

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



Curare

INDEX

	<u>PAGE</u>
I. CALENDAR OF EVENTS . . . . .	357 - 358
II. USE OF CURARE IN ANESTHESIA . . . . .	
. . . . . Frank Cole . . . . .	359 - 364
III. GOSSIP . . . . .	365

---

Published for the General Staff Meeting each week  
during the school year, October to June, inclusive.

Financed by the Citizens Aid Society,  
Alumni and Friends.

William A. O'Brien, M.D.

I.

## UNIVERSITY OF MINNESOTA MEDICAL SCHOOL

## CALENDAR OF EVENTS

No. 24

May 8 - May 13

Visitors Welcome

Monday, May 8

- 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 Pediatrics Seminar; Lymphatic Participation in Cutaneous Phenomena, Dr. Pennington, W-205 U. H.
- 12:30 - 1:30 Pathology Seminar; Some Comparisons Between Mouse Mammary and Human Breast; R. A. Huseby, 104 I. A.
- 4:00 - Preventive Medicine and Public Health Seminar; Bedside or Visiting Nursing and Public Health Nursing, Definitions and Scope; Ruth B. Freeman, 6th Floor, H. S. Lounge.

Tuesday, May 9

- 8:00 - 9:00 Surgery Journal Club; O. H. Wangensteen and Staff, Main 515 U. H.
- 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; Physical and Psychological Deterioration in Starvation; Ancel Keys, 214 M. H.
- 4:30 - 5:30 Obstetrics and Gynecology Conference; J. L. McKelvey and Staff, Station 54 U. H.
- 4:00 - 5:00 Podiatric Grand Rounds; I. McQuarrie and Staff, W-205 U. H.
- 5:00 - 6:00 Roentgen Diagnosis Conference; H. O. Peterson, M-515 U. H.

Wednesday, May 10

- 9:00 - 11:00 Neuropsychiatry Seminar; J. C. McKinley and Staff, Station 60 Lounge, U. H.
- 10:30 - 12:30 Otolaryngology Case Studies; Out-Patient Ear, Nose and Throat Department; L. R. Boies and Staff.
- 11:00 - 12:00 Pathology-Medicine-Surgery Conference; Coronary Thrombosis, Diabetes Mellitus; E. T. Bell, C. J. Watson, O. H. Wangensteen, and Staff, Todd Amphitheater, U. H.

- 12:30 - 1:20 Physiological Chemistry Journal Club; Current Literature Reviews; Staff, 116 M. H.
- 4:00 - 5:00 Obstetrics and Gynecology Journal Club, J. L. McKelvey and Staff, Station 54, U. H.
- 4:30 - 5:30 Neurophysiology Seminar; Physiological Factors Determining the Sensitivity of the Brain to Anoxia; Loren Thompson; 113 M. S.

Thursday, May 11

- 9:00 - 10:00 Medicine Case presentation; C. J. Watson and Staff, Todd Amphitheater, U. H.
- 10:00 - 12:00 Medicine Rounds; C. J. Watson and Staff, East 214 U. H.
- 12:30 - 1:30 Physiology Chemistry Seminar; The Use of Heavy Isotopes as Tracers; H. G. Wood, 116 M. H.
- 4:30 - 5:30 Bacteriology Seminar; Report of New York Meetings, "Antibiotics," 113 M. S.
- 5:00 - 6:00 Roentgenology Seminar; Reviews of Recent Radiological Literature; Staff, M-515, U. H.

Friday, May 12

- 9:00 - 10:00 Medicine Grand Rounds; C. J. Watson and Staff; Todd Amphitheater, U. H.
- 8:30 - 10:00 Pediatrics Grand Rounds; I. McQuarrie and Staff
- 10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff; East 214 U. H.
- 11:45 - 1:15 University of Minnesota Hospital General Staff Meeting; Survival of Transfused Red Blood Cells; E. B. Flink and K. B. Skubi, Powell Hall Recreation Room
- 1:30 - 2:30 Medicine Case Presentation; C. J. Watson and Staff, Eustis Amphitheater
- 1:00 - 2:30 Dermatology and Syphilology; Presentation of selected cases of the week; Henry E. Michelson and Staff; W-306 U. H.
- 1:30 - 3:00 Roentgenology-Neurosurgery Conference; H. O. Peterson, W. T. Peyton, and Staff, Todd Amphitheater, U. H.

