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



Femoral Head  
Prosthesis

BULLETIN OF THE  
UNIVERSITY OF MINNESOTA HOSPITALS  
and  
MINNESOTA MEDICAL FOUNDATION

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## I. FEMORAL HEAD PROSTHESIS

### A Preliminary Report.

Frank J. Iwersen, M.D.

#### Historical Review

Prosthetic replacement of the femoral head is a relatively new procedure in orthopedic surgery. In 1929 Robineau used a rubber prosthesis for the upper one-third of a femur following a resection of a benign tumor. This, however, broke down in eighteen months and the procedure was never used again as far as can be determined. In 1929 Rohlman did the first experimental work on femoral head prosthesis and in 1943 Bohlman and Moore inserted a vitallium prosthesis for a giant cell tumor.

Arthroplasty of the hip dates back several years previous to this, however. Girdlestone in 1923 described excision of the head and neck of the femur with a resulting pseudarthrosis. This resulted in good motion with freedom from pain; however, instability, weakness, and shortening ensued. Whitman in 1924 reported his arthroplasty. This procedure, however, frequently left the patient disabled with pain and stiffness. For many years, different substances have been interposed between joint surfaces, but they have proved to be unsuitable because of lack of durability.

Smith-Petersen in 1939 described a mould arthroplasty using vitallium cups. This was the most successful operation up to this time, and many patients had good range of motion and freedom from pain following this procedure. This operation, however, was not universally successful, and it required prolonged postoperative care. As a result there has been continued search for other procedures in the hope of obtaining more satisfactory results.

Jean and Robert Judet in 1946 devised their femoral head prosthesis to introduce a new type of arthroplasty. This was reported in 1949 as well tolerated,

simple, effective in relieving pain, allowing an early range of motion, and compatible with short postoperative attention. Their prosthesis is a plastic head which is not affected by organic acids or by remaining in place in the body for long periods.

The indications for this type of surgery, as stated by the Judets, were: (1) osteoarthritis following Perthe's disease or old slipped femoral epiphysis, (2) non-union of fractured neck of the femur, (3) non-tuberculous ankylosis of the hip, (4) congenital dislocation of the hip, and (5) tumor of the femoral head.

These surgeons have now reported over 300 cases in which this procedure was undertaken. Of these 80 per cent have been able to return to some kind of work, 90 per cent have good range of motion and one-third of the patients are able to walk without a cane.

#### Report of Cases

Thirty-five femoral head insertions have been performed in 30 patients. The first operation was performed in June, 1951. The patient was a 40-year old female who was suffering pain and disability from an old reduced congenital dislocation of the hip. The last patient included in this series was operated upon in September, 1953.

The youngest patient was a 26-year old female who had a septic hip as a child, the oldest a 77-year old female who had an Austin-Moore type of prosthesis for an ununited fracture of the femoral neck. The average age of all patients was 55 years.

The indications for surgery in this group were as follows: an old septic hip in one case; rheumatoid arthritis in nine; congenital dislocation of the hip in two; slipped epiphysis in one; degenerative arthritis in 11; and ununited fracture of the femoral neck with aseptic necrosis of the head in 11.

The 26-year old patient had a painful right hip and limitation of motion 14

months after surgery. She is able to walk with no particular difficulty and has no pain. Flexion is present to 90 degrees, and other motions are satisfactory. This is considered an excellent result.

The oldest patient, a 77-year old female, is able to walk with support eight months after surgery, and she bears weight with no pain. This was an Austin-Moore type of prosthesis for an ununited fracture. Mobility of her hip is excellent. Flexion can be carried out to 90 degrees with abduction, and internal and external rotation are almost normal. This also is considered to be a good result.

Our results are reported as good, fair, and poor. Some of the patients with arthritis were confined to wheel chairs because of ankylosis of both hips and flexion contractures of the knees. In this group rather extensive surgery and physical therapy were required to obtain maximum rehabilitation. One such patient had not walked for twelve years. Posterior capsulotomies of both knees were done, and Judet type of prostheses were inserted in both hips. After several months of physical therapy, he was able to walk with special crutches. Although he did not attain full mobility of the hips or knees, his result must be judged in the light of his condition before surgery.

