

GENERAL STAFF MEETING
UNIVERSITY HOSPITALS
UNIVERSITY OF MINNESOTA

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ABSTRACT:**LUNG ABSCESS**

Abstr. Koucky.

Historical:**Ref.:**

Adams, F.: "Works of Hippocrates", Wm. Wood, N. Y.

Forbes, J.: Laennec's Treatise on Diseases of the Chest, Wood, Philadelphia.

Carmody, T. E.: Arch. Otolaryngology, 2:200, 1930.

Fenger, Christian: Collected Papers, I. W.B. Saunders, 1912.

Hippocrates wrote frequently on suppurative diseases of chest. Word "empyema" used to denote both pleural and pulmonary suppuration. It is of note that he describes quinsy "determined to the lungs" instead of outwardly, resulting in "empyema". Also describes treatment by either cautery or knife incision.

Galen and Paulus Aeginata warned against removing too much tonsil because of the possibility of injuring voice and causing inflammation of lungs. This offers refutation of the arguments advocated of both local and general anaesthesia as cause because these men used neither.

Laennec considered abscess of lung a rare disease. He gives an excellent description of gross appearance of abscess. Attributes lesion to effects of pneumonia.

Christian Fenger collected 4 cases of gangrenous cavities which had been operated on (1 by himself) Apr. 13, 1884. The technique of his operation is same as used today; i.e., location of abscess by means of large needle and incision thru the lung using introduced needle as a guide. A Paquelin cautery was used to make the opening thru the lung. His patient recovered completely.

Etiology:

It is impossible to abstract all data presented in literature bearing upon various theories of etiology and pathogenesis of lung abscess in a short review.

Incidence is low. At University Hospitals in 17,313 admissions there were 33 lung abscesses recorded. Several of

these were found at post mortem.

Age: ranges thru both extremes of life. Maximum appear between 20th and 30th years. In 337 cases by Hedblom,

Under 10	-	34
10 - 20	-	39
20 - 30	-	78
30 - 40	-	44
40 - 50	-	18
50 - 60	-	16
60 - 70	-	6

In our own group same holds true except that Hedblom's series are clinical cases and ours include autopsied cases in which the incidence is higher in aged.

Sex:

Males more susceptible than females. 70% males (Hedblom), our group 20 males, 13 females (61%).

In the clinical groups, no special relationship to climate, debility, occupation, etc. can be made out. No satisfactory explanation for preponderance of males?

In autopsy material, terminal cases and association to debility and pyemia is frequent.

Exciting organism:

(preferably the recovered organism.)

Ref: Bucher, C. J., A.J. of Med. Sc., 178:406 (Nov.) '30.

Study based on material collected thru bronchoscope in 118 cases. Total of 451 organisms recovered belonging to 19 groups, i.e., average each case 4 different organisms.

Percentages in which the various organisms were found varied.

Streptococcus	-	79%
Pneumococcus		42%
B. Influenza		34%
S. Albus		31%
Diphtheroids		24%
Spirochetes		22%
Fusiform B.		22%
S. Aureus		19%
Microtetragemes		22%

Results show marked similarity to flora found in mouth and upper respiratory tract. Presence of organism is insufficient proof, according to authors, for ascribing to it causative role. Repeated examinations on

same patient constantly showed changes in flora.

The part played by the spirochetes and fusiform bacilli such as are found in mouth is still not certain. Enormous literature is accumulating on this subject. Organisms were first found in suppuration of the lungs by Castellani A., (Lancet, 1384, ((May 19)) 1906) in India. Soon thereafter they were reported by investigators in northern countries. Some authors believe they are almost constantly found in chronic suppuration of lungs.

Ref: R. B. King & Dacey, H.: New Eng. Jr. of Med. 198:689 (May) '28: 178 cases of chest disease were examined. Sputum collected with precautions against oral contamination. The results were:

Lung abscess and
Bronchiectasis - 88%
(Positive for spirochetes), 177 organisms per 3 minutes search.

Chronic non-suppurative disease (asthma, pneumoconiosis, etc), 28%.

Acute diseases - 20%.

Pleural disease 31%. In these conditions the number of organisms per 3 minutes search was 11.

Preexisting Condition:

Hedblom, C: Lung Abscess, Dean Lewis Surgery, Prior & Co.

In study of 528 cases, this author classifies the preexisting condition or accident, in order of frequency as follows:

Aspiration
Pneumonia
Emboli
Extension
Trauma
Specific disease

Aspiration:

In 528 cases 41% followed after operation. 60% of operations were tonsillectomies, 24% were other operations about the head -- 84%.

In a collected series of 2,458 cases - 27% were postoperative and over 50% of operations were tonsillectomies. 17% were due to foreign bodies.

In 208 posttonsillectomy abscesses only 7 were under local anaesthesia.

Pneumonia

In 1017 collected cases, 27% followed pneumonia. Reversing statistics

Huxinel found only 2 lung abscesses in 770 cases of pneumonia and Fraenkel only 2% lung abscesses in 1,200 pneumonias. There is a discrepancy in the figures and Hedblom believes that many lung abscesses are diagnosed as pneumonia in their early stages and when the abscess becomes obvious, the cause is attributed to pneumonia. (Note bearing on statistics on spontaneous cure).

Emboli:

4% are due to emboli from such conditions as pyemia, thrombophlebitis, sinus thrombosis, puerperal sepsis and endocarditis.

Extension: 4%.

Trauma: Penetrating wounds may inoculate lung.

Specific Abscesses: These may follow infection by actinomycosis, ameba, echinococcus, and lung flukes.

Everyone is agreed that a certain number of abscesses follow pneumonia, aspiration of foreign bodies and pyemic conditions. These however constitute only a small portion of the lung abscesses. The remainder are due to aspiration or to emboli. As noted above, Hedblom believes only 4% are due to emboli. In contrast to this, other authors believe most if not all lung abscesses are due to emboli.

Aspiration versus Emboli:

In anything short of a monograph it is practically impossible to give due credit to all the literature on this subject.

Ref.: Kline, B.S. - J.A.M.A. 90:2008 (June 23) 1928.

This author gives the most compact discussion of material on this subject. The belief that postoperative lung abscess results from embolism, a mechanism produced by the dislodgement of infected thrombi from the vessels of the operative area, is based on the following data:

1. Definitely proved existence of postoperative pulmonary embolism.
2. Lung abscess develops most frequently after operations in infected or potentially infected fields (nose and throat operations).

3. These areas are mobile operative areas. In operations on the brain where the skull acts as splint, percentage of postoperative pulmonary complications is almost nihil.

4. Not uncommon appearance after operations under local anesthesia.

5. Failure to prevent postoperative pulmonary complications with the improved methods of anesthesia, etc.

6. Greater frequency of lower lobe involvement. This is explained on the greater blood supply and more direct arterial pathway to these lobes.

7. Often symptom-free period following operation. If aspiration were cause the appearance of symptoms would be early?

8. Sudden pain that frequently is initial symptom.

9. Lung abscess is rare with lodgment of foreign bodies even deep in lung passages. (Note: not true in our experience with foreign body.)

10. Unsuccessful attempts at experimental production by introduction of infected material by way of air passages. (see our notes on this).

