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ABSTRACTS

This section of THORAX *is published in collaboration with the two abstracting journals, Abstracts of World Medicine, and Abstracts of World Surgery, Obstetrics and Gynaecology, published by the British Medical Association. In this Journal some of the more important articles on subjects of interest to chest physicians and surgeons are selected for abstract, and these are classified into five sections : experimental ; tuberculosis ; neoplasm ; asthma ; thoracic surgery. Each section is not necessarily represented in any one issue.*

Experimental

Antibiotics and Chemotherapy

Neomycin in Experimental Tuberculosis of Guinea-pigs. KARLSON, A. G., GAINER, J. H., and FELDMAN, W. H. (1950). *Dis. Chest,* **17**, 493.

Guinea-pigs, weighing 800 g., were infected subcutaneously with 0.1 mg. (moist weight) of H37 Rv strain of tubercle bacilli. Three weeks later (when a few killed animals had visible lesions, which histological study showed to be progressive), they were divided into three groups. One group (10) was treated with neomycin (potency 160 units per mg.) twice daily in doses of 2,000 units for six days, followed by 4,000 units for 20 days, 6,000 for 24 days, and finally 8,000 units twice daily for 27 days, making a total of 77 days of treatment ; another group (6) was treated over the same period with 6 mg. streptomycin daily ; the third group (10) served as an untreated control. At the end of the treatment period all survivors were killed. (None of the two treated groups and three of the controls had died.)

At necropsy both treated groups had few macroscopical signs of disease, and histological examination showed reversal of the previously progressive tuberculosis ; the suppressive effect of neomycin, however, was somewhat less than that of streptomycin. While the neomycin was apparently well tolerated in these doses, there were focal renal cortical lesions showing some tubular degeneration and cellular infiltration. The authors state that the optimal mode of administration to guinea-pigs needs to be worked out, particularly with a view to discovering whether the renal lesions can be avoided. Meanwhile, this toxicity makes caution necessary in the approach to clinical use. Preliminary observations indicated that streptomycin-resistant tubercle bacilli were susceptible to neomycin.

P. D'Arcy Hart.

Failure of Chloromycetin in the Treatment of Tuberculosis. CARR, D. T., KARLSON, A. G., and GAINER, J. H. (1950). *Proc. Mayo Clin.,* **25**, 316.

Chloramphenicol ("chloromycetin"), though only weakly tuberculostatic *in vitro,* was tested against experimental tuberculosis in guinea-pigs ; no definite beneficial effect was obtained. Furthermore, the drug did not affect the course of miliary tuberculosis in a human patient. The latter infection was caused by streptomycin-resistant tubercle bacilli, but chloramphenicol *in vitro* is equally bacteriostatic to streptomycin-sensitive and resistant organisms. It is concluded that chloramphenicol is of no value as an antituberculotic agent.

P. D'Arcy Hart.

***p*-Anisaldehyde-thiosemicarbazone in Treatment of Experimental Murine Tuberculosis.** STEINBACH, M. M., and BAKER, H. (1950). *Proc. Soc. exp. Biol., N.Y.,* **74**, 595.

para-Anisaldehyde thiosemicarbazone at a concentration of 1 μg. per 100 ml. in Dubos medium prevented the growth *in vitro* of the H37 Rv and B1 strains of *Mycobacterium tuberculosis.* [In the summary the inhibitory concentration of the drug is given as 1 mg. per 100 ml.]

When the drug is administered in the diet at a concentration of 1% to mice infected by intravenous injection of a culture of the H37 Rv strain, the mice were prevented from dying of gross pulmonary tuberculosis. After 30 days, when all the infected control mice were dead, treated animals showed no gross pulmonary or other tuberculous lesions, but the spleen was enlarged. The findings in

animals killed 75 days after inoculation were similar. *L. G. Goodwin.*

Terramycin in the Treatment of Pneumococcic and Primary Atypical Pneumonia. MELCHER, G. W., GIBSON, C. D., ROSE, H. M., and KNEELAND, Y. (1950). *J. Amer. med. Ass.*, **143**, 1303.

A series of 18 patients with pneumococcal pneumonia and seven with presumed virus pneumonia were treated with terramycin. The antibiotic was given orally in the form of the hydrochloride. The initial dose was 2 g., and this was followed by 1 g. six-hourly for from four to eight days. Some evidence of gastro-intestinal irritation appeared in 9 of the 25 cases. In none was the nausea, vomiting, or diarrhoea sufficiently severe to require stoppage of treatment. No serious toxic effects were noted. All the patients with pneumococcal pneumonia showed the characteristic features of lobar pneumonia, and a typed pneumococcus was isolated from the sputum. In none were pneumococci found in the blood. In 11 of the 18, terramycin administration was begun during the first two days of illness. With one exception there was a dramatic fall of temperature within 24 to 36 hours of the first dose. There were no relapses, and complete radiographic clearing occurred in all cases. The response in the seven cases of primary atypical (virus) pneumonia was also satisfactory, the temperature falling rapidly and demonstrable clinical improvement being usually evident within a few hours of the first dose. *J. R. Bignall.*

The Treatment of Pneumococcic Pneumonia with Large Doses of Repository Penicillin Compared with Lower Doses of Penicillin: A Study of 686 Patients. DOWLING, H. F., LEPPER, M. H., and HIRSH, H. L. (1950). *Amer J. med. Sci.*, **220**, 17.

In the treatment of pneumonia due to pneumococcal infection a dose of 600,000 units of penicillin in oil and beeswax was administered twice daily to 238 patients. A similar dose of procaine penicillin in oil was administered to 45 patients. With this treatment the fatality rate was 5%. The results were compared with those obtained from the use of other forms of penicillin every three hours either intramuscularly or by mouth. In most instances 15,000 units were injected by the intramuscular route. The dose by mouth varied from 80,000 to 100,000 units. This series of cases consisted of 403 patients; it included a sub-group of 68 patients, most of whom received a single intramuscular injection of 300,000 units of procaine penicillin in oil with aluminium monostearate. The fatality rate in the second series was 5.4%.

When the statistics concerning both groups of cases were analysed, it was established that there was no substantial disparity either in the age distribution of the patients or in the incidence of bacteriaemia and complicating diseases. Thus in the first group of cases 47% of the patients were more than 40 years of age, and the fatality rate for these patients was 8%. In the second group the corresponding figures were 43% and 10%.

The curative effect exerted by procaine penicillin in oil and by penicillin in oil and beeswax is discussed; the authors conclude that similar results can be obtained by the administration of preparations which produce lower concentrations of the antibiotic in the blood. Perhaps better results could be achieved with large doses of an aqueous preparation of penicillin given at infrequent intervals, but it is difficult to assess the value of any form of penicillin when pneumonia is complicated by conditions such as hemiplegia, heart disease, and uraemia. *A. Garland.*

Dosage of Aureomycin in Primary Atypical Pneumonia. BLODGETT, W. A., KEATING, J. H., and COFFIN, G. J. (1950). *J. Amer. med. Ass.*, **143**, 878.

