

Contemporary Orthodontic Education

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The educational upheaval and resultant changes that are being observed at all levels of education from the Montessori School to the postdoctoral level are also being seen in dental education and are of particular interest to us in the field of postgraduate education in orthodontics.

These changes are really not sudden, as rumblings have been heard in our educational systems for some time, but the reasons for the changes are perplexing to most of us. Are these happenings due to a war that is unpopular with many of our students? Are they due to unjust racial treatment, or are there other factors that contribute to these educational changes and the widespread student unrest? Could students not satisfied with educational methods and present teaching be a part of this problem, and is some of this protest a cry for help in the academic world?

The graduate level is where much of this unrest lies. Graduate professional schools are not immune to such demonstrations either. At the University of Rochester, School of Medicine and Dentistry, a student protest was held in 1969. (Some of the demands will be examined later on). Faculty members in graduate schools have noticed at first subtle, and then not so subtle changes in graduate students' attitudes. Ideas and actions not thought of or accepted by students of the 1940's and 1950's are now being formulated. Can any of these happenings be applied to orthodontic education? (Orthodontic education as referred to in this article is education at the postgraduate or graduate level.)

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To fully appreciate this placing of orthodontic training at the graduate or postgraduate level, one has only to get educators to suggest more time for undergraduate orthodontic education in an already overcrowded four-year dental course.

The problems and complexities of orthodontic education are multiple and many questions have been raised: i.e., Are we educating enough orthodontists and are they properly trained? Are our courses well enough staffed, do we have enough teachers? Are we developing ways to train teachers in orthodontics? Do general dental statistics apply to orthodontics? How have social and economic changes affected our field? How have changes in state dental practice acts and concurrent use of auxiliary help influenced our field and our educational methods? To understand the total problem a chronological look at orthodontic education is in order.

Orthodontics began as a specialty late in the nineteenth century. In those days the mere recognition of malocclusion was a feat. The relations of the upper and lower jaws were not recorded until Angle¹ did so in his writing late in that century. All of the pioneers of this era and before Angle's time designed and built their own appliances.

In those early days there were no schools having well-rounded courses, but men passed knowledge on to men. Thurow² states "Teaching arrangements varied from man to man preceptorships, to schools in many forms, but the single teacher with the single mechanical approach has been the most distinctive feature of orthodontic education until relatively recent time. In this type of system it was necessary to draw teaching assistants from the ranks

of former students which further perpetuated the inbred lines of thought." Wright,³ examining the status of orthodontic education prior to 1930, pointed out that schools from 1900 to 1925 were proprietary only, and were roughly divided into two segments. One part offered eight-week courses which gave the student periods to observe and to do laboratory exercises only, while the other segment, the Angle School, was really the beginning of specialized science in orthodontics. It stressed the biological aspects of orthodontics coupled with mechanical interpretation. It considered occlusion as a basis of study which not only considered the dentition, but also the jaws, muscles of mastication, the lips, and even the facial lines. The course of instruction was for one year but unfortunately it closed around 1926. Angle's philosophy of education was both scientific and mechanical, something that we must have today at all times.

The men who led these different early schools were strong individuals and made valuable contributions to our profession. They inspired great loyalty in their students and, as we all know, strong feelings often ran high. Their devotion often appeared to be fanatical in nature when discussing their school. Good discussion is always valuable and helpful in our progress but unfortunately this orientation toward appliances or "schools" emphasized differences in orthodontic philosophies while the wide common ground was often passed over. Thus, some of the good was held back by system arguments. Robinson⁴ points out historically that many dental schools during Angle's time were diploma mills. Therefore, there were few qualified candidates. Brodie,⁵ describing the Angle College from the students' viewpoint, observed that Angle certainly must have recognized the shortcomings of dental education at that

time by the fact that entering students were expected to have their minds reasonably well prepared by the broad reading of good literature, and extensive preschool studying and examining in the basic sciences. This makes one realize Angle's remarkable ability to grasp the then contemporary educational system and mold his students to the needs of that time. Brodie also states the following: "It was here (in the Angle School) we began to know the true Dr. Angle, the scientist and the man. It was here we began to realize that this extraordinary school had a well-defined plan behind it; that there was a good and sufficient reason for everything we were asked to do, and that if we did our work well we would some day come to know what that reason was."

