

Staff Meeting Bulletin
Hospitals of the » » »
University of Minnesota



Anesthesia in Chest Surgery

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William A. O'Brien, M.D.

I.

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL
CALENDAR OF EVENTS
 April 30 - May 5, 1945

No. 69Monday, April 30

- 9:00 - 10:00 Roentgenology-Medicine Conference; L. G. Rigler; C. J. Watson and Staff; Todd Amphitheater, U. H.
- 9:00 - 11:00 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; Interns Quarters, U. H.
- 12:30 - 1:30 Pathology Seminar; Chorionepithelioma of Testis; S. C. Peterson; 104 I. A.

Tuesday, May 1

- 9:00 - 10:00 Roentgenology-Pediatrics Conference; L. G. Rigler, I. McQuarrie and Staff; Eustis Amphitheater, U. H.
- 11:00 - 12:00 Urology Conference; C. D. Creevy and Staff; Main 515 U. H.
- 12:30 - 1:30 Pathology Conference; Autopsies; Pathology Staff; 104 I. A.
- 12:30 - 1:30 Physiology-Pharmacology Seminar; Autoxidation of Fats and Lipoxidase Activity; Ralph Holman; 214 M. H.
- 4:00 - 5:00 Physiological Pathology of Surgical Diseases; Physiology and Surgery Staffs; Todd Amphitheater, U. H.
- 4:00 - 5:30 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff; Station 54, U. H.
- 4:00 - 5:00 Pediatrics Grand Rounds; I. McQuarrie and Staff; W-205 U. H.
- 4:30 - 5:30 Ophthalmology Ward Rounds; Erling Hansen and Staff; E-534, U. H.
- 5:00 - 6:00 Roentgen Diagnosis Conference; M. E. Tucker and Harry Mixer, 515 U. H.

Wednesday, May 2

- 9:00 - 11:00 Neuropsychiatry Seminar; J. C. McKinley and Staff; Station 60; Lounge, U. H.
- 11:00 - 12:00 Pathology-Medicine-Surgery Conference; Chronic Glomerulonephritis; E. T. Bell, C. J. Watson, O. H. Wangensteen and Staff; Todd Amphitheater, U. H.
- 12:30 - 1:30 Pediatrics Seminar Physical Development; Dr. Bosma; W-205 U. H.
- 12:30 - 1:30 Physiological Chemistry Literature Review; Staff; 116 M. H.
- 4:30 - 5:30 Neurophysiology Seminar; The Problem of Re-education of the Central Nervous System on the Basis of Transplantation Experiments; J. P. Murphy; 214 M. H.

Thursday, May 3

- 9:00 - 10:00 Medicine Case Presentation; C. J. Watson and Staff; Todd Amphitheater, U. H.
- 12:30 - 1:30 Physiological Chemistry; Intermediary Metabolism of Carbohydrates; M. F. Utter; 116 M. H.
- 4:00 - 5:00 Pediatric Journal Club; Review of Current Literature; Staff; W-205 U. H.
- 4:30 - 5:30 Ophthalmology Ward Rounds; Erling Hansen and Staff; E-534, U. H.
- 4:30 - 5:30 Roentgenology Seminar; Spondylolisthesis Cases of the Familial Origin: Captain Daniel Fink; M-515 U. H.

Friday, May 4

- 9:00 - 10:00 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U.H.
- 10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; E-214 U. H.
- 10:30 - 12:30 Otolaryngology Case Studies; L. R. Boies and Staff; Out-Patient Otolaryngology Department, U. H.
- 11:45 - 1:15 University of Minnesota Hospitals General Staff Meeting; Actinomyco-
sis; Fred Kolouch; Powell Hall, Recreation Room.
- 1:00 - 2:30 Dermatology and Syphilology; Presentation of Selected Cases of the
Week; Henry E. Michelson and Staff; W-206 U. H.
- 1:30 - 3:00 Roentgenology-Neurosurgery Conference; H. O. Peterson, W. T. Peyton
and Staff; Todd Amphitheater, U. H.