From St. Luke's Hospital, New York, the authors report a trial in which 14 patients with acute primary atypical pneumonia were treated with aureomycin in daily doses of 1 to 1.5 g. for periods varying from 3½ to 10 days. The patients were acutely, but not critically, ill, and radiography showed evidence of pulmonary infiltration in all cases. Cold-agglutinin titres were diagnostic in seven, and it is reported that treatment with aureomycin tends to diminish the expected rise in titre. The diagnosis was also supported by the absence of response to a preliminary course of penicillin in all but two cases. With aureomycin 10 of the patients became afebrile at the end of 48 hours, and another three after 72 hours' treatment. One had a low-grade fever for four days after an initial response. No relapses were observed. Drug toxicity was minimal, and toxic symptoms occurred in only three cases.

The authors conclude that the administration of small doses of aureomycin is justified in all but critically ill patients suffering from primary atypical pneumonia, but note that experience during seasons yielding cases of greater severity may cause them to modify this conclusion. *R. N. Johnston.*

Aureomycin Treatment of Pneumococcic Pneumonia. Clinical and Laboratory Studies on 33 Patients. GOCKE, T. M., COLLINS, H. S., and FINLAND, M. (1949). *Arch. intern. Med.*, **84**, 857.

Aureomycin is highly effective in the treatment of pneumococcal pneumonia and seems to suppress the infection even more readily than either penicillin or sulphonamides. But penicillin retains the advantages of simplicity of employment, low toxicity, and, for the present at least, lower cost. Aureomycin clearly has a place in therapy where mixed infections by sensitive organisms prevail, where suppuration is present or threatening, or where penicillin-resistant strains are found. The average dose in the present series of 33 cases was 18 g. spread over five to six days and given orally in 1 g. doses every four hours. In severe cases the drug can be given intravenously. *G. F. Walker.*

Cases of Advanced Childhood Pulmonary Tuberculosis Treated with Streptomycin Aerosol. MILLER, J. B., ABRAMSON, H. A., and RATNER, B. (1950). *Quart. Bull. Sea View Hosp.*, **11**, 102.

This paper reports a study of the effectiveness of large doses of streptomycin in a special diluent given as an aerosol. The streptomycin was dissolved in water which had been made alkaline (*p*H 8.0) and contained a detergent ("triton A20," 0.1%) and glycerin (2%). The patients received 1 g. of streptomycin in 5 ml. of solvent twice daily for three to six months by the aerosol method, oxygen and a De Vilbiss nebulizer being used. Three inches of rubber tubing formed a mouthpiece to deliver the aerosol to the back of the mouth, the nose being occluded. For children who could not co-operate and use the usual Y-tube, a face hood made of cellophane was found to be the best apparatus. This treatment was given to 12 children aged from 8 months to 15 years; nine of these with extensive lung disease, including one with miliary tuberculosis, responded well and became clinically healed. There was little response in three with collapse of the whole or part of a lung. There were no toxic effects and no increase in streptomycin resistance during treatment.

[The results in nine cases in which otherwise the prognosis would have been poor fully justify the authors' cautious conclusion that "further study of the value of this technique in indicated."] *L. M. Franklin.*

Comparison of a Liquid and a Solid Medium Method for Detection of Streptomycin-resistant *Mycobacterium tuberculosis*. BERNSTEIN, S., BRADLEY, E. M., MEDLAR, E. M., and STEENKEN, W. (1950). *Amer. Rev. Tuberc.*, **62**, 101.

The value of direct streptomycin-sensitivity testing on solid media was examined by comparing the results obtained on the Trudeau Society medium, containing 10, 50, and 500 μg. of streptomycin per ml. before inspissation, and assumed to contain 3, 5, 15, and 200 μg. after inspissation, with those in the indirect sensitivity test on Dubos "tween 80"–albumin liquid medium. The results obtained on 510 cultures are compared. There was close agreement between the results of the two tests when the bacterial population as a whole was either sensitive or resistant to streptomycin. With bacterial populations containing varying proportions of resistant and sensitive organisms, there was a 30% discrepancy between results of the two methods. In such cases use of the solid medium appears preferable because it indicates the relative proportions of sensitive and resistant organisms as well as the degree of resistance. A method of reporting results of *in vitro* sensitivity tests on solid media is presented. *E. Nassau.*

Respiratory Function

Air Velocity Index. A Numerical Expression of the Functionally Effective Portion of Ventilation. GAENSLER, E. A. (1950). *Amer. Rev. Tuberc.*, **62**, 17.

The author describes the determination of the "air velocity index" as a measure of ventilation in tests on 435 patients on 476 occasions. In the past it has been found that a direct comparison between the vital capacity and the maximum breathing capacity is misleading. By using appropriate formulae to correct for age, sex, height, and weight it is possible to predict the normal vital capacity and maximum breathing capacity for any given age, sex, height, weight, and body sur-

face. The ratio of the values actually found, expressed as

$$\frac{\text{percentage of maximum predicted breathing capacity}}{\text{percentage of predicted vital capacity}}$$

is known as the air velocity index.

From experiments it was found that this index was increased in patients with loss of pulmonary tissue due to disease or to collapse treatment, the increase being approximately proportional to the amount of loss of tissue. On the other hand bronchial obstruction and loss of pulmonary elasticity decreased the air velocity index. *R. H. J. Fanthorpe.*

Pathology

The Effect of Human Influenza Virus (Type A) on the Incidence of Lung Tumors in Mice. STEINER, P. E., and LOOSLI, C. G. (1950). *Cancer Res.*, **10**, 385.

This investigation was suggested by the fact that infection with influenza virus is often followed, both in man and in the mouse, by hyperplasia of the bronchial and bronchiolar epithelium. Mice of two inbred strains—strain A with a high incidence, and C57 black with a low incidence of spontaneous lung tumours—were exposed to a mist containing human influenza virus (type A, PR-8 strain). Infection occurred in almost 100%, as judged by sample necropsies. Of the C57 mice 6%, and of the strain-A mice 14% and 53% respectively in two experiments, died between the 8th and 14th day, none dying later. Many of the survivors appeared normal, but some showed dyspnoea or asymmetry of the thorax. On naked-eye and microscopical examination the lesions in the lungs were similar to those previously described in the post-influenzal state, and two to four weeks after infection areas of epithelial proliferation were seen which were often hard to distinguish from neoplasms. Later these atrophied, sometimes leaving areas of atelectasis, fibrosis, and cyst formation; these changes persisted throughout life. No increase in the incidence of lung tumours followed influenzal infection in either strain. No tumours at all occurred in either infected or control C57 mice. In the mice of strain A, influenzal infection was judged to be non-carcinogenic on the following grounds: (*a*) there was no increase following infection in the number of mice developing tumours, or in the average number of tumours per tumour-bearing mouse; (*b*) tumours arose no more often from old influenzal lesions than from apparently normal areas; and (*c*) there was no microscopical evidence that post-influenzal epithelial hyperplasia ever progressed to tumour formation. There was a suggestion, probably not significant, that the virus may have been slightly anti-carcinogenic.

