

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

Fluoroscopy  
of the Chest

INDEX

	<u>PAGE</u>
I. LAST WEEK . . . . .	269
II. MOVIE . . . . .	269
III. ANNOUNCEMENTS	
1. CENTER FOR CONTINUATION STUDY . . . . .	269
2. CONGRATULATIONS . . . . .	269
3. THE MINNESOTA PATHOLOGICAL SOCIETY . . . . .	269
IV. FLUOROSCOPY OF THE CHEST . . . . .	
. . Jack I. Chalek and Solveig Bergh . . . . .	270 - 279
V. GOSSIP . . . . .	280

---

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

Financed by the Citizens Aid Society

William A. O'Brien, M.D.

I. LAST WEEK

Date: March 1, 1940

Place: Recreation Room  
Powell Hall

Time: 12:15 to 1:35 P.M.

Program: Movie: "Beach Picnic"

The Surgical Treatment  
of Essential Hypertension  
H. F. Buchstein

Discussion

W. T. Peyton  
C. J. Watson  
Macnider Wetherby  
B. A. Watson  
J. L. McKelvey  
W. P. Ritchie  
A. E. Hansen  
O. H. Wangenstein

Present: 157

Gertrude Gunn  
Record Librarian  
- - -

II. MOVIE

Title: "Little Goldfish"

Released by: M-G-M  
- - -

III. ANNOUNCEMENTS

1. CENTER FOR CONTINUATION STUDY

General Surgery, March 11-16  
Guest teacher - Edward D. Churchill,  
John Homans Professor of Surgery,  
Harvard Medical School, Chief of the  
West Surgical Service, Massachusetts Gen-  
eral Hospital, Boston. Dr. Churchill  
will conduct two surgical colloquia, one  
on Wednesday morning, March 13 from 9:00  
until 11:00, and one on Friday morning  
from 9:00 until 11:00. The first will be  
on Diseases of the Chest, the second on  
General Surgical Subjects. Both will be  
held in Todd Amphitheatre,  
Clinical Pathological Conference on Wed-  
nesday, March 13, will include subjects  
of surgical interest. The next staff

meeting will be under the direction of  
the Department of Surgery. Subject -  
Peptic Ulcer - March 15. Next Thursday  
evening, March 14, Dr. Churchill will  
give the Judd Lecture at 8:15 in Medical  
Sciences Amphitheatre on "Surgery of the  
Lung." Every staff member should avail  
himself of the opportunity to hear Dr.  
Churchill. The new plan of asking our  
visiting teachers at the Center for Con-  
tinuation Study to take a more active  
University teaching part is the reason  
for this special invitation.

Other clinics at the Center will be as  
follows:

Monday, March 11, 9:00-12:00, Orthopedic  
Surgery, Eustis Amphitheatre.

Tuesday, March 12, 9:00-12:00, Gastro-  
intestinal Surgery, Minneapolis General  
Hospital.

Thursday, March 14, 9:00-12:00, Traumatic  
Surgery, Ancker Hospital.

Saturday, March 16, 9:00-12:00, Clinical  
Surgical, and Radiological Conference,  
Todd Amphitheatre, University of Minne-  
sota Hospitals.

There will be lectures and round table  
question and answer periods at the Center  
for Continuation Study each afternoon  
except Wednesday and Friday.

2. CONGRATULATIONS!

To Dr. and Mrs. Louis Winer  
on the arrival of Marylee on  
February 14th.  
- - -

3. THE MINNESOTA PATHOLOGICAL SOCIETY

The University of Minnesota Medical  
School, Institute of Anatomy

Tuesday, March 12, 1940, 8:00 P.M.  
- - - - -

The influence of body temperature on  
the defense mechanism in experimental  
pneumonia.

Drs. W. P. Larson  
and Raymond N. Bieter

Rheumatic heart disease; analysis of  
796 cases.