Saturday, May 5

- 8:00 - 9:00 Surgery Journal Club; O. H. Wangensteen and Staff; M-515 U. H.
- 9:00 - 10:00 Pediatrics Grand Rounds; I. McQuarrie and Staff; Eustis Amphitheater,
U. H.
- 9:15 - 10:30 Surgery Roentgenology Conference; O. H. Wangensteen, L. G. Rigler and
Staff; Todd Amphitheater, U. H.
- 9:00 - 10:00 Medicine Case Presentation; C. J. Watson and Staff; M-515 U. H.
- 10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; E-221 U. H.
- 11:30 - 12:30 Anatomy Seminar; Studies with Nissl Stain; B. Campbell; 226 I. A.

II. ANESTHESIA FOR OPEN CHEST SURGERY

Frank Cole

Owing to the many problems imposed by the surgical opening of the chest, both surgery and anesthesia in this field have only recently begun to make progress comparable with that in other regions of the body. The problems imposed by intrathoracic surgery have been well-defined by several investigators^{1,2,3,4,5}. One of the most important, the surgical pneumothorax, has always been the bugbear of both the surgeon and the anesthetist. The responsibilities of the anesthetist have been stated repeatedly to include his ability to inflate, at will, both sides of the chest. Devices to accomplish this effect have included the use of alternating pressure operating rooms; endotracheal insufflation (respiration without respiratory movements); and finally the use of the wide bore endotracheal tube for endotracheal inhalation. Endotracheal intubation has been stated by many modern workers^{5,6,7,8,9,10}, to be essential in open chest anesthesia. The advantages obtained by the use of the endotracheal tube are many and include, in this field, the following:

1. It assures, in the absence of kinking or twisting of the tube, an airway at all times.

2. It renders artificial respiration simple.

3. It prevents the patient from straining or coughing to a large extent; that is, he is unable to build up high intrabronchial pressures, as the glottis cannot be closed.

4. It makes possible and easy the repeated aspirations of the trachea that are so essential to proper anesthesia for "wet-lung" surgery.

5. It keeps oxygen and anesthetic gases out of the stomach, a great advantage when positive pressure and controlled respirations are employed.

6. It permits aspiration of the phar-

ynx without interrupting the anesthesia.

7. It reduces dead space in an individual whose facility for oxygenation is already reduced.

8. It prevents (with a tight fit) passage of secretions into the trachea.

9. It allows the use of positive pressure.

10. It helps to create a gas-tight system.

11. It makes possible surgery in the prone and lateral positions.

12. It saves expense; of great importance in the use of cyclopropane, considered by many^{6,11,12} to be the ideal anesthetic agent in these procedures.

13. It produces flaccid and adequate respiration, and

14. Reduces bleeding, an important consideration in an operation associated with much blood loss.

15. It provides a means of introducing an adequate dose of the anesthetic agent.

16. It acts as a respiratory stimulant.

17. It allows controlled respiration.

18. It eliminates the necessity of holding the mask during the entire anesthesia, freeing the anesthetist's hands and eliminating the large leaks often present when holding the chin or fitting the face is difficult.

19. It eliminates the danger of trauma to the face by the mask pressure.

Endobronchial intubation has been suggested^{3,4,12}. The anesthetic mixture can be delivered to one main bronchus (one lung anesthesia) or a suction catheter may be placed in a main bronchus or in a lobe bronchus, while respiration takes place through an endotracheal tube.

Endobronchial anesthesia was introduced by Waters⁴. It is not widely used, as it is fraught with technical difficulties, time-consuming, and uncertain.

The inflatable cuff surrounding the endotracheal tube has been the subject of much discussion; its use is favored by many^{7,13}. Its effect is to seal off the space between the outside of the tracheal tube and the inside of the trachea and thus to insure a gas-tight system, a great advantage when positive pressure or controlled respirations are desired. Many workers^{8,14} have objected to its use. Its disadvantages are twofold. Sustained pressure in the cuff has been known to be followed by necrosis of the larynx; and it prevents the drainage of secretions down the trachea and into the pharynx, around the tracheal tube. This latter has been asserted by many to be of prime importance as contamination from the diseased lung to the sound lung is facilitated by the position generally employed for these procedures; the possibility of such contamination is naturally greater when secretions are dammed back by the inflated cuff. Some workers⁶ believe the use of the cuff to be optional.

The surgical pneumothorax imposes on the surgeon and anesthesiologist problems of reduced oxygenation, mediastinal flap, collapse of a lobe or lobes that may require re-expansion, and paradoxical respiratory movements on the operated side.

