

GENERAL STAFF MEETING  
 UNIVERSITY HOSPITALS  
 UNIVERSITY OF MINNESOTA

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I. REVIEW OF 40 CASES OF BRONCHIECTASIS COLLECTED FROM CROSS-INDEX, UNIVERSITY HOSPITALS, July 1, 1928 to Sept. 1, 1931. Abstr. Koucky:

Service:

Medicine	23 (50+%)
Surgery	11
Surg. Ped.	4
Pediatrics	1
Oto-Laryng.	1

Age:

Under 10	2
10 - 20	9
20 - 30	7
30 - 40	4
40 - 50	7
Over 50	11

Age at Onset:

Under 5	5
5 - 10	6
10 - 20	9
20 - 30	2
30 - 40	5
40 - 50	6
Over 50	7

Duration of Symptoms:

Less than 2 years - 8 (20%)  
Average - 8 years.

Etiological Factors:

Indefinite - 13.

(Pneumonia, measles, etc. present usually in earlier life. Poor histories often account for absence of information.)

Tuberculosis - 1.

Foreign body - 1

Empyema - 1

Lung abscess - 4

Infections - 20 (50%)

(Pneumonia, influenza, measles, whooping cough).

These etiological factors correspond quite well with the usual statistics.

Side Involved:

Bilateral	-	22
Unilateral	-	15
Left	-	9
Right	-	6
Not stated	-	3

Sputum:

Ranged from 15 to 600 cc.

Hemoptosis:

21 (54%). Usually streaking; sometimes gross hemorrhage.

Sinusitis:

19 (48%).

Asthma:

6 - (15%).

This frequency of asthmatic attacks appears to be unique. The association is not commented upon in the literature. It is a question as to whether the asthma is the cause or the result of the bronchiectasis. Study of our own cases does not settle this question except that one has the impression that more often the bronchiectasis was present first.

Treatment:

Medical cases (23)

16 had no treatment. The patients often come in during an acute flare up and when this subsided the patient was discharged as improved. Some were aged chronic cases with cardiac complications in which treatment could be of no value. The remainder were given postural drainage, treatment for sinusitis, for asthma, and a few were given 1 or 2 bronchoscopic aspirations.

Pediatrics & Otolaryngology (2)

The 2 cases on these services received postural drainage without improvement and treatment of sinuses and nose (subsequent examination showed no improvement of the bronchiectasis).

Summary of Medical Cases:

25 cases. Only 8 were under 40 years of age, i.e., in the age reasonably qualified for active treatment. Of these 8, only 2 had a unilateral lesion, and 1 of these had a complicating Pott's disease.

Surgical and Surgical Pediatrics:

15 cases. All pediatrics cases except 1 in Aug. 1928 were treated by both the department of surgery and pediatrics.

Postural drainage case: 1 Case.

This man was recovering from a lung abscess and was discharged to continue convalescence at home.

Lipiodol alone: 1 Case.

This patient had a 10-year period of observation. From 1921 to 1930 he was observed in the out-patient department and treated by various means without improvement. Lipiodol was started in the hospital on an admission in 1930. He has continued on lipiodol in the dispensary since and his symptoms are apparently but is continuing his refill regularly.

Phrenectomy: 12 cases.

4 cases of phrenectomy were done elsewhere. All of these apparently had improvement but this proved insufficient and they came here for further treatment. The patient gained 31 pounds and the sputum dropped to 10 cc but subsequently he again lost weight and his sputum increased to 30 cc.

A total of 8 cases of phrenectomy (35%) have already received other forms of treatment. 7 of these received the additional treatment along simultaneously with the phrenectomy. 3 subsequently came to radical treatment.

2 cases of phrenectomy operation alone have not been called back yet for check up. 1 phrenectomy died.

Thoracic and Lipiodol: 4 cases.

One case is a clinical cure. The remainder were not particularly improved.

Thoracic and Pneumothorax: 5 cases.

One markedly improved while under observation. 3 of the cases received both pneumo, parvo, and lipiodol.

Thoracic and Lipiodol: 1 Case.

One case of abscess adjacent to the heart was cured.

Thoracic and Lipiodol: 1 Case.

One case cured many later.

Thoracic and Lipiodol: 1 Case.

One case previously treated with lipiodol and thorocoplasty.

Summary of Surgical Treatment:

Most of our cases have been treated by the conservative methods. Many have not been checked upon for results. The known good results have followed lipiodol injections. The radical forms of treatment have all proven fatal.

II. ABSTRACTS: THE TREATMENT AND PROGNOSIS OF BRONCHIECTASIS.  
Abstr. Koucky.

References:

- A. Hedbloom, K. Dean Lewis Surgery (Prior). Author's previous writings are all incorporated in this text.
- B. Findley, L. and Graham, S. Arch. of Des. of Child. 6:1-10 (Feb.) '31.
- C. Ochsner, A. Am. J. M. Sc. 179:388-405 (Mar.) '30.
- D. Alexander, J. and Buckingham, W. W., Tr. Sect. Surg. General & Abd. A.M.A. Pp. 218-237, '30.
- E. Whittemore, W. & Balboni, G.H., Arch. Surg. 16:228-278, Jan. (Pt.2) '28.
- F. Harrington, S. W., Proc. Staff Meet. Mayo Clin. 3:98 (Mar. 21) '28.
- G. Lilienthal, H., Trans. Am. Surg. Assn. XXXII 1914; Arch. Surg. 16:206-214 Jan. (Pt.2) '28.
- H. Sauerbruch, F. (Text Vol. I), Wien. klin. Schnschr, 40:545, (April 21) '27.
- I. Graham, E.A. Arch. Surg. 10: 392-418, (Pt. 2) Jan. '25.
- J. Whittemore, W., Ann. Surg. 86:219-226 (Aug.) '27.
- K. Sergent, M., Internat. Clin. 2:1926 (J.B.Lippincott Co.)

Postural drainage alone: 1 Case.

This man was recovering from a lung abscess and was discharged to continue convalescence at home.

Lipiodol alone: 1 case.

This patient had a 10-year period of observation. From 1921 to 1930 he was observed in the out-patient department and treated by various means without improvement. Lipiodol was started in the hospital on an admission in 1930. He has continued on lipiodol in the dispensary since and is symptom free apparently but is continuing his refills regularly.

Phrenectomy: 12 cases.

4 cases of phrenectomy were done elsewhere. All of these apparently had improvement but this proved insufficient and they came here for further treatment. One patient gained 31 pounds and the sputum dropped to 10 cc. but subsequently he again lost weight and his sputum increased to 90 cc.

A total of 9 cases of phrenectomy (75%) have already received other forms of treatment. 7 of these received the additional treatment almost simultaneously with the phrenectomy. 2 subsequently came to radical treatment.

2 cases of phrenic operation alone have not been called back yet for check up. 1 phrenectomy died.

Phrenic and Lipiodol: 4 cases.

One case is a clinical cure. The remainder were not particularly improved.

Phrenic and Pneumothorax: 5 cases.

None markedly improved while under observation. 3 of the cases received both phrenic, pneumo, and lipiodol.

Incision: 1 case.