Dr. B. J. Clawson  
- - - - -

#### IV. THE ROUTINE FLUOROSCOPIC EXAMINATION OF THE CHEST

Jack I. Chalek  
Solveig Bergh

The routine roentgen examination of the thorax of all patients in a clinic or hospital has been repeatedly proposed, and in some instances instituted. Some ten years ago, Kinsella, in St. Louis, suggested that a roentgenogram of the chest be made on all hospital admissions and he instituted this procedure in St. Mary's Hospital, a private institution. Kinsella argued that it is considered standard practise to make a physical examination of the heart and lungs of every patient admitted to a hospital regardless of the complaint. It is generally admitted that the roentgen method of exploration may furnish a great deal of information unobtainable by the ordinary methods of physical examination. Hence it seems logical to require this procedure.

Despite the validity of this reasoning, routine x-ray examinations have not been as generally adopted as might be desired, owing in large part to the expense involved. At certain institutions, of which the Mayo Clinic is a notable example, a roentgenogram of the chest is almost, if not completely, a routine procedure. Routine fluoroscopy is less commonly practiced.

There are a number of methods of routine roentgen exploration of the chest.

1. The most ideal, no doubt, would be to make stereoscopic postero-anterior and lateral roentgenograms. This is an expensive method and is rarely used, largely for this reason.
2. A single film of the chest can be made. This is much less expensive and also less effective. Nevertheless, it would add a great deal of information.
3. A single roentgenogram of the chest using x-ray paper is sometimes utilized. This is somewhat less expensive than No. 2 but is also much less

accurate.

4. A tuberculin skin test is done and then a single roentgenogram of the chest is made on all the positive reactors. This can be done on film or on paper. This, obviously, is a search for tuberculosis alone, and many other lesions in non-reactors will not be detected. A small percentage of patients with tuberculosis who do not react positively will also be missed. It is difficult to do because of the delay involved in reading the tuberculin skin test, a delay which is sufficient to nullify the effectiveness of the method.
5. The most recent innovation for purposes of routine examination using film is fluororadiography. A photograph of the image on the fluoroscopic screen is made on 35 mm. or 3x4 inch film. It may then be viewed through an enlarging lens and will give information as to the lungs similar to that furnished by a single roentgenogram. It is somewhat less accurate. This method is much cheaper because of the small size of film but requires a rather large outlay for the original equipment. It is still rather in an experimental stage.
6. Routine fluoroscopy of the thorax is the final method. The advantages and disadvantages of this procedure will be discussed in more detail below.

The recent literature has been examined for the results of routine roentgen examination of the chest. In 1928 and 1929, Fellows, Ordway, and Reid<sup>1</sup> reported their findings on the fluoroscopic examinations of applicants for positions with the Metropolitan Life Insurance Company. Of 4,843 persons passed on physical examination, 59, or 1.2%, were found on fluoroscopy to have pulmonary pathology. These cases were followed by film study and classified as tuberculosis.

Fluoroscopy was again used in 1930

by Kaltentidt<sup>2</sup> in the study of 4,836 Munich University students. His results showed 14.8% inactive lesions; 1.3% partially active; 0.56% active; and 2% in which tuberculosis was clinically significant.

Hitherington and Flahiff<sup>3</sup> report the use of fluoroscopy in school children. This was decided upon because many parents and older children refused tuberculin tests and also because it is an inexpensive method. They compare results with those of a previous year when tuberculin tests were used.

1927 - 1057 cases  
367+ Mantoux  
108 lesions on film: 29.7%

1931 - 953 cases  
69 selected by fluoroscopy  
43 lesions: 62.3%

The fluoroscopic selection here shows a much higher percentage of positive findings on follow-up films, so the authors believe fluoroscopy to be the method of choice over the Mantoux test. There is, however, no data to indicate how many cases were overlooked. It is to be noted that the first group showed 10.2% of positive cases while the second gave only 4.5%.

Hodges<sup>4</sup> reports routine chest films on all hospital admissions and outpatients at the University of Michigan Hospitals for a 12½ day period. 1101 cases are considered.

