

Bulletin of the
**University of Minnesota Hospitals
and
Minnesota Medical Foundation**



**Disorders of Speech —
A Medical Problem**

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I. DISORDERS OF SPEECH
- A MEDICAL PROBLEM

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Many ways are used by man to communicate ideas, feelings and attitudes to his fellowmen. The most useful and also most effective is through the medium of speech. It has been said that the ability to speak well using an adequate selection of words with good sentence structure is one of the best indicators of mental capacity and balance. Likewise it is a skill which lends itself to continued improvement throughout life. The individual, who fails to develop good speech in the course of the maturation process or who suffers from either a congenital or an acquired deficiency, is under a severe handicap. Few persons realize the seriousness of the psychological problems a speech defect can cause.

For the purposes of this discussion, speech may be regarded as being defective when it attracts adverse attention to itself or when it interferes with effective communication or satisfying self-expression¹. On the basis of such a definition, about 7% of the adult population and approximately 10% of the public school population would be classified as having speech defects¹. Of these approximately one-half would be serious enough to warrant speech therapy; the rest, though technically defective, could get along fairly well without treatment. Using the recent census figures, about 6,000,000 persons in this country are in need of speech therapy. Thus speech defects are the most common handicapping condition.

If this seems to be a large number, consider the complexity of the speech act. The idea which is to be expressed must first be formulated in words, an accomplishment which the child requires several years to learn. Mastery of good speech requires refinement and improvement over most of an individual's productive life. Symbolic formulation presumably takes place in the cerebral cortex. Though the speech center is probably located on the dominant

hemisphere, it would be unwarranted at the present time to attempt a too precise localization.

All levels of the nervous system are involved in normal speech. As a result of cerebral activity, a pattern of nerve impulses flows over the corticobulbar and cortico-spinal tracts controlling muscles involved. Respiration is strikingly modified and must be nicely correlated with phonation and articulation. Hearing must be adequate. The movements of the lips, tongue, palate, vocal cords, and other structures used in speech must be rapid and delicate. It has been shown, that as pronounced by the average Mid-westerner, the word church requires 25 distinct adjustments of the articulatory and phonatory structures. One might well be surprised that we have so few speech defectives instead of so many!

There are many classifications of speech disorders, none of which is completely satisfactory. Some authorities have attempted to classify the disorders on an etiological basis. Since the cause of some defects is by no means clear, such a nomenclature is often confusing and controversial. If speech disorders are classified according to the symptoms, many disorders would have to be put under two or three headings. The descriptive classification used in this discussion is not intended to be a guide to the subject of speech pathology, but is used for purposes of convenience only. In so far as possible an attempt has been made to follow accepted usage in the application of all these terms. In instances where a term might be used with several meanings, the one accepted by most of the competent authorities has been indicated.

1. Dyslalia

This term refers to cases of defective articulation in which no organic basis for the defect can be found. No neurological lesion is demonstrable--at least none which can reasonably account

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for the speech disorder. In such cases, the peripheral speech structure--lips, teeth, tongue, palate, etcetera--are noted to be within normal limits as to size and function. The hearing is normal. And yet the speech is defective.

Patients with dyslalia form the largest single group of speech defectives. Some cases are fairly mild, such as that of the child who has a consistent sound substitution, as f for th, or w for r. We can also include here the mild distortions of various speech sounds, particularly of s, which is the most frequently misarticulated sound. In the more severe cases sound substitutions and distortions are so great as to make speech unintelligible or nearly so.

The most reasonable hypothesis in explanation of this disorder is that these patients have simply failed to learn correct articulatory patterns. The problem would seem to fall within the realm of educational psychology and learning theory. It is necessary to explain, however, why each individual patient develops one misarticulation or another, or why he develops any at all. As might be expected, this type of defect is common among patients whose general mental retardation makes all learning difficult. However, the disorder also occurs in many patients of superior intelligence.

Fortunately, despite the lack of a satisfactory theory to account for dyslalia, most patients of average intellectual capacity or better make rapid improvement under therapy. It is often possible in mild cases to give the child's mother instructions for work at home, and even some severe cases may make improvement under such a regime. Care must be exercised in selecting these cases. Mere "correction" always does more harm than good. Many of these children develop negativistic behavior and other personality deviations because of nagging by misguided parents who are trying to force them to talk perfectly.

2. Dysarthria

This term is used to refer to cases whose articulation is defective because of

a neurological lesion. Patients with cerebral palsy probably constitute the largest number among dysarthric patients seen by most speech therapists. Other neurological conditions in which a high incidence of dysarthria is found are paralysis agitans, pseudobulbar palsy, injuries to various cranial nerves, multiple sclerosis and general paresis.