Patient had an abscess adjacent to an ectatic bronchus. Died.

Thoracoplasty: 1 case.

Had cautery lobectomy later.

Cautery Lobectomy: 2 cases.

These cases had had previously phrenectomy, pneumothorax, lipiodol and one had had a lower stage thoracoplasty. Both cases died.

Summary of Surgical Treatment:

Most of our cases have been treated by the conservative methods. Many have not been checked upon for results. The known good results have followed lipiodol injections. The radical forms of treatment have all proven fatal.

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General Statement:

Hedbloom, Ref. A. "Bronchiectasis is a chronic progressively extending disease which when fully established offers slight prospect of a spontaneous cure but which may be prevented at least in some measure, and ameliorated or cured by early diagnosis and suitable treatment."

Whittemore, Ref. E. "Medical treatment may be dismissed by saying that it cannot cure any case, although if the patient can devote his life to taking care of his health it may be that he will live a long and fairly comfortable life."

Sauerbruch, Ref. H. "The surgical treatment is certainly the hardest and least thankful of the entire lung surgery."

Spontaneous Cure; Ref. B., C.

A few scattered cases of apparent healing of bronchiectasis were found in the literature. These authors studied 32 personal cases in children for a period of 3 to 6 years. 12 of the cases died and the average duration of life was 2.63 years. In the remainder 3 cases appeared to have healed and 3 seemed to remain stationary. The conclusions were:

1. The prognosis in children is grave as the condition steadily becomes worse.
2. Undoubtedly bronchiectasis following chronic pneumonia may disappear but the degree of dilatation in these cases is slight.
3. The age of onset of the bronchiectasis would seem to influence the course of events: recovery is more probable in the examples which develop in later childhood.
4. During childhood the duration of the illness is of no prognostic help (i.e., cases seen within a few months of onset may be as uncontrollable as those seen several years later.)

The criteria of cure is doubtful. Remissions with no symptoms for long periods of time are common in the course of the illness so that so-called cured or arrested cases may be misleading.

Ochsner, Ref. C. believes that in some cases the dilatation is functional and not anatomical and is due to atony of the bronchial musculature induced by

bacterial toxins. In such cases spontaneous cure may result when the infection improves.

Medical Management: Ref. A, D, K.

Postural drainage, administration (intratracheal and nasal) of medication, vaccines and the dehydration treatment or "thirst cure" have been tried.

Postural drainage was first advocated by Quincke in 1898. In itself it has proven of no great value; combined with surgical procedures it has been of considerable help. It is recommended at 2-4 hr. intervals. The most applicable method is lying over the bed with the arms and head near the floor. In cases where active treatment is contraindicated this is the best palliative procedure.

Intratracheal medication, sprays, etc. have proven to be of no value.

Note: In our own cases this appears to be a common form of treatment. Some were treated in this fashion probably as bronchitis; many were so treated as a palliative measure because more active steps were contraindicated by age, etc.

Vaccines are shown to be useless.

"Thirst Cure" consists of severe limitation of the fluid intake. Dehydration produces a diminution of sputum. The method is not recommended.

Change of Climate:

Most cases show improvement during the summer and in dry warm climates.

Surgical Management:

Four methods of amelioration or cure of the disease are available:

- drainage
  - compression of cavities
  - extirpation of diseased tissue
  - filling with lipiodol
- A. Drainage
    - Bronchoscopic
    - incision (pneumonotomy, bronchotomy)
  - B. Compression
    - phrenectomy
    - pneumothorax
    - thorocoplasty
  - C. Extirpation (lobectomy)
    - primary excision
    - cautery excision
    - exteriorization of lung
  - D. Lipiodol Filling
    - passive method
    - transtracheal method

Bronchoscopic Drainage:

inadequate because the pus cannot be entirely evacuated and reaccumulates immediately and the frequency with which the procedure would have to be carried out makes it prohibitive.

Incision: Ref. A, C, D, G, H.

This consists of single or multiple incisions with knife or cautery thru the diseased lung to establish drainage to the exterior.

It was first suggested by Mosler in 1873.

Robinson 1902 collected 33 cases. The mortality was 62%. Batzdorf collected 53 cases with a mortality of 62%. 13.4% improved. Sauerbruch (1911) collected 123 cases having a mortality of 35% and 38% improved. These statistics show the extremely high mortality from this procedure. The mortality now probably would be less with the newer methods of anaesthesia and better acquaintance with technique. Hedbloom recommends the procedure only for single large bronchiectatic cavities or abscesses or for localized collections of dilatations. He recommends incision by cautery. The danger appears to be air embolism thru vessels held open by the sclerotic lung tissue.

Note: The one case in our own series was operated on for an abscess adjacent to an ectatic bronchus. She died suddenly with symptoms suggesting air embolism. Microscopic examination of the lung showed a sclerosing type of bronchiectasis.

Pneumothorax - Ref. A, D, E.

was first advocated for bronchiectasis by Mumford and Robinson in 1912. The procedure is limited to cases having a free pleural space and an uninvolved lung parenchyma. The latter point is very important. Infection and abscesses of the lung manifested by fever and leucocytosis may produce, following pneumothorax a complicating empyema. Cures reported by this treatment are in cases of less than a years duration and are rare in developed cases. The treatment is simple, safe (?), and has the possibility of ultimate restoration of lung function. It may be used as a gauge of the amount of improvement to be gained by the more radical thorocoplasty. The **objection is the long time necessary to**

carry out the treatment. The danger is empyema - 8.5% of cases.

## Results:

Tillman: 65 cases, 36.3% free of symptoms.

Whittemore and Balboni: 129 cases:

52% clinical "cures"

14% died

9% developed empyema

11% unimproved.

Phrenectomy: Ref. A, D, F.

is a simple minor procedure done under local anesthesia without any complications except in rare unique cases. The paralysis and resultant elevation of the diaphragm brings about a diminution of the pleural cavity equivalent to 15-30% of its volume and equivalent to a pneumothorax of 250-500 cc. of air. Sputum is raised with greater ease. However cure is to be expected only in unilateral cases and, moreover, the compression effects only the peripheral dilatations and less or not at all those medially located. It is to be tried first in all cases before more radical methods are carried out.

Hedbloom: 38 cases, 9 completely relieved, 20 showed marked improvement, only 2 unimproved.

Thorocoplasty: Ref. A, C, D, G, H.

Thorocoplasty produces much the same results as phrenectomy except that the compression is greater. Of the radical procedures it has the shortest period of convalescence and is the least trying to the patient. When the minor procedures fail it is the most generally applicable (Hedbloom). The lower posterior stage alone is not effective. The complete posterior plastic is necessary to get a good collapse and usually the complete operation with total deribbing is necessary. The operation is recommended in early unilateral cases and particularly in the atelectatic and cirrhotic types with retraction of the mediastinum to the affected side. Definite contraindications to this operation are given (Hedbloom): Advanced bilateral cases, those with constitutional signs (cardiac damage, amyloidosis) and most especially those with sepsis. Abscesses and pneumonic infection evidenced by fever and excessive sputum and

weight loss are absolute contraindications. The complications arising from this operative procedure are apparently due to disregarding this last contraindication. The complications are those of sepsis: pneumonia, brain abscess and septacemia. The danger of pneumonia produced by the flooding of the lungs by pus forced out of the bronchi by the collapse is mentioned by all writers. Hedbloom advises a 5-stage operation to avoid this complication.