11. Comparative ease of production by intravenous injection of infected material.

On the other hand belief that lung abscess is due to aspiration is based on these observations:

1. Universal presence of dust pigment in adult lungs is evidence for aspiration of foreign material.

2. Autopsy observation shows that pneumonia can follow after aspiration of material during unconsciousness (coma, anesthesia, extreme fatigue, drunken coma, etc.)

3. Production of pneumonia by intra-bronchial inoculation.

4. Bronchoscopic observations showed presence of blood and mucus in bronchial tree in 155 patients out of 200 after tonsillectomy.

5. Occurrence of lung abscess after clean operations in a clean field indicate that in these cases the organisms are undoubtedly aspirated from the oral cavity.

6. Microscopic examination of early lesions of pulmonary abscess show the lesion to be in or about one of the bronchioles.

7. Aspiration of infected material

from carious teeth, infected tonsils, lung abscesses (i.e., material containing s. pyogenes and spirochetes) can produce lung abscess experimentally.

8. Abscesses produced by intravenous injection of infected material eventuate in healing and not in a progressively enlarging lesion.

9. Such abscesses are invariably multiple, and

10. Microscopic examination shows the early stages centered about thrombosed vessels in intravenous types not bronchioles.

In a census of recent writers 40 declared themselves in favor of aspiration while only 10 favor embolism as direct cause of lung abscess. The view of the majority may be right.

In our own group:

Aspiration:

Posttonsillectomy	- 6
After oral operation	- 1
Foreign body	- 2
Carcinoma of larynx	- 1
	10 (33%)

Embolic:

Sepsis of various forms (carbuncle, infection of finger, diabetic gangrene, appendicitis, etc) - 8 (25%)

One followed after a pelvic floor repair. (Aseptic operation - pelvis thrombophlebitis, or aspiration?) (case today).

<u>Pneumonia: (?)</u>	- 8 (25%)
<u>Bronchiectasis:</u>	- 1
<u>Carcinoma of lung</u>	- 2
(abscess dominated picture)	
<u>Specific (actinomycosis)</u>	- 1
<u>Indefinite:</u>	- 3 (17% group)

Summary of etiology:

Lung abscess may result from pneumonia, aspiration of foreign bodies, specific infectious agents; may be a metastatic process secondary to sepsis elsewhere in body; but is most commonly produced by aspiration of small infectious particles from the oral or nasal cavities. The causative organism is a pyogenic form usually

with admixture of spirochetes. Role of the latter as a primary causative agent is uncertain; most probably it's symbiosis with the pyogenes induces chronicity in a lesion primarily produced by the progenic types.

3. Pathology:

A variety of therapeutic methods have been evolved. Each is partially successful and this is due to the variety of pathological pictures which may be present. Moreover the choice treatment is dependent on the particular type of lesion present.

Wessler, E.: J.A.M.A. 73:1918

(Dec.27) '19.

MacCallum, J.; J.H.H.B. Monograph

#10.

Aspiration Type:

The period of incubation, i.e. from operation to onset of symptoms, is 13 to 14 days. (Not so definite according to other writers). The earliest finding is a bronchitis with peribronchial extension. A variable degree of destruction occurs with the formation of a cavity resembling a bronchiectatic cavity in that the bronchial structures may form part of the wall. About this cavity is a zone of infiltration of alveoli and adjacent bronchioles. Depending upon the acuteness of the disease, is degree of so-called gangrene. A fulminating destruction is called gangrene. An essential part of the picture is the infiltration and induration of the lung about the abscess. From this results (1) obstruction of adjacent bronchi with development of bronchiectasis, (2) interference with drainage into main bronchi and (3) the inability of the cavity to collapse after evacuation of its contents.

The postpneumonic type results from a wholesale death of lung parenchyma during the course of a pneumonia; or as an ulcerative and extending process beginning at some point in the bronchi in pneumonias, of the streptococcic variety.

In addition to the attention paid to the zone of induration about the abscess, further particular attention must be given to the distance from the hilus that the abscess is located.

Peripheral abscesses can communicate with the main bronchi only by long and tortuous pathways - either sinuses thru the indurated capsule or down the ramifications of the bronchial tree.

Central abscesses are adjacent to

the large bronchi and often the separating wall of these main bronchi are inflamed and friable and easily broken allowing drainage into them.

In one of the cases in the University Hospital series, the abscess was undiscovered (due to the patient's critical condition from other causes) until autopsy. There was an extensive central abscess which had not drained antemortem but which immediately ruptured into the main bronchi during the manipulation of removing the lung. About 2 ounces of pus drained thru the main bronchus.

Summary of Pathology:

1. Gangrene may be considered as an acute form of lung abscess. (or massive anaerobic infection?)

2. Lung abscesses are surrounded by a zone of indurated pneumonitis hindering drainage, collapse of the cavity after drainage and causing obstruction of adjacent bronchi.

3. Peripheral abscess drain into a large bronchus only with difficulty.

4. Central abscesses drain readily into a main bronchus.

5. Bronchiectasis is an almost constant sequelae of lung abscess of any duration.

4. Symptomatology & Diagnosis:

In the University Hospital series, the first complaint was cough in 14 and toxicity (fever, sweating, weakness, malaise) in 10. Physical examination was indefinite in 15, definite (not necessarily diagnostic) in 14 and the abscess was unsuspected in 4. In other words, in over 50% the results of examination were entirely vague. The x-ray diagnosis was in error in only 3 cases. In 1 case a clinical diagnosis was made based on the raising of "1 pint" of foul sputum in which the x-ray was negative. 3 cases came to autopsy showing lung abscesses in which a negative x-ray study had been done. Sputum examinations were poor. The amount was measured in only 11 cases and varied from 30 to 600 c.c. In 4 cases only was examination for elastic tissue recorded with 1 examination positive and 3 negative. Only 2 cases are recorded regarding presence of spirochetes (1 positive, 1 negative).

Hedblom, C.: Lung Abscess: Dean
Lewis Surg (Prior).

Our own experience illustrates the results of this author's study. The presenting symptoms are given exactly as outlined above.

Secondary anemia of rather severe grade is usually present. (This is quite marked in our group).

The physical findings according to this author are most frequently indefinite and x-ray gives the most conclusive evidence for location, size, etc. The picture varies depending on whether the abscess cavity is full or evacuated.

Complications: are listed by this author as follows:

Empyema

Pericarditis

Haemorrhage

Brain abscess

Visceral Disease (toxic myocardium nephritis, amyloidosis, arthritis and arthropathy).

Eagleton: "Brain Abscess", MacMillan 73, 1922: states that of all metastatic abscesses of the brain about 12% are caused by suppurative pulmonary disease, about the same number have origin in other pyemic foci, a small number are due to amoebic dysenteric disease of the liver and the rest are unknown. 3 of our 33 cases (11%) died of brain abscess.

5. Treatment:

Lilienthal, H.: Arch. of Surg. 16:206, 1928: S.G.& O.103:788 (Dec) '31.

Kernan, J.D.: Arch. of Surg. 16:215, '28.

Whittemore, W. & Balboni, G.: Ibid, p. 228.

Clerf, L. H.: Arch. of Otolaryng. 11:192, 1930.

Pierson, P.: Ibid, p. 279.

Flick, J., et al; Arch. of Surg. 19:1292 (Dec) 1929 (Pt. I.)

Moersch, H.J.: Ann. of Surg. 43:1126, 1931: S.G.& O. 46:704, 1928.