The prognosis for this group is not nearly so good as for the dyslalics, although in individual cases it may be possible to accomplish a good deal. Dysarthria is more common among patients seen in a hospital speech clinic than in speech clinics in non-medical situations. It is one of the few speech disorders which is more common in adult life than in childhood. Although the treatment of both dyslalia and dysarthria involves a certain amount of repetitive drill, this is never as important in the therapy as most laymen believe. Instructions as to placement of the speech organs are not often useful. Thorough ear training forms the basis of most therapy, and is designed to make the patient aware of his errors and of the correct sound.

3. Dysphonia

This group of problems includes all disorders of voice from minor defects of voice quality to aphonia, or complete loss of vocalization. The latter may occur as a result of laryngectomy, hysteria, bilateral vocal cord paralysis, or it may be a manifestation of acute laryngitis. Between these extremes we have all degrees of dysphonia. Vocal quality alone may be affected, or the pitch and loudness of the voice may also be altered.

The principles of the treatment of functional dysphonia are easily stated, but it is often difficult for the patient to put them into practice. First it is necessary to train the patient's ear so that he knows exactly what is wrong with his voice and is able to identify the undesirable characteristics. He is then taught a mode of vocal production which results in the elimination of the undesirable characteristics.

This new mode of voice production is often a matter of trial and error, but usually involves the elimination of excessive tension in neck and laryngeal muscles. The final stage is the habituation of the new vocal pattern. In patients whose dysphonia has an organic basis, treatment of the organic lesion by a laryngological procedure accompanies speech therapy, though many do not fully recover until they have learned correct habits in the use of the voice.

While many children have unpleasantly shrill voices, little work on voice is done with pre-adolescent patients. Most children's voices undergo an improvement in quality during the years of puberty, and neither pitch nor loudness is settled until the larynx has reached adult size. An exception to this general rule is the child with a cleft palate. Such a patient must receive much therapy which should be started as early as he is able to cooperate.

4. Dysphemia

This term has been used differently by many different authorities. It is used here as the equivalent of stuttering, or as some call it, stammering. The alleged differences between stuttering and stammering exist only in the minds of laymen. They are not recognized by any competent authority in the field of speech pathology today. The term "stuttering" is generally preferred.

So much controversy and the resulting confusion have complicated the problem of stuttering. To undertake a too brief discussion of the subject may appear hazardous. In the time available it will be possible to give but the briefest outline without much documentation. The theory to be presented is firmly supported by solid research findings.

To begin with, every child normally repeats a good deal when he talks². The average amount of repetition is 45 times per 1000 words². This repetition may persist in an attenuated degree in adult speech. Under certain circumstances², the amount of repetition is increased. If an

influential person in the child's environment, usually a parent, mis-evaluates the repetitions as being abnormal and undesirable, the child becomes aware of this and tries to avoid repeating.

The child may be punished for repetitions and other non-fluencies, which is the quickest way to make a full-blown stutterer out of him. More often he is told "to slow down", "to think what he wants to say", to "take it easy", to "take a deep breath", or to "stop and start over". Such advice, of course, is a little slower in action than punishment, but is just as certain in its effects. Some parents say nothing to the child, but because they are concerned over the repetitions in his speech, they wince, sigh, or make elaborate efforts to "pay no attention" to the non-fluency. In one way or another, the anxiety of the parents is communicated to the child, and increasing difficulty develops as he tries to avoid the non-fluency which has aroused the parental concern. In his efforts to avoid a normal and inevitable part of his speech pattern, the child develops muscular tension, fears of speaking, and anticipations of difficulty. His previously effortless repetitions become increasingly tense and finally complete blocks appear. The previously normal child is now a stutterer.

If the parents seek help early, adequate treatment consists in counselling the parents². If the child has developed strain, tension, avoidance behavior, and fears of speaking, it is usually necessary to counsel the child as well as providing him with the benefit of speech therapy designed to ameliorate his symptoms directly.

Hostility and lack of self-confidence are often noted in the adult stutterer. They are the most usual reactions to the experience of having stuttered for years. It is a serious mistake to consider them the cause of the disorder.

5. Dysphasia

Under this heading are grouped

disorders of symbolic formulation and expression and of reception and interpretation of symbols⁴. Properly speaking, dysphasia is a symptom of a lesion in the cerebrum. It may be the only residual symptom of such a lesion and when present it is nearly always the most important one. Since nothing can be done for the primary lesion, except occasionally to try to prevent its recurrence or extension, the attention of the clinician tends to be focused on the alleviation of the speech disability.