Saturday, May 13

- 9:00 - 10:00 Medicine Case Presentation, C. J. Watson and Staff, Main 515 U. H.
- 9:15 - 11:30 Surgery-Roentgenology Conference; O. H. Wangenstein, L. G. Rigler, and Staff, Todd Amphitheater, U. H.
- 10:00 - 12:00 Medicine Ward Rounds; C. J. Watson and Staff, E-214 U. H.
- 11:30 - 12:30 Anatomy Seminar; Bone Changes in Unerupted and Erupted Teeth; C. H. Morningstar; Symptomatology of Herpes Simplex Infection in Rabbits; Robert Good, I. A. 226

## II. USE OF CURARE IN ANESTHESIA

Frank Cole

The term "Anesthesia" was originally used to mean relief from pain, but modern technical usage of the word confers on it the implication of the muscular relaxation that facilitates many difficult abdominal surgical procedures. This relaxation is usually produced by deepening the anesthesia, bringing about a higher concentration of the anesthetic agent in the blood. It has more recently been obtained by the use of "combined anesthesia," or "balanced anesthesia," wherein the patient is put to sleep after the required relaxation has been accomplished by regional nerve block, usually spinal (subarachnoid, subdural). In this series of 100 cases, the relaxation of abdominal muscles was obtained by the use of curare, following the anesthetization of the patient with a general anesthetic agent, cyclopropane being used in all but two cases. Curare was often used after a spinal nerve block had been done and the patient anesthetized, but where sufficient time had elapsed to permit the lessening or actual disappearance of the spinal effect.

Obtaining relaxation and anesthesia by the use of one drug, an inhalant, requires a higher concentration of the agent in the inspired atmosphere and in the blood; it imposes on the patient the penalties of an anesthesia deeper than is necessary to obtain merely anesthesia. Where the relaxation is provided by another means, whether it be the production of regional analgesia or the use of curare, a lighter anesthesia may be maintained, which should, theoretically, better the patient's operative and post-operative course.

Curare is obtained by brewing the various parts of several species of the *Strychnos* genus. Commercially, it has hitherto been available as a dark brown, shiny, resinous substance. Intocostrin, the Squibb extract used in this series, is a clear, transparent, amber liquid, packaged in 5 c.c. rubber-stopped ampules, containing a 2% sterile solution of a

standard drug. The activity of Intocostrin is due almost entirely to the presence of a crystallizable substance, d-tubocurarine chloride, a solution of which is about to become available for experimental use.

The early history of curare consists of its use by South American Indians in hunting and possibly in fighting, and its employment in the physiological laboratory. Hoffman administered curare, unsuccessfully, in the treatment of tetanus, in 1879; he was able to control the seizures, but not without severe respiratory depression, for which he performed tracheotomy and artificial respiration. Hoche used it to treat tetany in 1894; and it was used by L. B. Cole in 1934, by Mitchell in 1935, and by West in 1936, in the treatment of tetanus. Burman administered curare in 1939, in treating spastic states. It was first used in its present form by Bennett, in 1940, for the prevention of serious injuries often encountered in convulsive shock therapy in psychiatry. Griffith, in 1942, reported its first use in anesthesia; it was his practice to give single doses for difficult abdominal closures. Cullen, in 1943, was the first to report a series of cases dealing with the use to which it has since been put at this hospital. The newness of the use of this drug in man is exemplified by such statements in the 1942 printing of Goodran and Gilman's "The Pharmacological Basis of Therapeutics" as, "Curare is an important pharmacological tool for laboratory investigations; but as yet it has no well-established therapeutic uses"; and, "Curare and its alkaloids have no valid, well-established clinical uses."

The curare effect is the interruption of nerve impulses at the myoneural junction, so that the muscle will respond neither to injected acetylcholine nor to stimulation of its nerve. The action is entirely peripheral, so that a nerve bathed in curare will still conduct impulses. The curare effect, neutralization of the acetylcholine reaction, the fundamental neuromuscular stimulation mechanism, has been shown to be inhibited by prostigmine; prostigmine is known to

inhibit choline esterase, which, in turn, destroys acetylcholine, and thus to restore the acetylcholine preponderance at the myoneural junction.

Muscles are affected in the following order; first, those supplied by cranial nerves, followed by those of the trunk and extremities, and finally those of respiration; the diaphragm is the last muscle to be paralyzed. Subjectively, the effects of curare on an unanesthetized, unpremedicated patient are, in the order of appearance, weakness of the eyelids, strabismus with diplopia, weakness of throat and jaw muscles with inability to swallow or to cough, inability of the patient to raise himself, weakness of arms and legs, and finally respiratory paralysis. Recovery occurs, as in a too high spinal block, in the reverse order, so that the diaphragm and the intercostal muscles are the first to regain their function. Under anesthesia, the only effect seen with a proper dose is the immediate relaxation of the abdominal muscles; with a larger dose, respiratory depression. The incidence of laryngospasm is believed to be smaller when curare has been given; endotracheal intubation may be facilitated by its use, and curare may be used in the treatment of laryngospasm.