Heuer, G. J.: S.G.& O. 52:394, 1931.

Graham, E.A.: Ann. of Surg. 86:174:1927.

Kline, B. & Berger, S.; Arch. of Surg. 18: 481, 1929.

Willy Meyer said, "Let all remember that the best results with the

least mortality can be obtained by teamwork only; that is, if the bacteriologist, internist and surgeon, roentgenologist and bronchoscopist cooperate, often for weeks and months, for the welfare of the patient."

Medical Management:

Intensive supportive treatment:- complete bed rest, high fluid and high caloric intake, frequent transfusion, digitalis, codeine to remove the tortures of cough, and postural drainage in a position dependent on the location of the abscess - results in a cure in a certain number of patients. Others are greatly improved so that they can withstand surgical procedures that might be necessary.

Cure under this program occurs:

Lilienthal	-	50	±	%
Miller	-	50		%
Wessler	-	11		%
Lord	-	10		%
Hedblom	-	10		%

The explanation for the differences in figures on these cures lies in diagnosis. Lilienthal and Miller believe that early cases are diagnosed as pneumonia and heal and are never recorded as cases of lung abscess. Their figures seem somewhat based on theory.

It is frequently said that the embolic (from a pyemic focus) abscesses heal more often than the aspiration abscesses.

Pneumothorax:

An occasional report recommending pneumothorax is found. On the whole however this agent is used only on special occasions and then with hesitancy.

A review of the use of pneumothorax in suppuration of the lung was presented some time ago. (Bronchiectasis). Empyema complicating the treatment was the danger cited. Used in the treatment of lung abscess the danger becomes greater because of the more acute infection. About 9% of all cases (i.e., including mostly relatively safe chronic conditions) develop empyema. It is used only as a supple-

mentary measure in the treatment of some cases of chronic draining central abscesses to gain collapse of the cavity. It is not of much value?

Arsphenamine:

Because of the frequent presence of spirochetes in lung abscesses, arsphenamine has been advocated. Kline and Berger recommended its use. The paper was presented before the American Association for thoracic surgery. The following are quotations from each of the discussions given:-

F. B. Berry: "The results of treatment with arsphenamine have not been so satisfactory."

Miller: "Have treated between 40 and 50 patients ---- the results have been disappointing."

Pritchard: "it makes some difference in spirochetal infections whether treatment is given early or late." "That is a point which should be considered in the good results and in the disappointing results."

Graham: "I have had the experience of seeing the spirochetes and such organisms disappear from the sputum after the use of arsphenamine but the patient nevertheless has not recovered and after some time the spirochetes reappear."

Cole: "I have tried it (arsphenamine) as a routine measure; but did not get any results."

Bronchoscopic Drainage:

Four series of cases treated by bronchoscopy are reviewed. These include the Mayo Clinic group, Chevalier Jackson Clinic, New York Hospitals, and Jefferson Medical School Hospital. The 2 series from Philadelphia may overlap. These groups total 446 cases (?indefinite) of which 364 were suitable for bronchoscopic treatment.

"Total Number" refers to the number treated by bronchoscopy long enough for an estimate of results:

Total Number	Mayo Clinic	C. Jack-son	N.Y.	Phila-delphia
	98	77	68	121
Cured	52%	50%	46%	54%
Improved	18%	10%	22%	13%
No change	19%	10%		6%
Died	1-%	4%	13%	2%
Referred to surgery		23%		23%

The following comments may be summarized from these papers:

1. Posttonsillectomy abscesses are particularly favorable to bronchoscopic drainage. (This type is really a foreign body abscess).

2. The earlier the patients are bronchoscoped the more favorable the outcome. Cures in cases of less than 3 months duration result in 69% and 70% (Mayo Clinic & Phila.)

3. Bronchoscopy can safely be done on sick patients who are coughing and who are in poor condition and who have a good deal of fever.

4. Central abscesses can be drained readily, peripheral abscesses usually require surgical drainage.

5. Prolonged duration of an abscess is not a contraindication to bronchoscopy but it diminishes the number of cures.

6. Hopelessly ill patients should be bronchoscoped; sometimes a remarkable improvement results.

7. Bronchoscopic drainage accomplishes its beneficial effect by creating more adequate pathway for drainage. Hyperplastic edematous bronchial mucosa is removed; strictured tortuous pathways are stretched and opened; abscesses not communicating with bronchi are perforated and drained, sometimes by direct puncture thru intervening lung tissue. Bronchoscopic drainage is not simple aspiration of a dependent collection of pus such as might be passively drained by postural drainage. It is a surgical drainage of an abscess into the main bronchi.

Surgical (External) Drainage:

Surgical drainage has for its purpose (1) evacuation of pus with establishment of a pathway of exit, and (2) obliteration of cavity.

Just as peripheral abscesses cannot be readily reached thru a bronchoscope, central abscesses cannot be reached very well thru the chest wall.

Abscesses of a short duration, before the infiltration about the cavity becomes firm and hard, can be collapsed and drained at the same time. Chronic abscesses may be drained but further work can be expected to collapse the cavity.

One operation is more or

less routine; others are used only in somewhat special conditions.

Thorocotomy:

This could better be called pneumotomy but by common usage still remains thorocotomy.

In brief, the operative procedure consists of exposure of the lung by intercostal incision or by resection of one or more ribs. Simple intercostal approach is recommended in the acutely ill patients and the latter is a more deliberate exposure in patients of better risk.

If the pleura is adherent the operation is finished in one stage. If the pleural surfaces are not fused, fusion is forced by the application of irritant packs (iodoform) and the second part of the operation is done about a week later. Opening of the abscess thru a free pleural space obviously would produce an empyema.

The second stage consists of actually opening the abscess. This is located by preoperative examinations, by palpation of the lung and by puncture with a large needle at the time of operation. Location of the actual abscess is not as easy sometimes as it may seem.

The puncture into the pocket is made preferably with a cautery to prevent bleeding.

Anesthesia:

Different authors recommend different anesthesia. The general tendency is to do as much as possible under local and morphine. The danger of general anesthesia is aspiration of the contents of the abscess into the normal bronchi.

Post-operative care:

An intense program of supportive treatment is necessary, particularly transfusions and a high caloric intake.

Many men prefer to put no drains thru the thorocotomy opening. A soft flexible tube, if any, is used and then only for a few days. (Hedblom uses a tube for a long time). However, the pathway must be kept open and the abscess must heal from the bottom. To accomplish this end, the incision is not closed and the abscess is packed daily and subsequently dilatation (digital), or excision of the scar is done to prevent closure of the sinus.

This description applies to soft or moderately indurated cavities. The sclerosed abscesses require operative procedures for closure. The hard scar about the abscess is excised in one or more stages and the overlying lung is removed in a cone-shaped manner. Also during these reoperations the ramifications of the abscess are explored and consolidated into one cavity.

There are still left for consideration, several types of cases: hard central cavities left after drainage, extensive indurations of lung, multiple abscess pockets and the secondary bronchiectasis. Depending upon the operator and the case, special procedures are done to ameliorate these conditions. Cure at this stage is impossible. Thorocoplasty, cautery, lobectomy and excision of the lobe are practised. These procedures have been described before (bronchiectasis).