Some surgeons disagree with the claims made by Hedbloom. They do not think the compression by thorocoplasty is sufficient to give a cure. Sauerbruch estimated that 80-100 pounds pressure is necessary to compress the dilatations of the large bronchi. Hedbloom however recommends the operation for early unilateral cases and for the atelectatic cirrhotic types. His results appear to substantiate his claims.

#### Results:

Lilienthal - 1914 - 5 cases - 20% mortality.

Sauerbruch - 1920 - 27 cases

5 clinical cures

12 improved

1 worse.

Hedbloom - 11 cases - 1926 - 5-stage operation.

3 - clinically cured

7 - working full time with slight sputum

2 - improved

no mortality.

1927 - 18 cases - 3-stage operation  
4 - deaths.

11 cases - cases with associated abscess and pneumonitis - 4 deaths.

These statistics show that there is no mortality with picked cases and a high percentage of improvement. When the operation is done in 3 stages the mortality jumps to 22.2% and when septic cases are operated upon the mortality rises to 35.5%.

#### Lobectomy; Ref. A, C, D, G, H, I, J.

Primary lobectomy consists of excision of a lobe of the lung. This is done in one or two stages. In the one stage operation, the lobe is isolated, the pulmonary ligament divided, the hilus

of the lobe is ligated, and the lobe removed. In the two stage operation, the lobe to be removed is first isolated from the remainder of the pleural space. Fusion of this is done by an irritating pack left in place for a few days. At a second stage the lobe is excised. Theoretically this is the operation of choice since it removes all the diseased tissue. The chief danger is leakage from the bronchial stumps with the development of a tension pneumothorax. The mortality always has been high.

1914 Meyers - 16 cases - mortality 50%

1922 Lilienthal - 30 cases - mortality 43%

Hedbloom - 40 cases " 51%

Graham - 45 cases " 52%

If the operation is successful a cure not always results unless only that lobe had been involved. Hedbloom suggested that a preliminary thorocoplasty makes the operation easier and safer because the collapse induces shrinking of the lung, obliteration of the pleural space and diminishes the volume of the chest so that leakage from the stump is less likely.

#### Cautery Lobectomy:

Consists of burning away the entire lobe and is performed in several stages. This procedure gets away from the leakage of the stump encountered in the other type of lobectomy but on the other hand there is produced the danger of hemorrhage, air embolism and sepsis (cerebral abscess and pneumonia). Graham, states he has never had an instance of shock or hemorrhage in his cases. He has had 4 deaths: 3 cerebral complications and 1 pneumonia. Toxic symptoms from absorption of the burned tissue is the rule. These last from the 3rd to the 10th post-operative day. For this reason the cauterization is never extensive at one sitting. From 2 to 8 stages are done. In the intervening time excellent drainage is provided to the exterior thru the fistulae which form. Complete cure is possible only in unilateral cases. Bronchial fistulae frequently persist but they do not cause much discomfort.

Results: Graham 20 cases. Mortality 20%, 30% clinical cures and

30% cured except for persistent fistulae. Mortality from Sauerbruch's clinic is 10.7%.

Exteriorization of the Lung. Ref. J.

Whittemore reported on a method of lobectomy whereby the lobe is not excised but is brought out thru the incision in the chest wall and sutured in place. The compression causes necrosis of the external portion. When sloughing is complete the base is clean and contains numerous fistulae for external drainage. There was no mortality and improvement was satisfactory.

Lipiodol Injection: Ref. C.

Ochsner reviews the history of the use of lipiodol. He cites the cases reported that showed improvement after diagnostic injections of lipiodol. He reviewed his 1500 injections and found on 6 reactions. These varied from a rhinitis to an erythematous rash and all cleared up in 24 hours. Ochsner is unsettled as to the advisability of using lipiodol (diagnostic) in cases of pulmonary tuberculosis. He reports 112 cases of bronchiectasis treated by injection of lipiodol. The maximum number of fillings in any one case was 12. 100% showed improvement. 35% were clinically cured and in 12% of these there was a disappearance of the lesions on x-ray examination. 36% received a clinical cure but had a relapse later. This relapse cleared up on 1-2 injections. 32% showed marked improvement but were still under treatment. Improvement is manifested by a gain in weight, disappearance of fever and cough.

Ochsner is not certain as to the mechanism of the improvement. He believes the lipiodol is disinfectant even the experiments have shown that the oil is not bacteriocidal in vitro.

He states "those cases in which there is relatively little pathology or a bilateral process, as well as in other cases in which a surgical procedure is not indicated may be greatly benefited or possibly cured by the repeated introduction of iodized oil."

Summary of Surgical Results:

A comparison of results by the various methods of treatment is not possible because the methods are applied to different stages of the disease. The treatment

carried out for the advanced stages necessarily carries a higher mortality and gives poorer results.

<u>Type of Treatment</u>	<u>Mor-tali-ty</u>	<u>Clini-cal Cures</u>	<u>Total % Im-proved</u>
Phrenectomy	0	23.7%	76.3%
Lipiodol	0	35 %	100 %
Pneumothorax	14%	0	52 %
Thorocoplasty	0-22.2%	23 %	87.3%
Incision	35-62 %	0	38 %
Primary Lobectomy	42.8-70%	0	0
Cautery Lobectomy	20 %	30 %	60 %

Prophylaxis of Bronchiectasis: Ref. A, D.

Because of the unfavorable outcome of treatment and the poor prognosis a plea for treatment to prevent the advanced stages of the disease is presented. The various etiological factors and all the possible methods of pathogenesis are not known; however certain causes are definite and their end results preventable:- early recognition of the aspiration of foreign bodies and their removal, recognition and treatment of atelectosis following infections, treatment of so-called chronic or unresolved pneumonia; early and adequate drainage of empyema and lung abscesses; active and persistent treatment of upper respiratory foci of infection.

Atelectosis and unresolved pneumonia (same thing?) if they fail to respond to medical management should early be treated as bronchiectosis by phrenicotomy (to relieve the tension on the bronchi). Thorocoplasty early is urged if there is manifested any tendency of the mediastinum to shift to the affected side. This shift is due to increased negative pressure on this side and to fibrosis and will lead rapidly to a severe bronchiectasis.

Conclusions:

1. The prognosis of bronchiectasis is not good.
2. Medical management has little to offer; surgical methods carry a high



mortality rate and a relatively low percentage of cures.

3. 50% of cases are bilateral; cure is possible in only about 30% of the unilateral cases, i.e., about 15% of the total.

4. Bilateral cases can only be ameliorated by operative work on the side of worst involvement.

5. Advanced bilateral cases can be treated only by lipiodol.

6. Septic bilateral cases should not be operated upon.

7. Septic unilateral cases can be subjected to only phrenicotomy, lipiodol or cauterly lobectomy.

8. Early unilateral non-septic cases appear to respond best to thorocoplasty.

9. Phrenectomy and pneumothorax appear to be of value only in mild unilateral cases.

10. The value of lipiodol injections is remarkable (in the reported work) but further reports are necessary to substantiate this.