751 - 68.3% Negative  
260 - 23.6% Findings of questionable significance  
90 - 8.1% Findings of clinical significance

Of the 90, 50 would not have had x-ray examination if routine films had not been made. Of these, the diagnosis was made clinically in 15. The remaining 35 were unsuspected before the routine x-ray report was given at the end of the test period.

Of these 35 -

- 10 - Open to some doubt as to the significance of x-ray findings.
- 4 - Clinical significance questionable although x-ray findings were definite.
- 7 - Showed cardiac enlargement.
- 14, or 15.5%, were definitely a diagnostic failure clinically. Findings on the film in these cases were:

- 1 pneumonic infiltration
- 1 borderline heart syphilis
- 2 pneumonitis
- 5 tuberculosis
  - 4 minimal
  - 1 tuberculous pneumonia
- 1 dextrocardia
- 3 metastatic lesions
- 1 neoplastic metastasis or tuberculosis

Pohle, Paul and Oatway<sup>4</sup> report routine films on 1460 patients who were admitted to the University of Wisconsin Hospital.

13.3% - 199 cases - had significant lesions undetermined clinically. If all cases of debatable importance were eliminated, this percentage was lowered to 2.9. They believe the routine chest film to be of definite clinical value.

Schaare<sup>5</sup> compared the results of examination of 400 cases obtained by fluoroscopy versus film. In 17.85%, the lesion was not detected by fluoroscopy. In 21.75% a lesion was suspected but could not be definitely classified.

Pastor<sup>6</sup> states that in Puerto Rico fluoroscopic examination followed by x-ray plates of suspicious or positive cases is the procedure used in discovering cases of tuberculosis. The tuberculin test is not used there because of the almost universal tuberculin allergy. Beyond 20 years of age practically everyone is a positive reactor. He believes fluoroscopic examination should be used more often than it is.

Routine fluoroscopy of the chest was

initiated at the University of Minnesota Hospitals in February, 1939. It was planned that all patients sixteen years and over, coming to the clinic or admitted to the hospital, should undergo this procedure, and that it should be repeated annually on those patients returning to the hospital for further care.

The primary purpose of routine fluoroscopy of the chest is to exclude tuberculosis of open character for the protection of the hospital personnel and other patients. A second purpose is the demonstration of other pathology which may produce no symptoms or physical signs and therefore escape detection.

Previously, an attempt was made to apply a Mantoux test on every patient and take a single chest film on the positive reactors. This procedure was a failure for numerous reasons so that it was decided to adopt routine fluoroscopy and make roentgenograms whenever it was deemed necessary.

Fluoroscopy has certain distinct disadvantages which are listed below:

1. Cannot exclude minimal tuberculosis and other very small lesions.
2. Demonstration and evaluation of small lesions require films for confirmation.
3. Details are lacking that one gets with a roentgenogram hence final conclusions may be doubtful.
4. Hypersthenic and obese individuals are very difficult to examine because of lack of penetration and distortion.
5. There is a tendency to exaggerate the significance of the broncho-vascular markings and to overestimate the size of the heart.

Fluoroscopy presents certain advantages over the simple roentgenogram:

1. The patient can be turned at any angle so that pathology hidden behind the heart, in the mediastinum, or below the domes of the diaphragms can be

easily observed. This is of especial value in finding a calcified Ghon tubercle or calcified gland. Likewise, the rotation of the patient permits the differentiation of calcified foci from blood vessels.

2. In examination of the heart, the superiority of fluoroscopy is universally accepted. The shape of the various chambers and their pulsations are clearly brought out in most cases by rotating the patient. Calcification of the valves is easily seen with fluoroscopy if one uses a small field, whereas in the film it is usually missed because motion destroys the details. However, if the calcification is marked, it can sometimes be demonstrated on a film if an intense exposure of short duration is used.
3. The differentiation of aneurysm and mediastinal tumor is much more certain by fluoroscopy.
4. Foreign bodies in the bronchi, especially of non-opaque character, are most often brilliantly demonstrated because it is possible to observe the lungs in deep expiration as well as inspiration.
5. Rarely, a small carcinoma of the lung which might be overlooked on ordinary films, may be observed in this way.