The term aphasia has become so deeply entrenched in the literature that it may be futile to try to confine it to the cases of complete loss of language function, and use dysphasia as the more general term to include all degrees of loss of function. Whichever term is used, it is important to remember that every patient has a general disturbance in language function. This is emphasized by the classification of Weisenburg⁴, who grouped patients as predominantly expressive, predominantly receptive, and expressive-receptive.

As a result of the experience accumulated primarily since World War II, it is now realized that the possibilities of improvement in patients with dysphasia are much greater than was formerly appreciated. No miracles are possible, of course, and many patients still have an essentially hopeless prognosis so far as any significant recovery of useful language is concerned. But far more can be accomplished by intensive therapy than was generally believed as recently as ten years ago.

Dysphasia is far more common in the adult population than among children. Occasionally, however, children show dysphasic signs as a result of trauma, encephalitis, or a tumor.

6. Delayed Speech Development

If a child reaches the age of 30 months without saying any words, or the age of 42 months without using two- and three-word sentences, he is to be regarded as being significantly retarded in speech development. Delay in the develop-

ment of speech always presents a problem in differential diagnosis. By far the most common cause of delay in speech development is mental deficiency. In such cases the retardation in speech is to be considered an additional manifestation of the child's slow mental growth.

Another important cause of delayed speech is a deficiency in hearing⁵. If a child is congenitally deaf, the parents usually suspect it. Their complaint then is failure to hear rather than failure to develop speech. If, however, the child has relatively normal hearing for low frequencies but a marked loss for frequencies of 2000 cycles and above, the parents bring him in because he is talking little or not at all. At the present time it is usually impossible to get a satisfactory estimate of hearing in a child of two or three years of age. This may be remedied in the future, for research is in progress to develop an audiogram by means of the electro-dermal responses in children⁶.

A number of psychological factors may play a part in speech retardation. The child may have no need for speech and hence lack adequate motivation for talking. He may be emotionally disturbed or have some other interferences with the learning process.

Speech retardation is sometimes referred to as "congenital aphasia". By previous definition this would imply the presence of a cerebral lesion. Evidence for such a lesion rarely occurs. The purely descriptive term, "delayed speech development" is to be preferred.

7. Cleft Palate

An individual with a cleft palate usually produces speech difficult to understand because of the severe distortions of most of the consonant sounds and the accompanying unpleasant quality due to the excessive nasality. The achievements of oral surgeons in the rehabilitation of cleft palate patients are familiar, and deserve re-emphasis. Not so familiar are the results of

prosthetic treatment of the cleft palate. Often patients are able to get dramatic improvement from a properly fitted obturator. Whether the treatment is surgical or prosthetic, orthodontic treatment is usually necessary. Irrespective of what age surgery is done or how brilliant the operative result may be, speech therapy is also required.

8. Speech of the Hard-of-hearing

This complex subject has been receiving increasing attention in recent years from otologists and speech pathologists. All that is possible in this brief review is to mention that there is such a problem and that it is being intensively investigated from every angle.

Since 1938 limited service to children suffering from speech disorders has been available at the University of Minnesota Hospitals. In that year the Department of Pediatrics and the Division of Social Welfare developed and put into effect a cooperative program which made possible diagnostic and treatment service. The development of this program has served to emphasize the magnitude of the problem in our state and its importance as a medical problem. At the present time the chief limitation is the necessity for the speech clinician to divide time between the Gillette Hospital for Crippled Children and the University Hospitals. This factor determines not only the number of children served but also the kind and intensity of therapy which can be offered.

With but one exception, children with speech disorders follow regular University Hospitals' procedures as far as method of referral, eligibility status and preliminary work-up etc. are concerned.

In each case after a complete physical examination done in the pediatric outpatient department, the child and parents are seen by the child psychiatry staff, including the speech clinician, for preliminary evaluation. This arrangement serves the purpose of screening those children who are obviously mentally deficient or who have psychiatric problems in which the speech disturbance is but a

symptom. Following such evaluation, arrangements are made for further investigation and treatment plans for the patients selected.

The only exception to the above procedure is with cases of cleft palate who are under the care of the Division of Social Welfare. For the most part these children receive medical care elsewhere. Because the cause of their speech defect is known, they are seen for corrective speech procedure without the usual preliminary study.

The initial step in defining a speech problem is to interview the parents at length before the child is seen. Such procedure is desirable for it provides the speech clinician with many valuable clues as to the source of difficulty.

The type of speech examination given the child depends on the age of the child, his ability to cooperate, the type of defect etc. In general, the first task is to secure, through the use of pictures and conversation, a good sample of the child's current speech for evaluation. Articulation errors are noted as are any deviations in the rhythm or quality of the voice. The structure and function of the peripheral speech mechanism and the breathing patterns of the child are studied. On the basis of the child's past history and appraisal of existing speech accomplishments, it is usually possible to determine the type of speech problem the child has.