I well remember many of us as graduate students when we were not sure that everything we did had a reason. Today, many years later, the reasons for many of these things are obvious. Today's students are not as patient as we were, however, and ask why and what for, more often than we thought of doing. The combination of science and technique that Angle used, as well his "observe, think and reason" are well taken today, and the thinking student, critical in his final analysis, is always important.

Thus, we see how Angle with his knowledge of biology and engineering over a period of forty years and several different orthodontic appliances took us through a period of rapid progress. To quote Thurow again,² "Following Dr. Angle's death, the earlier dynamic pace of progress slowed almost to a standstill. During this period there was no lack of orthodontic progress and research from the "Edgewise" group, but it was channeled away from therapeutic techniques. The new emphasis was on cephalometrics and the "biological" as-

pects of the problem. These investigations were sorely needed, but the pendulum swung so far that the mechanics of treatment were shunned completely as a subject too trivial for serious scientific attention, as though the patient could somehow be considered apart from the mouthful of wires and rubber bands which assailed his tissues."

Cephalometrics did and does serve a very useful role and these critical cephalometric years finally were applied to treatment and case planning. Many sacred cows fell, among them Dr. Angle's unalterable opposition to extraction and the idea of functional predisposition to bone growth. Ricketts⁶ in recent articles has shown that much has really changed over a short span of time in orthodontic dogma. Mechanics is again recognized as a link in the therapeutic chain. Let us hope that appliance therapies being developed today do not swing us too far to the mechanical approach again. Let us use thought and study not the appliance to dictate treatment. The appliance must be adapted to the existing situation.

All of our new ideas in treatment have helped. Today's edgewise, for example, is a far cry from the model Dr. Angle knew.

Now to look at the really interim preceptorship program. Hahn⁷ outlined its objectives. They were: to provide an opportunity to those who could not be accommodated in graduate or postgraduate programs and to provide for more well-trained orthodontists. He felt that the schools were not able to fulfill the needs for orthodontists with their then existing facilities. Today this program is for all practical purposes terminated, but we must now come to an inevitable question. That is, what is the supply and demand for orthodontists and are we meeting it?

This led us to formulate a survey of our own which was used to supplement

information derived from many other surveys.^{8,9,10,11,12}

Our survey was sent to the Chairman of each of the Graduate Departments of Orthodontics in the United States. Over eighty per cent answered. The questions were general, as intended, to get a broad idea of orthodontic education. Some of the questions and answers were not felt to be of statistical value by our statistician, but a selection of the answers have been used in this paper.

Historically, a survey¹³ in 1954 reported twenty-six schools offering postgraduate or graduate training. Of the offered courses at that time, sixteen led to a degree, an M.S. or an M.S.D., that is, graduate work where the course is administered under the graduate program of the university. Nine awarded certificates of proficiency (postgraduate training), this work organized under the college of dentistry, and one school offered work under a teaching fellowship plan.

The majority of schools at that time required full-time residency, although a few permitted part-time training; the course time varied from fifteen to eighteen months although one required twenty-four months. The report also noted with interest the rapid increase in the number of schools offering advanced work in orthodontics and the concurrent increase in the opportunities for training. The committee reported that if all available spaces were filled, the number of new men entering the specialty each year would be between one hundred sixty and one hundred seventy.