11. The most hopeful phase of the problem is in energetic treatment of conditions known to lead to bronchiectasis.

12. The frequency of hemoptysis, the remarkable association with "asthma", the indefinite histories of onset, the number of cases we see in older persons (who probably do not find their way into surgical series) are to be noted.

Note: Pathologist Koucky's splendid summary of this problem is to be commended. His entire report plus his recommendations are passed on to you without any alterations. We must not forget that the weekly information we receive is the contribution of Fellows Henrikson, Koucky, Pearson, Randall and Shimonek. It takes time, work and good judgment to do this and predicates a splendid future for these young men. They have done yeomen service in bringing closer to realization our concept of what a teaching hospital staff meeting should be - a "hospital seminar." W.A.O'B.

Three cases of bronchiectasis died during 1931. Two are presented here (third is omitted because of lack of space.)

### III. CASE REPORT

#### CHRONIC BRONCHIECTASIS, RIGHT. Path. Randall.

The case is that of a white female 25 years of age, admitted to the University Hospitals 10-2-30 and discharged 10-31-30 (29 days); readmitted 8-1-31 and died 8-11-31 (10 days).

#### Ether pneumonia?

1927 - Patient sustained fractured hip and this was operated upon. Following this, patient believes she contracted ether pneumonia?, then began to cough and raise sputum. The sputum was found to be negative for tubercle bacilli.

#### Phrenicotomy

6- -28 - A phrenicotomy was done. Pneumothorax tried but unsatisfactory.

6-30-28 - First operation on thoracic cavity was done at the Glen Lake Sanatorium.

#### Hemoptysis

11- -28 - Patient had a severe hemorrhage (pulmonary). Later it was reported that patient has had two positive sputum examinations for tubercle bacilli.

#### Operations

12- -28 - Admitted to Glen Lake Sanatorium. Patient had her first operation, June 1928, which was a rib resection. This was followed by two operations which were cauterizations, fourth and fifth operations were rib resections and the sixth was cauterization. The last operation was done June 1930.

#### Hospital

10-2-30 - Admitted to University Hospitals. Patient has had no pleurisy, night sweats, but lost some weight since accident. Past History - Tonsillectomy 1919. No edema, dyspnea, palpitation, precordial pain nor orthopnea. Appetite fair. Stools normal. No constipation, diarrhea or pain. No dysuria or hematuria. No history of tuberculosis in family.

#### Physical examination

Reveals a white female lying comfortably in bed. In good mental state.

Eyes - pupils are equal and regular.  
Ears, nose and throat - negative. Neck - thyroid not palpable; no palpable adenopathy. Chest - operative scar on right side which is bandaged; an opening in thoracic wall present. Lungs - left side - no impairment, no rubs, or rales, breath sounds somewhat increased; right side -- dullness below fourth interspace, anteriorly; hyper-resonance above fourth interspace on right side. Heart - outline normal, no thrills or shocks, tones fairly clear, rate and rhythm normal, systolic murmur present over whole precordium. Abdomen - liver, spleen and kidneys not palpable; small hard nodule below right costal margin in antero-axillary line. Laboratory: Urine - negative. Blood - Hb. 75%, rbc's 4,480,000, Wbc's 10,000, Pmn 74%, L 26%. Progress: T 99.4, P 105, R 20.

#### Cauterization

10-4-30 - Operative data. Preoperative diagnosis: Bronchiectasis. Spinal anesthesia. Findings: On right thorax there is an old scar about 25 cm. in length in which there is an area of exposed lung. Procedure: Incision was lengthened, exposing the lung anterior to the portion previously cauterized. The diaphragm was well visualized. The exposed area of lung was then cauterized by means of actual cautery to a depth of about 3.0 cm. Apparently all of this lobe was removed by the process. Cavity was packed with vaseline gauze.

#### Fever

10-10-30 - and for next 7 days, patient has been running a temperature from 100 to 103 with pulse from 110 to 130. There was a great deal of serous drainage from the wound having a bad odor. Has been given a great deal of morphine, codeine, chloral hydrate.

10-28-30 - Mineral oil oz. i, b.i.d. Browns mixture with ammonium chlorid oz. i q.i.d. Chloral hydrate gr. xxx. Patient seems very restless. Up and about. Patient coughs a lot and raises a considerable amount of sputum.

#### Improved

10-31-30 - 26 days post-operative. Patient has had a satisfactory convalescence. Discharged from Hospitals. Thought advisable to give patient lipiodol injections into the bronchus which was thought

to be of some value. Patient refused these and desired to go home.

#### History reviewed

August 1, 1931 - Readmitted to University Hospitals. Patient comes into Hospital for further operative procedure on right lung. She has had eight operations (lobectomies, cauterizations, etc.) in this region following a diagnosis of bronchiectasis. Note: There is some discrepancy in the patient's past history as follows: In 1922, patient was struck by an automobile and suffered a fracture of the left femur. The immediate treatment of this was unsatisfactory and later operative procedures were resorted to -- she has had three operations upon this hip, the last one being in 1927. Following this operation she developed pneumonia. After this, she recovered from the pneumonia but still had a cough and would raise large amounts of sputum, especially when she would bend over.

#### Present History

Immediate present history: Patient is in fair health. She has only a slight cough and raises practically no sputum except when she has a cold. Has a good appetite, good color and appears quite well except for a large opening in the right chest wall, posteriorly. States that she has slight dyspnea but this is due to the cavity in the right chest wall and when bandages are applied tightly she notices no difficulty in breathing.

#### Physical Examination

Positive findings on admission are the same as those found in previous examination. Patient wears both upper and lower plates. Lungs -- left, apparently normal; normal breath sounds and no rales. Right, appears normal superiorly; no breath sounds in inferior portion (this is difficult to examine due to cavity and bandages over it; no rales. Heart - apparently somewhat displaced to the left; tones strong; no murmurs nor thrills; blood pressure 125/85. Extremities - left leg shorter than right; operative scars on left hip. Laboratory: Urine - negative. Blood - Hb. 78%, rbc's 4,490,000, wbc's 8,200, Pmn 75%, L 27%; hypochromasia with decided anochromasia, anisocytosis, polikilocytosis; blood group IV.

8-7-31 - General diet. No complaints.  
No medications.