6. End Results:

Hedblom has collected almost all the cases treated by thorocotomy. In 114 personal cases (30 acute, 84 chronic):

- 67% cured
- 10% improved
- 23% died (9 more died later)

In 714 collected cases with complete records, the results were as follows:

- 47% cured
- 16% immediate mortality

In a total of 1470 collected cases, the total mortality was 31%. Of the acute cases the cure was 59% and in the chronic cases was 39% cure.

When should surgical treatment be started?

Central abscesses:

Because such cases respond to bronchoscopy and because the difficulty of surgical approach is great these cases, if they do not immediately respond to conservative treatment should be carried along on it as best as possible for prolonged period of time. If toxicity persists and other attempts at drainage have failed, external drainage may have to be attempted. After the abscess has become chronic and is

draining into a bronchus, collapse measures are indicated to close the cavity and also to prevent bronchiectasis. Pneumothorax is rarely efficient. Thorocoplasty is usually necessary.

Peripheral abscess:

Regarding the time for surgical interference in this type of abscess, there is considerable difference of opinion. Hedblom and Sauerbruch have expressed themselves for early interference. Miller (Bellevue Hospital) believes late interference is indicated. Medical management in some hands recognizes 3-5 years as a time limit for spontaneous cure.

In favor of early interference (in 6-8 weeks after onset) the following reasons are advanced:

1. Spontaneous cure results in only about 10-20% of cases.
2. Operative cure in acute cases is over 65%.
3. Cure in chronic cases is only about 40%.
4. Chronic cases require several operations and a long time for cure.
5. Acute cases sometimes are cured by one operation.
6. Bronchiectasis is constant sequelae of chronic abscess.

Hedblom even recommends immediate incision without waiting for a liquified focus or cavity in very acute fulminating cases because otherwise all of these die.

Impressions Concerning Surgical Treatment:

1. Central abscesses require surgical intervention ordinarily only late to collapse residual cavities (Thorocoplasty).
2. Peripheral abscesses result in the highest percentage of cures thru surgical drainage early.
3. No longer than 6-8 weeks should be allowed for conservative measures to indicate their value.
4. Early abscesses may be cured by one operation; chronic abscesses usually require secondary operations for closure of the cavity.
5. Old chronic abscesses of the multiple type or with extensive induration and bronchiectasis usually require extensive excisions or collapsing procedures. (Cautery lobectomy, etc.)

Results of University Hospital Series: 33 cases.

Admitted as empyema and treated surgically as such: 4: 1 died, 1 under treatment, 2 improved but 1 has bronchiectasis and the other probably has it.

Brain abscess drained - 2 - both died.

Removal of foreign body - 2 - both improved.

Bronchoscopic Drainage - 4 (in addition to above 2):

- 1 - no change
- 2 - complete cure
- 1 - improved greatly, referred to surgery.

Symptomatic Treatment: - 19.

One cannot honestly judge the results of treatment because of the absence of accurate notes and follow-up. Those that did not die are discharged as improved. (? have become chronic).

In 4 cases there was a cure as indicated by a follow-up of 1-3 mo. later.

Surgical Drainage:

1. Bronchiectatic abscess (previously reported) died suddenly after 1st stage operation.
 1. Carcinoma of lung with abscess died of carcinoma later.
 2. Cases treated by thorotomy are symptomatically cured but one has a bronchial fistulae.
 1. Case still in hospital under treatment.

Deaths: 14 cases. In reviewing the literature and then studying these deaths, one is impressed by the severity of our fatal cases and their hopeless outlook. Many were found at autopsy as terminal conditions; many died of generalized sepsis for which they were admitted.

1. Actinomy cases - numerous admissions.
2. Brain abscess - 59 days in hospital
3. (Carcinoma of lung (Brain abscess - 23 days

4. Diabetic in coma	- 6 days
5. Ca. of larynx	- 48 "
6. Multiple septic foci	- 14 "
7. Brain abscess	- 45 "
8. Died after thorocotomy	- 41 "
9. Empyema - critically ill	- 4 "
10. Massive gangrene	- 10 "
11. Carbuncle and sepsis	- 5 "
12. Multiple septic foci	- 6 "
13. Empyema, multiple foci	- 5 "
14. Carcinoma of lung	- 2 admissions.

Note: It can be readily seen that this series represents cross-section of all our cases which may be different from some of the others reported.

Impressions:

1. The Ancients had a very remarkable knowledge of pulmonary suppuration; they associated it with operations and disease in the upper respiratory tract.

2. The operative technique of Christian Fenger (pulmonary abscess) dating back to 1884, sounds very modern.

3. Incidence of pulmonary abscess is probably low. University Hospitals had 33 cases in 17,313 admissions.

4. Occurs in all age periods, maximum incidence 20 to 30. Approximately two-thirds are males.

5. Exciting organism is preferably called the "recovered organism." An average of 4 types occur to each case.

6. As a general rule, pyogenic forms plus spirochetes and fusiform bacilli predominate. The findings are remarkably like that of the floor of the mouth.

7. The part played by spirochetes and fusiform bacilli is still a debated question.

8. In a series of 528 cases, aspiration, pneumonia, emboli, extension, and trauma were the predisposing factors in the order mentioned.

9. According to Hedblom, 41% follow operation (aspiration?). 84% of these operations were about the head.

10. Apparently, type of anesthesia (local or general) does not make any difference in the incidence of aspiration.

11. 27% of the cases follow pneumonia, 4% emboli, 4% extension, according to Hedblom.

12. Many of the cases diagnosed as pneumonia may have been abscesses in the first place. The arguments for and against

aspiration and emboli are presented. It is probable both are factors and it may be difficult to decide which is the most important in individual cases.

13. In our series, one-third apparently were due to aspiration, 1/4 to emboli, 1/4 to pneumonia, and 1/2 to lung tumor, specific and indefinite causes.

14. The type of treatment depends on the character of the lesion in the lung.

15. Incubation period is probably about 2 weeks (?).

16. The zone of induration which forms about the abscess requires special attention. It frequently interferes with adequate drainage and bronchiectasis may result.

17. Central abscesses tend to drain into the large bronchi, peripheral abscesses tend to remain localized. (Poor drainage).

18. Gangrene may be considered an acute form of lung abscess or a massive anaerobic infection.

19. Bronchiectasis is almost a constant sequelae of lung abscesses of longer duration.

20. In the University Hospitals series, the first complaint was cough in 14, and toxicity in 10. Physical findings were indefinite. X-ray examinations were most helpful (85% accuracy).

21. Studies of the amount of sputum expectorated daily were disappointing (by absence).

22. The most frequent complications are empyema, pericarditis, hemorrhage, brain abscess and visceral disease (toxic myocardium, amyloidosis, arthritis, etc).

23. Of all metastatic abscesses of the brain, about 12% are caused by pulmonary suppuration.

24. Willy Meyer said, "Let all remember that the best results with least mortality can be obtained by teamwork only, i.e., if the bacteriologist, internist, surgeon, roentgenologist and bronchoscopist would cooperate often for weeks and months for the welfare of the patient."

25. Medical management is one of the most important phases of the treatment. Spontaneous cure by this form of treatment varies from 10 to 50% accord-

ing to different authors.

26. Pneumothorax in itself is apparently not of much value.

27. Results of arsphenamine treatment are not encouraging according to literature and may be contra-indicated on account of fever.