Other problems confronting the anesthesiologist and associated with intrathoracic surgery include the following:

1. The general health of these patients is often poor since they are commonly suffering from bronchiectasis or malignancy, and hypoxia.
2. Open-chest operations are often shocking procedures.
3. Both oxygen absorption and absorption of anesthetic gases are reduced before surgery; the latter often renders induction slow.
4. Unfortunately, the position that is ideal for the surgeon imposes a severe

handicap on the patient, who is usually placed in a lateral position, with the head down. This facilitates cross-contamination, as has been pointed out. The effect of the lateral position is to hamper the respiratory movements on the sound side¹. It has been demonstrated¹ that at least 35° of head-lowering is required to avoid inter-lung spread. The effect of the head down position, in half this amount, is to inhibit pulmonary exchange. Excessive Trendelenburg position fails to protect the apices from secretions in lower lobe bronchiectasis. It has been shown¹⁵ that the Trendelenburg position elevates the diaphragm and thereby lowers the functional residual air, causing atelectasis. These factors tend, in the intact chest, to raise intrapleural pressure, impairing respiration and impeding the return of blood to the heart.

5. Contamination of the sound lung has already been discussed.

6. Respiratory obstruction may develop due to the presence of pus or blood in the trachea and bronchi.

7. It is essential, in these procedures, that the patient not be allowed to cough or strain. It has been pointed out¹⁶ that coughing can spread contaminating material to the undiseased lung or lobes. It is constantly being pointed out by the surgeon that straining renders more difficult his already difficult work in so dangerous an area.

8. Finally, pneumothorax is attended by mechanical effects on the lungs, heart, and great vessels. The usual changes in intrathoracic pressure associated with normal respiration are here completely lacking.

9. The combined effects of lateral position, lowering the head¹⁷, and changes in intrathoracic pressure have been shown to favor the formation of interstitial pulmonary edema; this has been demonstrated repeatedly in this hospital, clinically and roentgenologically.

Many different drugs and varied techniques have been advocated by different anesthetists. Ether has been recommended as the drug of choice^{6,8,18}. Cyclopropane seems now to be the anesthetic agent most commonly used in lobectomies and pneumonectomies^{11,12}. Nitrous oxide, ethylene, pentothal and avertin (in combination with other drugs) have been used in the past. Regional anesthesia has been used by some^{18,19}. However, it is generally felt that the patient is better kept asleep for such procedures. Spinal anesthesia⁹ does not leave the cough reflex intact, as the chest is open; it renders bronchial suction and intubation difficult; its mortality figures are probably not good.

The carbon dioxide absorption technique is employed universally for intrathoracic surgery^{11,12}. The results of surgical pneumothorax have been discussed above; respiratory embarrassment, it has been stated²⁰, is often pronounced when the pleura is opened; the mediastinum at this time moves toward the intact side²¹, tending to collapse that lung, too. It has been our experience, however, that opening the pleura is associated with little change in the patient's circulatory and respiratory signs. Our technique includes a slight deepening of the anesthesia at the moment of opening the pleura and readiness to control the respirations immediately, but the patient is often allowed to breathe unassisted. Some authors^{2,4,22} have advised a preliminary pneumothorax, to avoid what they consider a severe embarrassment to the lungs and heart attending the opening of the pleural cavity on the operating table.

The use of positive pressure has been repeatedly recommended^{2,8}. It has been condemned by others⁷, as its effects have been shown to be injurious^{1,7,23,24}; increased pressure has been shown to cause (a) rise in venous pressure, (b) fall in blood pressure, (c) decrease in arterial and venous blood flow with lengthening of the circulation time, (d) slowing of respiration, (e) rupture of alveoli or mucous membrane²⁵, (f) straining and interference with ventilation and elimination of carbon dioxide, and (g) retarding of the entrance of blood into the right heart in cardiac patients. While controlled respir-

ations have occasionally been criticized⁹, the distinction between this technique and the use of positive pressure is not always accurately made. Controlled respirations are used routinely by some investigators^{5,16,26}. Its advantages are that it provides a smoother anesthesia; often eliminates straining; maintains better oxygenation in all procedures but pneumonectomy, and even here when the breathing is shallow. Its disadvantages are, aside from the danger of raising intrabronchial pressure, the tendency to spread infected material to normal lung tissue and the occasional inconvenience to the surgeon caused by the movement of the passively expanding lobe or lobes. Increasing the pressure on the airway, whether by the use of positive pressure or controlled respirations, is used to (a) prevent collapse of the sound lung; (b) reinflate collapsed areas; (c) demonstrate lines of demarcation; (d) stabilize the mediastinum; and (e) expand the collapsed lung at the time of closure.