Of the 11 patients with ununited fractures in this series, eight have had good results, two poor results, and one a fair result. The poor results were associated with complications in both instances. One patient was operated upon a second time because a subluxation occurred after the original procedure. Following the second operation she developed a low grade infection. She is still having some difficulty although she walks with partial weight bearing on crutches. The other patient's course was complicated by a fracture just below the lesser trochanter produced by the stem of the intermedullary type of prosthesis. She also had a wound infection and is still not walking 16 months after operation.

In eight of these patients an anterior approach to the hip joint was made, and in three the approach was posterolateral. The results did not appear to depend on the operative approach.

Of the nine patients with degenerative arthritis, whose ages ranged from 43 to 64, four had good results. One of these was a patient who had had a bilateral procedure. Four patients had poor results and one, who also had a bilateral procedure, a fair result. All four patients with poor results had persistent pain, and three developed flexion contractures. One had a post-operative infection, and his wound is still draining 22 months following his surgery despite subsequent removal of the prosthesis.

Rheumatoid arthritis was responsible for nine operations in five patients. Thus four of these patients had procedures on both hips. Three also had bilateral capsulotomies on the knees. In three patients, two of whom had bilateral prosthesis insertions, the results have been good. They are now walking with crutches, whereas before they had been confined to wheel chairs. In one individual subjected to the bilateral procedure, the result was fair. He is able to walk on crutches and he has very little pain; however, he does have flexion contractions of both hips of 40 degrees. A poor result was obtained in one patient who also had the bilateral procedure. He has rather severe pain in his hips and low back. Mobility of his hips is poor, and he is unable to sit down comfortably. Before surgery, his hips were ankylosed at 90 degrees, and he now has about 30 degrees of flexion in the hips. The patient believes that his condition is somewhat worse than it was before surgery.

Painful hips occurred in two 40-year old females because of congenital dislocations. Both of these women had pain severe enough to prevent them from carrying on their duties as housewives. In both instances, motion of the affected hip was limited. One patient has now been followed for 28 months and the other for 18 months. Neither has any pain. Both

UNUNITED FRACTURES

11 PROCEDURES

11 PATIENTS

AGE	PERIOD FOLLOW UP	APPROACH	SUPPORT	PROSTHESIS	MOTION	PAIN	COMPLICATION	RESULT
58	7 mos.	POST LAT.	NO	AUSTIN MOORE	GOOD	NONE	NONE	GOOD
60	8 mos.	ANT.	YES	JUDET	POOR	YES	INFECTION	POOR
60	24 mos.	ANT.	NO	JUDET	GOOD	NONE	NONE	GOOD
64	5 mos.	POST LAT.	YES	AUSTIN MOORE	GOOD	NONE	FLEXION CONTRACTURE	GOOD
66	16 mos.	ANT.	YES	JUDET	GOOD	NONE	NONE	GOOD
67	9 mos.	ANT.	NO	JUDET	GOOD	SLIGHT	NONE	GOOD
70	16 mos.	ANT.	NO	JUDET	GOOD	NONE	NONE	GOOD
73	13 mos.	ANT.	YES	AUSTIN MOORE	GOOD	NONE	NONE	GOOD
74	16 mos.	ANT.	YES	MOORE	POOR	YES	FRACTURE INFECTION	POOR
77	11 mos.	ANT.	YES	JUDET	GOOD	NONE	STROKE	POOR?
77	9 mos.	POST LAT.	YES	AUSTIN MOORE	GOOD	NONE	NONE	GOOD

