

The Department of Orthodontics at the University of Washington

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A great deal of interest has been shown in the formation and development of the Department of Orthodontics at the University of Washington. This paper was written to explain some of our aims and objectives in Orthodontic education.

In the organization of the department it was recognized that other existing departments had much to offer in the way of a pattern, so ideas were liberally borrowed from the Universities of Illinois, Northwestern and California. The department's organization and philosophy owes much to its academic predecessors and their leaders. Drs. Brodie, Downs, Thompson and Wylie all have had an indirect part in our development in that they were former teachers and the source of inspiration of the one charged with the formation of the department.

Dean Ernest M. Jones was primarily responsible for the planning of the physical plant of the entire school and had completed this task before many of the department heads had been selected. In planning the physical layout and equipment for the Department, Dean Jones relied heavily upon the advice and help of Dr. Emery J. Fraser.

When the orthodontic program was formulated it was felt that it should have the full sanction of the Graduate School of the university. We outlined the curriculum to conform to graduate school standards and kept in mind the fact that one of our objectives was to train clinically competent orthodontists. In March, 1949, the graduate school of

the university granted full approval to the School of Dentistry to offer graduate work in the field of orthodontics.

ORGANIZATION

The Department has two major responsibilities, one to the undergraduate students of the School of Dentistry and the other to the Graduate School in the training of orthodontic specialists.