#### Cauterization

8-8-31 - 9:35 A.M. Morphine Sulphate gr. 1/6 (H). Atropine sulphate gr. 1/150. Foot of bed elevated for 4 hours. 9:57 A.M. - to operating room. Preoperative diagnosis - unilateral lower lobe bronchiectasis, right side. Postoperative diagnosis - same. Spinal anesthesia - 100 mg. of novocain crystals 9 cc. in spinal fluid 10 minutes after the intramuscular injection of 50 mg. of ephedrine. Operation - Graham cauter lobectomy, right. Findings, gross: Previous cautery had been done on the right lower lobe. A bronchiectatic pocket is visualized by lipiodol. Diaphragm is parallel. Paradoxical motion was present. Diaphragm pushed up into the incision with coughing. Reopening of the previous incision and resection of portions of the regenerated and lateral rib segments. Skin and muscle flap was then retracted upward, and the exposed remaining portion of the right lower lobe was destroyed by actual cautery with cautery iron of a dull cherry red heat. No bleeding was encountered. Diaphragm and surrounding chest wall was carefully protracted by several layers of gauze packing, as was also the pericardium and mediastinal structures. Most of the cautery was directed medially and upward. The wound was then closed with about 2 feet of iodoform gauze packing directly against the cauterized area followed by a long strip of plain gauze placed in the incision under pressure. Dressings then applied and tightly strapped in place with adhesive. During the first part of the operation it was necessary to supplement the spinal anesthesia with injection of a small amount of 1/2 of 1% novocain during the resection of the regenerated rib. Postoperative condition good. - 11:25 A.M. Morphine sulphage gr. 1/6 (H). Returned from operative room. 3:25 P.M. - Morphine Sulphate gr. 1/6 (H). 4:30 P.M. - emesis of 150 cc. of orange juice. 7:30 P.M. - Morphine Sulphate gr. 1/6 (H). Complains of severe pain. T 98.8, P 105, and R 20.

#### Post-operative Pain

8-9-31 - 12:30 A.M. - Morphine Sulphate gr. 1/6 (H). Dressings thoroughly saturated with serous drainage. No appearance of hemorrhage. Had several small emeses first part of night of clear fluid.

Given lemonade, seemed able to tolerate that. 5:00 A.M. - Morphine Sulphate gr. 1/6 (H) for pain. 8:30 A.M. - dressings saturated with serous drainage which is slightly blood tinged. 10:15 A.M. - Morphine Sulphate gr. 1/6 (H). Slept most of afternoon. 7:30 P.M. - patient still sleeping. 9 P.M. - codeine sulphate gr. 1-1/2. Complains of severe pain. Sleeps at intervals. Serous drainage on dressing but no hemorrhage. General condition good. Complains that hypodermics are not frequent enough.

8-10-31 - Patient started to menstruate. Complains of headache. Complains of not getting hypodermics often enough. Is getting Morphine sulphate gr. 1/6 (H) alternating with codeine sulphate gr. 1-1/2 every 4 hours p.r.n. Had some bloody sputum today, will be watched. 10:30 P.M. - allonal tablets i and codeine gr. 1-1/2 for headache.

#### Drowsy - Exitus

8-11-31 - Seems very pale and drowsy today. Still complains of hypodermics not being given often enough. Pulse of fair quality. Temperature 98.8 to 101, pulse 128. 8 A.M. - Morphine Sulphate gr. 1/6 (H). Appears very drowsy. At times would awaken with a startle and then suddenly fall asleep. Pulse is very rapid. Complains of very severe pain. When patient does not get a hypodermic, she becomes very restless and coughs, raising some phlegm which is slightly blood streaked. Patient is very drowsy this A.M. Respirations irregular. Pulse of good quality, regular but rapid. Coughs very little this A.M. 1 P.M. - has been sleeping since 9 A.M. Awake occasionally but too drowsy to speak much. 1:30 P.M. - Became nauseated. Had emesis of 150 cc. of greenish fluid. No blood. Then patient appeared to inhale emesis. Gaspd, became cyanotic, eyes rolled back, pulse became weak and then imperceptible. 1:40 P.M. - adrenalin i cc. Caffeine sodium benzoate gr. 7-1/2. Artificial respirations. 1:55 P.M. - patient gasped twice and then ceased breathing. Pronounced dead.

#### Autopsy

The body is that of a well-developed, somewhat poorly nourished, white female about 25 years of age. The eyes, nose, and mouth were not examined because the body had been embalmed. There is slight

cyanosis of the finger-tips. There is a large incision extending from the angle of the right scapula anteriorly and downward to about 6.0 cm. over the peristernal border on the right side. This incision is packed with a large amount of gauze. There is no evidence of hemorrhage. There are several sections of the ribs gone in this region. The tissue inside the wound, that is the lung tissue, appears scarred as if it had been seered. Upon exploring the wound immediately below the incision and immediately below the operative area is the diaphragm.

On exposing the intrathoracic cavity, it is noted that practically all of the right lower lobe has been destroyed by operative means. There is no evidence of hemorrhage. The pericardium and mediastinum do not show evidences of change due to operative injury. There is only a small shell of the lower lobe present near the mediastinum and near the base. This does not consist of any bronchiectatic cavities on section. The middle lobe is separated from this operative area by a wall of dense adhesions. The right upper lobe is quite firm and fixed by a few dense adhesions at the apex. There is some emphysema present in the subcutaneous tissues, right upper lobe and immediate mediastinum. However, this is not extensive. Upon section, the right lung shows the vessels to be filled with blood clots. This is probably postmortem change as they can be removed without much difficulty. However, there is considerable congestion and atelectasis. The left lung is free from adhesions. There is no increase in fluid. On section of the right lung an increased fibrosis is shown which is probably an old chronic condition. There is an increase in mucous secretions in the smaller bronchioles of the right lung. The trachea shows no increase in secretions or fluid. No evidence of foreign body.

On examination, the left lung is air-containing throughout except possibly at the base where there is some atelectasis but no consolidation is present. On section, the larger bronchi and bronchioles contain a moderate amount of mucoid secretion. There is no foreign body or aspiration secretion noted. There is some congestion on this side. No evidence of pneumonia.

The Heart weighs approximately 300 Gm. No evidence of emboli is noted in the great

vessels. There is no increase of fluid in the Pericardial Sac. The myocardium and epicardium show no evidences of change.

The Liver weighs about 1500 Gm. There is no marked gross change other than postmortem and embalming change. One must rely upon microscopic sections of the liver for pathological changes.

The Spleen weighs about 300 Gm. and is firm. On section, there appears to be a localized amyloid (?) disease in the region of the malpighian corpuscles. These areas are pink, smooth, and surrounded by a dark red pulp. Not tested with iodine.

Both Kidneys are smooth and weigh approximately 150 Gm. each. The cortex and medulla are distinct. The glomeruli are distinct. No gross changes noted.

The Gastro-Intestinal Tract and pelvic organs are only grossly examined in the body but not removed. No changes noted.

#### Diagnoses:

1. Chronic bronchiectasis.
2. (Postoperative) cauterization of right lower lobe.
3. Fibrosis of right upper lobe.
4. Emphysema, right lung.
5. Amyloid disease of spleen (?).  
(See microscopis report).
6. Emaciation.

Note: Doubtful as to immediate cause of death. No evidence of thrombi or emboli noted. Slight increase in bronchial secretions (edema?) Drowsiness suggests acute hepatic insufficiency (toxic), intracranial lesions (abscess?), or profound toxemia (absorption).

#### Microscopic examination:

Lungs: Bilateral pneumonia.  
Only slight evidence of bronchiectasis remains.

Spleen: No amyloid present.

#### IV. CASE REPORT

##### CHRONIC LUNG ABSCESS, BRONCHI-ECTASIS, AND PNEUMONITIS.

Path. Randall.

