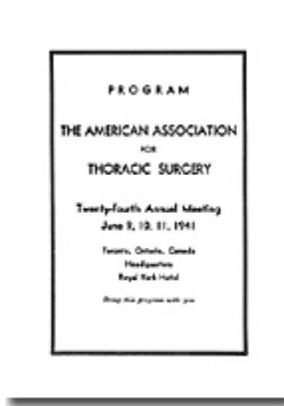


# 1941 ANNUAL MEETING PROGRAM

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## MONDAY MORNING, JUNE 9, 1941

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### Monday Morning, June 9, 1941

ROYAL YORK HOTEL

9:00 a. m. Business Session.

9:30 a. m. Scientific Session.

1. Anatomic Changes in the Lungs Following Thoracoplasty.

OSCAR AUERBACH (*by invitation*),  
Staten Island, New York.

*Abst.* This study is based on 134 consecutive autopsies performed at the Sea View Hospital from June, 1932, to December, 1940, on patients who had had one or more stages of thoracoplasty performed upon them up to five years before death. It was undertaken to determine the anatomic changes in the lungs following thoracoplasty, both on the operated and contralateral side, as well as to study the tuberculous changes in other organs such as the intestines and larynx.

The following changes were noted in the lungs and pleura:

1. *On the thoracoplasty side:*

- a. Narrowed chest cavity contains a contracted lung, the extent of contraction depending upon, 1) the degree of fibrosis in the underlying lung parenchyma, 2) the extent to which the thoracoplasty has narrowed the thoracic cage, 3) the patency of the tuberculous cavity or

cavities in the lung, 4) the amount of aerated lung.

- b. The pleurae showed varying degrees of thickening, being greatest over the apex.
- c. Cavity closure had occurred in 17 of the 134 cases. It resulted in a scar in 6 individuals. In all others healing was associated with inspissation of the cavity contents, the bronchi leading to the cavity in all instances were obliterated and ended blindly in the outer wall of the cavity. In the 117 cases in which the cavity on the operated side remained open, the draining bronchi leading into the lumen of the cavity were patent.
- d. Bronchi in the great majority of cases showed tuberculous changes only in the broncho-cavitary region.
- e. The pulmonary vessels showed anatomically visible changes only in the diseased areas.
- f. The changes in the intervening lung parenchyma were found to be dependent only upon the extent of the underlying pulmonary pathology when the collapse therapy was instituted.

2. *On the contralateral lung:*

Although 46 of the 118 patients without cavities in the contralateral lung before thoracoplasty showed evidence of a progressive lesion in the contralateral lung at autopsy, it is felt that collapse therapy prevents, or greatly diminishes the chances for spread to this lung. In 79 instances the tuberculous process in the contra-lateral lung showed evidence of anatomic healing. Emphysema in the contralateral lung and in the uncollapsed portions of the ipsilateral lung was constantly found. It was either compensatory or perifocal in type.

2. Surgery in Pulmonary Tuberculosis.

RALPH ADAMS, and (*by invitation*)

PAUL DUFAULT, Boston, Massachusetts.

*Abst. A* twelve-year period of surgical therapy for pulmonary tuberculosis at one sanatorium is reviewed and the statistical results are briefly reported. The material embraces 241 patients treated by thoracoplasty and 18 treated by extrapleural pneumothorax.

The important factors which have raised the rate of conversion to 81% and given an all-inclusive death rate of 7.6% are analyzed. The discussion includes preoperative preparation, the role of various anaesthetic agents, the type and technique of operation, the influence of apicolysis upon percentage and speed of conversion, postoperative care and complications, the reasons for failure and the causes of death in 262 consecutive cases.

### 3. Thoracoplasty for Pulmonary Tuberculosis.

GEORGE F. SKINNER, St. John, New Brunswick.

Although there are now numerous reports in the literature of successful series of thoracoplasty, there are very few studies of late results. We are now able to present fifty cases operated upon more than ten years ago, the first cases of this series having been done in 1924. And a further series of fifty cases was operated upon more than five years ago.

The above were all previously reported in the Canadian Medical Association Journal (36:476-483, 1937). The summary of that time is now compared with the 1941 analysis of the present results of these cases. A preliminary report will then be given on one hundred and twenty-five cases operated upon during the last five years-the latter with four operative deaths and three late deaths-and this in spite of the fact that an apico-lysis was done in most of the last series. Apicolysis in thoracoplasty cases is discussed from the point of view of varying the amount and type of relaxation according to the type of case rather than as a routine procedure.

And, finally, the mortality and morbidity rates in pure parenchymatous cases, are contrasted with those complicated by empyema, stressing especially the difficulties encountered in three groups:

1. Cases with high tubercle bacilli counts in the fluid causing wall infections on account of repeated aspirations before delayed operation.
  2. Cases delayed until broncho-pleural fistulae developed.
  3. Cases previously treated by oleothorax.
- Case histories of the three groups are given.