M. H. Salaman.

Tuberculosis: Clinical

Fatal Tension Pneumothorax Resulting from Diaphragmatic Rupture in a Patient Receiving Pneumoperitoneum. YANNITELLI, S. A., WOODRUFF, C. E., MUELLER, E. E., and HOWARD, W. L. (1949). *Amer. Rev. Tuberc.*, **60**, 794.

A coloured girl aged 16 had tuberculosis of the left lung. After a pneumoperitoneum had been maintained for 10 months she developed a right-sided spontaneous pneumothorax 20 days after a refill. Diminution in the air content of the peritoneum was noticed and radiographs showed bleb-like projections above the middle of the right leaf of the diaphragm. The lung was allowed to re-expand and the pneumoperitoneum was continued.

Six months later she had another spontaneous pneumothorax which was fatal. Necropsy revealed a tension pneumothorax; a soft whitish mass 1.7 cm. in length, which collapsed under pressure, projected from the pleural surface of the diaphragm at the junction of the lateral muscle fibres and the central aponeurosis. On the peritoneal surface of the diaphragm there was a rounded opening 2 mm. wide which connected with this mass. It is thought that rupture of the diaphragm was the cause of the pneumothorax, and that a valve effect occurred, aided by the pump-like action of the diaphragm, which became stronger as the dyspnoea increased, and caused a rapidly fatal tension pneumothorax. *L. M. Franklin.*

The Occurrence of Pulmonary Tuberculosis following Pulmonary Excision for Non-tuberculous Diseases. KATZ, H. L. (1950). *Amer. Rev. Tuberc.*, **61**, 835.

The need for a long-term follow-up of patients who have undergone pulmonary resection is illustrated by the four cases reported, in which the patients were found to have pulmonary tuberculosis within 5 to 16 months after pulmonary resection for non-tuberculous conditions, although there had

been no evidence of tuberculosis before or immediately after the operation. In three cases in which only a portion of a lung had been removed the tuberculosis, which was already far advanced when diagnosed, had developed in the remaining part of the lung.

L. M. Franklin.

Endocavitary Aspiration Associated with Local Antibiotic Therapy in the Treatment of Residual Cavities after Thoracoplasty. MESITI, M., and INGRAO, F. (1950). *Arch. Tisiol.*, **5**, 198.

The incidence of residual cavities after thoracoplasty and their treatment is reviewed. The authors then give details of 19 of their own cases from the Carlo Forlanini Clinic at Rome University.

In all cases the exact size and position of the cavity was assayed by tomography, and a drain was then inserted by Monaldi's technique. Subsequently the patient rested for from 24 to 48 hours. At the end of this period 200 mg. of streptomycin was introduced twice a day into the cavity via a catheter down the drainage tube. The cavities were previously washed out with physiological saline on each occasion. Streptomycin was also given intramuscularly in a dose of 1 g. once a day. For two hours after each introduction of streptomycin the patient's posture was adjusted so as to favour retention of the solution in the cavity.

In five cases the cavity completely resolved, and in five others there was considerable and permanent reduction in size. Results were disappointing in the remainder. The successful cases were those in which there was stenosis or complete obstruction to bronchial drainage.

Donough O'Brien.

Pleural, Peritoneal, and Pericardial Tuberculosis. A Review of 209 Cases Uncomplicated by Treatment or Secondary Infection. AUERBACH, O. (1950). *Amer. Rev. Tuberc.*, **61**, 845.

In a series of 2,333 necropsies on cases of tuberculosis carried out at Sea View Hospital, Staten Island, New York, tuberculosis of the serosal surfaces was found in 209 cases (8.9%). It was more commonly found in negroes than in whites. Tuberculosis of the peritoneum was found 131 times, of the pleura 103 times, and of the pericardium 28 times. In 49 cases more than one serosal surface was affected. In 114 cases the serosal lesions were associated with skeletal or urogenital tuberculosis. Tuberculous peritonitis was commoner in females than males, and was associated with tuberculosis of the Fallopian tubes in 60% of the former. Chronic pulmonary tuberculosis was present in only 25 of the 103 cases of pleural involvement. It is suggested that in most cases of pulmonary tuberculosis the pleural space has been obliterated by fibrous tissue before the pulmonary disease reaches the pleural surface of the lung, so that tuberculous pleuritis does not develop.

L. M. Franklin.

The Diagnosis of Acute Haematogenous Tuberculosis. VAN BEEK, C., HAEX, A. J. C., and SMIT, A. (1949). *Ned. Tijdschr. Geneesk.*, **93**, 2708.

Repeated aspiration biopsy of the liver was performed in seven cases of tuberculosis. Periportal and pericentral miliary and submiliary tubercles without caseation were found, as in cases of Besnier–Boeck–Schaumann disease. When tubercles are found in the liver the diagnosis of haematogenous tuberculosis is made and streptomycin therapy is instituted. The tuberculogram of the liver is described for all cases. Sometimes the tubercles are of different ages; repeated examination often reveals a restoration or hyalinization of the tubercles. The pathogenesis of the tubercles is discussed.

H. Vos (Excerpta Medica).

The Prognosis of Healed Cavities as Judged from Radiological Appearances. BERNOU, A., and TRICOIRE, J. (1949). *Rev. Tuberc., Paris*, **13**, 778.

The authors studied at Chateaubriant the radiological appearances of cases of tuberculosis in which cavity closure had followed treatment by rest, pneumothorax, phrenic paralysis, or thoracoplasty, and conclude that the size of the lesion left after the disappearance of a cavity is a considerable factor in the prognosis of the cavity's subsequent behaviour. Follow-up of 147 cases, in which 183 cavities closed after periods of rest in bed, supplemented sometimes by courses of gold injections and calcium salts, showed that only one patient out of 95 with lesions less than 3 mm. in diameter relapsed, compared with 12 out of 98 with larger shadows. Patients with lesions more than 1 cm. in diameter had a 30% relapse rate, and though relapse occurred in half the cases within six

months, three relapsed after five years. Similar proportions obtained when pneumothorax treatment of 117 cases resulted in cavity closure and in 11 cases treated with phrenic paralysis. No clear idea of the residual lesion could be obtained after thoracoplasty even with the aid of tomography. The average follow-up period in half the cases was from one to five years, but a quarter were reviewed within a year. *J. Robertson Sinton.*

Puncture-biopsy of the Liver in Miliary Tuberculosis. JANBON, M., CAZAL, P., and BERTRAND, L. (1949). *Pr. méd.*, **57**, 854.