The case is that of a white female, 16 years of age, admitted to the University Hospitals 8-24-31 and died 10-3-31 (41 days).

Pneumonia

1916 to 1924 - At one year of age, patient had first attack of pneumonia. After this patient had pneumonia every year until 8 years of age.

1-19-26 - Tonsillectomy.

Bronchiectasis (exacerbations)

2-15-26 - Patient developed a severe cough which became progressively worse. The cough is worse in the morning, especially when lying on right side. At present, patient has coughing spells which are more severe about every two months. At these times, she raises a considerable amount of sputum which is very foul-smelling. During this time, patient has developed dyspnea on exertion which has become worse in later years.

1927 - Patient consulted a physician who thought her cough was the result of her previous attack of pneumonia.

Hemoptysis

4- -31 - Sputum was blood-streaked for one week. Patient had dyspnea without exertion.

Hospital

8-24-31 - Admitted to University Hospitals. Complaints: Loss of 10 lbs. in weight since January 31, 1931. Cough. Dyspnea. Past History: Patient has had frequent earaches. Cannot breathe very well through nose. Frequent sore throats before tonsillectomy. Family history: No tuberculosis.

Physical Examination

Reveals a well-developed and well-nourished, white female, 16 years of age, who is cooperative and is of fair intelligence. Ears - perforation of left drum. Neck - posterior cervical adenopathy, also anterior cervical adenopathy. Breasts - left smaller than right; some evidence of cystic change. Chest - Excursion equal; tactile fremitus normal; no retraction; on percussion there is impaired resonance on the right, below the third rib, auscultation shows diminished breath sounds over the same area and at right base behind. Heart - blood pressure 106/76; normal size and shape; no thrills or murmurs. There is a marked sinus arrhythmia. Abdomen - negative. Extremities - clubbing of fingers. Impression: Lung abscess, right base. Perforated left ear drum. Nasal obstruction. Pelvic examina-

tion: Genitals fairly well developed. Cervix small and in midline. Uterus in anterior. Pelvis essentially negative.

Laboratory

Urine - many wbc's, few rbc's. Blood - Hb. 84%, Wbc's 13,500, P 74, L 22, M 4. Progress: Temperature 98. Pulse 84. Weight 96 lbs. X-ray of chest, hands: conclusions - Bilateral bronchiectasis. Clubbing of fingers.

Impression

8-25-31 - Placed on general diet. Note by Fellow: Harsh cough, raises considerable amount of foul-smelling sputum. Chest - enlarged appearance, decreased breath sounds, dullness over right chest at anterior base, beginning pulmonary osteo-arthritis of fingers and toes. Cavity in right chest is closer to anterior aspect. Impression: 1. Bronchiectasis. 2. Thickened pleura. 3. Tuberculosis. 4. Lung abscess.

8-26-31 - Temperature taken every 2 hours for 48 hours. Manteau test. Urine - negative.

8-27-31 - Urine - negative.

Postural drainage

8-28-31 - Postural drainage, 15 minutes t.i.d. Stool - negative except for positive benzidine. Sputum - 4 cc. yellowish, muco-purulent with very foul odor; microscopic shows pus cells, streptococcus, staphylococcus and bacilli. No elastic tissue. No tubercles. Manteau test - negative.

Fingers

8-29-31 - X-ray of sinuses - conclusion - sinuses negative. Has the digit fingers of each hand bandaged and supported on tongue blades to straighten them. Patient states that they pained her when left crooked and feels much better supported. 10 A.M. - 10 cc. of foul-smelling drainage from lungs during postural drainage.

Lipiodol

9-1-31 - Note by Fellow: Throat was anesthetized with cocaine and patient was taken to x-ray laboratory where lipiodol injection was done. Patient was apprehensive, swallowing most of the dye. Therefore, the fluoroscopy which was done was not entirely satisfactory. There was a small amount of dye shown in

bronchi but most of it was in the stomach. Stereoscopic views of the chest were taken.

#### Nose

9-3-31 - Stool - negative. Urine - negative. Nose and throat consultation: anterior nares small. Mucous membrane of nose and turbinates negative. No pus or crusting discharge. Throat negative. Suggest x-ray of sinuses.

9-4-31 - X-ray of sinuses: Conclusion - negative sinuses.

9-6-31 - Temperature 99. Pulse 80. Respirations 18 to 20. Weight 101 lbs.

9-9-31 - Tincture belladonna M xv., t.i.d. Ammoniated mercury ointment to lesions on face every day.

9-13-31 - Vena puncture. Blood used as foreign protein. Temperature 98.8.

#### Bronchoscopic

9-14-31 - Bronchoscopic consultation: Tracheo-bronchial tree diffusely and uniformly congested. Moderate amount of them white purulent secretion in trachea and each main bronchus, a little more in right side. Specimen taken from right side, aspiration used on each side, and lipiodol injected in right side. Impression: Bronchiectasis. Bilateral, more pronounced on right side.

#### X-ray, Abscess

X-ray of chest: Lipiodol injection through the bronchoscope shows a very large abscess at the base of the right lung below the dome of the diaphragm which was previously invisible. In the lateral view this is shown to be entirely posterior and the connection with the bronchus is very well demonstrated. The appearance suggests a large abscess with a fistula into the bronchus or possibly an encapsulated empyema which has ruptured into a bronchus. It is very well localized however. The extensive bronchiectasis previously reported is again shown, but the lipiodol passed entirely into this abscess. There is a very large mass of parenchymal infiltration just behind the heart on the left side with probably some atelectasis of the lung here. Conclusions: Lipiodol into lung abscess. Bronchiectasis with atelectasis of lung. Films of the hands showed a very slight clubbing of the distal phalanges characteristic of a pulmonary osteo-arthropathy in the earlier stage. Conclusion:

Pulmonary osteo-arthropathy, early.

Stool - negative benzidone.

9-15-31 - Sputum - Ziehl-Nielsen stain - no tubercle bacilli (obtained by bronchoscopic examination). X-ray of chest - The abscess cavity has emptied itself to a very large extent of lipiodol, only a very slight residue remaining. Otherwise the findings are the same.

#### Pain

9-16-31 - Complains of pain in the right side. Has been present since examination. Pain goes up to right apex. Hot water bottle to chest.

9-17-31 - Temperature 99. Pulse 100. Pneumothorax - 200 cc. air injected. No evidence of crackling rales or cavity. Negative pressure of -2.

#### Dental

9-19-31 - Dental consultation - x-rays have been taken. Would not advise removal of upper cuspids which should be brought into place by means of orthodontia. If this is impossible for her at the present time, she may be able to have it done later. Sputum - negative for tubercle bacilli, many pus cells and rbc's. Blood - wbc's 17,700.

#### Pneumothorax

9-23-31 - Pneumothorax, 600 cc. air injected. Pulse at start 120, after 130. Pressure at start -3 to -6, after pneumothorax +2. X-ray of chest - conclusion - hydropneumothorax, right. Partial collapse, right lung. Superficial lung abscess or encapsulated empyema, right.