The occurrence of reflexes coincident with surgical manipulation about the hilum is described throughout the literature^{1,6,7,14,18,27}. These reflexes, considered due to vagal stimulation, consist of irregular, jerky respirations; sudden periods of apnea; and marked circulatory disturbances, including bradycardia; they often occur at the time of clamping the bronchus. Intravenous atropine injections have been recommended at this time²⁷; many workers, however, advocate infiltration of the hilar region or vagus nerve with procaine^{1,14,18}. Occasionally the lower portion of the trachea and the main stem bronchus on the affected side are infiltrated; phrenic nerve block is practiced by some^{4,18}, should excessive diaphragmatic movements inconvenience the surgeon.

Finally, the matter of secretions must be dealt with by the anesthetist. The possibility of dissemination of infected material has been considered above. Secretions harrass the anesthetist by (a) partially or even completely obstructing the patient's respiratory passages, and (b) bringing about, by the necessity of repeated tracheal aspira-

tions and interruptions of the anesthesia, an at times too-light and an uneven anesthesia. It is a well-known fact that the bronchiectatic patient¹⁶ who exhibits no sputum preoperatively, even after postural drainage, may raise considerable amounts of it when general anesthesia is begun. Preoperative bronchoscopic drainage is advocated by some anesthetists^{10,14}. The diseased lobe may be like a sponge and discharge sputum whenever the surgeon manipulates it¹⁶.

Determinations of arterial blood oxygen in patients undergoing intrathoracic surgery^{28,29} have shown that (a) changes in these levels appear to be independent of the anesthetic agent used; (b) only in the presence of pulmonary suppuration was true hypoxia found, where it was found almost routinely; (c) the duration and type of intrathoracic surgery had no demonstrable effect on arterial blood oxygen levels; and (d) arterial blood oxygenation was normal for good risk patients and low for poor risk patients, regardless of the pathology.

The technique employed at the University of Minnesota Hospitals for open chest surgery includes:

1. Rapid induction, often by means of the use of an intravenous soluble barbiturate.
2. Endotracheal intubation, excepting in infants with tracheo-esophageal fistula.
3. The use of the inflatable cuff.
4. Cyclopropane.
5. Carbon dioxide absorption technique (circle type).
6. The use of controlled respirations in selected cases. It has been shown that there is very little blood flow through a collapsed lung, and it is our policy to let the patient breathe spontaneously when the pleura has been opened, as long as all circulatory and respiratory signs remain good. When respirations are controlled, manually exert-

ed pressures of 7 to 10 mm. Hg. are used.

7. No constant positive pressure.
8. Lateral, head-down position.
9. Frequent re-expansion of sound lobes or lung.
10. For wet-lung cases, frequent tracheal aspirations, at least every ten minutes.
11. Rapid recovery of the cough reflex.
12. The administration of ephedrine, desoxyephedrine, or EA-1 before terminating the anesthesia, to prevent the occurrence of what has been described as "cyclopropane shock."

It has been well said⁸ that "during critical periods...the anesthetist is easily the busiest man on the team."

The following table is a list of deliberate open chest surgery performed at these hospitals from January 1, 1935 to April 23, 1945. It does not include many cases in which the pleura is often inadvertently opened, as sympathectomy and nephrectomy.