### 4. Thoracoplasty for Pulmonary Tuberculosis.

- (1) Analysis of One Hundred Consecutive Cases of Thoracoplasty with No Mortality.

RICHARD H. DIEFFENBACH and ANTHONY D. C  
RECCA

(by invitation), Newark, New Jersey.

*Abst.* Cases have been followed for a period of from 3 to 5 years. There were 221 operative procedures on the cases analyzed.

Discussion of program for the selection of cases, anaesthesia and operative procedures.

Types of lesions treated. 43% had contralateral pneumothorax at time of thoracoplasty. High percentage of arrested cases. Failure of other methods discussed. Complications and analysis of present status of cases.

- (2) Analysis of 104 cases of Thoracoplasty for Pulmonary Tuberculosis.

GEORGE G. FINNEY, Baltimore, Maryland.

*Abst.* Analysis of 104 cases of thoracoplasty for pulmonary tuberculosis, covering a period from April, 1932, to December, 1940, is presented. This is a consecutive series operated upon by Dr. Robert T. Miller and the author. The present status of the patients is given as reported by the physicians of the various sanatoria where convalescence took place following surgery. Follow-up has been obtained in nearly 100% of the cases. Particular consideration will be given not only to the operative and ultimate mortality, the types of cases and number of operations, but also to the incidence of infection, since no special precautions were taken at operation other than scrupulously careful surgical technique. Type of operations done will be described, and also the importance of position used on operating table' will be stressed, with special reference to small axillary pillow used to aid free respiratory movements. The necessity for good anaesthesia will be brought out, cyclopropane gas having been found very satisfactory. The benefit of routine blood transfusion started during the operation and continued until the patient is conscious, in order to avoid the usual postoperative drop in blood pressure, will be stressed.

### (3) The Results of Thoracoplasty.

H. MELTZER, Ninette, Manitoba.

*Abst.* This paper is based on a study of 180 cases of pulmonary tuberculosis treated by a modern thoracoplasty from April, 1935, to December, 1940. Particular emphasis is placed on the results in relationship to age, to type of disease, and duration of disease before collapse therapy was instituted. The influence of a previous pneumo-thorax or empyema on the thoracoplasty results is stressed. The age groups from 40 to 50, and over 50, are found in well selected cases to yield results comparable to any other age group, both as to mortality and ultimate results. In acute and subacute cases results are found to be most encouraging, particularly in view of the dangers so frequently cited for these types.

### (4) Thoracoplasty in Bilateral Pulmonary Tuberculosis.

ARTHUR M. VINEBERG, and (*by invitation*),  
DOUGLAS ACKMAN and MICHAEL  
ARONOVITCH,  
Montreal, Quebec, Canada.

*Abst.* Fifty cases of bilateral pulmonary tuberculosis which had had unilateral thoracoplasty were reviewed and analyzed in an effort to discover why certain of them did well while others did not. Cases with well healed disease on the contralateral side were not included. The contralateral side at the time of operation was classified in each case as retrogressing, quiescent or progressing, with or without cavity. This classification was based mostly

on serial X-ray evidence over variable periods of time prior to operation. Most favorable results were obtained in those cases which showed actively retrogressing disease even if the retrogression had been going on for only a short period of time. The so-called quiescent cases did not do quite as well. Those cases with progressive disease on the contralateral side gave poor results.

(5) Results in 90 Consecutive Thoracoplasties for Pulmonary Tuberculosis.

ARTHUR H. AUFSES (*by invitation*), New York City.

*Abst.* Results of 90 consecutive thoracoplasties performed at Montefiore Hospital from January 1, 1935, until July 1, 1940, are analyzed. There has been a complete follow-up in 100% of the cases and thus a report can be made which is based on precise information as to the results. Such a report is somewhat different from those usually seen in the literature. The results of one to six year follow-up are analyzed in regard to the percentage of cases becoming arrested after discharge from the hospital as well as the number of cases who became active after previously having been considered as arrested. The effect of the addition of the Semb extrafascial apicolysis upon the results is discussed. Aside from minor changes which may occur during follow-up examination in the next few months, the results are as follows:

Arrested.....  
 ..... 70%  
 Postoperative  
 deaths..... 6½ %  
 Late  
 deaths.....  
 .... 4½ %  
 Not  
 arrested.....  
 ..... 19%

An analysis of the reasons for good results, the causes of postoperative deaths and the possible reasons for poor results are discussed.

5. Extra-Periosteal Pneumonolysis in Pulmonary Tuberculosis-A Preliminary Report

CHARLES P. BAILEY (*by invitation*),  
 Philadelphia, Pa.