9-24-31 - Patient had second pneumothorax and has been troubled with irritating cough which is suppressed by codeine. Feels weak and tired. Raises about 50 cc. of sputum.

#### X-ray

9-26-31 - X-ray of chest - there is some increased collapse since the last examination and a small amount of fluid is also present. The cavity is still filled with lipiodol and does not appear to be separating off from the pleura whatever altho the remainder of the lung is collapsing down. Conclusion: Pneumothorax. Slight amount of pleural effusion. Superficial abscess or encapsulated empyema, right. Aspiration

attempted, level of first lumbar vertebrae on right side without success. Coarse rales at level of first lumbar.

### Surgical

9-29-31 - Surgical consultation - Impression is encapsulated empyema. Believe drainage indicated. Additional history concerning sputum after tonsillectomy is rather significant of lung abscess, but I do not believe that this is one. Patient transferred from Medicine to Surgery.

### Rib Resection

10-2-31 - Operative date. 6 A.M. - codeine sulphate gr. i for cough. S.S. enema. Coughed considerably this A.M. Seems very tired. X-ray of chest - There is evidence of some fluid on the right side at this time and a diffuse increase in the bronchovascular markings suggesting a disseminated infection or possible pulmonary edema. 2 P.M. - Codeine sulphate gr. i, Morphine Sulphate gr. 1/6, atropine sulphate gr. 1/180. To operating room: Preoperative diagnosis - Encapsulated empyema at right base or lung abscess. Anesthesia: Ethylene.

Preparation: Iodin and alcohol. Incision: Oblique over tenth rib. Operative procedure: The tenth rib was resected subperiosteally and it was found that the lung was adherent beneath it. It was easily apparent, however, that on either side of the point of adherence the lung was not fixed. The pleura was cut down upon here but one immediately came into the free pleural space due to the fact that the lung was adherent to the diaphragm but not to the pleura itself. The pleura was not very thick being two or three times the normal thickness. Because of the free adherence of free pleural cavity it was thought best not to incise the lung or separate the lung from the diaphragm at this time. The lung felt indurated but there was no great extent of this. Apparently a bronchial fistula is situated near the dome of the diaphragm. It was therefore considered best to close the wound and this was done with a running suture of chronic catgut approximating the pleura. The muscle was gently closed over it and the ninth rib was resected subperiosteally and an iodoform gauze pack inserted over the pleura to obtain union between the parietal pleura and the lung. A few in-

terrupted sutures were then placed in the muscle over the pack with the idea in mind of getting agglutination and subsequently opening the pleura and removing the pack at that time. The skin was closed with interrupted sutures of linen.

### Post-operative

Blood pressure after getting back to ward 85/50. Pressure varied from 95/60 to 80/30. Quite cyanotic. 8 P.M. - Interne called to ward. Condition is very bad. Gasping for breath. Cyanotic. Blood pressure 0/0. O<sub>2</sub> - CO<sub>2</sub> given under positive pressure. 500 cc. citrated blood whole blood given with 1000 cc. saline. Blood pressure rose to 140/85 and was maintained. O<sub>2</sub> tent set up. Patient's color is much better at 10:15 P.M. Yesterday, 1400 cc. of air withdrawn from chest. Total air said to have been given by pneumothorax. Probably a pleural fistula had been obtained. (Lung was needled for pus.) At operation, lung expanded by pressure. Post-operative coughing, etc. has probably forced air under pressure into pleural surface with the reaction noted above.

### Exitus

10-3-31 - 1 A.M. - Blood pressure 95/60 for two hours. Pulse good. Still cyanotic but helped a great deal by oxygen tent. 7:30 A.M. - patient much better. Blood pressure 105/60. Heart is still irregular but pulse is fairly strong. No cyanosis with oxygen tent. Note by Fellow: Cyanosis still marked. Coughing incessantly. Temperature 102. Chest full of bronchial rales. X-ray last night failed to show collapse. Lungs extremely congested. Cyanosis, temperature, coughing and rales suggest "capillary bronchitis". Will try steam inhalations and atropine alternating with oxygen tent. 5 P.M. - Patient is obviously much worse. Blood pressure 80/50. Extreme cyanosis in oxygen tent. Seems much weaker. Does not respond. 9:05 P.M. - patient expired.

### Autopsy

The body is that of a well-developed and well-nourished, white female, measuring 151 cm. in length, and weighing approximately 130 lbs. There are puncture wounds in both antecubital spaces. There is a small incision over

the internal malleolus of the right tibia which has been closed with black silk sutures. Rigor is present. Hypostasis is purplish and posterior. There is 1+ edema over the kidney region. There is slight cyanosis. No jaundice. Each pupil measures 5 mm. in diameter. There is an incision over the lower angle of the right scapula, measuring about 10 inches in length, which is open. There is a very definite osteo-arthropathy of the fingers and toes.

The surface of the Peritoneal Cavity is smooth, moist, and glistening. No increase in fluid. The liver margin is about three fingerbreadths below the right costal margin. The spleen is not enlarged. The organs are in normal relationship to one another. The pelvic organs are essentially normal.

Pleural Cavities. Upon removal of the chest plate, extensive adhesions are noted over the right and left lungs extending between the visceral and parietal pleurae. These are more extensive on the left side and are very dense. Those on the right side can be broken down with ease. The incision, noted above, over the 10th rib extends to the pleura just above the diaphragm. There is no injury to the lung or diaphragm noted. Both lungs are quite atelectatic and contain very little air. They are only slightly crepitant. The Pericardial Sac is smooth, moist, and glistening. No increase in fluid.

The Heart weighs 240 grams and is essentially normal. The endocardium and myocardium show no change. The coronaries and Root of the Aorta are normal.

The Right Lung was injected with methylene blue to the right bronchus. No evidence of perforation of the lung at any point. The base of the right lung shows numerous adhesions which can be broken-up with ease. No evidence of any empyema cavity outside of the lung. The right lower main bronchus is traced out and is noted to connect in a small saculation, measuring about 2.5 cm. in diameter, in the lowermost portion of the right lower lobe just above the diaphragm and just lateral to the mediastinum. This is a very small cavity and does not contain any free pus at this time. On section of the right lung, it is noted that the bronchi are greatly thickened, moderate amount of fibrosis throughout, and all of the bronchi and

bronchioles contain a moderate amount of frothy, slightly blood-tinged exudate. There is a moderate amount of edema present in both lungs. The Left lung is essentially the same as the right except there is no cavity found. The adhesions over the visceral pleura are extremely dense and liberated with great difficulty. A very prominent picture is the very definite enlargement of the mediastinal lymph nodes which are discrete, soft, and on section appear broken down but not caseous but quite hyperplastic.

The Spleen weighs 180 grams, cuts readily, and on section shows the pulp to be quite soft, and the malpighian corpuscles and trabeculations to be distinct.

The Liver weighs 1150 grams. There is definite perihepatitis. On section, the lobulations and central vessels are distinct.

The Gall-Bladder is small. The wall is not thickened. It contains dark green colored bile.

The Gastro-Intestinal Tract is normal.

The Pancreas and Adrenals are normal.