18% POOR

DEGENERATIVE ARTHRITIS  
11 PROCEDURES  
9 PATIENTS

AGE	PERIOD FOLLOW UP	APPROACH	SUPPORT	PROSTHESIS	MOTION	PAIN	COMPLICATION	RESULT
43	9 mos.	ANT.	NO	JUDET	EXCELLENT	NONE	NONE	GOOD
50	18 mos.	ANT.	YES	JUDET	GOOD	YES	FLEXION CONTRACTURE	POOR
50	4 mos.	POST LAT.	YES	JUDET	GOOD	YES	FLEXION CONTRACTURE	POOR
54	15 mos.	POST LAT.	YES	JUDET	GOOD	NONE	NONE	GOOD
54	15 mos.	POST LAT.	YES	JUDET	GOOD	SLIGHT	NONE	GOOD
55	24 mos.	ANT.	YES	JUDET	GOOD	SLIGHT	NONE	FAIR
55	24 mos.	ANT.	YES	JUDET	GOOD	SLIGHT	NONE	FAIR
55	22 mos.	ANT.	YES	JUDET	POOR	YES	INFECTION	POOR
56	9 mos.	ANT.	YES	JUDET	FAIR	YES	FLEXION CONTRACTURE	POOR
60	9 mos.	ANT.	NO	JUDET	GOOD	NONE	NONE	GOOD
64	23 mos.	ANT.	NO	JUDET	GOOD	NONE	NONE	GOOD

36% POOR

RHEUMATOID ARTHRITIS  
9 PROCEDURES  
5 PATIENTS

AGE	PERIOD FOLLOW UP	APPROACH	SUPPORT	PROSTHESIS	MOTION	PAIN	COMPLICATION	RESULT
31	12 mos.	ANT.	YES	JUDET	FAIR	SLIGHT	NONE	GOOD
31	12 mos.	ANT.	YES	JUDET	FAIR	SLIGHT	NONE	GOOD
38	17 mos.	ANT.	NO	JUDET	GOOD	NONE	NONE	GOOD
40	22 mos.	ANT.	YES	AUSTIN MOORE	FAIR	NONE	FLEXION CONTRACTURE	FAIR
40	22 mos.	ANT.	YES	AUSTIN MOORE	FAIR	NONE	FLEXION CONTRACTURE	FAIR
45	12 mos.	ANT.	YES	JUDET	POOR	YES	NONE	POOR
45	12 mos.	ANT.	YES	JUDET	POOR	YES	NONE	POOR
45	7 mos.	POST LAT.	YES	JUDET	FAIR	NONE	NONE	GOOD
45	7 mos.	POST LAT.	YES	JUDET	FAIR 22% POOR	NONE	NONE	GOOD

OLD CONGENITAL DISLOCATION OF HIP

2 PROCEDURES

2 PATIENTS

AGE	PERIOD FOLLOW UP	APPROACH	SUPPORT	PROSTHESIS	MOTION	PAIN	COMPLICATION	RESULT
40	28 mos.	ANT.	NO	JUDET ACRYLIC	GOOD	NONE	SUBLUXATION	GOOD
41	18 mos.	ANT.	NO	JUDET	GOOD	NONE	NONE	GOOD

OLD SEPTIC HIP

26	14 mos.	ANT.	NO	JUDET	GOOD	NONE	NONE	GOOD
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OLD SLIPPED EPIPHYSIS

48	6 mos.	POST LAT.	YES	AUSTIN MOORE	POOR	YES	FLEXION CONTRACTURE	POOR
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are able to walk without support with a slight limp. Both have excellent mobility, and both are pleased with their results.

The old septic hip occurred in a young female patient. Following surgery, she is able to dance and walk with no particular difficulty and suffers no discomfort.

An old slipped epiphysis caused pain and a flexion contracture in a 48-year old male. Following insertion of a femoral prosthesis of the Austin-Moore type, he has regained some motion. He still has rather severe pain and a mild flexion contracture, however. He did not seem to respond well immediately after surgery and has shown no improvement in seven months.

#### Type of Prosthesis

In these 35 procedures, 26 stainless steel prostheses of the Judet type were inserted, one acrylic type and eight of the Austin-Moore intramedullary type. The results do not appear to be correlated with the type of prosthesis used.

#### Surgical Approach

In 26 procedures an anterior approach to the joint was used, and in nine the approach was postero-lateral. Again there seems to be no preference. All of the patients, whether walking with or without support, have some degree of limp.

#### Complications

Subluxation of the prosthesis occurred in two instances. In one, a 40-year old female, the prosthesis was relocated by manipulation under anesthesia following which the patient was held in a cast for two months. An excellent result was obtained. In the second instance a second operation was done. The prosthesis was relocated by excavating the acetabulum and shortening the abductor mus-

cles. A poor result was obtained here.