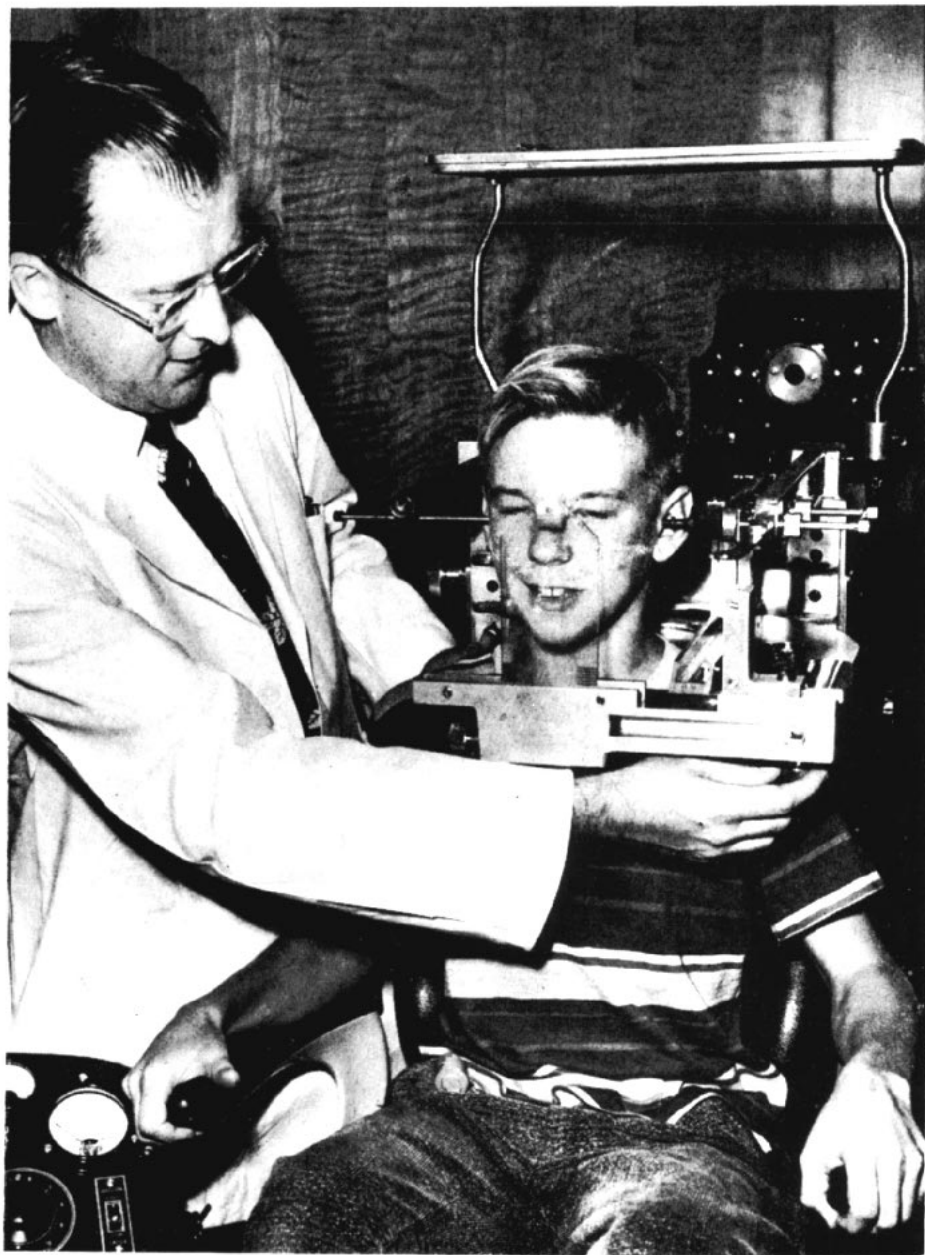
Undergraduate Program

The program of the undergraduate orthodontic curriculum has been planned with the following general educational aims:

- a. To give the students a general background in normal and abnormal growth and development of the head and to teach them how to apply this knowledge to the recognition and diagnosis of malocclusion.
- b. To give the students a dynamic concept of the masticatory mechanism.
- c. To prepare students of dentistry to recognize orthodontic problems as related to early diagnosis and prognosis and to initiate preventive treatment when indicated in the general practice of dentistry.

These are the objectives of the five orthodontic courses in the undergraduate dental curriculum. One of these courses is offered in the Sophomore year, two in the Junior year and two in the Senior year, all of one quarter's duration. Four of these are lecture courses, and one in the Junior year is

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Dr. Moore adjusts one of the most newly built Broadbent-Bolten cephalometers to a patient, in the Department of Orthodontics at the University of Washington.

a laboratory course in which the students are taught the technics of filing and soldering orthodontic wires and the formation of orthodontic bands. In the laboratory course they are also taught how to construct simple appliances which may be used as space maintainers or as preventive orthodontic mechanisms.

The lecture courses cover many phases of the field of human biology. Examples of the subjects covered are as follows: A review of the osteology and myology of the head and neck and its clinical application, comparative anatomy of animal and human dentitions, analysis of forces of occlusion, review of all studies and methods of studying human head growth, principles of growth and development, etiology of malocclusion, functional analysis of occlusion, classification of malocclusion, evaluation of orthodontic appliances, tissue changes, principles of orthodontic treatment, preventive orthodontics, diagnosis, case analysis and treatment planning, appraisal of orthodontic results.

Graduate Program

The graduate program is reserved for men who have already completed their dental training. The objectives of the program are:

- a. To teach the students to think independently and to evaluate critically their own work, thus developing their clinical operative skill to an optimum level.
- b. To acquaint the students with all of the literature pertaining directly or indirectly to orthodontics and the methods of unbiased critical analysis.
- c. To train the students in the procedures and methods of original research and to require them to carry on an original investigation of their own so that they may become familiar with the problems of the field.

Briefly stated, the primary aim is to train clinically competent orthodontists and secondarily, to train potential research workers and teachers.

GRADUATE CURRICULUM

The graduate curriculum has been devised to maintain a balance between didactic and clinical teaching. The most logical way to illustrate this is to describe the course quarter by quarter outlining the material covered.

The First Quarter. This quarter is devoted to the presentation of basic technics and philosophies inherent in the science of orthodontics. Three hours a week are devoted to a seminar in Applied Osteology and Myology of the Head and Neck. A five hour course is given in Roentgenographic Cephalometry in which the technics of tracing and evaluating headfilms from a clinical standpoint are covered in great detail. The fundamentals of Growth and Development are given in a two-hour seminar each week. This course is taught by having the students review a great portion of the literature related to this field. Two hours are also spent in an orthodontic seminar in which the technic and philosophy of the Edgewise orthodontic appliance are reviewed.

During this quarter a course in Biostatistics is given by one of the staff of the Department of Public Health and Preventive Medicine of the Division Health Sciences. This course, held four hours a week, is presented to acquaint the students with the proper statistical procedures in orthodontic research, and is given only to graduate students in Dentistry. Statistical data from previously published orthodontic research is critically analyzed and reviewed. The students perform class exercises which involve the statistical analysis of research material gathered by the department with emphasis placed upon the methods of handling small samples.