The use of liver puncture and histological study of the tissue in cases in which radiography reveals miliary shadows in the lung is advocated to demonstrate the tuberculous nature of the case when gastric lavage and other methods of diagnosis have failed. The technique is also useful in determining the presence of a haematogenous miliary spread in non-pulmonary tuberculosis, and in assessing the value of streptomycin treatment in acute miliary tuberculosis. The following types of lesion found by liver puncture are recognized, photomicrographs being reproduced to illustrate them. These are: (1) typical follicular tubercles found in the hepatic lobules, often in the periphery; (2) inflammatory nodules consisting of lymphocytes, histiocytes, plasma cells, and epithelioid cells, but no typical giant cells; these lesions are probably early stages of the follicular type; (3) degenerative lesions of the hepatic parenchyma (sometimes with anisokaryosis and fatty degeneration).

S. Roodhouse Gloyne.

Coexisting Disseminated Coccidioidomycosis and Tuberculosis. Report of a Case. FIRESTONE, G. M., and BENSON, E. S. (1949). *Amer. Rev. Tuberc.*, **59**, 415.

Cases in which coccidioidomycosis and tuberculosis coexist are rare, and the authors add a sixth case to the five previously recorded in the literature. Their patient was followed up over a period of five and a half years, during which time both conditions were steadily progressive. The coccidioidomycosis was first manifested by enlargement of the cervical lymph nodes; later the skin was involved, especially the nares, and the disease finally terminated by miliary dissemination throughout the body. The tuberculous infection was first evidenced radiographically by a soft shadow in the upper zone of the right lung; later it developed the characteristics of bilateral fibro-caseous disease with cavitation and before death it involved both the pharynx and the bowel. In addition there was haematogenous spread to the seminal vesicles. The clinical history and necropsy findings are recorded in great detail. The diagnosis of coccidioidomycosis was made during life by biopsy of a cervical lymph node, culture of the biopsy material, and guinea-pig inoculation. The diagnosis of tuberculosis was confirmed during life by the finding of tubercle bacilli in the sputum on direct examination, culture, and guinea-pig inoculation, further confirmation being obtained from post-mortem material. A variety of different therapeutic agents were employed in the management of the case, the majority of which were without significant effect. There was, however, some improvement of the coccidioidomycotic lesions during the administration of calciferol and also some temporary improvement of the pulmonary tuberculosis under the influence of streptomycin. It is of interest that during the administration of the latter drug the coccidioidal lesions continued to progress.

Richard D. Tonkin.

Neoplasm

Expectoration of Fibrosarcoma. Patient Well Four Years Later. CURRY, J. J., and FUCHS, J. E. (1950). *J. thorac. Surg.*, **19**, 135.

A healthy girl of 13 had a cough, intermittent wheezing, and slight yellow sputum for six weeks, and after a further three weeks pain was experienced to the left of the sternum. Two weeks later, during strenuous exercise, she coughed up a lump of tissue and a few ounces of fresh blood, whereupon all her symptoms cleared up. The expectorated tissue measured 2 cm. in diameter, and histological examination revealed typical fusiform cells packed densely in interlacing strands, three-quarters of the surface of the tumour being covered by stratified squamous epithelium. Twice-repeated bronchoscopy demonstrated a heaping-up of tissue on the medial wall of the left main stem bronchus, but biopsy of this tissue revealed granulating fibromuscular cellular structure only. Careful follow-up over a period of four years has failed to reveal any recurrence.

C. A. Jackson.

Fibrosarcoma of the Bronchus. Report of a Case Diagnosed by Bronchoscopy and Treated by Pneumonectomy. CARSWELL, J., and KRAEFT, N. H. (1950). *J. thorac. Surg.*, **19**, 117.

Reviewing the American literature since 1900, the authors found only 31 cases of primary fibrosarcoma of the lung and six cases of sarcoma arising primarily in a bronchus. Two types of fibrosarcoma are recognized: a slowly progressive, diffuse, or circumscribed tumour showing various stages of differentiation and occurring in adults; and a rapidly growing tumour of round-cell histology affecting children. The case reported is of the former type, the patient being a 27-year-old male student who presented with a history of 18 months' dyspnoea, five months' loss of weight, three months' wheezing, and a small haemoptysis. He had had two inconclusive bronchoscopic examinations. Ten days before admission there had been fever and left chest pain. Radiologically, collapse of the left lower lobe was revealed. Bronchoscopy then demonstrated a firm, round, dark-red tumour attached to the medial wall of the left bronchus just distal to the carina. Partial removal was undertaken without severe haemorrhage. A left pneumonectomy was performed 17 days later.

Examination of the lung revealed no parenchymal involvement. Microscopically, the bronchial tumour was a polypoid mass projecting into the lumen, covered with metaplastic bronchial mucosa, and consisting of spindle cells surrounded by collagen; areas of pleomorphism and mitotic activity were observed. The patient was alive and at work seven and a half months after pneumonectomy. In the treatment of this condition the authors favour resection proximal to the site of tumour rather than bronchoscopic removal of the growth, the latter being merely a prelude to the more radical operation. *C. A. Jackson.*

Fibrosarcoma of the Bronchus. BLACK, H. (1950). *J. thorac. Surg.*, **19**, 123.

The histological diagnosis of fibrosarcoma should be confined to tumours consisting of fibroblasts which produce collagen and reticulin fibres, the latter investing the individual cells, which are fusiform in shape on cut section, in some areas being arranged in interlacing bundles or cords, and in others presenting a whorled appearance. There are two types of fibrosarcoma: a commoner, slowly growing, differentiated tumour with well-developed collagen and reticulin fibres, its cells showing little pleomorphism, hyperchromatism, or mitosis; and, more rarely, a tumour of closely packed cells with frequent pleomorphism, hyperchromatism, and mitotic figures, few collagen fibres, and only delicate reticulin fibres. Only five of the reported cases of primary fibrosarcoma of the bronchus in the literature fulfil these diagnostic requirements. There were two female and three male patients, all under the age of 30. One died without treatment, four were diagnosed bronchoscopically, and in three cases endoscopic removal was undertaken. Two patients were alive and well six years and two and a half years, respectively, after this treatment, bronchoscopic resection being combined with repeated fulguration in the first case and followed by deep *x*-irradiation in the second. The third patient died of pulmonary tuberculosis two and a half years after onset, having also had deep *x*-ray therapy. The fifth patient died from haemorrhage while undergoing pneumonectomy.

The author's own patient, a 46-year-old woman, had a history of several attacks of "'flu," a recent respiratory infection, and a small haemoptysis. Radiography of the lungs revealed an opacity at the left base, and bronchoscopy demonstrated a polypoid tumour obstructing the left lower-lobe bronchus. Pneumonectomy was preferred to endoscopic resection. The gross specimen showed extension of the polypoid tumour into the adjacent pulmonary tissue, and the histological appearances were of characteristic spindle-shaped cells in a fine reticular network and scanty intercellular stroma. The patient died six years and five months after resection from mediastinal spread of the tumour involving the left atrial wall.

The author subscribes to the belief that bronchial neoplasms arise in the aberrant development of embryological lung buds, and that these fibrosarcomata originate from mesodermal elements present in them. They grow slowly, spread by local invasion, and do not produce distant metastases. Treatment by radical resection is recommended. *C. A. Jackson.*

Nitrogen Mustard in the Treatment of Inoperable Bronchogenic Carcinoma. LYNCH, J. P., WARE, P. F., and GAENSLER, E. A. (1950). *Surgery*, **27**, 368.