The situation was entirely different according to a 1969 survey.⁸ The total number of university orthodontic programs was forty-six which included three in Canada. The survey showed a total of 347 students enrolled each year in university programs in orthodontics. Only eighteen of these students

were in Canadian schools and many of these will practice in the United States. Since the course length varies from sixteen to thirty-six months, this means that at any given time the universities are educating from six to seven hundred orthodontists. Eight of the American universities offer no advanced orthodontic programs, but several have indicated that graduate or postgraduate training is in the planning stage. Unfortunately, we have to remember that we now also have hospital training programs which the American Dental Council on Dental Education approved in 1965, despite the virtually unanimous opposition of orthodontic educators. Then there still is the proprietary school. Besides this, we have all the general practitioners who try to do "simple" orthodontics.

This growth is spectacular from the shop trainee of the late 19th century, to a few proprietary schools, to the first graduate or postgraduate of the early 1930's to forty-six courses and more to come; no other specialty has done as well. Dewel in 1968¹⁴ pointed out that more than ten per cent of the dentists graduated each year from the dental schools go into recognized orthodontic programs. Also, membership in the A.A.O. can be taken as a fairly reliable indication of orthodontic manpower. In 1949, the A.A.O. reached the 1,000 mark and it took another ten years to reach the 2,000 mark. Since 1959, the membership has tripled and the Association now has almost 6,000 members, most of whom are products of university programs and all, incidentally, in the exclusive practice of orthodontics.

Dewel again observed, "Despite this rather remarkable increase, the specialty is constantly criticized for not meeting the need for orthodontic treatment. Yet the demand for general dental service is as great, if not greater, than that confronting orthodontics. During the last twenty years, there was seen no com-

parable increase in the number of dentists to fill this need."

A report on "Dental Education 1967-1968"¹¹ was of particular interest to us, especially the section outlining the number of dental students and the number of schools to educate these students. In 1900 there were 57 dental schools. This number had fallen to 38 by 1930; since then it has slowly increased to 50 in 1968, and five new schools will open by 1972. Thus even by 1972, we will not have as many dental schools as we had in 1900. One half of the current schools are in private universities and these privately-endowed institutions are finding it increasingly difficult to finance the costs of dental school. One private school has announced that it is about to close, and others are likely to follow. The 38 dental schools produced 1,561 dental graduates in 1930 (a depression year). In 1967, there were 3,360 dental graduates from 50 schools. The ten-year average prior to 1967 was 3,117. This will give you an idea how general dental statistics and orthodontic statistics vary and this continues throughout the study.

Now as to other figures during this 1967-1968 report, 675 dentists received master degrees or certificates in the eight approved areas of specialty practice in 1967. This figure represents twenty per cent of the 3,360 graduates who received their dental degrees in that year. This report again does not show how many additional dentists completed specialty training requirements in hospitals and other facilities. The present estimate is that there are 937 dentists enrolled in some type of internship or residency program. Thus, this report concluded that more than one quarter of all current dental graduates ultimately enter specialty practice. This report also noted that orthodontic totals are greater than the next two specialties combined. The question

was posed as to what effect this may have on the equally important practice of general dentistry. Entrance requirements for all advanced education programs are extremely high in competence as well as in grade averages. This means that the most capable men are being withdrawn for specialty practice. Yet general dentistry remains the basis for all dental practice; it should not be undermined by an ever-increasing withdrawal into limited practice.

It would seem then that orthodontics need not suffer from a mass guilt complex over its deficiencies, whether real or imaginary. Statistics can be used and we know they can be inadequate or misinterpreted. For instance, in a recent periodical¹⁵ for dentists, the following report was presented under the title "Orthodontic Needs Greatly Exceed Supply." From it I quote "the number of orthodontists has more than doubled in the last ten years. Graduate training has been lengthened and improved. However, undergraduate training hasn't kept pace with graduate training, and all too few dentists are qualified to handle minor orthodontic problems that crop up." Consider these facts:

1. "The orthodontic profession in the United States is now operating at near full capacity." With this I must disagree violently. As we will see, many men could do much more; some just aren't busy as we will also see. We are just starting to move toward any semblance of good functional use of auxiliary help, so our full capacity is still to be realized.