Infection occurred in two patients, and neither is doing well at the present time. A fracture occurred in one patient, a complication which must always be guarded against. Many of the patients for whom this procedure is considered are elderly people with osteoporosis. Fractures of the femur may occur readily in this group.

Pain associated with a flexion contracture was the most common complication or complaint. This occurred in seven patients, four of whom were in the degenerative arthritis group and two in the rheumatoid arthritis group.

In a few instances the prosthesis was probably inserted at a poor angle. A valgus position might favor subluxation, while a varus position would bring about a poor weight bearing direction. The prosthesis would then have a tendency to work loose in the neck of the femur. Judet feels the prosthesis should parallel the neck at an angle of approximately 135 degrees.

#### Summary

Thirty-five prosthetic femoral head insertions have been performed in 30 patients. The most recent procedure was carried out five months prior to time of this writing. Results of these 35 procedures can be classified as follows: good - 22 (63 per cent); fair - 4 (11 per cent); poor - 9 (26 per cent). The poorest results occurred in patients with degenerative arthritis, while some of the best results were obtained in elderly patients with ununited fractures.

The authors believe that this procedure compares favorably with mould prosthesis. It is simpler and requires less postoperative care. Final evaluation will depend on long-term follow-up studies. Its use will be continued in selected patients.

\* \* \*

## II MEDICAL SCHOOL NEWS

### Coming Events

- February 10-11 Continuation Course in Cancer Detection for General Physicians  
February 11 Dedication of the Elias P. Lyon Laboratories  
February 15-17 Continuation Course in Fundamental Advances in Internal Medicine  
for Internists  
February 16 Journal-Lancet Lecture; "The Biosynthesis of Heme;" Dr. David  
Shemin, Columbia University, New York City; Owre Amphitheater;  
8:00 p.m.  
February 18-20 Conference on Sterility and Associated Problems of Reproduction  
for Physicians  
March 4-6 Continuation Course in Clinical Dietetics for Dietitians  
March 5-6 Parenteral Alimentation Symposium (Sponsored by Hennepin County  
Medical Society); Radisson Hotel, Minneapolis  
March 8-10 Conference on Coroners' Problems  
March 22-24 Continuation Course in Cardiovascular Diseases for General Physi-  
cians  
March 23 George E. Fahr Lecture; "Some Pitfalls in the Care of Cardiacs;"  
Dr. Samuel A. Levine, Boston; Owre Amphitheater; 8:15 p.m.

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### Continuation Course

The University of Minnesota will present a Conference on Sterility and Associated Problems of Reproduction for Physicians from February 18 to 20, 1954, at the Center for Continuation Study. The Conference, which has been designed to meet the needs of those physicians who are frequently consulted by infertile couples, will take up this problem from a number of standpoints. Medical and gynecological procedures in the diagnosis and management of a sterility problem will be stressed. In addition, fertility control and genetic aspects of infertility will be considered, and adoption procedures will be the subject of a panel discussion. Guest speaker will be Dr. Alan F. Guttmacher, Director, Department of Obstetrics and Gynecology, The Mount Sinai Hospital, and Clinical Professor of Obstetrics and Gynecology, Columbia University, New York City, a recognized authority in this field. The Conference will be presented under the direction of Doctors John L. McKelvey, Professor and Head, and Louis L. Freidman, Clinical Instructor of the Department of Obstetrics and Gynecology of the University of Minnesota Medical School.

\* \* \*

### Student-Faculty Dance

An All Medical School Dance sponsored by the Medical Interfraternity Council will be held at the Golden Valley Country Club on Saturday, February 27, beginning at 9:00 p.m. Students in charge of planning the dance have promised an excellent orchestra, and a pleasant evening is in store. All members of the student body and faculty are urged to attend. Profits from the dance will be donated to the Minnesota Medical Foundation.