*Abst.* Extra-periosteal pneumonolysis as described by Alexander in 1927 was limited to a relatively small part of the lung. The operation to be presented is far more extensive. The space created is maintained by refills of air until the new ribs have developed over the collapsed lung. The old ribs may then be removed, allowing the chest wall to fall in and obliterate the space. At the time of the original operation the part of the lung to be collapsed is completely mobilized as in the Semb type of pneumonolysis. Up to 10 ribs may be stripped at one stage as the chest wall is left intact and

paradoxical breathing cannot develop. Nineteen cases have been operated upon. One patient died six weeks after operation, following a psychosis with rupture of the wound and secondary infection, and another died ten months later of progression of disease in his contralateral lung. Full analysis of results will be given.

## **Monday Afternoon, June 9, 1941**

### **ROYAL YORK HOTEL**

2:00 p. m. Scientific Session.

#### 6. Bronchospirography.

Studies of the Functional Capacity of Re-expanded Lungs following Pneumothorax and of Lungs following Thoracoplasty.

MAX PINNER, and (*by invitation*), GEORGE LEINER and WILLIAM A. ZAVOD, New York City.

*Abst.* 1. Bronchospirography can determine to what extent each lung contributes to the total pulmonary function; it would be misleading to use this method for the measurement of the total pulmonary function.

2. "Re-expanded" lungs may or may not be severely damaged in their function. Particularly in the presence of severe contralateral damage they may compensate to a large extent for the contralateral lung.
3. Whether or not a re-expanded lung is functionally severely damaged does not as far as our studies show, depend on the length of treatment or the presence of effusions during pneumothorax.
4. The degree of functional impairment is apparently not predictable on the clinical or roentgenological evidence, save for the fact that the roentgenological appearance of fibrothorax indicates poor function.
5. Thoracoplasty lungs (not complicated by diaphragmatic paralysis) participate to a considerable degree in respiration, this degree being dependent on the extent of the thoracoplasty.
6. Lungs damaged either by disease or collapse measures or both have certain functional characteristics in common. In the vast majority of them the ventilatory function is less impaired than the respiratory function; this means that oxygen intake is more severely decreased than vital capacity and tidal air. This discrepancy between ventilation and respiration is numerically expressed by an

elevated ventilation equivalent. The true significance of the ventilation equivalent is much more clearly demonstrated by bronchspirometric than by spirometric studies. The limitation of the ventilatory reserve is shown in the majority of damaged lungs by the fact that the tidal air comprises a much greater percentage of the vital capacity than in normal lungs.

7. Since clinical and roentgenological evidence is not a reliable indication of the functional capacity of a lung, and since spirometric data give no clue as to the distribution between the left and the right lung of the available function, bronchspirographic tests are indicated before irreversible collapse procedures are done.

7. Studies of Individual Lung Function-  
An Open Circuit Method with  
Air, and Low Oxygen Mixtures  
as the Inspired Gases.

WALTER WHITEHEAD (*by invitation*), Detroit,  
Michigan.

*Abst.* The tests so far reported have been carried out with each lung breathing into a small closed circuit spirometer containing an excess of oxygen as the breathing mixture. Under these circumstances, the oxygen pressure in the alveoli of the lungs is greatly increased and the transfer of oxygen from the lungs to the blood must be enhanced. This is a factor worth considering whenever gas exchange has been impaired by disease. It is probable that breathing atmospheric air would be more desirable, but it is technically difficult to keep the composition of the breathing mixture constant in a small rebreathing circuit.

For these reasons, an open circuit method has been used in a study of respiratory function in 15 patients. The data are obtained by analysis of the expired air of each lung while either air or a low oxygen mixture is inspired. The composition of the inspired gas is, of course, absolutely constant, and a stress in the form of breathing a low oxygen mixture can be applied to each lung separately while the other breathes air. In this manner, the functional activity of the right and left lung can be measured together with the response of each lung to a stress.

In all cases studied, the lung breathing low oxygen absorbed less oxygen than the lung breathing air. The oxygen absorption was sometimes greatly reduced, although the excretion of carbon dioxide by the same lung was unimpaired or even increased.

The respiratory quotient of each lung and the body as a whole can be readily determined by the method used. It was found that a very high quotient can exist in one lung with a normal or a low quotient in the other. A high R.Q. means that ventilation is relatively greater than circulation in the lung in which it is demonstrated, and it may therefore be concluded that one lung can be hyperventilating while the other is not. The factors which constitute independent adjustment of the lungs to new conditions are objectively demonstrable and they offer a means of predicting the ability of either lung to carry the load when increased demands are made upon it.