Substituting curare for the spinal block usually employed in conjunction with cyclopropane anesthesia is of some advantage in avoiding the blood pressure fall commonly seen in spinal analgesia. No significant blood pressure changes were found in the entire series. It eliminates, also, the headache, nausea and vomiting, and many other untoward signs and symptoms complicating subarachnoid nerve root block, as well as the possibility of permanent damage to the spinal cord or spinal nerves themselves, rare but dangerous complications. It renders unnecessary the psychic trauma attending the performing of this block on a conscious, often apprehensive, patient.

Curare cannot be used as a substitute for spinal analgesia, in the conscious patient, as it is less effective in producing relaxation when used without anesthesia or preanesthetic medication; and it

is in no way an anesthetic drug, but simply a muscle paralyzer.

Two absolute contraindications for the use of curare are myasthenia gravis and the inability of the anesthetist to perform artificial respiration. The anesthetist must be definitely convinced of his or her ability, before administering curare, to care, by performing artificial respiration, for the respiratory depression that may ensue, and is to be so convinced only, before injecting this drug, by actually inflating the anesthetized patient's lungs. While the physiological antidote for a toxic dose of curare is physostigmine or prostigmine, one c.c. of a 1:2000 solution of the latter being injected intravenously, neither of these drugs was used in the entire series, artificial respiration being easily performed and proving quite satisfactory; controlled breathing is a necessary part of the anesthetist's armamentarium. Artificial respiration is best carried out here, as in any operating-room situation where it is demanded, by intermittent manual compression of the breathing bag on a gas machine, using either a tight fitting face mask or an endotracheal tube.

Curare is partly destroyed by the liver and in part eliminated unaltered by the kidney. A relative contraindication for the use of this drug is the presence of impaired renal function, which might serve to heighten the effect of an otherwise harmless dose.

The patient's age, vigor, weight, and depth and rate of respirations were considered in calculating the dose. Based on weight alone, doses of one milligram per kilogram, and of one-half to two-thirds of a milligram per pound of body weight have been used. In this connection, it may be mentioned that larger initial doses were used in the first half of the cases in this series than in the second, many 100 mg. doses being given at the start of the series; at present, doses of 60 to 70 mg. are commonly given at the beginning of an operation. Doses of 40 to 60 mg. were used to maintain relaxation when the effect of the first injection had disappeared.

All injections were intravenous and were made rapidly, no single injection requiring more than ten seconds. The initial injection in each case was not made until relaxation was of some advantage, for the following reasons. First, the effect of the curare was almost invariably present within one minute following its intravenous administration. Second, the duration of its effect was known to be limited. Third, the tension of the abdominal muscles and tightness of the peritoneum could be seen, and the onset and degree of relaxation observed. The drug was therefore given as the peritoneum was about to be opened, or at the time of its opening. In those cases in which a spinal block had been done, curare was administered as soon as the wearing off of the spinal effect became apparent. It was interesting to note here the excellent duration of the Nupercaine-dextrose mixture used here in gastric resections, the average being three and three-fourths hours. Curare is also effective when injected intramuscularly, but this method of administration entails a fifteen minute wait for relaxation. No effect is obtained when taken by mouth, in the absence of lesions of the mouth and gastrointestinal tract.

Undesirable side effects consisted entirely of respiratory depression. No noteworthy circulatory disturbances were encountered in the entire series. The respiratory depression was manifested in a diminution of depth of respiration, together with (as intercostal function decreased) a jerkiness, which, together with the shallowness, produced a picture typical of an ether overdose. In some cases, the depression was severe, so that very little movement of the breathing bag could be seen, and in a few cases, total apnea resulted. In the presence of apnea, or where respiratory excursion was too shallow to carry on oxygenation efficiently, artificial respiration was employed until normal respiratory function had returned to a sufficient degree; the average period of severe respiratory depression was ten minutes.