This study was undertaken to determine the effectiveness of this procedure at the University Hospitals and to try to eliminate errors and defects in our method. The results of our experience during the first ten months are listed below:

Review of Ten Months' Experience

1. Number of cases considered in this study:		7,114
Females	3,852	
Males	3,362	
Private cases and children under 16 not included.		
2. Cases admitted to the hospital		4,163
3. Number of cases fluoroscoped		4,391
4. Number of cases not fluoroscoped		2,723
Of the latter group film examination was done in	1,154	
Of these, positive findings were obtained in	768	
5. Number of cases with fluoroscopic or film examination or 78% of all cases considered	5,545,	
6. Findings in cases fluoroscoped:		
Negative	2,625	
Positive	1,766	
7. Cases with positive findings having complaints referable to the chest . . . . . or 19%		337,
8. Cases with both fluoroscopic and film examinations:		
A. Fluoroscopic findings same as roentgenographic	703	
B. Fluoroscopic findings different from roentgenographic . . . . .	375	
1. Film more correct than fluoroscopy	299	
2. Film less correct than fluoroscopy	76	

Individual Findings Reported Fluoroscopically  
on 4391 cases of which 1766 had positive findings

<u>No. of Cases</u>	<u>Type</u>
77	Abnormality chest wall or thorax
733	Enlarged hearts (2 with calcified pericarditis)
9	Calcified cardiac valves
703	Tortuous and/or calcified aorta (1 anomaly - right sided, retro-esophageal aortic arch.)
9	Aneurysm large arteries
540	Primary calcified tuberculous complex
6	Minimal tuberculosis
20	Miliary and advanced tuberculosis
70	Healed adult tuberculosis
101	Emphysema
219	Increased broncho-vascular markings
12	Bronchiectasis
12	Inflammatory process
7	Atelectasis
8	Primary lung tumor or metastasis
8	Mediastinal tumor or metastasis
134	Adhesions and/or thickened pleura
6	Pleural effusion
2	Encapsulated empyema
10	Enlarged thyroid or tumor of neck
10	Calcified cervical glands
7	Pneumothorax

In addition it may be of interest to note that in the past 2 months 3 cases of complete situs inversus, 2 cases of lung cysts, and several more calcified valves have been found fluoroscopically.

Mediastinal tumor includes several cases of retrosternal thyroid, but consists mainly of lymphoblastomas and metastatic glands.

Explanatory note in regard to the  
 Individual Findings Chart:

Abnormality of the chest wall and thorax includes such things as soft tissue tumors of chest wall, fractures, congenital anomalies of the ribs, hypertrophic and other deforming changes of the spine and ribs.

A calcified Ghon tubercle along, a calcified hilar or mediastinal gland, or a combination of both is here referred to as a primary calcified tuberculous complex.

Under inflammatory process there were included such processes as pneumonia, lung abscess, pneumoconiosis, fungus infection, and a few undetermined diseases.

Discussion

The primary purpose of this project was to discover open cases of tuberculosis but as events have proved more non-tuberculous lesions have been found.

There were 26 active tuberculous cases and 610 probably healed cases. The latter figure includes healed adult and calcified primary Ghon complex. This constitutes about 35% of the 1766 cases reported as having positive fluoroscopic findings.

It is true that some cases of minimal tuberculosis will be missed fluoroscopically and it is therefore impossible to exclude it completely by that

method of examination.

The most commonly reported abnormality is enlarged heart (733 cases) and next in frequency is the tortuous aorta and calcified aorta considered in one group (703 cases). A moderate number of these cases also had film studies which usually corroborated the fluoroscopic reports. However, there is no question that some of these patients, especially of the hypersthenic and obese types are erroneously diagnosed as having left ventricular enlargement. It is probable, therefore, that the number of cases reported as having cardiac enlargement is higher than the true figure.