During the last few years much experimental work has been done on the effect

which nitrogen mustard and allied substances have upon growing cells and particularly upon tumour cells. Effects similar to those obtained with ionizing radiation have been reported.

Pneumonectomy for bronchogenic carcinoma still gives results which are better than those of other forms of treatment. Unfortunately nearly 70% of cases of lung cancer are inoperable when first seen or are found to be so on surgical exploration. The subsequent fate of the inoperable patient is a miserable one, usually with much cough, sputum, pain, and dyspnoea. Palliative treatment is difficult and often ineffective.

This report describes 60 cases of inoperable lung cancer treated with nitrogen mustard. No other form of active treatment was employed. The drug was administered intravenously in courses lasting for four to eight days, with a total dosage varying from 16 to 180 mg. Larger doses were given in cases where the smaller doses had failed to produce a response. Results were not obviously better with the larger doses. Slight nausea and vomiting occurred in half the patients, but were severe only in 13%. These reactions were decreased if the drug was given at bedtime with "nembutal." The leucocyte count fell to 5,000 per c.mm. in 27%, and to 2,000 in 17%, and in four patients a severe agranulocytosis developed. In view of these toxic reactions all patients were treated in hospital and daily leucocyte counts performed during treatment and for at least two weeks after the conclusion.

Subjective and objective improvement occurred in about 60% of patients and in some was most striking. Decrease in cough and sputum, pain, and dyspnoea was most frequently observed. In some cases palpable metastatic nodules disappeared quite dramatically. Improvement was most noticeable in the undifferentiated type of tumour (83%) and least obvious in the well-differentiated epidermoid carcinoma (11%). On the other hand histological changes were most pronounced in the epidermoid and least obvious in the undifferentiated carcinomata.

The authors do not consider that life has been prolonged in these cases; there have been none of the prolonged survivals occasionally seen with *x*-ray therapy. They consider, however, that its palliative effect is more pronounced as it is administered systemically and not locally. Its further use as a palliative form of treatment seems to be completely justified. *W. P. Cleland.*

Referred Gastric Symptoms in Carcinoma of the Bronchus. WENZL, M. (1950). *Wien. klin. Wschr.*, **62**, 261.

Out of 225 patients with bronchial carcinoma treated at the University Surgical Clinic, Vienna, 72 complained of abdominal symptoms at some stage of the illness. In some there was merely loss of appetite associated with malignant cachexia; in others there was an exacerbation of pre-existing gastric disease; 18 patients complained of loss of appetite, epigastric discomfort, flatulence, and nausea; and in six cases the abdominal symptoms overshadowed those more directly attributable to the intrathoracic disease. The abdominal symptoms in this group are considered to be due to involvement of the vagus in mediastinal metastases. One patient in whom the mediastinal lymph nodes had appeared microscopically to be normal at operation developed gastric symptoms after pneumonectomy; subsequent necropsy showed that the left vagus nerve was involved in a mass of secondary tumour tissue. Similar observations have been made at operation on other patients with abdominal symptoms, and it is thought that the presence of such symptoms in cases of bronchial carcinoma is of some value in indicating probable involvement of the mediastinum. *J. R. Bignall.*

Hodgkin's Disease of the Lung: Roentgen Appearance and Therapeutic Management. SHEINMEL, A., ROSWIT, B., and LAWRENCE, L. R. (1950). *Radiology*, **54**, 165.

This report is based on a radiological survey of 35 cases of pulmonary parenchymal involvement in Hodgkin's disease amongst patients of the U.S. Veterans' Administration Hospital, Bronx, N.Y. The authors have adopted, with slight modifications, the classification of radiological appearances found in such cases originally drawn up by Verse: I. Direct invasion of the lung in the presence of mediastinal nodal disease. II. Peribronchial or endobronchial infiltration in the presence of mediastinal nodal disease. III. Massive homogeneous infiltration—so-called "lobar infiltration"—with varying degrees of mediastinal nodal disease. IV. Lobular infiltration with varying degrees of mediastinal nodal disease. (1) Punctate and/or mottled opacities of variable extent, usually basilar, unilateral, or bilateral. (2) Circumscribed, nodular opacities, (*a*) solitary, isolated; (*b*) solitary, in the presence of extensive disease elsewhere in the pulmonary

parenchyma ; or (*c*) multiple, diffuse, bilateral, and ultimately coalescent. (3) Confluent, irregular opacities, (*a*) solitary ; (*b*) multiple ; or (*c*) widely disseminated and ultimately coalescent. V. Generalized dissemination. (1) True miliary spread. (2) Lymphangitic spread.

It will thus be seen that there is no typical *x*-ray manifestation of pulmonary lymphadenomatosis, but that the appearances are protean, even to the extent of the development of cavitation. The differential diagnosis is, therefore, from tuberculosis, pulmonary abscess, peribronchial inflammatory disease, lobar pneumonia, primary bronchial neoplasm, metastatic infiltration of both nodular and lymphangitic types, mycotic infection, and miliary sarcoidosis. In this series the incidence of the nodular type of infiltration (12 out of 35 cases) was unusually high.

Before January, 1947, radiotherapy was the only form of treatment employed, and was given daily, the daily tumour doses being 150 to 200 r and the total dose 1,500 to 2,000 r. If necessary, irradiation was continued to a total of 2,500 to 3,000 r. The technical factors usually employed were: 200 to 220 kV, 15 to 20 mA, with Thoraeus filter and 50 cm. target–skin distance. After January, 1947, nitrogen mustard was employed in those cases in which irradiation was no longer considered advisable. The drug was given intravenously in doses of 0.1 mg. per kg. body weight on four consecutive days, the course being repeated at intervals of not less than four weeks if necessary. All types of lesion with the exception of the lymphangitic type responded favourably in a majority of cases to both radiation therapy and nitrogen mustard, but there was no type of lesion in which a favourable response could be predicted with certainty. Even in the same patient one pulmonary focus might respond to direct irradiation, whereas a concomitant lesion of a similar kind elsewhere in the lung, similarly treated, might show no change.

The development of pulmonary lesions, other than an isolated focus, in Hodgkin's disease is considered by the authors to suggest a more aggressive type of disease, but its prognostic significance is doubtful.

L. G. Blair.

Pleural Mesothelioma. CAMPBELL, W. N. (1950). *Amer. J. Path.*, **26**, 473.