28. Bronchoscopic drainage is particularly helpful, especially in the central type (near the hilum).

29. This type of treatment does not consist simply of draining a dependent pocket but of actually opening up the abscess through the lung tissue (real internal drainage).

30. External abscesses which do not heal under medical treatment may be operated surgically.

31. The anesthesia (is or is not) an important factor.

32. Attempts should be made to keep the sinus open and the cavity allowed to heal from the bottom.

33. In the sclerotic type it may be necessary to remove fibrotic tissue before healing results.

34. Hedblom has collected the results of cases treated by thoracotomy. The cures average about 67%.

35. The present day attitude in regard to surgical intervention is toward earlier treatment.

is of no significance and frequent attacks of migraine. Physical examination: Asthenic female, 64 years of age, edentulous. Heart - blood pressure 224/116, slight enlargement of heart to left, no murmurs. Pelvic - pelvic floor lacerated, prolapse of anterior and posterior vaginal walls, III^o prolapse of cervix with area of erosion.

Laboratory:

Urine - negative. Blood - Hb. 91%, wbc's 6,000, negative serology. Biopsy of cervix - shows chronic cervicitis.

Hypertension

6-9-30 - X-ray of heart - cardiac enlargement, slight degree, left ventricular type. Medical consultation - Heart enlarged to left, A₂ accentuated, numerous, coarse, congestive rales posteriorly at bases, especially on right. Impression: Hypertension, mild decompensation. Suggest digitalization. Electrocardiogram - left preponderance.

Repair

6-12-30 - Operation. Anesthesia - nitrous oxide. Pelvic floor repaired. Biopsy taken from cervix. Suspension not done because of cardiac condition.

6-13-30 - Does not respond and seems weak. Pulse and temperature normal. Fluids not forced because of cardiac condition.

Cerebral

6-14-30 - Somewhat better. Pulse rate increased in spite of digitalis. Choking and inability to swallow on attempting to drink. 9:30 P.M. - Eyes rotated to right, right pupil larger than left. Both respond to light. Apparently, cannot see very well. Tongue deviates to right. Flaccid paralysis of left arm; right arm is hypertonic. Lower extremities appear spastic. Bilateral positive Babinski, other reflexes more active on left than on right.

Impression: Cerebral hemorrhage, right internal capsule.

6-15-30 - Signs of hemorrhage same.

Exitus

6-16-30 - Does not respond and is unable to swallow. Temperature 103. Moist rales in both bases.

6-17-30 - Growing progressively worse.

II. CASE REPORT:

PELVIC REPAIR. PULMONARY AND CEREBRAL ABSCESSSES.

Path. Dvorak.

The case is that of a woman, 64 years old, admitted to University Hospitals 6-4-30 and expired 6-18-30 (14 days).

Clinical data:

Prolapse, bleeding

1925 - Patient first observed sensation of weight in the pelvis and feeling of uterus coming out.

1928 - Above complaints continued and she now observed occasional bleeding from vagina.

Hospital (4 years)

6-4-30 - Condition did not improve.

Applied for admission. Past history: Menopause at 45, old injury of hip which

Pulse rapid and feeble.

6-18-30 - 4:20 A.M. Expired. (6th post-operative day).

Decubitus

Body is that of a well developed, poorly nourished white adult female 169 cm. in length, weighing approximately 125 lbs. Rigor present; hypostasis purplish and posterior. No edema, cyanosis or jaundice. Pupils negative. Decubitus ulceration 6 cm. in diameter over left buttock. Bruise 3 cm. in diameter over right arm.

Subcutaneous fat over anterior abdominal wall scanty. Peritoneal cavity is negative. Appendix normal. Diaphragm at 4th rib on right and left sides.

Adhesions

Multiple pleural adhesions at both apices, especially left. Pericardial sac normal.

Heart?

Heart weighs 295 grams and does not show any left ventricular hypertrophy? Coronaries are soft and patent. No valvular disease present. Root of aorta shows moderate sclerotic changes.

Infected infarcts

Right lung weighs 370 grams, left 750. Left showed several large, anemic infarcts with central softening about 2 cm. in diameter. Generalized, patchy, reddish brown consolidated areas throughout this lung from which purulent exudate can be expressed. Right lung is normal.

Spleen weighs 100 grams. Surface is smooth and pulp is slightly softened.

Chronic Passive congestion

Liver weighs 1300 grams and shows slight darkening of centers of the lobules. The gallbladder does not contain stones. The gastro-intestinal tract, the pancreas and adrenals are negative.

Kidneys weigh 150 grams each. When capsules are stripped cortices are very pale. Pelves and ureters normal. Bladder contains a small amount of turbid urine.

Aorta shows a moderate amount of sclerosis. Organs of the neck and lymph nodes are normal.

Operation

Peritoneum is found dissected free from anterior surface of corpus of the uterus.

Lateral edges of peritoneal flap still attached. From this pouch extended several large, thick clots of old blood. No evidence of local peritonitis or infection. Pouch did not penetrate or connect with the vagina. Vesicovaginal wall was sutured after repair.

Examination of the brain revealed a subcortical area of hemorrhagic softening 2 cm in diameter, in right precentral and postcentral gyri. No evidence of gross hemorrhage. Ventricles negative.

Diagnoses:

1. Laceration of pelvic floor (clinical).
2. Prolapse of uterus (clinical).
3. Prolapse of vaginal walls (clinical).
4. Chronic cervicitis.
5. Biopsy scar (wound).
6. Hypertension (clinical).
7. Cerebral encephalomalacia (probably due to embolism).
8. Pulmonary infarct (abscesses).
9. Broncho-pneumonia.
10. Pleural adhesions.
11. Decubitus ulcerations.
12. Bruise of right arm.
13. Slight passive congestion of liver.
14. Slight arteriosclerosis.

Abscesses quite definitely due to emboli.

Note: Emboli to brain.

Further interest: emboli from a sterile field producing abscess probably thru secondary infection (via bronchi) of the infarcted area.

Is picture that of secondary infection of vascular accidents?

III. CASE REPORT

ASPIRATED FOREIGN BODY.
BRONCHIECTASIS. LUNG
ABSCCESS.

Path. Koucky.

The case is that of a white, male child, 5 years of age, admitted to University Hospitals 5-8-32 and expired 5-10-32 (2 days).

Note:

Patient is 15th child in family of 16

children. Mother dead. Father lives in North Dakota. Child referred to University Hospitals (and apparently taken care of) by Red Cross workers. Therefore history obtained is inadequate and conflicting.

Colds - screw

According to Red Cross worker, child has not been well since the age of 8 months. Coughs and caught cold on least provocation. However, according to another history obtained from physician and father (?), child aspirated a foreign body (screw) approximately 14 months prior to admission. While information does not appear on chart, it is said (by personal communication from attending staff) that screw had been watched by x-ray and was found to migrate in various portions of lungs. Type of treatment that the child had previously is unknown. Referred to hospital in critical condition. Father signed statement to effect that he was aware of patient's critical condition and possible fatal outcome.

Septic

5-8-32 - Admitted to University Hospitals. Temperature rose to 102 and in 2 days stay it was septic in type. Pulse ranged from 140 to 110. Respirations from 20 to 60. Examination shows very toxic condition. Clubbing and cyanosis of fingers, watch crystal nails (fingers). Development of chest quite normal, no deformities. Lungs-impaired resonance in left base with diminution in intensity of breath sounds; right lung quite normal.