2. "Less than 200 trained orthodontists are being graduated yearly by our dental schools." This figure is altogether wrong by all other surveys.

3. "There are over 46 million children in the United States under 14 years of age and studies show that 50% of school age children have malocclusions and only an estimated 2 to 3% of these children are presently receiving

orthodontic care." Now again the variables are huge even if these doubtful statistics are accurate. Again of this huge percentage, many won't accept care even under the "so-called" free programs. So you can see how these figures can be vastly misleading.

However, the answer to the problem according to this article was, "because the demand for care is so great, it is only natural that the orthodontic specialist confine his practice largely to severe malocclusions. But that means that many minor or partial orthodontic problems are neglected. Some of these limited orthodontic problems should be an integral part of the practice of general dentistry" and their solution is - "When this situation arises in your practice, contact us" and they mention a company. They then advertise full edge-wise appliances, twin arch appliances, and many other full techniques. This type of reasoning leads many into waters they wish they had never entered later on. We should hasten to refute these really not factual or misleading statistics.

Another very contemporary survey,¹⁶ the first cycle of the National Survey of Dental Manpower, stated that the ratio of persons per dentist is relatively favorable in metropolitan areas, frequently falling below 2,000. In the very rural areas, those containing small towns with populations of 2,500 or less, the ratios are in some instances higher, in excess of 4,000 persons per dentist. Again, the type of community, educational level and many other factors must be considered. Finally, orthodontics which is, like it or not, sophisticated and most times to the public at least, an elective, may not be exposed directly to these ratios. This report also found that one eighth of the dentists reported limit their practice to a single specialty, primarily orthodontics or oral surgery, and specialists are more likely to be lo-

cated in metropolitan areas. Thus, we are educating, as we saw before, many more than the present one eighth of the dental population for specialty practice, so that figure will change rapidly.

Recently, attending meetings around the country and talking with many students, one question is frequently asked: Where shall we practice? There seems to be enough orthodontists in many places and we do find some men not busy today. Undergraduate students in dentistry now comment that they know orthodontics is not the needed specialty. Why don't we face this fact? Incidentally, it was interesting in New York State when our huge Medicaid program came into existence to feel the pressure come off the orthodontists for a while. Many of the general dentists who had complained were now so busy with their own work and so very well rewarded for it that the whipping boy¹⁷ was allowed to rest for a while. In the East we seem to be meeting orthodontic needs in quantity, at least. However, the need for general dentists is still critical in many areas.

It is interesting to talk with faculty members of dental schools who intimate that orthodontists have secret societies or say we try to hide the facts, and then try to get the same educators to suggest more time for undergraduate lectures, when they claim they do not have enough time now for the basic dental courses in already overcrowded four year courses. Brodie's¹⁸ suggestions on the way the undergraduate should be trained in orthodontics, if allowed, would remove the dental course from its too-rigid technical and clinical aspects and allow for deeper study to better prepare the young dentist. Again, the dental schools and the dental profession must stop considering orthodontics as a system of refined techniques and allow the proper place in its educational scheme for its study. This

article on the placement of orthodontics in the dental curriculum is one all should examine. Then, of course, there is the constant cry for more short courses. Now we must finally face the fact that to even halfway train a student to understand and start on an orthodontic career must take a full two years of postgraduate or graduate studies, and any other way is not feasible. Finally, we feel we are basically meeting the orthodontic educational needs and I'm sure we fully intend to continue this in our approach to better education and training.

These facts that we must accept as self evident are not as evident to the federal government and to people in places of prominence in dental education as we might feel they should be. Recently Creed C. Black, the Assistant Secretary for Legislation, Department of Health, Education and Welfare, stated¹⁹ that the growth of population had not been matched by corresponding increases in our supplies of dentists and physicians and that we were therefore faced with critical shortages of manpower. Again, this generalization is often transferred directly to our field. Also, Mr. Black spoke of the cost of care that has been and still is rising at a frightening rate. The many surveys done in orthodontic circles have shown again that in orthodontics we have held the line and even lowered fees in many areas over the years.