#### 8. Bronchospirography.

GEORGE W. WRIGHT (*by invitation*), Trudeau, New York,  
and WARRINER WOODRUFF, Saranac Lake, New York.

*Abst.* The usual technique has been modified in that the Minute Ventilation, Oxygen Consumption and Carbon Dioxide Output are calculated by having the subject respire room air, the expired air being collected in Douglas bags and analyzed for Oxygen and Carbon Dioxide. This change was made to increase the accuracy of the observations and to permit a study of the subject's response to respiring pure Nitrogen in one lung. We shall discuss the experimental error and also the influence of narcosis and the reduced airway on the subject's physiological status. The response of the subject to changes produced in the blood by having the diseased lung respire pure Nitrogen and the use of this procedure as a means of producing a strain on the good lung for prognostic purposes before collapse therapy will be presented,

#### 9. A Review of 100 Consecutive Cases of Endobronchial Tuberculosis.

J. MAXWELL CHAMBERLAIN, Oneonta, New York.

*Abst.* The cases were studied from the standpoint of the evolution of this complication with and without treatment. Treatment consisted of bed rest, local application of silver nitrate, pneumothorax, thoracoplasty and combinations of these.

Best results were obtained  
when therapy was directed  
at both the pulmonary and  
bronchial lesions.

Pneumothorax over endobronchial disease was found dangerous. Local therapy is often of great aid. Good results were obtained by thoracoplasty. The complications of irreversible damage occurring in the major bronchus (partial stenosis) would suggest that an irreversible or permanent form of therapy be directed at the distal pulmonary disease to control both the pulmonary and bronchial lesions.

#### 10. Tuberculous Stenosis of the Major Bronchi.

WILLIAM M. TUTTLE, Detroit, Michigan.

*Abst.* In recent years, endoscopic examination of the trachea and bronchi of tuberculous individuals has become a common diagnostic and therapeutic procedure. With the aid of these methods, our knowledge of the presence and management of tuberculous stenosis of the larger airways has been enhanced. This study reviews our experience in a group of 105 patients with either ulcero-stenosis or healed stenosis of the main bronchi. The etiology and the management of both the bronchial lesion and the existing parenchymal lesion has been studied.

"These complications which arise as a result of a stenosed bronchus are considered. Bacteriological studies have been made of the material aspirated from behind the stenoses. In a large majority of patients, an anaerobic streptococcus viridans has been isolated. It is significant that the organism has been present mainly in those patients with severe secondary infection behind the stenosis. Pyogenic infection of the poststenotic pulmonary parenchyma is a severe complication and unrelated to the amount of first observed tuberculosis. This series is of interest in view of the opinions of some workers that pulmonary tuberculosis in

the presence of bronchial stenosis is better treated with lobectomy or pneumonectomy. Of the total series, many of whom were too ill for extensive surgical treatment when first seen, thoracoplasty was done in 30 cases. There was no death in this portion of the series, although two patients were too ill to complete the contemplated procedure. The superiority of thoracoplasty over other types of collapse therapy will be discussed.

5:00 p. m. Cocktail Party-Dr. and Mrs. Norman S. Shenstone.  
147 Dundee Rd.

## **Monday Evening, June 9, 1941**

ROYAL YORK HOTEL

8:30 p. m. Scientific Session.

11. Effect of Thoracoplasty upon Pulmonary Tuberculosis Complicated by Stenotic Tuberculous Bronchitis.

JOHN ALEXANDER, Ann Arbor, Michigan, GEORGE N. J.

SOMMER, JR., Trenton, New Jersey, and ADRIAN A. EHLER, Albany, New York.

*Abst. A* persisting prejudice exists in many clinics against the use of thoracoplasty for cavernous tuberculosis complicated by varying degrees of bronchial stenosis and atelectasis. Our results during a period of seven years have, however, convinced us that the operation is a valuable one in selected cases, and that the risk to life is much less, and the chance of complete healing of the tuberculosis much greater, than from the alternative operations of pneumonectomy and lobectomy. Types of cases suitable and unsuitable for thoracoplasty from the bronchoscopic and other points of view, and special technical considerations, will be discussed.

12. A Preliminary Report on Some Investigative Procedures Regarding Closure of Refractory and Residual Cavities.

LOUIS R. DAVIDSON, New York City.

*Abst.* It is advisable to define a cavity according to its transverse diameter and to avoid the term "giant" cavity since this at the best is merely a relative term. What are the mechanics and biology of the tuberculous pulmonary cavity?

Causation, evolution and closure of the cavity are briefly considered. Particular attention is given to the theories of Andrus, Coryllos and Monaldi. The location of the cavities is discussed too, thus considering Macklin's theory.

The treatment of cavities may be divided into several groups so that a plan of attack may be roughly outlined.