Fibrosis-abscesses-bolt

X-ray of chest - (left chest) . Very extensive fibrotic and abscess process in left lung, with multiple cavities (extreme fibrosis throughout). Large metallic foreign body, a stove bolt, is shown in the lower bronchus. Changed in position on 2 examinations. In one it is shown with the narrow end directed downward and inward, in the other with head directed laterally and downward. Large abscess also present in right base. Exact cause of this is not apparent as there is no foreign body on right side. It is possible that the foreign body (on the left) was originally on right, or this may be a secondary infection from the extensive infection in the left.

Conclusions: Metallic foreign body in

bronchus, left. Extensive abscess formation and fibrosis, bilateral.

Bronchoscopic - exitus

Laboratory: Urine - negative. Blood - Hb. 46%, wbc's 16,000, rbc's 3,080,000. Progress: Bronchoscopic removal of the foreign body decided. Anesthesia - avertin, 75 mg. per kilo given, very satisfactory. Procedure - bronchoscope passed. Just as it reached a position satisfactory to observation of the bronchi, the child became cyanotic, ceased breathing and could not be revived. Expired 9:30 A.M., 5-10-32.

Clubbed fingers

Body is well developed, fairly well nourished, white, male child, 5 years of age, weighing approximately 35 lbs. Rigor not present. Hypostasis purplish and posterior. No edema observed. Slight duskiness about ends of fingers. No jaundice. Pupils are equal, each measuring 3 mm. in diameter. Definite clubbing of fingers and tendency toward watch crystal nails. Toes appear normal. No enlargement about wrists. Form of chest normal.

Peritoneal Cavity contains definite excess of straw-colored fluid. Appendix shows no abnormalities.

Pleural Cavities. Marked adhesions on both sides, especially on left. On left side, lung cannot be stripped away from parietal pleura. Parietal pleura removed with lung. Even with this procedure, there is tear in upper posterior part of left lung into abscessed cavity within apex of left lung. On right side, adhesions are not so dense but are universal. The Pericardial Sac is normal and contains no excess fluid.

Right Ventricle?

Heart is examined in situ and appears slightly larger than normal for age. Palpation of right ventricle gives impression that it is firmer and thicker in proportion to left. No marked or definite dilation of right heart. Removed, heart weighs 105 grams. All valves are normal. Thickness of right ventricle, when open, is only slightly (if any) greater than normal. The Root of the Aorta and coronaries show no changes.

Heavy - Screw

Right lung weighs 300 grams, left 350 grams. Both lungs (for size) are very heavy. On palpation are firm and do not crepitate. Because of firmness and shaggy, thick pleura overlying lungs, they have lost general appearance of lung entirely. Left lung is opened along bronchi. There is intense bronchitis throughout. Foreign body is small, round-headed screw (about 2 mm. diameter and 4 or 5 mm. in length), found lying free in anterior branch of left lower lobe. Not caught within any edema or stricture of bronchi.

Bronchitis - ectasia

Bronchi throughout this lung, including upper and lower lobes, both posterior and anterior branches, are uniformly involved in extensive severe bronchitis and bronchiectasis. Type of bronchiectasis varies, in part it is cylindrical, other saccular and in upper type is lost within multiple abscesses. Along diaphragmatic edge of lower lobe, bronchi open up into sinuses filled with pus which lie within edge of lung and adjacent thick pleura.

Abscesses

Spread irregularly through lower lobe are several small abscess cavities communicating with bronchi. Left upper lobe in apex (involving about one-half of the upper lobe) converted into multilocular gangrenous type of abscess. This has penetrated thick parietal pleura and at one point in removing parietal pleura from chest wall, abscess has apparently broken into or may have extended into parietal chest wall.

Other side

Right lung is slightly less heavy than left. Bronchi in lower lobe and middle lobe are involved in extensive bronchitis and bronchiectasis very much same as left side. There are numerous abscesses through this lobe. Softened with cavities and show softening without cavity formation. The left upper lobe contains no abscesses and the bronchi are slightly (if any) dilated in this area.

Enlarged nodes

Hilus of both lungs, bifurcation of the trachea and upper part of the posterior mediastinum are filled with large fused nodes. These are not broken down but are

firm.

The Spleen weighs 90 grams, slightly soft and shows no other changes.

Fat - swollen

The Liver is large, extends three fingers below the rib margin and weighs 750 grams. Its surface is mottled with a yellowish color. On cut surface, yellowish mottling is not so evident. There are pale yellowish, diffuse areas visible.

The gall-bladder shows no changes.

The Gastro-Intestinal Tract normal.

The Pancreas shows no abnormalities except head which is quite round and seems larger in proportion to rest than usual.

The Adrenals show no changes.

The Right Kidney weighs 100 grams, Left 105 grams. Both are swollen. Capsules strip easily. Stellate sub-capsular veins dilated. Surfaces of kidneys, both externally and on cut section, show faint, yellowish patches.

No Note

The Bladder shows no change.

The Aorta is normal.

Lymph Nodes of the mediastinum are as described above. There are many lymph nodes in the mesentery of the small bowel and along the iliac axis artery. These are up to 1.0 cm. in size and not softened. Show no evidence of coal dust.

The Organs of the Head and Neck are not examined.

Diagnoses:

1. Foreign body in lung (screw).
2. Bronchiectasis.
3. Multiple abscesses.
4. Pleural obliteration.
5. Fatty liver and kidneys.
6. Mediastinal and mesenteric adenopathy.
7. Pulmonary osteo-arthropathy (beginning).

Note:

Definite aspiration abscess (foreign body).

The bronchiectasis is not secondary to the abscess but probably developed at same time.

Aspirated foreign body, pulmonary fibrosis, abscesses and bronchiectasis.

IV. SPOTLIGHT:

TIME:

All about the boy from Wheaton in the big city - Time XIX, No. 23, 32 (June 6) 1932.

Jawbones.

Within each half of the upper jawbone (maxilla) is a sinus. Here occur one out of every 100 cancers. Dr. William Thomas Peyton of the University of Minnesota discourages mere surgery for the treatment of this cancer because "surgery alone, total excision of the maxilla, carries a high mortality (15% to 40%), and results in very few, if any, permanent cures. With proper combination of surgery and radium five-year cures may be obtained in 10% of all cancers of the antrum coming for treatment."

SLIPPED AGAIN:

For the past 2 years it came in June -- this year in May. Number of deaths also a probable factor.

Autopsy Percentage

	<u>1930</u>		
	<u>Deaths</u>	<u>Autopsies</u>	<u>%</u>
Jan.	26	20	77
Feb.	34	25	74
Mar.	28	22	79
Apr.	29	20	69
May	26	19	73
June	27	15	56
<u>1931</u>			
Jan.	38	25	66
Feb.	25	21	84
Mar.	29	26	90
Apr.	25	20	80
May	44	34	77
June	28	15	54
<u>1932</u>			
Jan.	21	15	71
Feb.	30	25	83
Mar.	30	25	83
Apr.	27	22	82
May	41	23	56
June	?	?	?

PROGRAM -- 1931-1932.