	1935	1936	1937	1938	1939	1940	1941	1942	1943	1944	1945	Total
1. Anast. esophagus									2	1		3
2. Att. rem. pulm. embolus			1									1
3. Biopsy mediast. tumor							1		2			3
4. Cautery pneumonectomy		1										1
5. Cauteriz'n lung abscess		1										1
6. Decortication empy. cavity						1						1
7. Esophagectomy				2	1	1		2				6
8. Ex. hygroma chest									1	1		2
9. Ex. mediast. tumor					1	2		1	1	1	2	8
10. Ex. pericard. cyst							1					1
11. Ext. ca. esophagus			1		1	1						3
12. Intrathoracic thyroidectomy							1					1
13. Ligation esophagus						1		3	5	1	2	12
14. Lig. Pat. Duct. Art.					1	1	1	2	10	2	1	18
15. Mobilization esophagus					1	1						2
16. Pericardiectomy				1	1	2	2	1		1		8
17. Pneumonolysis		1	1			1						3
18. Pneumonectomy			2	2	2	1	2		6	8	3	26
19. Pulm. lobectomy	1		2	2	1	3	5	5	5	8	1	33
20. Rem. bullet from lung			1									1
21. Repair diaph. hernia			1	1	1	4		1	2	1	2	13
22. Transthoracic exploration			1		2	2		2		15	1	23
23. Transthoracic gastrectomy									3	1	1	5
24. Transthoracic gastrostomy										3		3
	—	—	—	—	—	—	—	—	—	—	—	—
Total	1	3	10	8	12	21	13	17	33	46	14	178
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References

1. Maier, H.
Responsibility of the Anesthetist in Reducing the Operative Complications of Thoracic Surgery.
Anes. 5,1:11-21 (Jan.) '44.
2. Magill, I.
Anesthesia in Thoracic Surgery, with Special Reference to Lobectomy.
Proc.Roy.Soc.Med.(Sect.of Anesth.) 29:643-653 (Apr.) '36.
3. Rovenstine, E.
Anesthesia for Intrathoracic Surgery: The Endotracheal & Endobronchial Techniques.
*Surg.,Gyn.,& Obst.*63:325-330 (Sep)'36.
4. Hewer, C. L.
Recent Advances in Anesthesia and Analgesia.
Blakiston Co., Philadelphia, '44.
5. Subcommittee on Anesthesia of Division of Medical Sciences, National Research Council: Fundamentals of Anesthesia.
Amer.Med.Assn.Press, 2nd ed., '44.
6. Wilkins, A. R.
Anesthesia in Esophageal Surgery.
Anes. 4,3:274-278 (May) '43.
7. Esten, B.
Anesthesia for Thoracic Surgery.
N.Y.State J.Med. 43,20:1980-1985 (Oct.15) '43.
8. Beecher, H.
Some Controversial Matters of Anesthesia for Thoracic Surgery.
J.Thoracic Surg. 10,2:202-219 (Dec)'40.
9. Lundy, J.
Clinical Anesthesia.
W. B. Saunders, Philadelphia, '42.
10. Guedel, A.
Inhalation Anesthesia.
Macmillan Co., N.Y., 118-119, '44.
11. Eversole, U. and Overholt, R.
Anesthesia in Thoracic Surgery.
*J.Thoracic Surg.*5:510-521 (June) '36.
12. Dunlop, J.
Anesthetic Practices in Thoracic Surgery.
Curr.Res.in Anes. & Anagl., 18:301-311 (Nov.) '39.
13. Gillespie, N.
Endotracheal Anesthesia.
U. of Wis. Press, '41.
14. Neff, W., Phillips, W. & Gunn, G.:
Anesthesia for Pneumonectomy in Man.
Anesthesiology 3,3:314-322 (May) '42.
15. Altschule, M.
The Significance of Changes in the Lung Volume & its Subdivisions during and after Abdominal Operations.
Anesthesiology 4,4:385-391 (July)'43.
16. Nosworthy, M. D.
Anesthesia in Chest Surgery, with Special Reference to Controlled Respiration and Cyclopropane.
Proc.Roy.Soc.Med. 34:479-506, Section of Anesthetics, (Apr.4) '41.
17. Greenberg, A., Visscher, M., Petersen, W. & Boyd, W.
The Cause of Death in Ruminants Held on their Backs.
J.Am.Vet.Med.Assn.,105,788:417-418, (Nov.) '42.
18. Beecher, H.
Some Current Problems in Anesthesia.
Surgery 8:125-163 (July)'40.
19. Bourne, W., Leigh, M. D., Inglis, A.N., and Howell, G.R.
Spinal Anesthesia for Thoracic Surgery.
Anes. 3,3:272-281 (May) '42.
20. Wood, D.
Anesthesia in Surgery of the Chest.
Curr.Res.in Anes.& Anagl. 13:260-262 (Nov.) '34.
21. Hewer, C. L.
Anesthesia in Thoracic Operations.
Curr.Res.in Anes.& Analg. 9:24-28 (Jan.) '30.