Bronchiectasis is frequently diagnosed from the history alone. Physical findings are usually present but may be absent. It is in these latter cases that radiological examination is important especially in that it accurately localizes the lesion.

Lung cyst is a radiological diagnosis. Very few cases are diagnosed clinically which may be due in part to lack of signs and symptoms referable to the lungs.

Pleural effusion and empyema especially of minimal degree are easy to miss clinically, but should rarely be missed fluoroscopically.

Mediastinal tumors and aneurysms when large can be detected by physical examination but, in the earlier stages, may give no signs or symptoms. It is especially in this early period that fluoroscopy is so valuable in making a diagnosis. A number of entirely unsuspected cases were thus uncovered.

Calcified cardiac valves, while they may be suspected clinically, are rarely so diagnosed until fluoroscopic examination is done. It is interesting to note that 9 cases were discovered whereas in all the previous years before routine fluoroscopy only a few were found by means of chest films. Here indeed fluoroscopy is superior to the x-ray film.

Calcified pericarditis was definitely diagnosed in 2 cases by fluoroscopy where the patient was known to have heart disease of an undetermined type.

Comparison with clinical findings is difficult because many of the patients are fluoroscoped, and the report is written in the chart before the clinical examination is performed. However, we have records of an appreciable number of cases of far advanced tuberculosis, lung cysts, situs inversus, mediastinal and lung tumors, and aneurysms that were not found clinically but were discovered by the fluoroscopist.

Of the 4,391 cases fluoroscoped, 1,776 had abnormal findings. Only 337 of these had symptoms referable to the chest. There remains a group of 1,439 patients without chest symptoms who had abnormal findings fluoroscopically. A large part of this latter group includes such entities as calcified Ghon complex, healed fractured ribs, anomalies of ribs, dextro cardia, healed adult tuberculosis, tortuous aorta or calcified aorta, and thickened pleura with and without diaphragmatic adhesions, and therefore one would not expect these patients to have cardio-respiratory symptoms. There were, however, a considerable group in whom the presenting symptom was entirely foreign to the chest such as "eye trouble," "pregnancy," "dyspepsia," and so forth in whom significant lesions were found.

The reports differed in 375 of the 1,078 cases having both chest film and fluoroscopy. The film was more correct in 299 of the 375 cases which means that the fluoroscopic report either was entirely wrong or did not include as many findings as were determined from the roentgenogram. Usually the variance was as to the number of findings reported. In the remaining 76 of the 375 the fluoroscopic report was more correct. We assumed that the fluoroscopic report was more accurate in the case of calcified Ghon complex, tortuous and calcified aorta, aneurysms, mediastinal tumors, and calcified valves in judging the accuracy of the reports. The x-ray film report was given preference in other entities.

A graph of the age distribution of the patients fluoroscoped as compared to the percentage of pathology found is shown in Figure 1. As might be expected, the incidence of intrathoracic abnormalities

rises sharply with age. This is owing in part to the inclusion of enlarged heart and arteriosclerotic aorta in the category of abnormal findings, in part to the greater incidence of calcified tuberculous lesions in the older age groups and in part to the increased frequency of chronic lung disorders attending advancing age. It is of interest to note that in the decade from 16 to 25 only 6.2% of the patients showed abnormalities. In contrast to this the frequency rises to 65.7% in the decade from 66 to 75. It should be noted that the number of patients decreases steadily from the second to the eighth decades.

This attempt to institute routine fluoroscopy of all patients has not been entirely successful up to the present time. Many patients have not been fluoroscoped, mainly through lack of understanding and cooperation on the part of the staff. Patients not fluoroscoped fall largely into the following categories:

- Group A
1. Private patients )
  2. Children under 16 years )
  3. University students )
  4. Hospital employees )
- (Not examined routinely  
(by fluoroscopy for obvious  
(reasons.