- (a) The residual post-thoracoplasty cavity. Discussion of the two stage operation of pneumonostomy and pedicle muscle flap which we have been performing at Sea View Hospital. This is contrasted with previous procedures particularly simple surgical drainage and the one stage procedure of Coryllos.
- (b) The large cavity with an appreciable amount of aerated lung parenchyma surrounding it. How is this handled?
  1. Thoracoplasty-posterior and anterior combined?
  2. Monaldi technique alone?
  3. Monaldi operation combined with a subsequent thoracoplasty?
- (c) The large cavity with practically no surrounding parenchyma. Monaldi operation for drainage purposes prior to cauterization of the bronchus.
- (d) The large cavity with the additional presence of severe bronchiectatic changes. In these cases it is the bronchiectasis which is the most distressing feature as far as the patient is concerned. Here one must consider the possibility of lobectomy and possible pneumonectomy.

### 13. Open Drainage for Residual Cavities beneath Thoracoplasty.

W. L. ROGERS, SIDNEY J. SHIPMAN, and *(by invitation)*,

A. C. DANIELS, San Francisco, California.

*Abst.* It is our belief that previously reported poor results in open drainage has been due chiefly to two factors: incomplete knowledge of cavity mechanics and inadequate localization of infection resulting in excessive wound sepsis. To overcome these disadvantages intracavitary pressure studies were made in each case. In addition a technique involving the use of a skin flap was utilized. A series of cases treated successfully in this manner is reported, together with a movie showing the operative technique. This study is limited to drainage and closure of persistent cavities beneath thoracoplasties.

## UESDAY MORNING, JUNE 10, 1941

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### Tuesday Morning, June 10, 1941

#### ROYAL YORK HOTEL

9:00 a. m. Scientific Session.

14. Surgical Significance of Metastasis in Primary Carcinoma of Lung: Report of Two Cases with Unusual Site of Metastasis.

ALTON  
OCHSNER and MICHAEL E. BEBAKEY,  
New Orleans, Louisiana.

*Abst.* At present, primary carcinoma of the lung has a high incidence of metastasis at the time that the diagnosis is made. On the other hand, a large number of these lesions are characterized by late and limited metastasis. For this reason the incidence of operability can be increased. The means of accomplishing this are emphasized. The various methods of metastasis and their relative significance are discussed. The frequency of the various sites of metastasis is presented, based upon an analysis of collected cases. The clinical considerations of metastasis from the standpoint of manifestation, diagnosis, and surgical significances are discussed. Two cases are reported which, several months following pneumonectomy, developed metastasis in the sentinel axillary node. The routes of extension to this area are discussed.

15. A Topographic Classification of Cancer of the Lung with Special Reference to the Surgical Implications of the Circumscribed Variety.

HAROLD NEUHOF, and (*by invitation*), COLEMAN B. RABIN and IRVING A. SAROT, New York City.

*Abst.* Carcinoma of the lung on the basis of topographic features was the subject of a communication presented before the American Association for Thoracic Surgery in 1934. That study was based upon an examination of 250 cases in various stages of the disease with about 100 autopsies. A classification into non-circumscribed and circumscribed tumors was made on topography and not on microscopic features. The diffuse neoplasms were found to arise preponderantly from main bronchi and

also in smaller proportion of cases from branch bronchi. The circumscribed tumors were of two varieties: (1) Branch bronchus tumors which spread outwards into the periphery (peripheral carcinomata), and (2) tumors which were more or less sharply circumscribed within the substance of the lung (without demonstrable bronchial origin on gross examination). In the non-circumscribed group, early regional lymph node invasion was common. In the circumscribed group, it was rare. Since that publication, many additional cases have been studied. In particular, there has been the study of a considerable number of specimens removed at operation, or in others, autopsies performed shortly after exploratory or radical operation. As a result of these studies there is now evidence that in not a few instances main bronchus cancers are not characterized by early regional node involvement. On the other hand, there is additional evidence that the circumscribed cancers comprise an important group (about 25 per cent of all cases) in which regional lymph node involvement is usually limited or absent even when these tumors attain a large size. Such tumors, therefore, comprise fundamentally a particularly favorable group for surgical eradication. There are discussed the basis for the diagnosis of the circumscribed variety of cancer and the operative procedures for its eradication.

16. Pneumonectomy for Carcinoma of the Lung.

STUART W. HARRINGTON, Rochester, Minnesota.

17. Experiences in Total Pneumonectomy.

NORMAN S. SHENSTONE (*by imitation*), Toronto, Ontario, Canada.

*Abst.* A presentation of the results of operations for carcinoma, adenoma and inflammatory conditions of the lung performed at the Toronto General Hospital during the past four years with a description of the method used in dealing with the hilar structures.