Fifteen hours per week are spent in clinical orthodontics, learning and mastering the various technics necessary for the use of the Edgewise orthodontic appliance. Part of this time is devoted to the technic of taking full mouth impressions and the making of anatomical models of the mouth. The students practice their impression technic on patients who are desirous of having orthodontic work in the clinic. Last year each student constructed and trimmed approximately twenty sets of models of prospective orthodontic patients during his first quarter of residence. This gave ample experience in impression-taking technic, and prepared the student to begin work in the Clinic.

The Second Quarter. Beginning with this quarter the students spend eighteen hours each week in clinical orthodontics. They have been trained in the technics of construction of the Edgewise orthodontic appliance during the first quarter and are now ready to apply this knowledge to new orthodontic patients selected for them by the staff. Each student is assigned six new orthodontic patients who will comprise the nucleus of his clinical practice while he is in school. There are six clinical teachers in the Department; thus each student has one new orthodontic patient with each staff member. When these cases are well under way additional ones are transferred to the students from those not completed by the previous class. Other cases which involve minor orthodontic problems of a preventive nature are also selected from time to time for assignment to the students.

During this quarter the Growth and Development seminars are continued on the same basis as they were conducted during the first quarter. The time spent in Orthodontic Seminar is increased, however, from two to six

hours per week. The students spend one hour a week with each clinical staff member, presenting the Case Analysis and Treatment Plan of the patient whom he has under each instructor. These case analysis and treatment plans are prepared in written fashion and presented before classmates and the staff for their critical evaluation. The cephalometric evaluation of each patient is thoroughly analyzed. This procedure has been found to be a very effective way of teaching orthodontic diagnosis and treatment.

A course in Advanced Oral Histology and Embryology involving eight hours per week lecture and laboratory time, taught by the staff of the Oral Histology Department, is also offered during the second quarter. Emphasis is placed upon the physiology and biochemistry of bone and the orthodontic implications of this subject are covered completely.

The Third Quarter. The students are now well under way in their clinical training. During this quarter they again spend eighteen hours per week in the Clinic. A few additional patients by this time have been gathered by each student so that their clinical practice has grown to about nine patients per man. The Orthodontic Seminar is continued in this quarter six hours per week and is still primarily concerned with the presentation of the case analysis and treatment plans of the various students' patients.

During this quarter the Psychology Department of the University gives a two hour seminar course entitled "Psychological Development of the Child", which discusses the normal psychological development of children within the age range of orthodontic patients. Applied Dental Nutrition is presented one hour each week by one of the staff of the School of Dentistry. Four hours

a week are devoted to the study of the physical properties of orthodontic materials, which involves both laboratory and seminar sessions.

The Fourth Quarter. The students continue to treat their clinic patients, spending eighteen hours per week in the clinic. Two hours a week are again spent in Orthodontic Seminar discussing various treatment problems and how they are solved by use of the Edgewise orthodontic appliance. Assignments are given in this course for appliance construction to be carried out on typodonts during the students' free time. A two hour seminar is given by Pedodontic Department in Caries Control.

The Pediatric Department of the School of Medicine gives a two-hour seminar each week on the Physical Growth of the Child, which covers pertinent aspects of normal body growth and development. The student is expected, during the remaining time in this quarter, to begin an original research problem which will ultimately be the basis for his Master's thesis. He is given credit during this quarter for this work.

The Fifth Quarter. The student continues his clinical training and attends a two-hour seminar in orthodontic treatment, a continuation of the one offered during the fourth quarter. The remaining time is spent conducting and completing the original research that was started previously and writing a thesis. The finished thesis must be defended by the student before a committee appointed by the Graduate School from the faculty of the Division of Health Science before the Master Science Degree is conferred.

The Sixth Quarter. A course in clinical orthodontics has been established for a sixth quarter of residence for those students who elect to remain an additional quarter to complete their

clinic cases. This course was initiated for two reasons: (1) to provide the student an opportunity to complete those clinical cases that were begun early in his training and (2) to provide two full academic years of work, thus meeting the requirements of certifying specialty boards which require two academic years of formal training. Those men who elect to remain for this sixth quarter's work are appointed Fellows in the Department of Orthodontics and do not have to pay a tuition fee for this last quarter. The first class which completed their graduate training in the Department of Orthodontics all elected to remain for the sixth quarter.

