.

The rest of the mornings were devoted to technic. We had the filing problems the same as those you have had....

The soldering problem followed the same pattern, the plaster mixing and the hand carving of blocks were done under a taskmaster who always had perfection in mind and knew how to stimulate his scholar never to be satisfied with less. Note that we had no mechanical plaster-mixers or model-trimmers in those days.[2] [An electric model trimmer was purchased by the

department in 1935.]

Moderator: Did you do your technic on typodonts?

Dr. Angel: Our first typodonts were of solid metal. Then we had the kind that were set up in some sort of compound, so that the teeth would move when the compound was heated.

Dr. Myer: The afternoon sessions were divided between anatomy dissection and histology. The dissecting laboratories were the Old Building at its worst. They were poorly lighted, terrifically hot in the summers and cold in the winters. Even under these poor conditions Chet Wright was able to discover an atypical soft palate muscle....

After filing, soldering, and block trimming were finished we went into the technic of band formation, arch-bending, and accessory manipulation. Meanwhile, the problem of plaster impression-taking, impression assembly, painting and pouring were going steadily ahead. I can assure you, speaking for myself, that I have made every mistake possible and I still wonder how I managed to get along.[2]

Dr. Prewitt: We filed and soldered until our fingers were raw from slipping and burning, we took plaster impressions of each other until we thought we had been born with a plaster lining; we carved models until our hands took the shape of the knife. Strange to say we seemed to become worse the more we practiced, until one fine day it was pointed out to us that the work actually was better but that we were ourselves becoming more critical of our own efforts.[9]

Moderator: What were your other subjects?

Dr. Myer: After the head and neck anatomy had been covered we went into the study of growth and development. One must stop and realize that 18 years ago [in 1930] our knowledge was more limited than today. Not that we have all the answers even yet. Dr. Broadbent had been working on his cephalometric x-rays just a short time. His serial studies had not been in progress sufficiently long to give information. Dr. Krogman was at work on the craniostat but only on dried skulls and this was limited.

Our class was thoroughly schooled and drilled in anchorage value. Some of the first cases treated in the department are classics in showing the value anchorage plays in treatment.... If ever a class had the fundamentals of occlusion and forces operating on a denture literally hammered into it, we were that class. Many a session at "The Greek's" [University Restaurant] was devoted to going more fully into this phase of theory....

One thing which I feel was stressed was arch form. We went into the problem of tooth form in relationship to arch form very, very carefully. We were always reminded that an arch too wide would collapse. This I feel has been borne out quite consistently. The use of extraction in those days was never mentioned.[2]

Moderator: How do the concepts of that time stand up in the light of what we know today?

Dr. Brodie: It should be realized that at the time we were in possession of very few facts about the field of orthodontia. Oppenheim had given the profession his outstanding contribution of 1910-11 and we were aware of the changes that took place around a moving tooth. But he had made certain assumptions relative to functional development and these assumptions were swallowed quite as readily as were his actual findings. Indeed, these assumptions were taught here for a number of years, and very enthusiastically....

[In 1930] our concept of bone growth in relation to orthodontic tooth movement was markedly different from that of today. We thought that if one could obtain correct proximal contact, correct axial inclination and proper interdigitation so that normal function could operate over the dental units, alveolar bone would be built and the underlying basal bone would promote the growth of the maxilla or mandible.... We believed in "Wolff's Law." It was only when we made an evaluation of treated cases using head x-rays in 1938 that we finally realized we had misinterpreted it.

We were very cocky about our ability to move teeth in any direction in those days, our only concern being for the establishment of perfection of interdental relations. Our relapses were blamed on our own shortcomings in technique or on lack of cooperation by the patient...[5]

Moderator: What were your concepts of etiology?

Dr. Brodie: Class II was held to be due to mouth breathing at the time when the first permanent molars were erupting. This caused the patient to keep the teeth out of occlusion and since all first molars erupted cusp-to-cusp, or so we said, the mandibular pair failed to share in the forward growth of the upper jaw and thus became locked in a distal relation. Once this happened the case became Division I if the habit persisted or Division II if the child's pride caused him to attempt to cover his protruding teeth.[5]

Dr. Myer: Class I was a matter of slipped contacts, premature loss or prolonged retention of deciduous teeth or abnormal musculature...[2]

Dr. Brodie: It was all very simple and beauti-

ful and logical, but why we ignored the fact that Division I did not become progressively worse with age, since the open mouth persisted, is a mystery. Class III was explained on the basis of sore tonsils which caused the patient to protrude the mandible in swallowing.... All sorts of bizarre malocclusions were explained on the basis of premature loss or prolonged retention of deciduous teeth, upon mesial drift and ectopic eruption.