The following subjects were discussed during the present series: The number of the meeting, the date, and the official attendance are given. The latter does not include those who came for lunch only, average 8 to 12 a week, and those who simply stayed for a short time and then left.

	<u>Attendance</u>
(1) 10/1 Pathology of Diabetes Mellitus	62
(2) 10/8 Primary Carcinoma of Pancreas and of Gall-bladder	62
(3) 10/15 Rupture of Uterus	72
(4) 10/22 Treatment of Myelogenous Leukemia	83
(5) 10/29 Differential Diagnosis of Testicular Tumors by Biological Means.	
Pleural Endothelioma	86
(6) 11/5 Intussusception	88
(7) 11/12 Differential Stain for Cancer of Cervix Uteri	
Treatment of Tuberculosis of Spine.	
Treatment of Scoliosis Arachnodactyly	89
(8) 11/19 Carcinoma of Esophagus	84
(9) 12/3 Adamantinoma	77
(10) 12/10 Purpura Hemorrhagica	80
(11) 12/17 Morbidity and Mortality Factors in Hyperthyroidism	82
(12) 1/4 Bone Tumors (Surgical Seminar)	50
(13) 1/7 Average Hospital Stay	
Decompensated Portal Cirrhosis	
Ovarian Carcinoma with metastasis	
Collapse following paracentesis	83
(14) 1/14 Tumors of Spinal Cord	74
(15) 1/21 Prognosis and Treatment of Bronchiectasis	83
(16) 1/28 Carcinoma of Prostate	
Out-Patient Department Report	74
(17) 2/4 Fracture Survey	73
(18) 2/11 Otitis Media and its Relation to Gastroenteritis	86

Attendance

- (19) 2/13 Ewing's Sarcoma of Bone (Minn. Radiological Society)
Multiple Myeloma with Intestinal Obstruction
Carcinoma of Breast with Metastasis
Carcinoma of Antrum with Peripheral Metastasis 50
- (20) 2/18 Polycystic Kidney (hereditary Aspects) 72
- (21) 2/25 Suprarenal Tumors 67
Massive Unattached Retroperitoneal Tumors
(Also at Minn. Medical Assn. meeting, St. Paul, May 23, 1932) 150
- (22) 3/3 Sciatic Syndrome
Sacral Chordoma 76
- (23) 3/10 Chronic Cholecystitis with Pyloric Obstruction
Perforated Peptic Ulcer 72
- (24) 3/17 Neurofibromatosis 70
- (25) 3/22 Cause of Disease
Autopsy Question (Minn. Funeral Directors & Embalmer's Assn.) 150
- (26) 3/31 Staphylococcic Infections 74
- (27) 4/7 Treatment of Carcinoma of Cervix Uteri 72
- (28) 4/14 Necrotic Sequestration of the Kidneys in Pregnancy
Renal Lesions in the Toxemias of Pregnancy
Reactions following Transfusion of Blood with Urinary Suppression and Uremia 82
- (29) 4/21 Recovery from Streptococcic Meningitis 83
- (30) 4/28 Carcinoma of Rectum 81
- (31) 5/5 Diagnosis and Treatment of Acute Intestinal Obstruction
Neurogenic Intestinal Obstruction
Extrinsic Nervous Control of Large Bowel 93
- (32) 5/12 Etiology, Pathogenesis and Cause of Death in Asthma 81
- (33) 5/19 Social and Economic Status of Out-Patients
Systemic Blastomycosis 78
- (34) 5/26 Acute Poliomyelitis 74
- (35) 6/2 Nature of Hodgkin's Disease 69

(36) 6/9 Pulmonary Abscess --

Counting attendance record (only) and those who followed bulletins elsewhere more than 5000 attended the "meetings!"
Thank You!

THANK YOU!

One criticism of 1930-31 series was directed at "too little chance for discussion." This year attempts to change this were made. In addition, special efforts were made to get the "right men" to come to special meetings and give us their opinions. Results were very gratifying. According to our records the following men took an active part in discussions or preparation of material this year. Apologies for any omissions -- all names should be on this list as the presence of many who came regularly really was the backbone of our little affair.
Again thank you!

- Alfred Washington Adson (Mayo)
- Dean Howard Affleck
- Raymond Michel Amberg
- Arnold Sibert Anderson
- Moses Barron (General)
- Archibald Hildreth Beard
- Elexious Thomas Bell (Pathology)
- Nathan Joseph Berkwitz
- Alex Blumstein
- Lawrence Randall Boies
- Verl G. Borland
- Edward A. Boyden (Anatomy)
- Orwood Jackson Campbell
- James Bain Carey
- Anton Julius Carlson (Chicago)
- Herbert Austin Carlson
- Benjamin Junior Clawson (Pathology)
- Wallace H. Cole
- Alexander Robert Colvin (Ancker)
- Gilbert Geoffrey Cottam (So. Dakota)
- Charles Donald Creevy
- Lewis Morgan Daniels
- Harold Sheely Diehl
- Harold Joseph Dvorak
- Ralph V. Ellis
- John B. Eneboe
- Rudolph Engel
- Lester Gabriel Erickson
- Erwin William Exley (General)
- Frederick Blythe Exner
- George Edmeston Fahr (General)
- Madeleine Ann Fallon
- Paul Hill Fesler

Bernice Figenshau (Thorson)
 Luther Calvin Fisher, Jr.
 Christian Alford Fjelstad
 Edwin Leslie Gardner (General)
 Emil Sebastian T. Geist
 William Guy Guthrie (U. S. Army)
 A. Scott Hamilton
 Arild Edsten Hansen
 Cyrus Owen Hanson
 Stuart William Harrington (Mayo)
 William Parker Herbst, Jr.
 Arnold Earl Hetzler (No. Dakota)
 James Sutherland Hibbard
 Herman Ertresvaag Hilleboe
 Edgar John Huenekens (General)
 Charles Joseph Hutchinson
 Frederick B. Hutt (Farm)
 John Jacob Jacobi (Switzerland)
 Richard Melvin Johnson
 Rudolph William Koucky
 Laura Arlene Lane
 Leonard Adam Lang
 Jennings Crawford Litzenberg
 Francis W. Lynch
 William Edward Macklin (Litchfield)
 John Francis Madden
 Melville Husted Manson
 Mathilda Mathison (Social Service)
 Chauncey Angus McKinlay
 John Charnley McKinley
 Frank Stewart McKinney
 Irvine McQuarrie
 Charles Henry Mead, Jr.
 Henry Ernest Michelson
 Johannes K. Moen, Jr.
 Frances Money (Social Service)
 Horace Newhart
 Frederick Adolph Olson (General)
 John Randall Paine
 Bjarne J. Pearson
 Arthur Herman Pederson (St. Joseph's)
 William Thomas Peyton
 Kenneth Allen Phelps
 Erling Stoud Platou (General)
 Robert Bernard Radl
 Osmer Samuel Randall
 John H. Raymond
 Carl Oliver Rice
 Lawrence Francis Richdorf (General)
 Leo George Rigler
 Emil Camille Robitshek (General)
 Jacob Sagel
 Richard Everingham Scammon
 Raymond Allen Schwegler, Jr.
 Horace Golden Scott
 Stewart Wenzel Shimonek
 Russell Ostreich Spittler
 Karl Wilhelm Stenstrom

Chester Arthur Stewart
 Albert Valentine Stoesser
 Gilbert Joshua Thomas
 Floyd Ammann Thompson
 Willis Herbert Thompson
 Henry Ludwig Ulrich
 Howard A. Vogel
 Carl William Waldron
 Owen Harding Wangensteen
 Bernard Alec Watson
 Ross Wilson Weisiger
 Samuel Arthur Weisman
 Anton G. Wethall
 Macnider Wetherby
 Philip H. Woutat

MAIL STAFF

A constant stimulus this year was the large number of men who followed us by mail. They have commented frequently on various items, expressed their pleasure on many occasions, made us feel at all times that they were glad to "be with us". We thank you for your interest. If you desire to "be with us" next year, just let us know and we will keep your name on the list.