ADMISSION REQUIREMENTS

An applicant is eligible for admission to the graduate school for work leading to a Master of Science degree in Orthodontics provided he is a graduate of a school of dentistry approved by the Council on Dental Education. He must have a grade average in his last year of undergraduate work of not less than B. If the applicant's average for the senior year is below B, he must attend the University of Washington for one quarter with an average of B or better before he can begin residence credit towards an advanced degree. During this first quarter the student would be on a provisionally approved status.

For those individuals who are not desirous of obtaining an advanced degree, the thesis requirement is waived. The entrance requirements, however, remain the same, and there is no difference in the course content. A student who does not elect to write a thesis is given a certificate upon successful completion of the course.

The class is limited to ten students who are accepted only on a full-time basis. A new class is started at the beginning of each fall quarter.



A part of the Orthodontic Clinic at the University of Washington.

PHYSICAL FACILITIES OF THE DEPARTMENT

The Department shares a waiting room and a supply dispensary with the Pedodontic department. All other facilities used by the department are autonomous. The clinic and laboratory were planned to house a maximum of ten students. Each student has his own individual work area with custom-made cabinets which provide a complete orthodontic office. A separate room with an adjoining darkroom houses the Broadbent-Bolton Cephalometer. Another room has been set aside with eight transilluminating tables for the evaluation of cephalometric headfilms. The department's office and seminar room adjoin the Clinic. The Health Sciences Division Library is located on the same floor as the department in an adjacent wing of the building. The facilities and equipment of the entire Health Sciences Building are available to the graduate students for the carrying out of their original research projects.

The cephalometer is used extensively for the gathering of records for various research projects. It is also used routinely on all orthodontic patients. A good portion of the orthodontic curriculum is built around the clinical application of this instrument.

CLINICAL MATERIAL

During the first year of operation of the clinic 637 patients were screened by the department as possible teaching material and 93 of these patients were accepted for treatment. With this ratio of acceptance versus rejection it seems likely that we shall always have excellent teaching material.

THE ORTHODONTIC STAFF

The present staff of the Orthodontic Department is composed of two full-time members and four part-time mem-

bers. The author of this paper and Dr. Richard R. Riedel are the full-time staff members. Dr. Riedel received his dental training at Marquette University and his graduate training in Orthodontics at Northwestern University. He taught orthodontics at Northwestern University for a short time before joining our staff.

The author received his dental training at the University of California and his graduate orthodontic training at the University of Illinois. He remained on the staff of Illinois and practiced orthodontics part time before joining the staff at Washington.

The part-time staff is composed of men who are widely recognized as four outstanding orthodontic clinicians in the United States. In my opinion, no better location for a new Department of Orthodontics could be imagined than in Seattle where four such men would be available. These four men have worked together as a group for many years in study club work. They have all been constant students as well as teachers to those in the profession with whom they have been in contact. These men were all instrumental in the preliminary planning of the Department and are greatly responsible for the Department's rapid growth. Their names are: Drs. E. Allen Bishop, Emery J. Fraser, Paul D. Lewis and William P. McGovern.

The Department's staff has been augmented by several visiting lecturers during the past year. These men were all outstanding orthodontic educators and each presented seminars to the graduate students during their stay. They included Dr. Allan G. Brodie, Dean and head of the Department of Orthodontics at the University of Illinois, Dr. Harry Sicher, of Loyola University in Chicago, Dr. George Hahn of the University of California, Dr. C. W. Carey of the University of California, and Dr.

Arne Bjork of Uppsala University, Sweden. Visits from other leaders in the orthodontic profession are anticipated in future years.

RESEARCH

Four theses have been completed by graduates of the Department to date. All four of these theses involved the use of cephalometric headfilms. A project is under way now in the Department to utilize cinefluorography in the study of normal function of the masticatory mechanism. This study should throw a new light upon oral function.

SUMMARY

It is hoped that this brief account of the University of Washington's Department of Orthodontics, will give a birds' eye picture of what is going on, orthodontically speaking, in the Pacific Northwest. A great deal of organization and smoothing out is still necessary; however, we feel that our first year of operation has been successful. It has been said that "proof of the pudding is in the eating"; thus the degree of our success will be measured in the achievements of our graduates.

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