- Group B
1. Acute surgical cases
  2. Bedridden patients
  3. Known tuberculous cases admitted for chest surgery
  4. Patients admitted late in the day or night
  5. Cases returning to clinics for check-up, especially to the surgery clinic
  6. Patients admitted especially for eye, ear, nose, or throat operations.

In order that we may increase the percentage of patients who are routinely fluoroscoped a number of suggestions are offered:

1. Patient should be fluoroscoped before he is discharged from the hospital if he has not had some type of radiological examination of the chest previously.

2. The staff doctor should refer the patient from the clinic to fluoroscopy if he has not had a radiological examination of the chest for a period of one year.
3. The first clinic the patient attends should check the chart to be certain the patient has been fluoroscoped.
4. Bedridden patients should have bedside film if they are still too incapacitated to come to the x-ray department before they are discharged.

During the past 2 months there has been a definite improvement in the percentage of patients fluoroscoped. We hope in the near future to have almost 100% of the cases examined radiologically.

A number of cases are herewith reported in detail to illustrate the usefulness of routine fluoroscopy in the detection of serious intrathoracic disease.

#### Case Reports

1. Male, aged 56 years, was first seen here on 7-11-39 complaining of anorexia, insomnia, and severe burning pain all over the body. There were no complaints referable to the chest. He was considered a psychoneurotic by one of the neurological staff. With the correct diagnosis in mind, further questioning brought out a history of slightly productive cough of six weeks' duration. There had also been a moderate weight loss. Physical examination of the chest revealed some dullness over the left base and numerous findings suggestive of asthma. The physical signs were obtained after the fluoroscopic findings were determined.

On fluoroscopy there was observed a mass in the left hilum and some fluid at the left base. A diagnosis of bronchogenic carcinoma was made and this was confirmed by roentgenographic examination and later by bronchoscopic biopsy.

2. A 46 year old male was first seen on 5-25-39, having been referred from

the Veterans' Hospital for radiation therapy. He complained of a productive cough of five months' duration with loss of 30 pounds.

A supraclavicular gland had been biopsied at the Veterans' Hospital and adenocarcinoma found.

Physical examination of the chest was essentially negative. After the fluoroscopic findings were reported, one observer was able to percuss but a wdened mediastinal dullness.

On fluoroscopy a large lobulated mass was found in the mediastinum suggesting by its appearance Hodgkin's disease or metastatic carcinoma. Roentgenograms gave the same findings except that the possibility of a primary carcinoma of the bronchus with metastasis to the peritracheal lymph nodes was also suggested.

3. The patient was a 71 year old male who was admitted to the clinic on 12-8-39 complaining of constipation, epigastric distress, marked weight loss, and weakness. Examination of the heart was negative. The blood pressure was 86/58. Pulse rate 88. The abdomen was negative.

A clinical diagnosis of carcinoma of the stomach or colon was made and upon roentgen examination an annular constricting carcinoma of the stomach was found.

On fluoroscopy of the chest calcification of the aortic valve was found and later demonstrated in roentgenograms. This finding was entirely unsuspected clinically.

4. The patient was a 17 year old white female complaining of cough present since she was 5 months old but very severe in the past 2 years. The cough was worse in the morning and was productive of a greenish sputum.

Physical examination of the chest was negative upon admission except for increased breath sounds on the left. Fluoroscopically a diagnosis of bronchiectasis

or tuberculosis was suspected. This case is notable for the absence of physical signs in the presence of very obvious fluoroscopic findings.

5. Patient was a 36 year old white female who was admitted to the hospital with complaint of menorrhagia and metrorrhagia for which she had had 2 curettages in the past 2 years.

Examination of the chest was negative except for the heart which was diagnosed as a rheumatic heart with mitral valve defect.

Fluoroscopically, evidences of incipient tuberculosis of minimal degree were found in the right infraclavicular region. This finding was confirmed by roentgenograms.