Thank you!

O. J. Campbell,	Minneapolis, Minn.
Rudolf Engel,	Berlin, Germany
Moses Barron,	Minneapolis
A. E. Hetzler,	Richardton, N.D.
Clarence Jacobson,	Chisholm, Minn.
Wayne Canfield,	Houston, Minn.
L. W. Tasche,	Sheboygan, Wis.
A. E. Peterson,	Ovid, Colo.
Leonard Freeman	Rochester, Minn.
E. L. Tuohy,	Duluth, Minn.
Walter J. Halloran,	Jackson, Minn.
John Urner,	Minneapolis, Minn.
E. J. Simons,	Swanville, Minn.
Jos. A. Weinberg,	Omaha, Nebr.
Oliver P. Waugh,	Wimipeg, Can.
Henn. Co. Med. Society	Minneapolis, Minn.
Ramsey Co. Med. Society	St. Paul, Minn.
W. B. Richards,	St. Cloud, Minn.
O. E. Locken,	Crookston, Minn.
C. W. Brunkow,	Portland, Oregon
Pat Nagle,	Okla. City, Okla.
E. R. Music,	Okla. City, Okla.
Albert Kunschner,	Philadelphia, Penn.
Frank Hirschboeck,	Duluth, Minn.
Theo. C. Erickson,	Philadelphia, Pa.
John Littig,	Ann Arbor, Mich.
N.P.B.A. Hospital,	Glendive, Mont.

E. A. Boyden,	Minneapolis, Minn.
Harold Rypins,	Albany, N. Y.
A. L. Cameron,	Minot, N. D.
Theo. Mills,	Grand Rapids, Mich.
D. J. Glomset,	Des Moines, Iowa
N. L. Leven,	Rochester, Minn.
St. Paul Clinic,	St. Paul, Minn.
Geo. H. Whipple,	Rochester, N.Y.
W. H. Bueerman	Portland, Oregon
H. Redding Rufe,	Chalfont, Penn.
Richard Scammon,	Minneapolis, Minn.
Raymond Brokaw,	New York City.
E. C. Henrikson	Minneapolis, Minn.
F. A. Olson,	Minneapolis, Minn.
W. H. Hengstler,	St. Paul, Minn.
J. L. Ravitts,	Montezuma, Iowa.
E. J. Shapiro,	Duluth, Minn.
Minn. State Med. Assn.,	St. Paul, Minn.
T. H. Decker,	Rochester, Minn.
Harry Weber,	Rochester, Minn.
E. M. Berg,	Bismarck, N. D.
Raymond L. Gregory,	Hawarden, Iowa.
Everett K. Geer,	St. Paul, Minn.
Ray Shannon,	St. Paul, Minn.
Frederick H. Neher,	St. Paul, Minn.
C. D. Creevy,	Berlin, Germany.
Marcus H. Rabwin,	Los Angeles, Cal.
Charles Cervenka,	New Prague, Minn.
H. J. Dvorak,	Rochester, Minn.
J. M. Hilton,	Klamath Falls, Ore.
J. H. Moe,	Murphy, Calif.
F. J. Radusch,	Rapid City, S. D.

MARRIED: 1931-32

Figenshau-Thorson, all-medicine romance: Thomas Jefferson Edwards, Arkansas bride, Xmas (cyclone accompaniment): Spittler -- graduation, birthday, engagement announcement, Army appointment, all on March 17th -- 100% German Wedding: Hamilton -- California-Tulane union (no cyclones): and Raymond -- all-Minnesota romance. Congratulations and best wishes from all.

THEY GO:

Finke to England to continue Graduate Work.
Spittler to Letterman General Hospital, San Francisco, Calif.
Hamilton, Fellowship, Minnesota.
Affleck - Highland Hospital, Oakland, Calif., Internship.

Large - Montreal General Hospital, Fellowship Surgery.
Kehoe - Plans indefinite.
Baliniski - Plans indefinite.
Pearlman - Plans indefinite.
Paine - Minnesota, Surgical Fellowship.

Borland - Minneapolis General Hospital, Internship 1 year.

Wheeler - Minneapolis General Hospital, Internship for 6 mo. for surgery, then to Minnesota for Internship.

Hodges - Abbott Hospital, Internship.

Fuller - Child Guidance Clinic.

"Pi" Thompson - Yellowstone for a vacation.

Weisiger to Minneapolis General Hospital, Fellowship.

Hilleboe to Minnesota, Fellowship.

Roe to Children's Memorial Hospital, Chicago, Fellowship.

Eneboe to Minnesota, X-ray service.

Exner to Minnesota, Deep Therapy.

THEY COME:

New Interns University Hospital
July 1, 1932.

Pediatrics

	<u>University</u>
Ralph E. Dison,	Iowa.
Leo Wolfson	Syracuse
Aileen Petri	Minnesota
Margit H. Grytbak	Minnesota

Surgery

Edward B. Spackman	Alberta
Robert K. Plant	Michigan
Robert M. Cushing	Yale
Fred J. Jarvis	Iowa
James Tedder	Tulane
B. R. Burgoyne	Tulane
George Bergh	Minnesota

Medicine

Herbert Hoff	St. Paul
Kenneth Olson	Minneapolis
George Hauser	Tulane

Obstetrics & Gynecology

Louis Friedman	Minnesota
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DuBois, Head of Department of Anatomy, Alabama, to work with Prof. Boyden and Medical Service this summer.

THEY STAY:

Holman	Medicine
Beecham	Surgery
Day	Medicine
Edwards	Medicine
Koeppsel	Medicine
Nilson	Medicine

(Incomplete list)

LAST:

Today is our last regular meeting for 1931-32. The next issue will be sent to you. It will contain a complete list of all changes for next year - attendance records - discussions of meetings - index, etc. If you wish any back numbers to complete your set, see Miss Gunn now.

Before we stop, it is unnecessary to tell Bjarne Pearson and Rudolph Koucky what a fine job they have done this year. Every issue is a credit to them and their efforts have been appreciated by all.

And to you, Leo Rigler, and your associates -- our gratitude -- what could a meeting be today without the radiologist!

Miss Gunn, we have appreciated very much your active interest and efforts at all times. Your assistance has been invaluable.

Many have complimented us on the splendid arrangement and neat typing of our Bulletin. This is the work of Miss Lavers, of the Mimeograph Department, who has transcribed our scrawl and mixed up material at all times as if she was a mindreader. We have greatly appreciated your sincere interest in helping us at all times, and wish to thank you.

And to our group who have demonstrated by their interest since last fall a spirit which is characteristically Minnesota's own - our appreciation.

Hope to see you next fall.