22. Wiggin, S. & Schultz, P.
Anesthetic Procedures in Thoracic Surgery.
Am.J.Surg. 54:4-17 (Oct.) '41.
23. Beecher, H., Bennett, H. S. & Bassett, D.
Circulatory Effects of Increased Pressure in the Airway.
Anes. 4,6:612-618 (Nov.) '43.
24. Barach, A.
Principles and Practice of Inhalational Therapy.
J. Lippincott Co., Phila. '44.
25. Thornton, T.F., Adams, W., & Livingstone, H.
Mediastinal and Subcutaneous Emphysema following Intratracheal Insufflation Anesthesia: Report of a Case.
Curr.Res.in Anes.& Analg. 23,5:177 (Sept.) '44.
26. Crafoord, C.
Pulmonary Ventilation and Anesthesia in Major Chest Surgery.
J.Thoracic Surg. 9:237-253 (Feb)'40.
27. Phelps, M.
The Role of the Alkaloids of the Belladonna Plants in Clinical Anesthesia.
Anes. 3,1:71-78 (Jan.) '42.
28. Thornton, T.F., Jr., Adams, W., Livingstone, H. & Wellman, V.
Clinical Investigation of Anoxia in Intrathoracic Operations.
Anes. 4,3:266-273 (May) '43.
29. Adams, W., Thornton, T., Carlson, A., and Livingstone, H.
Anoxia and Anesthesia in Intrathoracic Operations.
Surgery 13:859-879, '43.

GOSSIP

To Mankato, Minnesota, to speak to speak to the Red Cross Aides who had completed their training in nursing at one of the local hospitals. Celebration was held in the Auditorium of the Teachers College and a large crowd was present. This is the first class in Mankato which indicates the growing need for Aides for hospital service. When the Red Cross sent its first candidates into service most hospital administrators wondered how they could get along with them and now it is difficult to realize that some day we may have to get along without them. They have brought a fine spirit and understanding into hospital service. Metropolitan Life Insurance points out that in spite of extra demands made on women by the war, their health record continues to improve. ...On to Worthington to spend the day in speech and conference, as well as eating and sleeping. Before noon I bestir myself as I remember that I am to speak at a luncheon on community hospital planning. Worthington is one of the most rapidly growing centers in the state. Each medical group up to now has owned and operated its own hospital, but now the community is becoming interested in building one for all the people and all the physicians. In planning for the future, a certain number of hospital beds are necessary for acute illness and for the study of some chronic problems. Surprisingly good emergency surgery is done in most places. In addition to the acute problems, provisions must be made to house the elderly. Rest homes, old folks homes, etc. will some day be replaced by institutions which give long time chronic medical care, and also provide for living quarters for the aged. Ideally this institution should be erected near the acute care building, so that services may be extended as needed. Physicians' offices should also be located in the area with a tendency toward group practice rather than to individual practice. This does not mean that the individual practitioner is through as he has a greater place than ever in the medical care program. It seems foolish for the acute hospital, the chronic care unit, and the doctors' offices to duplicate diagnostic laboratory equipment. In the ideal medical center, laboratory services will be under pathologists and roentgenologists, (resident or rotating) which service will

also be used by the Public Health Department, the other unit in the plan. My ideas are given good attention, and good discussion follows. The proposal for better care for the chronically ill, and aged seems to attract more attention than the acute care plans, probably because this has become so urgent, and because so little planning has been done. The family has an important role in the care of the chronically ill as many times the patient's condition is made worse by family attitude. Study of blind children revealed that most of their problems were due to parental conflicts, and I am sure that many old people's problems are also made worse by family attitudes. Rehabilitation of the aged should be practiced as doing nothing is the most deadly occupation in the world. Proposal to keep all of us busy, sick and well, young and old, meets with the approval of the mental hygienists. The medical problems of the aged should have prompt scientific attention. In a course on this subject given just before the war at the Center for Continuation Study, operators of homes for the aged were moderately interested in their medical care problems of their patients, as these took second place to administrative problems...Our hopes for redistricting the state died with the last legislature, but even so, plans for public health units should go ahead. As I looked at the proposed site in Worthington, I could see a center in which the acute medical building, the chronic care building, the laboratory building, and the public health building could be located near the doctors' offices, so that cooperative efforts would be possible....I spoke at the school at 2:00 P.M. on Cancer. Youngsters like to hear the story about cancer mice, and also how they can help their parents with their cancer problems. The cancer story is one of action and the boys and girls like it on this account, as it involves a fight, with triumph or defeat. Engineers tell me that the cancer story has a special appeal to them as many have told me after listening to the story I must have had background in engineering, which is about as far from what I have had as anything I could imagine...To dinner with the Schades who have a lovely home on the local Gold Coast on the