Sodium pentothal was the anesthetic agent in two cases. Severe respiratory depression was seen in one of these cases, unaltered breathing in the other. Ethyl

ether, pentothal, and tribromethanol have been shown to possess curariform properties, in the sense that they inhibit the contractile response of a muscle in a dog to an injection of acetylcholine and to an electric stimulation of the controlling nerve. Of these three, ether is the worst offender, high blood concentrations of pentothal and avertin being required to demonstrate this effect. Potassium ions have been shown to have a striking anticurare action; ether has recently been found to increase, in anesthetic concentrations, the response of striated muscle to potassium in a small degree, although higher ether concentrations depress the response to potassium. The incidence of respiratory depression caused by curare when used in conjunction with ether anesthesia is understandably high. Probably, curare cannot be as safely used in ether anesthesia as with cyclopropane; certainly it should be used with caution, and in smaller doses when any one of the above substances is the anesthetic agent.

At the beginning, curare was used largely here in biliary surgery, as the time involved in these procedures seemed nicely fitted to a study of this drug, while the unusual degree of relaxation required in these operations furnished a splendid test of its powers. It was also used wherever relaxation was necessary and some contraindication for the use of spinal block was present, in patients undergoing general anesthesia. It was used, again, where abdominal muscle tension returned three hours or more after spinal block had been performed with a long acting drug, again in conjunction with general anesthesia. The one hundred cases selected for study are simply the first cases to receive curare here.

Operative Procedures for which Relaxation was Obtained by the Use of Curare

	After Spinal Block	Used Alone	Total
Abdominoperineal resection	1	1	2
Adrenalectomy		1	1
Bile duct exploration	1	5	6
B.D. exp. & cholecystectomy		9	9
Cholecystectomy		28	28
Cholecystectomy & appendectomy		5	5
Colectomy	1	4	5
Colostomy		6	6
Enterostomy		1	1
Excision Ca ampulla Vater	1		1
Gastreotomy	12	9	21
Gastreotomy & appendectomy	1		1
Hernioplasty, ventral	1	2	3
Hysterectomy & appendectomy		1	1
Intestinal resection	1		1
Laparotomy		6	6
Pancreatotomy		1	1
Repair perforated ulcer	1	1	2
	20	80	100

The first operation in which curare was administered here for abdominal relaxation was performed on May 4, 1943; the one hundredth such case was done on April 17, 1944. The youngest patient so treated was three years old and weighed 23 pounds. The oldest patient in the series was 91 years old; the heaviest weighed 222 pounds. The average age was 49.6 years; the average weight, 143.7 pounds. The one hundred cases represent one hundred different patients. In this connection, it may be mentioned that, in the field of psychiatry, it has been stated that there is no increased tolerance to repeated doses of curare.

Initial doses ranged from 12 to 100 mg.; the average first dose was 73.7 mg. The average initial dose in the first 50 cases was 79.8 mg.; this was reduced in the next 50 cases to 67.6 mg.

A second dose of curare was given when requested by the surgeon, during the operation itself or for closing. It may well be that the drug's effect had worn off some short time before, as the nurse anesthesiologist may have, in some cases, deepened

the anesthesia somewhat as the relaxation decreased, or as the surgeon may have requested additional relaxation some time after abdominal muscle tension had returned. While this increase in time is not felt to be large, it is pointed out, in connection with our findings that the intervals between the first and second doses, in the 42 cases receiving curare from the start, and requiring more than one injection, ranged from ten minutes to 175 minutes, and that the average such interval, or measurable duration of the relaxation produced by a single dose of curare, was 74.8 minutes. This compares favorably with the period of ten to fifteen minutes reported by Griffith and Johnson in their original article. Cases requiring only one injection had to be omitted from this calculation, as it was felt that the interval between this injection and the end of the operation did not express a measure of the duration of relaxation. Almost half of the cases, however, that receive curare from the start, as will be shown below, are given only one injection, no further relaxation being needed even at the time



of closure.

While pharmacological evidence suggests that the excretion of curare is very rapid, and that a physiological dose may be safely repeated within 20 minutes, animal experiments have shown that the drug may have some cumulative action. Our own experience indicates that adequate relaxation may be obtained by second and subsequent doses smaller than the initial injection; our most frequent additive dose is 40 mg.; the average second dose administered to the 42 cases requiring more than one injection, and in which curare was used from the start, was 47.6 mg.

Curare was used from the start of the operation in 73 cases. In 31, or 42.4%, of these cases, only one injection was necessary; two doses were used in 32 cases, or 43.8%; three doses were given in 7 cases, or 9.6%; four doses were administered in 3 cases, or 4.1%. No more than four doses were given to any single case in the entire series.