In his article Black stressed the great emphasis that will be placed on children's dental health, and that perhaps again by eliminating the backlog of untreated needs during childhood we may, within a generation or two, reduce the dental needs of the adult population to manageable proportions. If this means the establishment of good habits of oral hygiene, understanding of diet, fluoridation of water supply, and routine dental care, I agree with this and

again would emphasize how this should cut the demand for general dentistry. But we must make these government agencies who are looking for preventive orthodontics realize that the best "preventive" orthodontics is good dental care, and we must also make them realize that much etiology of malocclusion is genetic and therefore prevention is generally impossible. The search for this prevention, interception, etc., in orthodontics is the banner of many in government and the dental profession today. Black also stated that "Conditions militate against the early inclusion of orthodontics in most public programs. The cost of orthodontic care is unfortunately too great for the average program budget. Beyond that, is the question of manpower. In most areas of the country, I understand the supply of orthodontists is not sufficient to meet existing demands."

To the young student today this last statement is not as factual as it would seem and some areas are now overpopulated with orthodontists.

A 1962 panel²⁰ on orthodontic education discussed the training of students in the use of auxiliaries. The panel members felt this training was poor or often totally lacking in dental schools and in graduate programs and must be remedied. They also suggested that the curriculum include courses in orthodontic economics, practice management, accounting, etc.

This approach could be termed a horizontal method in contrast to the present vertical approach of individual courses not correlated to the total program. This again was one of the stimuli that led us to take our own survey and see how much of this we really were accomplishing.

In a review of answers pertinent to this paper from our personal survey we found that generally schools were still offering both graduate and postgradu-

ate training with many variations. No correlation could be found in time, size of course, etc. It was seemingly a random selection as to programs.

Those graduate programs that did award degrees mainly awarded M.S., about three to one to M.S.D. degrees, while five courses presently allowed for PhD. studies.

The number of students enrolled in each course was one of the greatest variables, ranging from two to twenty-two. The faculty variation was interesting when a correlation was attempted between these two. Many variables are apparent in this question and the questions that follow pertaining to it. We realize that even in the schools with the greater number of students, the faculty-student ratio is much better than at most levels of education. But the ratio of students to faculty does vary greatly in various programs, and size seems to generally lend to a greater student-to-faculty ratio. Some of the smaller courses seem to possess a clear advantage, in number at least, of faculty to students. Courses, for instance, were found that had two to four students with four full-time faculty members and eight part-time members. In isolated instances full-time faculty members could not practice at all. Generalizing, the number of full-time faculty members was small in comparison to the part-time members. All courses that replied to our survey were now full-time which was encouraging.

A rather amazing fact was that most of the technique taught was heavily slanted toward one, namely edgewise. Begg and light wire were the only other ones that made any significant contribution to the courses offered at all. Many schools taught several techniques, but again edgewise predominated in this survey in amount and it was the technique generally emphasized.

The basic science courses were varied, pointed out by the fact that there were thirty-four different subjects outlined. The usual courses, i.e., anatomy, physiology, histology, etc., were reported, but a wide variation in curriculum was seen and courses were not standardized at all. Among the suggestions that were asked for and received pertinent to this area was the plea, which we feel is needed, for more communication between graduate schools with more standardization.

Statistics and genetics were found in most of the graduate programs. A great predominance of these courses offered a guided course in cephalometrics, and all courses answering had a faculty-taught technique course. However, special attention for students who wanted to go into orthodontic education was not commonly noted and unfortunately most programs did not contain courses in education in their curriculum. This need for more qualified teachers was repeated over and over again by many of those interviewed.