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### FACULTY NEWS

Dr. David Glick, Professor of Physiological Chemistry, has been invited by the

Royal Caroline Medico-Surgical Institute of Sweden to lecture in Stockholm on Quantitative Histochemical Studies on the Adrenal and The Nature and Role of the Hyaluronidase Inhibitor in Human Serum in Health and Disease. Dr. Glick will leave early in March for Copenhagen to spend a week at the Carlsberg Laboratory before going on to Stockholm where he will spend two weeks at the Institute for Physical Cell Research.

Dr. Ancel Keys, Professor and Director, Laboratory of Physiological Hygiene, recently spoke on "Coronary Heart Disease" and "Living with Coronary Heart Disease" in a series of radio talks on "Your Heart" sponsored by the Minnesota Heart Association. This series is being broadcast by Station KUOM, Minneapolis.

Dr. Wallace D. Armstrong, Professor and Head, Department of Physiological Chemistry, attended a conference on "Recent Advances in the Study of the Structure, Composition, and Growth of Mineralized Tissue" which was sponsored by the New York Academy of Sciences on January 22. He presented a paper entitled "Radio Tracer Studies of Hard Tissues."

Dr. Jerome T. Syvertson, Professor and Head, Department of Bacteriology and Immunology, and Dr. William F. Scherer, Assistant Professor, attended a symposium on tissue cultures at the New York Academy of Sciences from January 14 to 16.

The Medical School was recently host to a distinguished visitor, Dr. H. W. Kosterlitz of the Department of Pharmacology, Harvard Medical School. On January 21 he presented a special lecture entitled "Changes in the Maternal Organism with Particular Reference to the Liver."

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Publications of the Medical School Faculty

- Gutmam, H. R. and Peters, J. H.: The Effect of 2-Acetylaminofluorene on Growth and Composition of the Liver of the Rat. *Cancer Res.*, 13: Dec., 1953.
- Halberg, F.; Symposium ueber Probleme des Hypophysen-Nebennierenrindensystems. (Springer-Verlag; Berlin, Goettingen, Heidelberg. Apr., 1953.
- Keys, Ancel: Clinical Aspects of the Atherosclerosis Problem. *International Forum*, 1: Dec., 1953.
- Keys, Ancel: Prediction and Possible Prevention of Coronary Disease. *Am. J. Public Health*, 43: 1399, 1953.
- McCannel, M.A.: Red Sore Eye Emergency Care. *Minn. Med.*, 36: 1046, 1953.
- Park, W. E.: Industrial Medicine - The Industrial Nurse (Part I). *Bull. Hennepin Co. Med. Soc.*, 24: Nov., 1953.
- Park, W. E.: Industrial Medicine - The Industrial Nurse (Part II). *Bull. Hennepin Co. Med. Soc.*, 24: Dec., 1953.
- Schwartz, S., Keprios, M., and Schmid, Rudi: Experimental Porphyria. II. Type Produced by Lead, Phenylhydrazine and Light. *Proc. Soc. Exp. Biol. Med.*, 79: 463, 1952.

III.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL  
WEEKLY CALENDAR OF EVENTS

Physicians Welcome

February 8 - 13, 1954

Monday, February 8

Medical School and University Hospitals

- 9:00 - 9:50 Roentgenology-Medicine Conference, L. G. Rigler, C. J. Watson and Staff; Todd Amphitheater, U. H.
- 9:00 - 10:50 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; W-612, U. H.
- 10:00 - 12:00 Neurology Rounds; A. B. Baker and Staff; Station 50, U. H.
- 11:30 - Tumor Conference; Doctors Hitchcock, Moore, and Stenstrom; Todd Amphitheater, U. H.
- 11:30 - 12:30 Physical Medicine Seminar; Poliomyelitis; Miland E. Knapp; Heart Hospital Auditorium.
- 12:15 - Obstetrics and Gynecology Journal Club; Staff Dining Room, U. H.
- 12:30 - 1:30 Physiology Seminar; Studies on Actomyosin of Heart Muscle in Normal Dogs and in Dogs with Experimental Congestive Heart Failure; Ellis S. Benson; 214 Millard Hall.
- 1:30 - 2:30 Pediatric-Neurological Rounds; R. Jensen, A. B. Baker and Staff; U. H.
- 1:30 - 3:30 Dermatology Hospital Rounds; H. E. Michelson and Staff; Dermatology Histopathology Room, M-434, U. H.
- 4:30 - Infectious Disease Rounds; Sta. 43, U. H.
- 4:30 - Public Health Seminar; A Physician's Participation in a School Health Program; Donald Dukelow; 15 Owre Hall.
- 5:00 - 6:00 Physiology-Surgery Conference; Todd Amphitheater, U. H.
- 5:00 - 6:00 Urology-Roentgenology Conference; C. D. Creevy, O. J. Baggenstoss, and Staff; Eustis Amphitheater.