6. Patient was a 53 year old white male whose complaints on admission to the clinic on 4-27-38 were hemorrhoids, low back pain, and failing vision.

Examination of chest was negative. No radiological examination. On 9-19-39, about 1½ years later, patient came in for hemorrhoidectomy. Fluoroscopic examination revealed far advanced tuberculosis with cavitation. This diagnosis was confirmed by film examination.

7. Patient was a 49 year old white male who was first seen here on 3-21-39 complaining of precordial pain, palpitation and dyspnea more marked upon exertion, of 1 year's duration.

Examination in clinic was negative except that the blood pressure varied from 150/90 to 175/120 and pulse was 98. On fluoroscopy there were found increased bronchovascular markings in both bases, and a film was ordered by the fluoroscopist to determine if any bronchiectasis was present. Multiple cysts of the right lower lobe were found and this diagnosis was later confirmed by bronchography.

On October 24, 1939 a lobectomy was

performed on the right lower lobe. On histological examination the following pathological diagnoses were made:

- 1) Congenital cystic disease of right lower lobe
- 2) Bronchial stenosis
- 3) Bronchial foreign body
- 4) Bronchiectasis

8. The patient was a 78 year old white male who was seen in the admission clinic on 11-2-39 complaining of progressive difficulty in swallowing of about 2 months' duration. At first the dysphagia was only for solid foods but at the time of admission here he had difficulty with fluids also.

A clinical diagnosis of carcinoma of pharynx or esophagus and aortic regurgitation was made. The lungs and heart were reported as negative on physical examination. Esophagoscopy showed carcinoma of hypopharynx. The fluoroscopic report read as follows:

- 1) Probable bronchiectasis left lower lobe
- 2) Fibrosis and atelectasis right upper lobe
- 3) Tortuous aorta with possible aneurysm
- 4) Calcified aortic valve.

X-ray film report read as follows:

- 1) Aortitis especially of ascending portion
- 2) Chronic fibrotic lesion right upper lobe
- 3) Probable residual pneumonia due to aspiration or bronchiectasis in left lower lobe.

### Conclusions

1. Routine fluoroscopy or roentgenographic examination of the chest has been performed in 78% of all patients admitted to the University Out-patient Clinic or Hospital during a ten month period.

2. Increased cooperation and care on the part of the staff are necessary to

increase the number of cases examined.

3. Abnormal findings were obtained in approximately 45% of those examined.

4. A sufficient number of unsuspected open cases of pulmonary tuberculosis were found to justify the time and expense devoted to the procedure.

5. Minimal tuberculous lesions may also be detected by fluoroscopy more frequently than by physical examination, but a certain number will be overlooked unless roentgenograms are routinely made.

6. Calcified tuberculous foci and glands are more readily detected and more correctly interpreted by fluoroscopy than by film examination.

7. A considerable number of cases with chronic non-tuberculous lung disease, unsuspected before the x-ray examination, have been discovered. Notable among these are tumors, lung cysts, bronchiectasis, foreign bodies.

8. Mediastinal tumors when of small size may be found in this manner although other physical signs are absent.

9. Small pleural effusions, especially when encapsulated are also readily detected.

10. Aneurysms of small size may be found even though they give rise to no symptoms or physical signs.

11. Calcified cardiac valves, rarely diagnosed clinically or by roentgenograms are found much more frequently by fluoroscopy.

12. The fluoroscopic diagnosis of enlarged heart and increased bronchovascular markings may be of little significance.

13. The incidence of intrathoracic abnormalities rises steadily with increasing age.

Bibliography

1. Fellows, Ordway, and Reid  
Quoted from Hetherington and Flahiff  
Am.Rev.Tbc. 27:71, 1933.
2. Kaltentidt  
Quoted from Hetherington and Flahiff  
Am.Rev.Tbc. 27:71, 1933.
3. Hetherington, H. W., and Flahiff, E. W.  
Am.Rev.Tbc. 27:71, 1933.
4. Pohle, E.A., Paul, L.W., and  
Oatway, W.H.  
Radiology 26:480 (Apr.) 1936.
5. Schaare,  
Quoted from Pohle, Paul, and Beatty,  
Radiology 28:40 (Jan.) 1937.
6. Pastor, J. Rodriguez  
Am.Rev.Tbc. 40:657 (Dec.) 1939.