As suspected, the ratio of accepted students to applicants again varied, but was low. However, on some of our questionnaires, the respondents broke down the number of accepted to those who applied and were of quality to attempt graduate work, and this was not as adverse a ratio.

Almost one half of the respondents were under pressure to enlarge the size of their classes, but most of them felt their classes were now of adequate size.

The area that delved into faculty salaries was one of almost unanimous agreement, especially the questions about the salary range of department heads. This was felt to be grossly inadequate. It also should be remembered that this survey was answered by department heads. The over-all general feeling favored increased faculty salaries. It becomes obvious to one after

examining the answers to this survey that the motivation for teaching is almost certainly not monetary. But it also was generally expressed that a monetary increase would help attract and especially hold better and more desperately needed faculty.

The survey showed almost a total lack of any courses such as those suggested by the 1962 panel on orthodontic education. These more sophisticated and desperately needed courses are apparently still mainly in the future. The student must still unfortunately face the world as a graduate totally unprepared to meet the challenge of the business side which is pushed more into the foreground with each socio-economic leveler. This area is one of the weakest in our schools along with total lack of courses on patient motivation, case presentation to parents, psychology of inter-relationships with our fellow practitioners and patients, and many other needed studies. Students are still asking many questions such as: How to set up an office? What is a good office layout? What about fees, financing and economics? Unfortunately often no answer is received.

In comparing a graduate program offered in the early fifties at the University of Illinois and a program offered today at Eastman Dental Center, the following was noted: the discipline received in the early course was good, and is still continued with students today. Technique instruction, anatomy, basic sciences, and the cephalometric background were excellent for that time. But then, the understanding of research was not at the level it is today. Today's knowledge of treatment, growth and practical use of cephalometrics is now at a useable, understandable, and practical stage. This was not the situation in the early days. Today, cephalometrics does prevent extraction in cases, does tell us all Class II's are not the

same, and treatment can be modified around the understanding of growth and development, skeletal pattern, and other factors. Thus, our sophistication increases. Today, it would be hard to practice without the aids we have. We can, fortunately, pass this on to our students today and they can, as a result, come out better prepared than we were. Now to ideas from students - often we hear the questions: What good will it do for others? For me? For all concerned? Is it true, and how well will it work? Will it really serve a purpose? Today, in our rapidly moving world, change is faster than it was a decade or two ago. Granted, not all change is progress, but students today have advanced to the critical stage we of the two-decade ago graduate student body were suggested to be; that is, to examine and be critical of ideas before accepting them. They *are* critical thinkers and they dare, and rightly so in many cases, to quiz and ask the faculty to prove what they say is valid, useful, and truthful. This is a change from the older days when things were accepted and taken for granted. This cry for a search for truth and meaning is one of the legitimate protests being heard today from many students.

Again, this is not a solution to all problems and we must accept that some protest is from individuals who do want to break down our present systems. To quote Michael Klonsky, Executive Secretary of the Students for a Democratic Society at their national meeting at the University of Texas in April 1969: "Our primary task is to build a Marxist-Leninist Revolutionary movement." However, at Cornell University the hard core of the SDS, for instance, is but a mere fraction of a total student population of 14,000.

Senator Gale McGee of Wyoming, who personally visited more than 200 campuses and talked with students,

further bore out the above contention when he states that "In everyone of these campuses, those who go beyond the limits of a civilized society are literally a handful but they are skilled and well-trained." The young student must be also guided by skilled and well-trained educators with truthful ideas and concepts of how to function in today's society in the best way possible. Today's students are asking for just this sort of guidance.

To cite: examining a statement to the Dean's Council at the University of Rochester by demonstrators in February of 1969:

"As medical students, and as your constituency, we are informing you that we refuse to be dehumanized by an education which either ignores or denies basic human dignities and which graduates generation after generation of physicians more concerned with their own economic well-being than with basic human needs. Students, by watching doctors degrade patients, by being harassed by the doctors, by possibly risking their entire education if they speak out at all, learn to substitute power, prestige, and professionalism for human values."