It should be noted that all of the etiological factors enumerated were acquired or environmental. Anyone who dared mention the word "heredity" was looked upon with suspicion. He was thought to be looking for an excuse for failure and warned that he had better perfect his technique and his case analysis. We spent just as much time on analysis as we do today although it was all based on plaster models and photographs...[5]

Moderator: Did any of these misconceptions get you into trouble?

Dr. Myer: We thought in those days that it was possible to move teeth distally. All our ideas and appliance manipulation were directed toward the objectives of keeping our anterior segments intact and our posterior teeth distally in cases where arch length had been lost.... The orthodontic ideas prevalent [in 1930] placed practically no limit on orthodontic treatment.... We knew how to move teeth with our appliances, but somehow and some way they did not always move as we wished, nor did they always stay. It was only after much sweat, some tears and many resorbed roots that we found out that orthodontia did have limitations.[2]

Moderator: Tell us about the seminars.

Dr. Goldstein: It was here that we first met an innovation. Our entire educational experience up to that time, had consisted of memorizing facts. We now had to learn to correlate that factual knowledge and draw conclusions. No lectures were given. We'd meet with the instructor in charge in a perfectly informal manner and for two hours a day were led to marshall our knowledge and draw conclusions about every angle of our field. This was a very difficult phase of the course to most, as there were apparently few who had ever learned to think for themselves.[4]

Dr. Prewitt: Then suddenly ... we one day awoke to the fact that, in some subtle way, our instructors had slipped something over on us. We were no longer taking textbook statements as unquestionable facts ... only now ... had we begun to think, to use our knowledge....

We soon found there was no greater thrill than to discover something for ourselves. Each

Dr. Isaac Schour, Associate Professor Histology, 1931-1935. Dean of the College of Dentistry, 1955-1964. Courtesy, University of Illinois Archives.

new thing, small as it might be and of no apparent consequence seemed to lead to other and new possibilities. Each repayed us in mental elation in direct proportion to the work we had put forth to find it.[9]

Dr. Furstman: It was a fantastic experience. There were three of us in the class and Dr. Brodie would have a seminar. We'd sit on one side of the table and he'd sit on the other side and ask questions or discuss things with us. What he was trying to do was teach us to reason.

In addition to Dr. Brodie, we had Isaac Schour, a PhD in histology and anatomy. He was doing work on the rate of eruption of teeth, and we had rat cages down in the histology department where they were cutting tissue sections. That was after he'd done his work on the effect of hypophysectomy on the rate of eruption.

Both Schour and Brodie were very young men, right around 30. I was about 25 at that time, so it was close. But it was always formal. We never called them "Isaac" or "Steve." It was always "Doctor Schour," or "Doctor Brodie," that is, until we graduated and came back.

Moderator: How did Allan Brodie get a name like "Steve"?

Dr. Furstman: Steve Brodie was the guy who jumped off the Brooklyn Bridge.

Moderator: Dr. Goldstein, could you explain what was meant by "teaching from the investigative standpoint"?

Dr. Goldstein: Every item was taught from the basis of the research that had been done upon it. To illustrate this point let us consider

Growth and Development. No lectures were given on this subject but the student was required to cover all of the significant original sources of the past two hundred and fifty years. Each method of investigation that had been employed in this field was critically examined and its validity tested so that we could learn to properly evaluate research methods and not be deceived by wrong conclusions.[4]

Moderator: What was it about Dr. Brodie that made his students strive for excellence?

Dr. Goldstein: Dr. Brodie had the happy faculty of being at once an expert technical operator and essentially a biologist. With all this he was, as a teacher, what can be termed "a natural." He was able to use his own background to the student's best advantage, and to interpret for the student, problems from the student's background.[4]

Dr. Angel: He had an unfailing ability to put his message across. He would come into the classroom every morning. The five of us around the table would feel almost like a family. It was a no-nonsense thing. He knew what he wanted from us and he got it. And I don't remember his ever referring to notes. It was all in his head.