18. Pulmonary Function after Pneumonectomy in Children.

CHARLES W. LESTER, and (*by invitation*), ANDRE COURNAND and ROBERT L. RILEY, New York City.

*Abst.* Four children who underwent pneumonectomies for infection were

studied one and a half to three and a half years after operation. The ages of the children varied from six to fourteen years at the time of operation. Observation by the usual clinical methods including X-ray bronchogram and bronchoscopic examination supplemented in one instance by secondary operation showed that the shifted heart and mediastinum had permitted the remaining lung to extend into the contralateral hemithorax. Pulmonary function was studied for lung volume, maximum breathing capacity and respiratory gas exchange under conditions of rest, moderate exercise and exhausting exercise. In addition normal children of the corresponding age groups were studied for the purpose of establishing normal values for comparison. The studies show that in the single remaining lung no emphysema had developed, that lung volume and maximum breathing capacity were above normal for one lung and that gas exchange was efficiently managed. This would seem to indicate that in these children at this time compensatory growth had taken place in that lung.

Tuesday Afternoon, June 10, 1941

ROYAL YORK HOTEL

2:00 p. m. Executive Session.

3:00 p. m. Presidential Address: Pulmonary Abscess.

FRASER B. GURD, Montreal, Quebec, Canada.

19. Pulmonary Abscess.

ROBERT R. SHAW, Dallas, Texas.

20. Chronic Non-tuberculous Thoracic Empyema.

ALBERT O. SINGLETON, and (*by invitation*),

ROBERT M. MOORE, Galveston, Texas.

*Abst.* This represents a study of 200 consecutive cases of thoracic empyema treated in the Surgical Service of the John Sealy Hospital, the teaching hospital of the Medical Department of the University of Texas. 170 of these cases were treated in the primary stage by us, 6 of which resulted in chronic empyema. 28 other chronic cases were treated primarily elsewhere. The 170 acute cases were all drained by trocar and cannula, a method of closed drainage. The paper deals more particularly with a detailed study of the 28 chronic empyema cases with special reference to the etiology and the method of

treatment used. Of the 28 cases, 23 were cured and 5 died.

We have gone into the etiology of chronic empyema and given a detailed report of our experience in the treatment of this condition, with a review of the various procedures which have been reported by others and those which have been most successful in our hands. While we have not been able to formulate a definite plan of treatment for this condition in general, our experience has taught us some important points in regard to the course of procedure in a majority of them. We have emphasized the serious problem involved and the importance of treating each individual case as a separate problem, keeping in mind the various procedures which may be advised in certain particular cases. We have also reported and discussed in detail the deformities of the skeleton resulting from chronic empyema in children.

21. Surgery of the Chest in War.

A. L. LOCKWOOD, Toronto, Ontario, Canada.

*Abst.* A summary of the author's experiences in the last World War is combined with a resume of recent experiences of others in China, Spain and the present World War. A consideration of the need for protective chest armour will be discussed. The case of a man carrying a rifle bullet embedded in his heart since 1916 will be presented.

7:30 p. m. Annual Dinner-Royal York Hotel.

Address: Aviation Medicine.

Wing Commander G. E. HALL, R. C. A. F.

## WEDNESDAY MORNING, JUNE 11, 1941

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### Wednesday Morning, June 11, 1941

ROYAL YORK HOTEL

9:00 a. m. Scientific Session.

22. A Method of Treatment of Large Pulmonary Air Cysts (Balloon Cysts) by an Endocutaneous Flap.

A. LINCOLN BROWN, and *(by invitation)*,

WILLIAM BROCK, San Francisco, California.

*Abst.* The vast majority of pulmonary cysts either pass unrecognized, or if diagnosed require no therapy. A certain number of cases demand intervention because they become infected, or because through a valve-like bronchial mechanism they become so distended they seriously decrease the patient's vital capacity. The methods of handling such conditions in the past have not been entirely satisfactory. Complete removal of the cyst in one manner or another is often not surgically feasible. The use of sclerosing solutions, tube drainage, etc., is far from ideal. The relatively simple and safe method of treatment of large pulmonary air cysts by the production of an endocutaneous flap was devised and successfully employed.

A review of the rationale of this procedure considering the problem in hand, the pathology involved, the available methods of treatments and the dangers involved is discussed.

23. Cancer of the Thoracic Esophagus and the Upper End of the Stomach: A Review of Nineteen Cases That Have Undergone Surgical Exploration.

H. BRODIE STEPHENS, San Francisco, California.

*Abst.* Since a report by Dr. Brunn and myself in 1937 upon the successful removal of a carcinoma of the mid-esophagus, twelve additional cases have been explored. In addition there have been six cases of carcinoma of the cardiac end of the stomach surgically explored by the trans-thoracic route.