Ancker Hospital

- 8:30 - 10:00 Tuberculosis and Chest Conference; Auditorium.
- 2:00 - 3:00 Surgery Journal Club; Classroom.

Minneapolis General Hospital

- 9:30 - Pediatric Rounds; Eldon Berglund; Newborn Nursery, Station C.
- 10:30 - 12:00 Medicine Rounds; Thomas Lowry; Sta. F.
- 11:00 - Orthopedic and Fracture Rounds; Drs. John Moe and Arthur Zierold; Sta. A.
- 11:00 - Pediatric Rounds; Erling Platou; Station K.

Monday, February 8 (Cont.)

Minneapolis General Hospital (Cont.)

- 12:30 - Surgery Grand Rounds; Dr. Zierold; Sta. E.
- 1:30 - 2:30 Tuberculosis Conference; J. A. Myers; Sta. M.
- 2:00 - Pediatric Rounds; Stations I and J.

Veterans Administration Hospital

- 9:30 - Infectious Disease Rounds; Drs. Hall, Zinneman, Lubin and Sherman.
- 1:30 - Cardiac Conference; Drs. Ferman, Smith, Hoseth, and Wexler; Conference Room, Bldg. I; Rounds immediately following conference.

Tuesday, February 9

Medical School and University Hospitals

- 9:00 - 9:50 Roentgenology-Pediatric Conference; L. G. Rigler, I. McQuarrie and Staff; Eustis Amphitheater, U. H.
- 12:30 - 1:30 Physiology 114C -- Respiration; E. B. Brown; 129 Millard Hall.
- 12:30 - Bacteriology Seminar; Immobilization Test of Treponema Pallidum; Del Rose Dubbs; Recent Methods in Bacterial Psychology; E. C. Dick; 214 Millard Hall.
- 12:30 - 1:20 Pathology Conference; Autopsies; J. R. Dawson and Staff; 102 I. A.
- 3:30 - General Physiology-Biophysics Seminar; 323 Zoology Building.
- 3:30 - Pediatric Seminar; The Endotoxins of Gram-negative Bacteria; Lewis Thomas; Sixth Floor, U. H.
- 4:00 - 5:00 Pediatric Rounds on Wards; I. McQuarrie and Staff; U. H.
- 4:30 - 5:30 Clinical-Medical-Pathological Conference; Todd Amphitheater, U. H.
- 5:00 - 6:00 X-ray Conference; Presentation of Cases by University Hospitals Staff; Eustis Amphitheater, U. H.

Ancker Hospital

- 9:00 - 10:00 Medical X-ray Conference; Auditorium.

Minneapolis General Hospital

- 10:00 - Psychiatry Grand Rounds; R. W. Anderson; Station H.
- 10:00 - Cardiac Rounds; Paul F. Dwan; Classroom, Station I.
- 10:00 - Pediatric Rounds; Spencer F. Brown; Stations I and J.
- 11:30 - 12:30 Neurology-Neurosurgery Conference; Classroom, Station M.
- 12:30 - 2:30 Dermatology Rounds on Clinic; Carl W. Laymon and Staff.
- 12:30 - ECG Conference; Boyd Thomes and Staff; 302 Harrington Hall.
- 1:00 - Tumor Clinic; Drs. Eder, Coe, and Lipschultz; Classroom.
- 3:00 - 5:00 Child Psychiatry Conference; Jack Wallinga; Station I.

Tuesday, February 9 (Cont.)