There has been extreme reluctance on the part of pathologists to diagnose pleural mesothelioma or even to acknowledge its existence. When it has been encountered there has always been a tendency to ascribe any pulmonary invasion to extension in a reverse direction. So deeply ingrained is this attitude that a bronchial origin is generally postulated even when no point of infiltration can be found. Bronchial carcinoma may simulate this neoplasm, but pleural mesothelioma is a real entity. The tumour is not common, and no author has previously described more than two cases from one institution. Saccone and Coblenz (1943), however, found 200 reported cases, and about 18 have been described in the American literature since. The author reports four cases (from 3,533 necropsies during eight years). He claims that histologically carcinomatous areas are seen, with spaces lined by a single layer of oxyphil cells ; areas composed of spindle cells are also present. The diagnosis can be made by biopsy, and the condition may be amenable to modern surgical treatment. It shows little tendency to spread. [Those who have any further doubt about the possibility of mesothelial neoplasia should read the paper by Crome (*J. Path. Bact.*, 1950, **62**, 61 ; *Abstracts of World Medicine*, 1950, **8**, 251).]

D. M. Pryce.

Boeck's Sarcoid of the Lung. HARTWEG, H. (1950). *Fortschr. Röntgenstr.*, **72**, 385.

During a seven-year period, 57 cases of pulmonary sarcoidosis were seen in the Roentgen Institute, Tübingen. In the same period 6,000 diagnoses of pulmonary tuberculosis were made—a ratio of one case of sarcoidosis to 100 of tuberculosis. In only 12 of the cases was the diagnosis of sarcoidosis confirmed by histological examination of excised lymph nodes. The radiological appearances of the lungs are divided into five stages. In the first stage there is enlargement of the hilar nodes, usually on both sides at once, but occasionally one side following the other. The pressure of the enlarged nodes on the smaller bronchi may cause segmental atelectasis. Stage 2 begins when a fine reticulation appears in the lung fields, which is followed by widespread miliary mottling of the lungs. Such a progression was observed in eight cases. Although the miliary shadows are usually equally distributed in both lungs, they may occasionally be limited to one side or be even more localized. They vary in size and may coalesce. In the third stage the miliary shadows gradually disappear and thick,

linear markings radiating from the hilum become apparent. There may be areas of emphysema or emphysematous bullae. The majority of radiographs fall readily into one or other of these stages, but a few are atypical and two further stages are described. In stage 4 the fibrotic changes are accompanied by scattered infiltration, commonly seen in the middle zones. An extension of this process is seen in the fifth stage, where gross fibrotic and emphysematous changes are present, with massive infiltration. Only two such cases were encountered. The lung changes in all but this final stage are capable of undergoing some spontaneous regression.

One patient in an advanced stage was treated with "vigantol" (vitamin D_2). After 70 mg. had been given there was a large rise in the serum calcium level, and severe gastro-intestinal symptoms developed which rapidly subsided when treatment was stopped. The serum calcium level was still raised four weeks later. Bone lesions were also present in 23 of the 57 cases. None were found in patients with enlarged hilar nodes alone, and 22 of the patients with bone lesions had some degree of pulmonary fibrosis. One patient had erythema nodosum and enlarged hilar nodes. An excised cervical node showed typical sarcoid changes. A month later the chest radiograph showed fine reticulation in both lungs, with miliary shadows in the right lung. [The tuberculin reaction is not recorded.]

J. R. Bignall.

Asthma

Bronchiectasis in Asthma. WALDBOTT, G. L., KAUFMAN, J. M., and MERKLE, K. J. (1950). *J. Allergy,* **21**, 339.

In 28 cases of bronchial asthma in which haemoptysis, purulent expectoration, or persistent rales were present, bronchograms were taken. Only in four of them was evidence of saccular or cylindrical bronchiectasis found; in 15 there was no such evidence, and in nine there was some widening of secondary bronchi in some part of the lung, with absence of foliage. Radiologists were not in agreement whether these changes should be termed bronchiectasis; in some cases they were not found after an interval of several months, and they are therefore regarded as reversible. The term pseudo-bronchiectasis is suggested for them.

H. Herxheimer.

Thoracic Surgery

Angiocardiography in Thoracic Surgery. STEINBERG, I., DOTTER, C. T., and ANRUS, W. DEW. (1950). *Surg. Gynec. Obstet.,* **90**, 45.

Angiocardiography has opened up a wide field in the investigation of congenital heart lesions and abnormalities of the great vessels. It has an additonal place, as the authors show, in facilitating diagnosis and assessment of operability in certain types of thoracic tumour.

A large mass may distort great vessels or cause pressure on pulmonary vessels, and the study of distortion effects may assist in locating a mediastinal tumour whose position is not revealed by ordinary radiography.

A number of good illustrations are reproduced to show the application of the method in the case of dermoids and pericardial and bronchogenic cysts as well as of thymic tumours. The procedure is valuable in the case of aneurysm, where, if there is an adequate neck, the interior of the sac is outlined. In conditions such as extensive bronchiectasis relative avascularity of the diseased lung and rotation of the heart can be detected. [The authors feel that the method is sufficiently safe for use as a routine examination in cases of doubt, but the abstracter considers that this procedure cannot be regarded as entirely devoid of risk and should not be used unless other methods of diagnosis have failed. In a number of the illustrative cases it would seem that a satisfactory diagnosis was arrived at by ordinary routine radiography.]

T. Holmes Sellors.

Coarctation of the Aorta. Surgical Treatment of 100 Cases. GROSS, R. E. (1950). *Circulation,* **1**, 41.

Having performed more than 100 operations for coarctation of the aorta, the author is in an unrivalled position to write on the surgical treatment of this condition. His experience suggests that classification into "infantile" and "adult" forms is not desirable, as the variations in the extent and degree of stenosis and associated intracardiac abnormalities are so numerous that any such division must be purely arbitrary. The justification for surgical intervention lies in the poor expectation of life of the untreated patient. A survey of the post-mortem records in hospitals of the Boston region indicated that one-quarter of the patients with coarctation survived into adult

life (average age at death, 47 years) without many symptoms; one-quarter died of infective endocarditis at an average age of 28; a third quarter died from rupture of the aorta at an average age of 27; and the remaining quarter died of hypertension, cardiac failure claiming twice as many victims as intracranial haemorrhage. In the summary it is stated that 40% die between the ages of 10 and 30, and 60% before they are 40.

The most important diagnostic feature is the diminution of the femoral arterial pressure as compared with the radial. The rise in the femoral pulse-wave is usually delayed. As years advance, the signs of hypertension above the level of the coarctation develop, and these are exaggerated on exercise. A collateral circulation is usually noticeable after childhood, with palpable vessels over the back and chest, and a variety of murmurs may be encountered. Radiologically there is commonly an enlargement of the heart—particularly of the left ventricle—and the ascending aorta is widened, but the aortic knuckle loses its prominence. The "notching" or "scalloping" of the lower borders of the middle ribs as a result of tortuous and dilated intercostal arteries is a characteristic feature. Angiocardiography and retrograde arterial injection give information about the site and size of the stricture, but do not help to determine the condition below the coarctation.