This is a strong statement by one of the more radical of the protestors but we must admit that intimidation did and does exist at times. We also must admit that the more radical student today is crying out against any kind of regulation; regulation, or perhaps better still, discipline, must especially be part of a professional program! Part of the success of the Angle School and the Graduate Department at Illinois was not only the good teaching methods mentioned earlier but the lighting of the fire of inquiry and teaching of self discipline by the course design. Certain demands are non-negotiable in professional schools. So both sides, and there are difficulties on both sides, should have a say and now start to develop the true program which would include basic discipline but truthful and straightforward approaches to good inquiries.

To quote from a student's viewpoint (Merle Cunningham, a student at the University of Rochester School of Medicine):

"After consideration of the present state of affairs of student activities on our medical school campuses throughout the country, we must necessarily and obviously look toward the future. Student forces have already begun to make their contribution toward changing the established system of medical education."

This protest then proceeded into the ideas students wanted to see enacted into their programs. Among them were: teachers more interested in teaching than research and ways to meet the communities' demands for medical care and other areas. Now on the other side, recognition is coming from sources where it should be heard. For instance, Warren Burger, Chief Justice of the United States, speaking before the members of the American Bar Association said: "Law schools ought to devote far more time to giving their students practical experience in how to deal with 'raw facts and real life problems' . . . (graduates) well-trained to write a fine appellate brief but not trained to recognize concealed usury in the sale of a television set on installments . . . (a graduate) who knows how to ask questions, simple, single questions, one at a time, in order to develop facts in evidence either in interviewing a witness or examining him in a courtroom." Burger praised the growing number of schools that permit their students to spend time on legal aid and public defender programs. Thus, in this graduate field, they are hopefully seeing the problem and attempting to do something to remedy it.

The problems are complex as we see them, but we in our small sphere must meet them too. The way to meet them seems to be through an improvement in the quality of our graduate training in orthodontics. Our purpose today, now that orthodontics is becoming more

available to many more people, is to give the public the best care at a rate that they can reasonably purchase it. Our use of auxiliary help and change in state laws will help, but the graduate student in orthodontics must be trained not in a vertical manner, but have a horizontal approach after the basics of how to apply all these facts to this ultimate receiver, the patient. Today, we can give students this type of training. We don't have to accept as dogma, school ideas of mechanics and treatment to suit a preconstructed idea because it was so years ago. Today we are much better prepared to do this and we have contended that the quantity of schools is reaching a point of adequacy or is, at least, keeping pace much better than other allied fields. But we can see in our travels and discussions with students a wide variation in the finished orthodontic trainee from the man who unfortunately still thinks only in the mechanical aspect to the well-trained man who thinks in a cross-sectional and sound way. This man must be taught how to avail himself to the most people in the most practical way by the methods we have enumerated.

Consequently, we should have more teachers educated as teachers and, of course, the need for more dollars is always with us in education, but it must be faced to improve our lot. The government is getting into education in a monetary way more and more, and apparently it must. There is a need for improved communication between courses to better disseminate good ideas and techniques and to allow the weaker courses to gain from the stronger ones. Better control of student-faculty ratios to give all graduates an equal chance or near equal chance for education is desirable.

Again, quality of our training should be generally upgraded and special emphasis placed on the training of men

able to face the challenge of the contemporary world. We hope to force a retreat from the seeming return of the mechanical school thinking to the scientific, diagnostic, biomechanical, sensible approach, not too heavily weighted on either side. This is what we must offer, a well-planned and well-balanced course.

This is what the student wants, expects and should receive; and this will ultimately be passed on to our most important link, the patient.

We have advanced rapidly and we are doing well. We also have been lucky. The public has bought us, so to say, in some instances before we deserve it. Now we can make an even better effort to be totally worthy of their confidence in the wonderful service we can perform.

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