In the group of 13 cases where the cancer involved the thoracic esophagus only 2 patients are alive today and one of them has probable metastasis. In the group of 6 cases where the cancer involved the cardiac end of the stomach only 2 patients are alive.

One of them had a resection of the tumor with a re-anastomosis of the esophagus to the stomach at a level just below the arch of the aorta (December, 1939). This patient is still alive but has definite recurrence of the tumor. The other member of this group is still alive but has an inoperable tumor. Of the entire 19 patients there is only one where life expectancy is good. (This patient had a Torek resection in July, 1940. The lymph glands removed with the esophageal tumor were free of metastasis.) For the most part the duration of symptoms is rather short in both groups. Occasionally the duration of symptoms is well over a year and one is left with the impression the tumor might well have been operable save for the long delay before reaching the surgeon.

24. Experiences with Eight Cases of Resection for Carcinoma of the Esophagus.

DALLAS B. PHEMISTER *(by invitation)*, Chicago, Illinois.

25. Carcinoma of the Esophagus-Demonstration of Cases.

HAROLD W. WOOKEY *(by invitation)*,

Toronto, Ontario, Canada.

26. An Experimental Study of Tubes Made from the Greater Curvature of the Stomach.

B. NOLAND CARTER, M.D., and *(by invitation)*

OSLER A. ABBOTT, M.D., and C. ROLLINS HANLON, M.D.

*Abst.* There is need for a method of re-establishing the continuity of the gastro-intestinal tract after the resection of a portion of the thoracic esophagus. With this in mind, studies have been carried out on dogs in which long tubes have been fashioned from the greater curvature of the stomach. These tubes have been formed at the first operation through a trans-abdominal approach and left attached at each end as is done in a skin tube for pedicle grafting. In one series of dogs the diaphragm was opened widely at a second stage operation, the tube divided at its pyloric end and led through the thorax to the second interspace where its end was brought out through the thoracic wall. In another series of dogs the tube was divided at its cardiac end and brought up beneath the skin of the thoracic wall. By utilizing a separate stage for the formation of the tube

one can be assured of sound healing and good function when the tube is finally placed either within the thorax or beneath the skin.

## Wednesday Afternoon, June 11, 1941

ROYAL YORK HOTEL

2 :00 p. m. Scientific Session.

27. Atelectasis and Bronchiectasis.

JOSEPH TANNENBERG (*by invitation*) and

MAX PINNER, New York City.

28. The Use of Sulfanilamide in Resection of the Lung.

FRANK ALLBRITTEN (*by invitation*), JOHN B. FLICK and

JOHN H. GIBBON, JR., Philadelphia, Pennsylvania

*Abst.* Both prophylactic general use of Sulfanilamide in operative procedures and local use of the drug in operative wounds that are potentially infected, have been productive of good results in several fields of surgery. For the past two years we have routinely given sul-fanflamide by mouth, to patients 24 hours prior to lobectomy for bronchiectasis, and to pneumonectomy, with and without suppuration in the lung. In addition, in about one-half of our cases, we have placed from IV to VII Gm. of Sulfanilamide in and about the bronchial stump and the pleural cavity at the conclusion of operation.

This paper is a report of blood, and in many cases, pleural fluid Sulfanilamide concentrations, in a series of four pneumonectomies and twelve lobectomies. In no instance was there a severe toxic reaction to Sulfanilamide, although occasionally minor reactions did occur. In the infected cases, the onset of infection was late and general manifestations were not severe. From this group of patients we have concluded:

1. That operative methods remain the primary factor in the control of infection.
2. When Sulfanilamide is not used locally, the pleural fluid concentration quickly reaches and remains at the concentration in the blood. When Sulfanilamide is used locally, a high concentration results in the pleural fluid in the first 24 hours. In the drained cases, however, it quickly falls to the concentration in the blood.
3. Sulfanilamide delays the onset and decreases the severity of the infection following lobectomy or pneumonectomy, in present treatment of pulmonary infection.

29. Experimental Study of the Effect on Cardio-Respiratory Function of Blood Transfusion Following Lobectomy.

JOHN H. GIBBON, JR., Philadelphia, Pennsylvania.

*Abst.* Recently two patients were observed who died ten hours after removal of the right lower and middle lobes for bronchiectasis in whom the left lower lobe had been removed more than a year previously. Both patients were given blood transfusions during and after the operation. At autopsy the remaining upper lobes in both patients were edematous. This paper presents experimental evidence that in animals in which a large part of the functioning pulmonary tissue has been removed, blood transfusion may not only be harmful but may lead to death. The following observations have been made:

1. In a series of acute experiments on cats a sudden marked decrease in functioning pulmonary tissue was produced by removing all the lower lobes and the right middle lobe. The saturation of arterial blood with oxygen was determined before lobectomy, immediately afterwards, and

again several hours later. In these control observations the arterial blood was always adequately saturated with oxygen.