lakeshore. The Harrisons live on one side and the Morks on the other. Fritz Schade is one of our most interesting graduates. His first course was in Business Administration, and from this he graduated to the position of calf buyer in South St. Paul. While in school he was one of our outstanding hockey players, and he likes to tell of the time his friends turned out to see him play with the University against the Millers in the professional league. A mighty cheer went up when the University team came on the ice, and Fritz who was goalie acknowledged the acclaim of his friends by falling over a rope in the excitement. In the summers Fritz was in charge of service in Glacier Park and after this he studied medicine. He has been a valuable addition to the Clinic in his town....In the evening to speak to the High School on cancer to one of the largest crowds I have ever seen in a community this size. Apparently the arrangements committee had outdone itself in getting to the people as in every store window I found myself looking out from between ladies' dresses, hardware, and beer signs. After the meeting, to B. O. Mork, Jr.'s home for good conversation until a late hour. My hosts carefully deposited me at the station 10 minutes after the train left, so I spent the night reading fiction and drinking coffee, until an early hour when the next train came along....The committee in charge of solicitation of funds for the Mayo Memorial has given me the pleasant task of telling the various medical classes about their University Medical School. Most of us remember the unpleasant things which happened to us, and by the time we were seniors, the list was rather impressive. It is difficult to believe your school is outstanding when you and your associates spend most of your time criticizing the place. Our teachers may assume ethereal form in later years, but certainly not at the present, so I am asking the students to come with me and look back to see what I see. Contrary to popular belief there isn't any rating of medical schools, which indicates that this one is 1, that one is 2, etc. There are groups of schools which certainly deserve consideration as the upper fourth, and Minnesota belongs here. Graduates of this school with few exceptions, become enthusiastic about us after they leave, as most of them do fairly well because of our methods of training and selection. This gives Minnesota a good name in most places. In one hospital we apparently never have recovered from the antics of a group of interns who came from this school. It is not a secret any more, but the medical students from this University who took the army qualifying examinations ranked first among the schools. This was the reason that the Surgeon General came out here to see what it was all about. A few years ago the late Dr. Henrici in looking over the results of arts college examination of pre-medics, found the three schools with the highest ranking students were Harvard, Yale, and Minnesota. Our faculty is fairly well known and certainly it would be difficult to find a place on the globe where the "Wagenstein" method is not used. One of our admirers on the west coast insists that this area is noted for 3 things, the Ice Follies, the Center for Continuation Study, and the Department of Riglerology. Few ads of medical books fail to include as one of the contributors, Doctors Watson or Spink, and so on it goes through the whole staff. I was once given the assignment of determining which groups at Minnesota were outstanding. I found that the department of Anatomy, and the Group working on small grains and their development in the Farm School were our outstanding units. There isn't a department in the school which is not well and favorably known, and all of this in a place which is distinctly off the beaten path. It is true many people mix us up with the Mayo Clinic, and once I was asked about our school by a man who said, "University of Minnesota, you're out in Wisconsin, aren't you?" We need new buildings. Buildings do not make an institution, as we were informed at our little country school one night when we wanted inside plumbing for the children. One farmer stood up and said that he had a nephew taking medicine at Johns Hopkins which was quite a good school without having outstanding buildings. That was quite an argument to meet with our little project for our one room school. A good place to work does make a difference. We need space for graduate training. The first 90 questionnaires returned by men in service from Minnesota from internships indicated that 89 wanted graduate training, and one planned to go into practice. A school remains good only as long as there is an urge to hold its place in the sun.