Veterans Administration Hospital

- 7:30 - Anesthesiology Conference; Conference Room, Bldg. I.  
8:45 - Surgery Journal Club; Conference Room, Bldg. I.  
9:30 - Surgery-Pathology Conference; Conference Room, Bldg. I.  
10:30 - Surgery-Tumor Conference; L. J. Hay, J. Jorgens and Donn Mosser;  
Conference Room, Bldg. I.  
1:00 - Review of Pathology, Pulmonary Tuberculosis; Conference Room, Bldg. I.  
1:30 - Combined Medical-Surgical Chest Conference; Conference Room, Bldg. I.  
2:00 - 2:50 Dermatology and Syphilology Conference; H. E. Michelson and Staff;  
Bldg. III.  
4:00 - Thoracic Surgery Problems; Conference Room, Bldg. I.

Wednesday, February 10

Medical School and University Hospitals

- 8:00 - 9:00 Roetgenology-Surgical-Pathological Conference; Paul Lober and L. G.  
Rigler; Todd Amphitheater, U. H.  
11:00 - 12:00 Pathology-Medicine-Surgery-Pediatrics Conference; Todd Amphitheater,  
U. H.  
12:30 - 1:30 Physiology 114B -- Transport Seminar; Nathan Lifson and M. B. Visscher;  
214 Millard Hall.  
12:30 - 1:20 Radioisotope Seminar; The Application of Radioactive Techniques to  
Immunologic Reactions; O. J. Mira; Underground Cobalt Unit, U. H.  
1:00 - 2:00 Dermatology Clinical Seminar; F. W. Lynch; 300 North Clinic.  
1:30 - 3:00 Pediatric Allergy Clinic; Albert V. Stoesser and Lloyd Nelson; W-211,  
U. H.  
3:30 - 4:30 Dermatology Pharmacology Seminar; J. D. Krafchuk; 3rd Floor Conference  
Room, Heart Hospital.  
4:00 - Medicine-Physiology Cardiovascular Conference; Medicine and Physiolo-  
gy Staffs; Heart Hospital Theater.  
4:30 - 5:50 Dermatology Infectious Disease Seminar; J. D. Krafchuk; 3rd Floor Con-  
ference Room, Heart Hospital.  
5:00 - 5:50 Urology-Pathological Conference; C. D. Creevy and Staff; Eustis Amphi-  
theater, U. H.  
5:00 - 6:00 Residents' Lecture; Small Bowel; Jack Freidman; Todd Amphitheater, U. H.  
5:30 - 7:30 Dermatology Journal Club and Discussion Group; Hospital Dining Room.  
7:30 - 9:30 Dermatology Pathology Seminar; Review of Interesting Slides of the  
Week; Robert W. Goltz; Todd Amphitheater, U. H.

Ancker Hospital

- 8:30 - 9:30 Clinico-Pathological Conference; Auditorium.  
12:30 - 1:30 Medical Journal Club; Library.

Wednesday, February 10 (Cont.)

Minneapolis General Hospital

- 8:30 - 9:30 Obstetrical and Gynecological Grand Rounds; William P. Sadler and Staff; Station C.
- 9:30 - Pediatric Rounds; Max Seham; Stations I and J.
- 10:30 - 12:00 Medicine Rounds; Thomas Lowry and Staff; Station D.
- 11:00 - Pediatric Seminar; Arnold Anderson; Classroom, Station I.
- 11:00 - Pediatric Rounds; Erling S. Platou; Station K.
- 12:15 - Pediatric Staff Meeting; Classroom, Station I.
- 1:30 - Visiting Pediatric Staff Case Presentation; Classroom, Station I.

Veterans Administration Hospital

- 8:30 - 10:00 Orthopedic X-ray Conference; E. T. Evans and Staff; Surgical Conference Room, Bldg. 43.
- 8:30 - 12:00 Neurology Rehabilitation and Case Conference; A. R. Baker.
- 9:00 - Gastro-Intestinal Rounds; Drs. Wilson, Zieve, Hay, Brakel, Nesbitt and O'Leary.
- 12:30 - Medical Journal Club; Doctors' Dining Room.
- 12:30 - X-ray Conference; J. Jorgens; Conference Room, Bldg. I.
- 1:30 - 3:00 Metabolic Disease Conference; Drs. Flink, Schultz and Brown.
- 7:00 p.m. Lectures in Basic Science of Orthopedics, Conference Room, Bldg. I.