There are three possible forms of surgical treatment: (1) Theoretically, sympathectomy would reduce arterial tone and peripheral resistance, but experience suggests that this form of operation is of doubtful value. (2) Anastomosis of the left subclavian artery with the distal aorta, as suggested by Blalock, has proved of use in by-passing the coarctation; but if the subclavian has to be turned down to reach the aorta a number of important collateral vessels (superior intercostal arteries, for example) must be divided, while the dilated subclavian may easily kink or angle too sharply for adequate passage of blood. (3) Resection of the stenosis and end-to-end junction is the most satisfactory procedure, but the operation entails considerable mobilization of the aorta to allow for suturing without undue tension. The operation is technically simplified if the upper intercostals are divided, but since these are important collateral channels their preservation is advisable. The author advocates the use of an everting suture, with intima approximated to intima and with little reduction in the diameter of the new lumen. In six cases in which there was a wide gap to be bridged an arterial graft has been used and has not given rise to aneurysm or other troubles.

Analysis of 100 operation cases shows that nine of the patients were only explored, 11 died at or shortly after operation, and of the remaining 80 the results in all but nine were most satisfactory. End-to-end anastomosis was carried out in 72 of these patients. The fatal cases are described and the criteria by which improvement is assessed are given.

T. Holmes Sellors.

The Results of Surgery in Bronchiectasis. LAMBERT, A. (1950). *J. thorac. Surg.*, **19**, 246.

The author analyses 106 operations for bronchiectasis, performed from 1939 to 1945, in detail, dividing them into those with accompanying acute suppurative disease in the lung and those without. It was found possible by chemotherapy and postural drainage to reduce the amount of sputum in the latter cases to about half that present on admission, but not in the former; the mortality rate in the group with acute suppuration was double that in the group with chronic disease. Altogether 21 pneumonectomies and 85 lobectomies were performed, tourniquet technique being used in 61, clamps in 17, and dissection in only 28. As might be expected, complications were commoner when the tourniquet was used, and in those with acute suppuration; a fistula developed in 71.4% of cases where more than one lobe was resected, and in 63.6% of upper lobectomies. Twelve deaths occurred, four from operative haemorrhage. Of the 91 survivors, 78 (65 lobectomies, 13 pneumonectomies) were followed up over an average of four years. Nine had symptoms from a residual lung stump, six needing revision. Of those who had had lobectomy 43 (66.2%) had less than ½ oz. (14 ml.) sputum post-operatively, none of those who had undergone pneumonectomy having sputum, but 10 needing later thoracoplasty. In 10 patients (12.8% of the 78 followed up) tuberculosis developed, two dying.

Geoffrey Flavell.

The Surgical Treatment of Bilateral Bronchiectasis. KERGIN, F. G. (1950). *J. thorac. Surg.*, **19**, 257.

Of 58 patients between the ages of 4 and 43, 27 had unilateral operations for bronchi-

ectasis and 31 bilateral. Four deaths occurred among the latter after the second stage of operation (in two instances because of cerebral anoxia at operation), representing a mortality for this group of 13%. Cases of bilateral bronchiectasis were divided into those with minimal lesions on the other side not requiring excision, and those with severe disease on both sides. Providing that both upper lobes (excepting the lingula) were healthy, the latter group underwent bilateral resection, the maximum removed (eight patients) being left lower, lingula, right lower, and middle lobes. In 11 cases basal segments were resected with preservation of apparently healthy dorsal lobes. Only five of these patients made good recoveries, four of the remaining six developing later bronchiectasis in the dorsal lobes, in addition to a variety of other complications. As a result this segment is no longer spared. Maximum respiratory function is sought pre-operatively, and the author prefers to carry out the lesser excision first, leaving at least six months between operations. Arterial oxygen saturation is estimated continuously during operation, which is performed with the patient in the prone position with endobronchial suction and intermittent positive pressure anaesthesia. If anoxia threatens and cannot be corrected, operation is abandoned. In 18 of the 27 survivors of bilateral excision the final result has been assessed, and 15 were found symptom-free. All are gainfully employed, none complain of dyspnoea, but most are breathless on exertion.

Geoffrey Flavell.

Late Results in 420 Tuberculous Patients Subjected to Thoracoplasty. HAGN-MEINCKE, F. (1950). *J. thorac. Surg.*, **19**, 837.

A series of 420 thoracoplasties performed at Copenhagen for pulmonary tuberculosis without empyema from 1935 to 1941 are analysed in 33 tables, and the results compared with those of conservative treatment of an equivalent group. The follow-up was complete.

The majority of patients were aged between 20 and 40, and had had the disease for more than two years; 87% had cavities, and in 53% the disease was almost unilateral. The indications for operation were liberal, for only 30% were considered "good chronics," that is, young patients with normal temperature, steady weight, no dyspnoea or complications, and a stationary radiographic condition.

The operation was usually carried out in stages, and in 261 cases included a Semb apicolysis. The total operative mortality (within two months) was 8.6%. Only patients whose radiographs showed no evidence of residual cavitation or of progression, who were free of complications, and whose sputum or gastric washings grew no bacilli on culture were considered healthy. In a final assessment 193 patients (46%) were healthy, 95 were ill, and 132 were dead.

In the "good chronics" the operative mortality was 3.1%; 70% of the survivors were healthy. Extensive involvement of the contralateral lung diminished chances of recovery, as did the presence of giant cavities. None of the patients with bilateral cavities was healthy.

By comparison, of 695 patients treated conservatively at the same hospital, and reviewed by Cold, only 5.7% were healthy (by the same criteria). Even of the "good chronics" only 23% were healthy.

In conclusion, thoracoplasty is considered the fundamental treatment for "good chronics"; even if extended to cases with major contralateral processes or large cavities it will be more successful than conservative treatment. It should not be applied to patients with bilateral cavitation. The good results are obtained within two years of the operation.

M. Meredith Brown.

An Evaluation of Apicolysis in Thoracoplasty. HAGN-MEINCKE, F. (1950). *J. thorac. Surg.*, **19**, 853.

The cases of tuberculosis mentioned in the preceding article are further reviewed as regards the results of apicolysis, performed according to Semb's principles of open dissection in the extrafascial layer, radical rib resection, and mobilization of rib periosteum. From 1935 to 1939, 282 patients were treated by thoracoplasty; in 148 cases apicolysis was also performed, the operative technique being otherwise the same. The total results did not differ appreciably, there being 47% healthy and 31.4% dead without, and 48% healthy and 29% dead with, apicolysis.

The figures are further analysed in various groups. Apicolysis appears to have had no effect on the results, when "good chronics" are considered alone, or when various degrees of extension of the disease are considered separately. Apicolysis was of some value for apical cavities (45% healthy with apicolysis,

36% without) but not in other regions. [The cavities are grouped according to their position in the postero-anterior radiograph.] Apical thoracoplasty appeared to be more successful when combined with apicolysis, but no difference was noted in the case of upper-lobe or total thoracoplasty. The apicolysis was extended to the fourth or lower ribs in 83% of cases in which it was performed.

Wound infection, which occurred altogether in 18% of thoracoplasties, was more common when apicolysis had been performed, and in addition more serious, if, as often happened, the subscapular space was involved. Horner's syndrome sometimes followed apicolysis. There was no significant difference between the rates of other complications, such as shock or atelectasis, without and with apicolysis, or the incidence of residual cavities.