Moderator: So far, we've covered two of the department's three objectives: training of clinicians and researchers. What about the third objective — teacher training?

Dr. Angel: After we got back from the August vacation, we were each assigned a different subject, such as anatomy, histology, or photography. The "teacher" of that subject was responsible for teaching it to his classmates. He had to work up a lesson plan for approval, hand out assignments and exams, and give the "students" a grade. And all of this was under the watchful eye of an instructor.

Moderator: After going through that, I'll bet you really got to know your subject.

Dr. Angel: You'd better believe it! It was also a great way to review.

Moderator: Did Dr. Brodie stick pretty close to Dr. Angle's teachings?

Dr. Furstman: To the letter.

Moderator: Does that mean that he never extracted?

Dr. Furstman: Never in the clinic. It wasn't till after some of the men had been down to Tweed's group and finally talked to him — guys like Ernie Myer, who extracted in their own practices — they were smart enough to do that. Steve said to me, "Look, Larry, if you say it's OK to extract teeth, the first thing you know, everybody's going to be extracting instead of making a proper diagnosis. Dr. Angle told me that and it's true."

Of course, when I went to see Tweed, Brodie got his nose out of joint. But eventually all the fellows on the staff studied with Tweed. Finally, Brodie very reluctantly changed his mind.

Moderator: Didn't Brodie have a mind of his own?

Dr. Furstman: Damn right he did.

Moderator: Then he didn't consider Angle a god.

Dr. Furstman: He respected him, but he realized he had his weaknesses, too. He said that most of Angle's tenets were top-drawer. But Brodie improved on them — he did so much research and writing.

Moderator: Even so, in his early years of teaching, according to J.R. Thompson,[10] Brodie felt less educated than many of his students. That's why he got his MS in anatomy in 1934, and finally, his PhD in 1940 after doing his landmark cephalometric study of the growth of the human head.

Next to Dr. Brodie, who influenced you the most?

Dr. McGonagle: Sometimes an individual appears who leaves an indelible print on us as one of the most unforgettable people we have known .... I think that Dr. William B. Downs was such a man. [The mid-thirties to the mid-fifties] were probably the golden age of orthodontics at the University of Illinois when the department was known as the "West Point of Orthodontics;" Dr. Downs played a large part in establishing that reputation.

The scientific and clinical astuteness of this humble man was awesome in its simplicity. He was slowly methodical, as evidenced by the fact that he would be fussing with an ideal archwire at 5:15 p.m. when he had to catch an elevated train at Marshfield Station at 5:40 p.m. He was extremely imaginative, ...an essential ingredient to any successful research man. He never accepted the dogma of others, or even his own, without personally testing the claims set forth.

Because underneath his quiet, retiring personality, there was a demanding nature, almost a stubborn streak; Mrs. Downs stated that one of his favorite phrases was, "never say, 'never.'" Dr. Downs introduced many innovations at the school, but never promoted any technique or method that he hadn't personally and thoroughly tested first in his own office. He never used the school as a test ground. It was just the other way around. His quiet dedication in the office had a profound effect on the men who associated with him over the years.[11]

Dr. Furstman: Bill and I went out to Aurora

once and spent all night going over the Downs Analysis. We were up in the attic and about every hour his wife would come to the stairs and yell, "Bill, you come to bed!"

Moderator: Did any notables from outside the university come to lecture?

Dr. Brodie: Dr. Noyes very wisely included in the earliest budgets, an annual sum of $500 for honoraria for such men. Among those who have come to us as lecturers are Dr. B. Holly Broadbent, Director of the Bolton Study of Child Development at Western Reserve University; Dr. Edmund H. Wuerpel, who until the war years lectured to every class; Dr. Wilton Krogman, eminent physical anthropologist, formerly of Western Reserve ... Dr. Milo Hellman, one of orthodontia's great research men, spent a week here ... and Dr. Albin Oppenheim gave clinics and lectures here in the winter before he died. More than this, he presented the department with labeled illustrations of every photomicrograph he had ever taken and intended to will his entire collection of microscopic slides to the University of Illinois but death intervened before his will could be changed.[8]

Moderator: By this time you must have had your fill of theory and were ready for that "great day."