In most instances psychological testing is essential before plans for therapy are made. Learning new speech patterns is a complex process and requires a certain minimum intellectual ability. A measure of that ability is helpful as an aid in the diagnostic study and as a guide to therapy. Psychological testing of the child with defective speech must be administered and interpreted with caution. The choice of a testing instrument is extremely important for tests which require verbal responses often penalize the child unduly. It is often desirable to

administer a battery of several tests.

In a few cases it is impossible to evaluate adequately the child's capacities on an out-patient basis. Under such circumstances hospitalization is desirable for such a procedure permits first hand observation of the child on a twenty-four hour basis.

The types of cases referred for diagnosis and treatment are many and varied and time does not permit a full discussion of the various kinds of therapy used. Because most of the children with speech problems come from outside the metropolitan area and because of the heavy case load, it is not possible to give intensive therapy in all cases which could benefit from it. In most instances it is necessary to outline for and with the mother a program for helping the child at home, with only occasional return visits to the clinic for evaluation of progress and further suggestions.

In our experience, as in most speech clinics, the largest single group of cases is composed of children who, for reasons not readily determined, have not learned to articulate clearly. Fortunately, it is this group which usually responds nicely to a program of home training.

Teaching a child a new sound involves considerably more than encouraging the child to practice words containing the sound. Such a procedure is usually uninteresting to the child, is frustrating to the parents, and most often is ineffective in producing permanent changes in the child's speech patterns.

A different approach to the problem yields more satisfactory results. First, a lot of experience is provided to hear the correct sound before the child is asked to produce it. He must learn to hear the difference between the sound he is learning and all other sounds. Various games and stories have been devised to make such listening experiences interesting for the child. Gradually, the sound comes to have a specific meaning to him. Eventually he becomes more conscious of it and notes its presence or absence in words.

When this goal is achieved, practice in making the sound begins. Initially, the child is encouraged to use the new sound in syllables, then in words, and finally in connected speech. Ultimately, the sound becomes incorporated into his habitual responses.

In home training of this kind, several essential points are stressed to the parents. They are encouraged to keep the work interesting to the child. Everything that is done must be story-like or game-like. If the child senses the parents are trying to "teach" him anything, failure usually results. The parents are urged to work with the child daily even though the period of practice is only a few minutes. Speech is a habit and constant repetition of new patterns is essential. Early in the training period, the parents are advised to concern themselves with only one sound at a time so as to not confuse the child. When the first sound has been mastered, a similar routine is begun on a second sound. Thus, over a period of time, a series of sounds useful in good speech are "learned" with the result that the child articulates more clearly. Usually as the child progresses from one sound to another, it is noted that each succeeding sound is easier to master. Often, sounds which have not been stressed clear spontaneously which suggests that the habit of listening developed with the first sound are carried over to the other difficult sounds.

Experience over several years indicate clearly that most parents, if given adequate instruction, can help their child develop more normal speech. By "adequate" instruction is meant that the parents have not only a good working knowledge of what is to be done but also insight into the important role their own feelings have in the process. Because most parents are so extremely anxious when their child has defective speech, an important part of the speech therapist's job is to help them accept failures more realistically and to realize that improvement is a long-term process in which constant pressure on

the child is to be avoided.

It is encouraging to note that home training can also be effective with cleft palate cases. In such situations, parental efforts must begin very early. As a rule, it is advisable to begin work with parents of such a child before speech develops. Encouraging the child to do simple blowing and sucking exercises seems to be very helpful in minimizing the usual nasal quality typical of cleft palate speech. Later, when the child has begun to use speech, a program similar to the one outlined above for the more simple articulation case can be carried out by the parents. Although such a program is helpful, more intensive therapy is indicated in the average case if good speech habits are to be acquired.

Problems of speech retardation are usually managed through interviews with the parents. The basic difficulty is usually focused in their own concerns about the "problem". For this reason, parental counselling and instruction in more adequate means of stimulation and motivation are essential to relieve the usual tensions in the home and reduce the pressures on the child. Only by so doing is it possible to create a more favorable environment for speech development. When an otherwise normal child fails to start speaking at the usual time expected, the parents usually feel compelled to do something about it--and what is done is almost always unwise. The most common error is to sit down with the child and "teach" him how to say words. Needless to say, such "teaching" seldom accomplishes its objective. Instead, the child often develops a negative attitude toward all communication. Talking should be fun. It seldom is when over-anxious and over-zealous parents continually attempt to force the child to produce better speech. Speech develops best in an environment where the child gets adequate stimulation without being pressured to do better. His early speech productions - whatever their imperfections may be - must be acceptable without reservation if he is to develop good speech. In illustration, it is infinitely better to meet the child's "I wanna dinka wah" with "Sure, you can have

a drink of water", than with "Not wah--water -- now you say 'water'". The latter approach, repeated constantly, tells the child, in effect, "We don't like the way you talk".