Thursday, February 11

Medical School and University Hospitals

- 9:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; E-221, U. H.
- 11:00 - 12:00 Cancer Clinic; K. Stenstrom, A. Kremen and B. Zimmermann; Todd Amphitheater, U. H.
- 12:00 - 1:00 Medical Journal Club; Filter Paper Electrophoresis; W. Warwick; 116 Millard Hall.
- 12:30 - Physiological Chemistry Seminar; Acetylcholine Metabolism in Brain; John Logothetis; 214 Millard Hall.
- 1:30 - 4:00 Cardiology X-ray Conference; Heart Hospital Theatre.
- \*3:00 - 5:30 Open House and Tour of Building; Elias P. Lyon Laboratories
- 5:00 - 6:00 Radiology Seminar; Bone Dysplasia; Fibrous Dysplasia; Bernard Kleppel; Eustis Amphitheater, U. H.
- \*6:30 p.m. Lyon Laboratories Dedication Banquet; Main Ballroom, Coffman Memorial Union; Speakers: President J. L. Morrill, Dr. C. J. Van Slyke, U. S. Public Health Service; Mr. Mefford Runyon, American Cancer Society; and Dean H. S. Diehl.

\*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.

Thursday, February 11 (Cont.)

Ancker Hospital

8:00 - 10:00 Medical Grand Rounds; Auditorium.

Minneapolis General Hospital

9:30 - Neurology Rounds; Heinz Bruhl; Station I.  
10:00 - Pediatric Rounds; Spencer F. Brown; Station K.  
10:00 - Psychiatry Grand Rounds; J. C. Michael and Staff; Sta. H.  
11:30 - 12:30 Clinical Pathological Conference; John I. Coe; Classroom.  
12:30 - 2:30 Dermatology Rounds and Clinic; Carl W. Laymon and Staff.  
1:00 - Fracture - X-ray Conference; Drs. Zierold and Moe; Classroom.  
1:00 - House Staff Conference; Station I.

Veterans Administration Hospital

8:00 - Surgery Grand Rounds; Conference Room, Bldg. I.  
8:00 - Surgery Ward Rounds; Lyle Hay and Staff; Ward 11.  
11:00 - Surgery-Roentgen Conference; J. Jorgens; Conference Room, Bldg. I.  
1:00 - 3:00 Bacteriology Conference; Staphylococcus; Robert Wise; Conference Room, Bldg. I.  
4:00 - Combined Medical-Surgical Conference; Conference Room, Bldg. I.

Friday, February 12 (HOLIDAY)

Saturday, February 13

Medical School and University Hospitals

7:45 - 8:50 Orthopedic X-ray Conference; W. H. Cole and Staff; M-109, U. H.  
9:00 - 10:30 Pediatric Grand Rounds; Eustis Amphitheater, U. H.  
9:00 - 11:50 Medicine Ward Rounds; C. J. Watson and Staff; Heart Hospital Amphitheater.  
9:15 - 10:00 Surgery-Roentgenology Conference; L. G. Rigler, J. Friedman, Owen H. Wangenstein and Staff; Todd Amphitheater, U. H.  
10:00 - 11:30 Surgery Conference; Todd Amphitheater, U. H.  
10:00 - 12:50 Obstetrics and Gynecology Grand Rounds; J. L. McKelvey and Staff; Station 44, U. H.

Ancker Hospital

8:30 - 9:30 Surgery Conference; Auditorium.

Minneapolis General Hospital

8:00 - Urology Staff Conference; T. H. Sweetser; Main Classroom.  
9:00 - Psychiatry Grand Rounds; R. W. Anderson; Sta. H.  
11:00 - 12:00 Medical - X-ray Conference; O. Lipschultz, Thomas Lowry and Staff; Main Classroom.

Veterans Administration Hospital

8:00 - Proctology Rounds; W. C. Bernstein and Staff; Bldg. III.  
8:30 - 11:15 Hematology Rounds; Drs. Hagen, Fifer, and J. Anderson.  
11:15 - 12:00 Morphology . . . Dr. Knoedler; Conference Room.