2. The above procedure was then repeated, except that the third blood sample was taken after a blood transfusion of either 10 or 15 cc. of blood per kilogram of body weight. In these experiments the third blood sample was markedly unsaturated, and following transfusions of 15 cc. per kilogram body weight, the animals always died. In normal animals receiving transfusions of 15 cc. per kilogram of body weight there was no diminution in the saturation of arterial blood with oxygen and the animals did not die.
3. Measurements of the pressure in the pulmonary artery were made during blood transfusion in normal cats and in cats in which lobectomies had been performed. In normal animals there was only a slight rise in pulmonary artery pressure, while in cats with lobectomies transfusion produced a marked rise in pulmonary artery pressure.
4. In a series of normal cats the lungs were removed and the lobes weighed separately. The weights of these lobes were expressed in percentage of total lung weight and percentage of body weight. The lungs of normal cats which had been transfused were similarly studied. No significant increase in the total lung weight, as expressed in percentage of body weight, was found. In animals with lobectomies but without transfusion there was a moderate increase in the weight of the remaining lobes. In animals with lobectomies followed by transfusion, the remaining lobes were extremely congested and edematous, and greatly increased in weight.
5. We have concluded that, after a marked decrease in functioning pulmonary tissue has been produced by removing lobes of the lung, a blood transfusion, of a size well tolerated by normal cats, is followed by a decrease in the saturation of arterial blood with oxygen and death. The anoxemia is attributed to the pulmonary vascular engorgement and to pulmonary edema. Failure of the right side of the heart does not occur until some time after the anoxemia is marked.

### 30. Major Changes in the Fundamental Relationships of the Respiratory Drive Mechanisms during Evipal and Pentothal Anesthesia, with Special Consideration of Possible Applications to Transpleural Surgery.

CARL A. MOVER (*by invitation*), Boston, Massachusetts,

introduced by EDWARD D. CHURCHILL,

Boston, Massachusetts.

### 31. Observations on the Effects of the Prolonged Administration of High Oxygen Concentration to Dogs.

JOHN R. PAINE, (*by invitation*), Minneapolis, Minnesota.

Four dogs with obstruction of the terminal ileum of 48 to 72 hours duration and four dogs with obstruction of the descending colon of 48 to 96 hours duration were confined in a chamber in which a concentration of oxygen over 95% was maintained. At intervals of 6 to 12 hours the chamber was opened and samples of intestinal gas taken for analysis of the oxygen and carbon dioxide content. After 48 hours all surviving animals were sacrificed.

The results in both groups of animals were similar. Initially the oxygen concentration in the intestinal gas increased to 18-20% and the carbon dioxide decreased to less than 2%. After approximately 36 hours, however, there was a tendency for the oxygen concentration to decrease and the carbon dioxide concentration to increase.

Autopsies were performed on all the experimental animals. These as well as roentgenograms taken before and after the experiment showed that the respiration of over 95% oxygen decreased the amount of gas in the obstructed bowel. On the other hand that in the stomach was frequently increased in quantity.

In two animals that died during the course of the experiment no adequate cause of death could be found at autopsy. The possibility that these animals experienced oxygen poisoning was considered and the following experiments were performed.

Fifteen dogs were subjected to oxygen concentration of 80 to 100% without interruption for 51 to 168 hours. Signs which were assumed to be those of oxygen poisoning occurred in all animals before the experiment was terminated. These were 1) lethargy, 2) failure to eat, 3) dyspnea, 4) slow respiratory rate, 5) retching. Some animals died while others with definite symptoms recovered from an equal exposure. The lower the oxygen concentration the longer was the time required to produce symptoms. All animals that died were autopsied. The gross pathological findings were 1) small and large intestine empty of gas, 2) stomach distended with gas, 3) spleen contracted, 4) coagulated fluid in the pleural cavities, 5) intense congestion of lungs. The microscopic pathological findings were 1) intense congestion of the lungs with an inflammatory type of edema, 2) passive congestion of the liver with central necrosis of liver lobules, 3) contraction of spleen.

The pathological findings varied in degree directly with the concentration of the oxygen and the length of the experiment. Other observations showed that a marked increase occurred in the hemoglobin content and red blood cell concentration of the blood. Dogs that developed severe symptoms of poisoning but recovered were sacrificed 4 to 6 weeks later. No gross or microscopic pathological findings could be detected. Three dogs confined in the chamber for 168 hours with an oxygen concentration of 20% did not develop any symptoms of poisoning. When sacrificed immediately afterwards, no gross or microscopic pathological changes could be detected.

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