The primary task in treatment of the young stutterer is to relieve parental anxiety. This often poses a very difficult and on occasions an almost insurmountable problem. To tell a parent his child will outgrow his repetitious speech serves no purpose at all. Not until the parents are able to accept the simple fact that repetitions and hesitations are a normal part of speech development can progress be made. It is essential to give sufficient time if significant changes in parental attitude are to be effected. Several interviews are always necessary and, in most cases, continued follow-up over a period of time is indicated.

During the past year, 154 children were seen for diagnosis and treatment in the speech clinic. Clinic visits totalled 332. In addition, approximately 30 children with the presenting complaint of "defective speech" were seen by the child psychiatry out-patient clinic. Most of this group were children in whom the primary problem was mental deficiency and for whom no speech therapy was indicated.

From the above discussion it would seem clear that the disorders of speech constitute an important medical problem. It is a problem, however, that has been too often overlooked or disregarded by physicians.

Physicians are in a strategic position to assist an individual who is afflicted with a speech disorder. He is usually the first person to whom individuals with this difficulty come. It is at this point where much subsequent suffering could be avoided. The tendency to assume an attitude of hopelessness telling patients either that "nothing can be done", or "the condition is not correctable", or as is too often the case, "nothing needs to be done - he'll outgrow it" leaves the patient

and his family discouraged and further complicates the problem. Such advice is harmful and should be discouraged.

Experience has definitely demonstrated that many cases involving a speech defect are remediable. As with other medical problems, early diagnosis and treatment is of paramount importance. Delay complicates the situation and makes more difficult therapeutic effort undertaken at a later date.

While it is true that most speech problems require the services of a skilled and well-trained speech clinician, the physician can be of immeasurable help by acquainting himself with the various kinds of speech disorders which exist, by becoming acquainted with the resources for special treatment services in the community and making referrals to such services at the earliest possible moment.

The inclusion of a speech service as a part of the total program of a teaching hospital has become increasingly important and essential. Apart from the direct service to those afflicted with this crippling disorder and the attendant relief from suffering not only in the patient but also in the family, it has served to call to the attention of the medical student and residents in training the importance of these disorders. Relatively few medical schools do any teaching in this important area. We are encouraged in the knowledge that our teaching program includes a consideration of speech development and the problems which occur in this area. Students are introduced to the problems during their junior and senior years, not only by lecture but also by conference and demonstration. Residents in pediatrics and psychiatry as well as others are also given opportunity to acquaint themselves with such problems. The opportunity to participate in cases involving speech disorders and to enjoy careful exploration of speech problems for diagnostic and treatment planning with a skilled clinician has augmented the total program. Of equal importance is the opportunity to inculcate the basic principles involved and to encourage the physician that

problems in this area are important and can be relieved if recognized early and treatment procedure initiated.

Much research in this field is to be done. A great deal of investigation which has been done is invalid and inconsequential. It would be logical and desirable to conduct an active program of research in a medical setting. However, if this is to be accomplished, the present program will require strengthening. It is our hope that eventually this will be accomplished.

In evaluating the work of the speech clinic during the past years, it becomes obvious that the clinic is not able to meet the demands made on it. Intensive therapy for a large group of children is needed. Until speech correction becomes much more widely available than at present, we shall have to continue to offer what help we can through the means that are available.

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II.

GREETINGS TO THE STAFF

As the academic year of 1950-51 opens there are two things, beyond our usual scientific and professional interests and responsibilities, which cannot fail to be uppermost in our minds. The one is the international situation; the other the building of the Mayo Memorial.

Little did any of us think five years ago when we rejoiced over the end of World War II that by 1950 United States troops would again be fighting on foreign soil and that we would be living from day to day fearful that newspapers or radio would bring us news of the outbreak of World War III. It is depressing to think of such possibilities. Yet, we would be tragically negligent if we should fail to face realistically the possibility of the most catastrophic war the world has ever known and also if we should fail to make every possible preparation to meet the impact of such war and to win if it should come.

In making such preparations the medical and nursing professions, the medical schools, the hospitals and other health facilities and agencies have very important responsibilities. During the coming year a considerable number of our hospital staff will most certainly be called to duty with the armed services: and those who remain will be requested to give time and effort to the planning and organization of emergency medical services for the civilian population. We dislike to disrupt or interfere with our regular programs of professional work but I am sure that individually and collectively our hospital staff can be counted upon to render whatever services may be demanded of them.