Each Kidney weighs 120 grams. The capsules strip readily. On section, the cortex and medulla are distinct. The glomeruli are distinct.

The Genital Organs are normal. There is slight retro-flexion of the uterus.

#### Diagnoses:

1. Chronic bronchiectasis (abscess).
2. Post-operative shock.
3. Pulmonary edema.
4. Chronic pneumonitis.
5. Small saculation cavity connecting with right lower bronchus in the periphery of the lung.
6. Chronic adhesive pleuritis.
7. Hyperplastic mediastinal lymphadenitis.
8. Acute splenitis.
9. Congestion of the liver and kidneys.
10. Slight retro-flexion of uterus.
11. Osteo-orthropathy.
12. Slight cyanosis.
13. Puncture wounds in both antecubital spaces.
14. Post-operative incision below the angle of the right scapula.

#### Microscopic section of lung:

The most striking feature encountered is the marked amount of fibrosis present



in the interstitial tissues which in many places are obliterating alveoli. This fibrosis is particularly marked around the bronchi and bronchioles. Within the alveoli, there is a moderate amount of exudate consisting mainly of desquamated epithelium, a few pus cells, and lymphocytes. In the section taken in the region of the small saculation cavity, there are numerous giant cells some of which are quite similar to the Langerhan's type. These are present in the alveoli, walls of the alveoli, and in the more dense interstitial reactionary zones. These giant cells are sometimes seen with a large amount of fibrosis around them and also with lymphocytes and atypical epithelioid cells as well. No typical tubercle formation is seen, however. No zones of caseation are noted. The bronchi in this region contain considerable exudate of lymphocytes and pus cells. The granulation tissue in the region of the cavity consists mainly of fibroblasts, young and well formed blood vessels containing red blood cells, as well as lymphocytes, plasma cells and polymorphonuclear cells. This has been reported recently in the Arch. of Path. as a non-tuberculous process.

Lymph nodes: show moderate amount of hyperplasia, no caseation, no tubercles.

Spleen: Acute splenitis.

#### V. PAUL HILL FESLER

came to the University Hospitals as Superintendent January 17, 1927 after serving in a similar capacity at the University of Oklahoma for twelve years. He will leave to assume direction of the Wesley Hospital in Chicago May 1, 1932. When the Minnesota position was open in 1926, an inquiry was made as to possible candidates. In most instances, only one name was recommended and that was Mr. Fesler's. His record of accomplishment against great odds at Oklahoma was almost unbelievable. When he arrived at Minnesota, great things were expected of him and no one has had any reason to feel that his advance notices were exaggerated in the slightest detail.

During the past five years, the changes in our Institution have been little short of amazing. Both recent and old graduates marvel on their return at the very evident changes which have taken place

during this short time. Hospital inspectors of national governing bodies have repeatedly termed our Hospital the most improved Institution on their list. To recount some of the changes is only to err by omission. The budget has been increased from \$290,000 to \$585,000; capacity increased nearly 200 beds and more than \$1,000,000 expended for new construction, equipment and alterations.

To go on with the list we find the Social Service Department organized and functioning on a high plane, the new Out-patient Department housed in the Hospital, the Health Service now an integral part of our plant, the Admission Service more than fulfilling its function (Mr. Fesler's choice of our best effort), Nursing service increased and more specialized, technical assistance increased (gradually going over to University graduate grade), complete detailed information to all referring physicians, weekly Staff Meeting, Departmental Seminars, Clinical Departments housed in the Hospital, Record Division reorganized, including the unit single number system, Stenographic Service improved, Ediphones at advantageous points, increase in Staff of all grades, new concept of courteous treatment of all, rearrangement of personnel with recognition of specialized individual talents (e.g., Miss Gilman in charge of all Hospital admission records), development of Dietetic and Technology courses, opportunities for graduate instruction of nurses, better working relationships with other institutions and social agencies, numerous contacts with organizations who have frequently met here and have been really made to feel at home, development of clerkships, research laboratories, alteration of operating rooms, laboratories, physiotherapy department, new manager of Out-patient Division, greater realization on the part of all of maintaining not just harmonious contacts with the public but a positive program directed to the end that the University Hospitals need the undivided support of all for maintenance and growth (to name but a few things). Newcomers in our group fail to realize this remarkable evolution, so smoothly have these innovations been put into effect.

Mr. Fesler is the last man to take credit for any of these things. He has repeatedly stated that when he came to Minnesota everything was simply awaiting affirmative action. "The Staff, and this means everyone, are the real ones responsible" according to Mr. Fesler. There is one thing for which we cannot take complete credit and that is the universal feeling of confidence in our Institution on the part of the medical profession. As faculty members, we are mirrored in the minds of our students in exactly the same way that we recall our teachers. Mingled feelings of reverence, respect, confidence, gratitude and bitterness for fancied or real slights and humiliations are still in our minds and this is also true of our students. When they leave us, they know what we expect of them. Frequently, this is impossible in daily practice. In sending us their patients, they often have feelings of inferiority for the work that they have not been able to do. While Mr. Fesler's policy from the very beginning has been to decentralize control and place direction and supervision on our shoulders, he has never completely turned over to us the problem of making the medical profession our real friend. In his uncanny way, he has been able to do what we probably can never do. The medical profession (more than any of us can realize) feel in his going that they have lost a true friend and supporter. Our debt to society is obligatory. The University's conception of a state-wide campus has come nearer to realization through his efforts than ever before.

One would imagine that his term of service was without a flaw. This is not true for he is human. It may be said, however, that he was a good loser and leaves with the universal respect of his associates and their best wishes for a happy and successful future. As the realization of his loss comes home to us, it becomes more and more apparent that many of the things for which he has been thoughtlessly criticized have really been blessings in disguise. His frequent absences from his desk fit in very well with the policies of our Institution and have really helped to make it what it is.

We look forward to the future, with confidence. We know that the man who comes in his place will be one who has his approval. In this way, his policies

will go on. The universal support of our entire group is necessary for his successor if Mr. Fesler's dream is to come true. Noted from coast to coast as the "physician to sick institutions" he goes to his new place with plenty of work to be done. Hospital superintendents usually take four or five years of "rest" after a building program but this was not Mr. Fesler's idea. Under his direction a new six hundred bed hospital will be built on the campus of Northwestern University's School of Medicine. He will bring to this new job all of his accumulated experience of the past, plus the constant search for that which is new and worth while.

Few men have had the opportunity to write such a brilliant chapter in Minnesota's history. His friends at Oklahoma have never forgotten what he did for them or failed to appreciate his continued interest in their institution. His admirers at Minnesota will come to fully realize what he has meant to us, when he is gone. We only hope that his interest in this Institution will never lag. May his health be spared for greater accomplishments in his new field and may the same dogged determination motivate his actions there. We salute Wesley Hospital and Northwestern University. We extend our gratitude to Mr. Fesler for what he has done for us and hope that he will never forget us. Even as he goes, he is planning our new nurses' home. Advanced information indicates that this will be a model of its kind and preliminary drawings are now on view in the main corridor of the Hospital (M 3).

Good Luck, Paul, and

thank you.

W.A.O'B.