Dr. Myer: ... the great day we were in the clinic. How Dr. Brodie managed to obtain all the cases we had was the miracle of the day. As the course was only organized on short notice, the cases were of every conceivable nature with a high percentage of Class III and bimaxillary protrusions.... That we managed as well as we did was due only to the careful guidance of Dr. Brodie.[2]

Moderator: How did you feel when you confronted your first patients?

Dr. Prewitt: To put it mildly, we were scared stiff, for not a lecture labeled "Orthodontia" had we received.... We were glad the patients didn't know of our ignorance, and we bravely started treatment on the "buck-passing philosophy" that only the instructors could be held responsible for any untoward accidents.[9]

Moderator: Did you start your cases from scratch?

Dr. Furstman: From square one.

Moderator: Did you finish them?

Dr. Furstman: Well, we did as much as we could in the time that we were there. Ernie Myer and Abe Goldstein were the heads of the clinic, and they used to come down and work on the patients who weren't finished from the classes ahead. So no one was ever overloaded as far as cases were concerned.

The "New Building" at 808 S. Wood Street, used by the College of Dentistry immediately after its construction in 1937. Courtesy, University of Illinois Archives.

Moderator: How were patients selected for admission to the clinic?

Dr. Furstman: Listen, in those days nobody knew what "orthodontics" meant. That was 1932. If you saw the word in a magazine like *The Ladies' Home Journal*, everybody notified everyone else in the profession. It was difficult to get patients. Dr. Brodie selected them to teach us principles and he did the best he could.

But as far as supervision was concerned, every time we saw patients, Brodie was right there, or one of the boys who had gone ahead — Goldstein, Myer, or Bill Downs — they were all superb clinicians.

Moderator: How long was the course then?

Dr. Furstman: A year-and-a-half when I took it. Later it was increased to two years. Since the average length of treatment in those days was two to two-and-a-half years, you couldn't finish the typical case in that length of time. Now you can hook up a case in an hour, it seems like.

When we did it in the clinic, we needed four 45-minute appointments.

Moderator: What did you use for impressions?

Dr. Furstman: Plaster of paris. I used plaster for five or six years after I got out of the army [after WWII]. I didn't switch to hydrocolloid until the late forties, since I was so used to plaster. I knew how to take beautiful impressions with it, knew how to cut 'em out. Of course, it was such a pain in the --- afterwards to wash them in a sieve, then dry them. The next morning, you had to put them together. You had to get the muscle roll.

Moderator: You couldn't pour them the same day?

Dr. Furstman: No, because you had to put shellac and sandarac on it. And when it came to separating the plaster impression from the plaster model, you had to be very careful.

Moderator: Dr. Angel, what material did you use for the bands and wires?

Dr. Angel: Gold.

Moderator: Did you have light wires?

Dr. Angel: No, they were full-size, .022 by .028.

Moderator: How many cases did you carry at one time?

Dr. Angel: About five. We picked up a few from the last class and started a few of our own.

Moderator: How long was it after you started the course before you were allowed to work on patients?

Dr. Angel: About three or four months.

Moderator: How did you trim models?

Dr. Angel: With a plaster plane.

Moderator: What was that?

Dr. Angel: It was like a carpenter's plane, but on a much smaller scale.

Moderator: How long did it take you to trim a model that way?

Dr. Angel: A couple of days.

Moderator: Did you band the second molars?

Dr. Angel: I don't think so.

Moderator: Use headgear?

Dr. Angel: No.

Moderator: Were there any adult patients?

Dr. Angel: Not that I can remember.

Moderator: How did all the theory you studied help you in the clinic?

Dr. Prewitt: We discovered that by applying the same methods of thought to our clinical problems that we had learned regarding our textbook assignments, we were able to lay out a sensible analysis and plan of treatment for our cases. Likewise, the long hours spent struggling with technique now enabled us to make our hands do what our thoughts dictated. Only now did we come to learn that Anatomy is Orthodontia, Histology is Orthodontia, that all biological sciences have their bearing and can make very definite and practical contributions in clinical practice.[9]

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Author Address

Dr. Norman Wahl
166 N. Moorpark Road
Thousand Oaks, CA 91360

Dr. Wahl practices orthodontics in Thousand Oaks, California. "A little house in Pasadena", his article about Dr. Edward H. Angle, appeared in the Spring, 1989 issue of The Angle Orthodontist.

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