## V. GOSSIP

A special course in the Treatment of Venereal Diseases will be held at the Center for Continuation Study, April 1-6, 1940. A group of physicians from North Dakota will be sent by their State Health Department.....The spring session of the midwestern section of the American Congress of Physical Therapy, held at the University of Minnesota Hospitals, Thursday, March 7, 1940, was a pronounced success....Charles O. Molander, in charge of the physical therapy section of Michael Reese Hospital told of his new department which will cost \$100,000. It is a gift of a group of people who are interested in the physical therapy movement. The continuation course for physical therapy technologists at the Center for Continuation Study was attended by 54 registrants from Minnesota and surrounding states. This is approximately one-half of the total registered technologists in the mid-west. At Gillette Hospital they saw the largest number of patients with poliomyelitis in the state. At Michael Dowling School they witnessed a training program on a group of 78 spastic children. At the Minneapolis General Hospital they saw the use of physical therapy in injuries. At the University of Minnesota Hospitals they saw fever therapy and rhythmic constriction. Few programs have provoked as much interest as this one. It appears that physicians should learn more about the value of physical agents and methods in disease, as much worthwhile work is being done. A large number of persons with arthritis find physical therapy of value. A recent summary of a 17-year old battle with arthritis clearly shows the value of physical therapy to this patient. This story which was sent to me by mail also had its humorous note, as pictures of the victim on the last sheet of the notes were titled "Adonais? - No, Arthritis!" New interest in the crippled child and his problems are part of our present social security program. Mr. Finke, the director for the State, has shown a commendable attitude in securing medical advice to help him in making out his program. During the course in medical Social Service last week a field trip to this organization was one of the highlights of the three-day program. Plans are being made to hold a three-day con-

tinuation course May 2, 3, and 4, for directors and medical and nursing staffs of student health services. Most appropriately, this pioneer movement is being developed by Dr. Ruth Boynton, health service director at Minnesota, who now is president of the National Association. ...Dean Harold S. Diehl is still confined to his bed because of illness. His many friends anxiously await his early recovery....Plans are under way for a special meeting of the staff to discuss medical photography, probably on April 12. We now have many medical photography fans in our group. A special effort will be made to show all the phases of this movement, so that we may appreciate its importance in medical teaching....Pediatrician Paul Dwan solves the movie problem by inviting his friends to show their pictures in his amusement room. A little theatre is set up and an operator and machine provided. It is up to each person to assemble his own audience from a very popular room next door....A group of Catholic Sisters may come to Minneapolis to open a nursing home for terminal cancer victims. This service which is provided as a result of gifts made to the Order elsewhere, is rendered to all such patients who can be accommodated, no matter what their religious affiliation. The only requirement is to be without funds and to have cancer which is beyond treatment. Homes have been established in many cities, and all are said to be used to their utmost....The second issue of the bulletin of the Minnesota Medical Foundation is off the press. Copies will be sent to graduates of the University in Minnesota and to a special subscription list...At a recent public forum in Fari-bault, the subject of Socialized Medicine was discussed. More than 600 lay persons attended. There were not many questions from the floor. My medical opponent believed that because there was need for medical care, the solution was simply one of economics. As far as he was concerned, the passage of the Wagner Act would solve all of our difficulties. He also believed that the Federal government would simply give the money to the states without any strings attached. It seems we have accomplished a great deal in Minnesota without Federal assistance. Our Hospital Service Plan is an outstanding example. We have also done a creditable job in venereal disease. There are many other examples.