Work on the Mayo Memorial was started about the 1st of July and the excavation is assuming tremendous proportions. Few, I believe, realized the size of this building and the amount of underground work that would be involved. The noise and the dirt incident to this excavation and construction job is annoying and at times disturbing or even disruptive to medical work. In addition, the inconvenience occasioned by having the hospital court hauled away is considerable.

However, to many of us who have looked forward for years to the construction of this building, these disturbances and inconveniences are not only bearable but welcome. We just hope that the rest of the staff will share this point of view and that construction will proceed without further delay.

The two other buildings under construction on the medical campus are no longer projected dreams but realities. The beautiful new Health Service Building was placed in operation last week and the Heart Hospital will be ready for occupancy by the 1st of January. These are splendid additions to the medical service and research facilities of the University.

To the new comers in our group we extend a cordial welcome. To those of last year's staff I would say that we look forward to the privilege of working together throughout another year.

Harold S. Diehl, M.D.
Dean of the Medical Sciences

III. MEDICAL SCHOOL NEWS

Coming Events

- October 10 Minnesota Medical Foundation Day - "Scholarship and Medicine,"
 Dr. Lowell T. Coggeshall, Dean of Biological Sciences, Univer-
 sity of Chicago - Medical Sciences Amphitheater - 3:00 p.m.
- October 26-28 Continuation Course in Diseases of the Chest for General Physicians
- October 30 -
 November 4 Continuation Course in Neurologic Roentgenology
- November 27 -
 December 1 Continuation Course in Child Psychiatry

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Foundation Day

The first Minnesota Medical Founda-
 tion Day will bring Dr. Lowell T.
 Coggeshall, Dean of Biological Sciences,
 University of Chicago, to our campus
 Tuesday, October 10. Dr. Coggeshall,
 distinguished investigator, administra-
 tor, and teacher, will speak to the
 student body, faculty, alumni, and
 friends of the Medical School at 3:00
 p.m. in the Medical Sciences Amphithe-
 ater on the subject, "Scholarship and
 Medicine." Dr. Owen H. Wangensteen, Pre-
 sident of the Minnesota Medical Founda-
 tion, will present scholarships in the
 amount of \$500 to each of five under-
 graduate medical students who have been
 selected by the Foundation Scholarship
 Committee.

The annual dinner meeting of the
 Foundation will be held at 6:15 p.m.
 in the Campus Club, Coffman Memorial
 Union. Greetings will be extended by
 Dr. Harold S. Diehl, Dean of Medical
 Sciences. Plans for expanding the
 scholarship program will be presented
 by Dr. Wesley W. Spink. Dr. E. J. Simons,
 member of the Board of Trustees, will
 comment briefly on the origin of the
 Minnesota Medical Foundation and its
 relations to the Medical Alumni Associa-
 tion. Dr. Herman E. Drill, Presi-
 dent of the Minnesota Medical Founda-
 tion, will tell of the plans and
 activities of the Medical Alumni Associa-
 tion. Election of new members to the
 Board of Trustees will be held after
 hearing the report of the nominating com-

mittee. All annual, life, and patron
 members of the Foundation are cordially
 invited to attend this meeting. Dinner
 will be served at \$1.75 per plate.

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Alumni Homecoming Meeting

The Minnesota Medical Alumni Associa-
 tion, headed by Dr. Herman E. Drill, Pres-
 ident, announces a homecoming clinical
 session to be held at the University of
 Minnesota Hospitals on the morning of the
 homecoming football game November 4, 1950.
 All medical alumni are cordially invited
 to return to the Medical School for a
 morning of clinical conferences at which
 they are the guests of honor. Plans in-
 clude coffee and doughnuts mid-morning, a
 brief tour of the medical buildings, and
 luncheon in the Coffman Memorial Union.
 Announcements will be mailed out to all
 medical alumni in the near future.

Officers of the Minnesota Medical
 Alumni Association elected at its meeting
 in Duluth June, 1950, include: Dr. H. E.
 Drill, President; Dr. Russell J. Moe,
 First Vice-President; Dr. Brian J.
 McGroarty, Second Vice-President; and
 Dr. Donald L. Iannin, Treasurer. The
 members of the executive committee are:
 Dr. Harold G. Benjamin, Dr. Cyrus O.
 Hanson, Dr. Rodney F. Sturley, Dr.
 William C. Bernstein, Dr. John T.
 Pewters, Dr. Jan Tillisch, and Dr.
 Raymond F. Hedin.

IV.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
CALENDAR OF EVENTS

No. 301

October 8 - October 14, 1950

Sunday, October 8

9:00 - 10:00 Surgery Grand Rounds; Station 22, U. H.