The average total doses given in these cases were as follows: in the cases requiring only one injection, 76.8 mg.; where two injections were given, 125 mg.; for the cases receiving three injections, 168.6 mg.; for those in which four doses were administered, 180 mg. Total doses ranged from 20 mg. to 240 mg. The average total dose for all cases receiving curare from the beginning of the operation was 110.8 mg.

The relaxation obtained by the use of curare was graded "excellent," "fair," or "poor"; in each case observations were made by the anesthetist; the surgeon's opinion was invariably requested, however, and it was his grade that was always assigned to the drug's efficiency.

The relaxation was excellent in 92 of the 100 cases and considered fair in 6 cases. It was marked poor in two cases; these operations were done on two consecutive days near the beginning of the series and are numbered 16 and 18 in order of time, so that no "poor" rating was noted for any one of the following 82 cases. It is felt that with increased experience and familiarity with the use

of the drug, and with improved technique of dosage and accompanying anesthesia, very few failures to obtain complete relaxation should result.

When respiratory depression was encountered, cases were divided into three groups, according to the severity of the depression; total apnea; depression short of apnea, but severe enough to warrant interference on the part of the anesthetist; and mild degrees of depression, to include all slight alterations of respirations, not serious enough to require treatment.

No effect on the respirations was noted in 64 of the 100 cases. Mild depression was seen in 24 cases. Severe depression without actual apnea occurred in 8 cases. Apnea was seen in 4 cases. Thus, in 12 of the 100 cases artificial respiration had to be instituted, while no antidotal treatment was necessary in 88% of the cases.

There were no deaths in the entire series, attributable to curare, and no harmful after-effects.

#### Summary

1. 158 intravenous injections of curare were given to obtain relaxation in 100 abdominal surgical procedures.
2. Single doses varied from 8 mg. to 100 mg.; the largest total dose used was 240 mg.
3. Excellent relaxation was produced in 92 cases.
4. Severe respiratory depression occurred in 12 cases.
5. No other harmful effects were observed; the circulatory system appeared to be unaffected by therapeutic doses.
6. Where respiratory depression occurred, it was always easily treated by artificial respiration.
7. There were no fatalities attributable to curare.

8. The average interval between the first and second doses, in cases requiring more than one dose, where curare was used from the start, was 74.8 minutes.

9. The relaxation obtained from the initial injection of curare persisted, in 42.4% of the cases in which it was used from the start, throughout the whole operation and was adequate for closure, so that a second injection was not needed.

### Conclusions

Curare, it appears from a study of these cases, is a drug that can be used by a competent anesthetist in almost every case; will produce abdominal muscle relaxation in cyclopropane anesthesia at any time with neither the difficulty, delay, nor the complications of spinal block; has for its only known complication easily-treated respiratory depression. It can produce, in the anesthetized patient, the so-called "spinal belly" as well as spinal block itself, but it is not a universal substitute for spinal block. In the hands of a trained anesthetist, who is able to perform artificial respiration, the rare myasthenia gravis is curare's only known contraindication.

Curare is believed to be of value in the treatment of laryngospasm, in endotracheal intubation, in esophagoscopy, and in bronchoscopy.

Different viewpoints are held by various investigators with regard to the place curare is to occupy in modern anesthesia. We are continuing to use it as indicated above. At least one prominent worker uses it for almost all abdominal surgery; another restricts its use to cases in which it is really needed, maintaining that inadequate relaxation should be infrequently met, that curare is still a dangerous drug, not to be used indiscriminately by unskilled anesthetists. All are agreed, however, that curare appears fairly certain to occupy a lasting place in the pharmacopeia of anesthesia, and it is our belief that cyclopropane-curare combined anesthesia may well become the method of choice for abdominal surgery.