M. Meredith Brown.

Acidosis during Thoracic Surgery. BEECHER, H. K., and MURPHY, A. J. (1950). *J. thorac. Surg.*, **19**, 50.

Detailed blood gas analyses and blood *p*H and haematocrit estimations were made at intervals on a series of 43 patients undergoing thoracic operations. These were performed in the lateral position, anaesthesia being induced with nitrous-oxide–oxygen and maintained with ether–oxygen by means of an endotracheal tube, a closed system, and a soda-lime filter. These studies show that while oxygen saturation of the blood remained satisfactory throughout, an early and severe rise in alveolar carbon-dioxide tension occurred, beginning before the pleura was opened and not caused by the anaesthetic agent or the apparatus. Similarly, patients undergoing lobectomy and pneumonectomy showed a sharp decrease in the *p*H of the blood, resulting in marked acidosis of combined respiratory and metabolic types. When the patient was restored to a supine position at the end of operation the blood *p*H level rose and CO_2 tension decreased. As the stimulant effect of the increased tension of CO_2 was removed a fall in blood pressure occurred, and it is suggested that these factors may be responsible for otherwise unexplained deaths following thoracic operations. *Geoffrey Flavell.*

Pulmonary Decortication for Fibrino-fibrothorax and Empyema in Children. KLASSEN, K. P. (1950). *Surgery*, **27**, 235.

The effect of chemotherapeutic agents, particularly penicillin, in some cases of pleural infection has, on occasion, obviated the need for surgical drainage. But while clinical and bacteriological response to antibiotics may be most satisfactory, the presence of fibrin and exudate may lead to loss of movement and reduced respiratory function. This thick-walled pleural cavity will not readily be restored to normal by drainage, and the deformity persists.

The remedy for this condition of thick-walled sterile empyema is to remove the whole sac by decortication. Decortication of the lung allows re-expansion to take place, but to this must be added freeing of the chest wall and diaphragm from its fibrous splint. In other words, a complete excision of the empyema is required, and the results of this operation in children are both safe and satisfactory. The technique and good results in six cases are described.

[In this type of empyema there are several features and even general principles which are often overlooked. Penicillin only sterilizes the pleural contents; it does not obliterate the cavity. A heavy fibrin deposit or chronicity usually indicates maltreatment of the acute stage. Restoration of lung function is not easily obtained without the continued and persistent use of specialized respiratory physiotherapy. The author mentions that one patient required physiotherapy for correction of a scoliosis, but does not comment on the use of breathing exercises.]

T. Holmes Sellors.

Stricture of the Esophagus Associated with Operation for Duodenal Ulcer. STRAUS, G. D. (1950). *Arch. Otolaryng., Chicago*, **51**, 165.

Benign strictures of the oesophagus associated with duodenal ulcer have been described by several authors. Mosher believes that fibrosis of the oesophagus can arise from infective thrombophlebitis of the oesophageal and peri-oesophageal veins following infections of the liver and the gall-bladder. The present author reports two cases. In one a benign stricture followed vagotomy, and in the other gastric resection for ulcer.

Of the reported cases, most had two factors in common—a peptic ulcer of the duodenum and some surgical trauma. In none of these cases was there any oesophageal obstruction before operation, so the author concludes that surgical trauma superimposed on chronic inflammatory disease sets up a retrograde thrombosis. In the case that followed

vagotomy there was actual damage to the peri-oesophageal structures. The stricture, seen with the oesophagoscope in the cases here described, showed ulceration similar to that seen in other cases of benign oesophageal obstruction, especially that sometimes found in congenital short oesophagus with diaphragmatic hernia. Treatment is by endoscopic bouginage, followed later by bouginage over a thread guide. A bland diet and avoidance of alcohol should be prescribed.

F. W. Watkyn-Thomas.

Nonspecific Granulomatous (Regional) Esophagitis. FRANKLIN, R. H., and TAYLOR, S. (1950). *J. thorac. Surg.*, **19**, 292.

Three cases of chronic inflammatory disease of the oesophagus unassociated with tuberculosis, syphilis, peptic ulceration, or the swallowing of corrosives are reported in this paper.

The first case developed in a man of 53 when he was in India. The obstruction was treated by dilatation; after approximately 15 months the patient's swallowing was again normal. The specimen removed at biopsy showed granulation tissue heavily infiltrated by pus cells, and some squamous epithelium with signs of regeneration.

The second case occurred in a girl of 13 living in Sweden. In view of her poor condition, a gastrostomy was first performed. Fifteen months later the patient was still unable to swallow. It was therefore decided to explore the oesophagus. The oesophagus was removed, being brought out in the neck, where it was allowed to slough. No specimen was therefore sent for microscopical examination. The remaining upper portion of the oesophagus subsequently became lined by granulation tissue of dense consistency.

The third case developed in a woman of 33 living in England. The dysphagia began in the early weeks of pregnancy. In view of the loss of weight, a gastrostomy was performed. At a subsequent oesophagoscopy, the presence of a lesion was confirmed 25 cm. from the alveolar margin. The biopsy specimen showed chronic inflammation without any evidence of malignancy. In view of the continued dysphagia and the risk of malignancy the subsequent procedures included an attempt at plastic repair of the stricture, drainage of an empyema, and finally resection with intrathoracic gastrostomy. Microscopical examination showed the tissue to be similar to that in Crohn's disease. The importance of this apparently rare condition is in its mimicry of cancer. The diagnosis of oesophageal carcinoma cannot be made without a histological examination. [This last statement is perfectly true; a biopsy report confirming cancer is, however, of much more significance than a "negative" report. In the latter case, the treatment is much more difficult as the diagnosis is uncertain; in two of the cases reported resection proved necessary.] *J. E. Richardson.*

The Treatment of Empyema in the Presence of Gross Calcification. BERNOU, A., GOYER, R., MARECAUX, L., and TRICOIRE, —. (1950). *Poumon*, **6**, 61.

The authors describe four cases of tuberculous empyema with extensive calcification of the visceral pleura which were treated at their clinic at Chateaubriant. The presence of these calcareous plaques prevents the cavity from closing: their removal is therefore an important, albeit preliminary, step in the treatment of the empyema. The method used in these cases is described in some detail.

Pleurotomy was performed and the parietal pleura entirely removed where it was thickened or calcified. The visceral calcification was usually in the form of a mosaic of multiple small plaques, some of which could be picked away quite easily. The remainder were decalcified by irrigation every three days with modified *eau de Villate* (the mixture of zinc sulphate and acetic acid without the lead subacetate). The debris then drained out freely. This procedure was invariably followed by a short, but never serious, febrile episode. Any more strongly adherent plaques were removed by galvanocautery, and perforations of the lung substance were sealed by the same means. In these particular cases this admittedly tedious and painful, but entirely successful, treatment was preferred to pneumonectomy. The pros and cons of this alternative are discussed.

Donough O'Brien.