10:30 - Surgical Conference; Todd Amphitheater, U. H.

Monday, October 9

9:00 - 9:50 Roentgenology-Medicine Conference; L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.

9:00 - 10:00 Pediatric Rounds; Dr. Lowry; 5th Floor, Minneapolis General Hospital.

9:00 - 10:50 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; M-109, U. H.

10:00 - 12:00 Neurology Rounds; A. B. Baker and Staff; Station 50, U. H.

11:00 - 11:50 Physical Medicine Seminar; Osteology of the Vertebral Column; G. K. Stillwell; E-101, U. H.

11:00 - 11:50 Roentgenology-Medicine Conference; Veterans Hospital.

11:00 - 12:00 Cancer Clinic; K. Stenstrom and A. Kremen; Eustis Amphitheater, U. H.

12:00 - 1:00 Physiology Seminar; Subject to be announced; Fletcher Miller; 214 Millard Hall.

12:15 - 1:20 Obstetrics and Gynecology Journal Club; Staff Dining Room, U. H.

1:00 - 2:00 Staff Meeting; Classroom, 4th Floor, Minneapolis General Hospital.

1:30 - 2:30 Pediatric-Neurological Rounds; R. Jensen, A. B. Baker and Staff; U. H.

2:00 - 3:00 Journal Club; Classroom, Station I, Minneapolis General Hospital.

4:00 - 5:00 Pediatric Seminar; Mongolism; John O'Brien; 6th Floor West, Child Psychiatry, U. H.

4:30 - 5:30 Dermatological Seminar; M-436, U. H.

5:00 - 5:50 Clinical Medical Pathologic Conference; Todd Amphitheater, U. H.

5:00 - 6:00 Urology-Roentgenology Conference; C. D. Creevy, O. J. Baggenstoss, and Staffs; M-109, U. H.

* 8:00 p.m. Clinical Research Club Meeting; Theoretical Problems Concerned with Intramedullary Nailing of Fractures, Leonard Peltier (Dept. of Surgery); Cardiac Performance Capacity and Renal Plasma Flow in Aortic Insufficiency, Thomas B. Gibbons (Dept of Medicine); Eustis Amphitheater, U. H.

Tuesday, October 10

- 8:00 - 9:00 Pediatric Rounds; Dr. Adams; 4th Floor, Minneapolis General Hospital.
- 8:00 - 9:00 Fracture Conference; Auditorium, Ancker Hospital.
- 8:30 - Pediatrics Allergy Rounds; Dr. Nelson; 4th Floor, Minneapolis General Hospital.
- 8:30 - 10:20 Surgery Seminar; Seminar Conference Room, Bldg. I, Veterans Hospital.
- 9:00 - 9:50 Roentgenology Pediatric Conference; L. G. Rigler, I. McQuarrie and Staffs; Todd Amphitheater, U. H.
- 9:00 - 10:00 Pediatric Rounds; F. H. Top; 7th Floor, Minneapolis General Hospital.
- 10:30 - 11:50 Surgical Pathological Conference; Lyle Hay and E. T. Bell; Veterans Hospital.
- 12:30 - 1:20 Pathology Conference; Autopsies; J. R. Dawson and Staff; 102 I. A.
- 1:00 - 2:30 X-ray Surgery Conference; Auditorium, Ancker Hospital.
- 2:00 - 2:50 Dermatology and Syphilology Conference; H. E. Michelson and Staff; Bldg. III, Veterans Hospital.
- * 3:00 - Minnesota Medical Foundation Lecture; Scholarship and Medicine, Lowell T. Coggeshall; Medical Sciences Amphitheater.
- 3:15 - 4:20 Gynecology Chart Conference; J. L. McKelvey and Staff; Station 54, U. H.
- 3:30 - 4:20 Clinical Pathological Conference; Staff; Veterans Hospital.
- 4:00 - 5:00 Physiology-Surgery Conference; Eustis Amphitheater, U. H.
- 4:00 - 5:00 Pediatric Rounds on Wards; I. McQuarrie and Staff; U. H.
- 5:00 - 6:00 X-ray Conference; Presentation of Cases by University Hospital Staff; Todd Amphitheater, U. H.

Wednesday, October 11

- 8:00 - 8:50 Surgery Journal Club; O. H. Wangensteen and Staff; M-109, U. H.
- 8:00 - 9:00 Roentgenology-Surgical-Pathological Conference; L. B. Thomas and L. G. Rigler; Todd Amphitheater, U. H.
- 8:30 - 9:30 Clinico-Pathological Conference; Auditorium, Ancker Hospital.
- 8:30 - 10:00 Orthopedic-Roentgenologic Conference; Edward T. Evans and Bernard O'Loughlin; Room IAW, Veterans Hospital.
- 8:30 - 12:00 Neurology Rehabilitation and Case Conference; A. B. Baker; Veterans Hospital.