### References

1. Hoffman, F. A.  
Ein Fall von Tetanus Traumaticus mit Curare Behandelt.  
Berl. Klin. Wochenschr. 16:637-638, '79.
2. Hoche, A.  
Versuche mit Curarin bei Tetanie.  
Neurol. Centralbl. 13:289-296, '94.
3. Wilson, A. T. and Wright, S.  
Anti-Curare Action of Potassium and Other Substances.  
Quart. Jr. Exp. Physiol. 26: 127-139, '36.
4. Bennett, A. E.  
Preventing Traumatic Complications in Convulsive Shock Therapy by Curare.  
J.A.M.A. 114:322-324, '40.
5. Goodman, L. and Gilman, A.  
The Pharmacological Basis of Therapeutics.  
The Macmillan Co., New York, 495-498, '42.
6. Griffith, H. R. and Johnson, G.  
The Use of Curare in General Anesthesia.  
Anesthesiology 3:418-421, '42.
7. E. R. Squibb and Sons  
Intocostrin - '43.
8. Cullen, S. C.  
The Use of Curare for the Improvement of Abdominal Muscle Relaxation During Inhalation Anesthesia.  
Surgery 14:261-266, '43.
9. Gross, E. G. and Cullen, S. C.  
The Effects of Anesthetic Agents on Muscular Contraction.  
Jr. Pharm. & Exp. Ther. 78:358-365, '43.
10. Griffith, H. R.  
The Use of Curare in Anesthesia and for Other Clinical Purposes.  
Can. M.A.J. 50:144-146, '44.
11. Torda, Clara  
Effect of Chloroform and Ether on Striated Muscle, Curr.Res.Anes.& Analg. 23:74-77, '44.

### III. GOSSIP

To Milwaukee to speak at the annual dinner of the Northwestern Mutual Quarter-Century Club at the Schroeder Hotel on May 2. Over 200 members were present, some of them with service as long as 52 years. Those who have retired come back for the event. A new class of 10 included the President Michael J. Cleary who had just completed 25 years of service with the company on May 1. We usually think of Milwaukee in terms of Germans and Poles but the Irish have infiltrated this company in large numbers. The menu included slabs of rare roast beef which recalled pre-war events of happy memory. Mr. Cleary is a remarkable gentleman. He has the ability to fraternize with his group and be an effective leader at the same time. The men and women I met vied with one another in telling me what a good friend he was to everyone. One of them said "He never bawls us out when we do something wrong, but we feel so ashamed of ourselves when we do that he doesn't have to say a word." The group displayed great pride over their association with the company. They feel important because of their long and faithful service. The prize specimen who demonstrated the effectiveness of their retirement program was a little cricket who was jumping all over the place at the ripe old age of 94. He has been resting on his laurels since 1920. The desire to be appreciated is uppermost in all of us. A few years ago an organization conducted an investigation on what men considered "success." The common denominators were the following, the man is past 40, married, with a family, home, and a financial program for the future. He discharges his duties as a citizen in an acceptable way. He cares for his financial obligations, but most important, he has won the respect of his associates. As I looked over this group, it appeared to me that they had only one thing in common, that is, they had won the respect of their associates... ..John B. Erich, dentist-surgeon of the Mayo Foundation spoke to the Seniors this morning. Author with Louie T. Austin of the new manual on "Traumatic Injuries of Facial Bones," he is an able and pleasing speaker. This overlap between dentistry and medicine is one which requires cooperation for success....Speaking of books you will find good reading in "Medical Physics" by Otto Glasser and associates. This same author has recently collaborated with Quinby Taylor and Weatherwax in producing a volume on "Physical Foundations of Radiology." Physics in medicine is one of the fascinating fields of interest, and one may safely predict that there will be many new developments in this field....A letter from Barney Watson, Major Watson if you please, told of meeting with Haynes Fowler, Ed Evans, Plankers, Ralph Creighton, Erickson, a Catholic Chaplain Father Lenarz from St. Cloud at which time there was much discussion of Minnesota affairs. Barney paid us the compliment of asking to have the Staff Meeting Bulletins sent to his hospital. He sends his best regards to everyone and hopes it will not be too long before he can pay his respects in person....A long letter from Colonel E. S. Murphy of the Headquarters Staff of the 1st Army, is also full of news. Murph is now so close to Ireland he is able to keep in touch with the old homeland without much difficulty. His letter is full of interesting items concerning his many activities and also his associates. In these columns I once asked his friends to remember him with letters; in so doing, I succeeded in having the friends' letters reach him before mine did. This has been the subject of many remarks by the Colonels which are most unpleasant at times....The group coming to the Center for Continuation Study for the Surgical Course on May 8, 9, and 10 will be large. We have over 100 registrations to date with new ones coming in every mail. The capacity of the Center has already been reached, and hotel accommodations are difficult to obtain. Educational centers should appreciate the eagerness with which men in practice desire to come back at the present time. It provides them with an opportunity to learn about our work and also gives them a change from their daily routine which has social approval. It suggests that many more opportunities of this sort should be provided for the men in practice....The American Public Health Association Course in Public Health Administration on Thursday, Friday and Saturday, May 11, 12 and 13 will feature Aurther Massey, medical officer of health from the city of Coventry, who will speak on Recent Developments in British Health Services and Health Education.