Wednesday, October 11 (Cont.)

- 9:00 - 10:00 Pediatric Rounds; Dr. Lowry; 5th Floor, Minneapolis General Hospital.
- 11:00 - 12:00 Pathology-Medicine-Surgery Conference; Medicine Case; O. H. Wangenstein, C. J. Watson and Staffs; Todd Amphitheater, U. H.
- 12:15 - Staff Meeting; Classroom, 4th Floor, Minneapolis General Hospital.
- 3:00 - 4:00 Pediatric Rounds; E. J. Huenekens; 4th Floor, Minneapolis General Hospital.
- 3:30 - 4:30 Journal Club; Surgery Office, Ancker Hospital.
- 4:00 - 5:00 Infectious Disease Rounds; Classroom, 8th Floor, Minneapolis General Hospital.
- 4:00 - 5:00 Infectious Disease Rounds; Todd Amphitheater, University Hospitals.
- 5:00 - 5:50 Urology-Pathological Conference; C. D. Creevy and Staff; E-101, U. H.
- 5:00 - 7:00 Dermatology Clinical Seminar; Dining Room, U. H.
- 8:00 - Dermatological Pathology Conference; Todd Amphitheater, U. H.

Thursday, October 12 HOLIDAYFriday, October 13

- 8:30 - 10:00 Neurology Grand Rounds; A. B. Baker and Staff; Station 50, U. H.
- 9:00 - 10:00 Pediatric Rounds; Dr. Lowry; 5th Floor, Minneapolis General Hospital.
- 9:00 - 9:50 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U. H.
- 9:30 - Surgery-Pediatric Conference; O. S. Wyatt and T. C. Chisholm; 4th Floor, Minneapolis General Hospital.
- 10:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.
- 10:30 - 11:20 Medicine Grand Rounds; Veterans Hospital.
- 10:30 - 11:50 Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Department, U. H.
- 11:45 - 12:50 University of Minnesota Hospitals Staff Meeting; Hospitals Report--1949-50; Ray Amberg; Powell Hall Amphitheater.
- 1:00 - 2:50 Neurosurgery-Roentgenology Conference; W. T. Peyton, Harold O. Peterson and Staff; Todd Amphitheater, U. H.
- 1:00 - 3:00 Pathology-Surgery Conference; Auditorium, Ancker Hospital.

Friday, October 13 (Cont.)

- 2:00 - 3:00 Dermatology and Syphilology Conference; Presentation of selected cases of the week; H. E. Michelson and Staff; W-312, U. H.
- 3:00 - 4:00 Neuropathology Conference; F. Tichy; Todd Amphitheater, U. H.
- 4:00 - 5:00 Clinical Pathological Conference; A. B. Baker; Todd Amphitheater, U. H.
- 4:15 - 5:15 Electrocardiographic Conference; 106 Temp. Bldg., Hospital Court, U. H.
- 4:30 - 5:30 Journal Club; M-436, U. H.

Saturday, October 14

- 7:45 - 8:50 Orthopedics Conference; Wallace H. Cole and Staff; M-109, U. H.
- 8:00 - Pediatric Rounds; Dr. Adams; 4th Floor, Minneapolis General Hospital.
- 8:30 - 9:30 Surgery Conference; Auditorium, Ancker Hospital.
- 9:00 - 9:50 Medicine Case Presentation; C. J. Watson and Staff; E-221, U. H.
- 9:00 - 10:00 Pediatric Rounds; F. H. Top; 7th Floor, Minneapolis General Hospital.
- 9:00 - 10:30 Pediatric Grand Rounds; I. McQuarrie and Staff; Eustis Amphitheater, U. H.
- 9:15 - 10:00 Surgery-Roentgenology Conference; F. Ruzicka, O. H. Wangenstein and Staff; Todd Amphitheater, U. H.
- 10:00 - 11:30 Surgery Conference; O. H. Wangenstein and Staff; Todd Amphitheater, U. H.
- 10:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.
- 10:00 - 12:50 Obstetrics and Gynecology Grand Rounds; J. L. McKelvey and Staff; Station 44, U. H.
- 11:00 - 12:00 Pediatric Clinic; Charles May; Classroom, 4th Floor, Minneapolis General Hospital.
- 11:00 - 12:00 Anatomy Seminar; Report of 7th International Congress for Cell Biology, J. F. Hartmann; Observations on the Histophysiology of the Adrenal, Morton Alpert; 226 I. A.

* Indicates special meeting. All other meetings occur regularly each week at the same time on the same day. Meeting place may vary from week to week for some conferences.