functions are better controlled. It is agreed that toxæmia is much more easily overcome than the disease itself. Rest in bed brings about the recovery of the patient, but the disease remains a problem. To effect the local healing which I have previously emphasized I wish to suggest that local rest of the lung should be the aim at this stage, rather than graduated exercise. In short, the plan is local and general rest until toxæmia is controlled, followed, if possible, by continuous lung rest until repair has been effected.

SOME POINTS CONCERNING LOCAL REST.

Some hint as to the application of local rest is given by the observation of healing or healed cases. In such patients, apart from the attempt at muscular restraint, there is retraction of the chest wall; fuller investigation usually reveals displacement of the heart and mediastinum towards the diseased side. In other words, the diseased lung is permanently protected, in that its field of operation is finally restricted. This is usually referred to as a result of the pull of the fibrosing lung; I regard it rather as a compensatory process brought about by the healthier lung increasing its field of operation, and at the same time ensuring restraint of function on the part of the diseased organ.

It may reasonably be argued that there is no good outlook for bilateral cases. As a fact there is not much for the moderately advanced bilateral case; improvement, if any, is usually temporary. We all have seen rare cases of extensive tubercle clear up in an apparently miraculous manner. I have felt that most of such cases are examples of superficial lesions where the pleura contributes to the result by promoting fibrotic change, and an enhanced cellular defence may be in operation; but the miraculous case is not our problem.

To return to the question of retraction, which I have described as compensation, I wish to emphasize its vital importance. A tuberculous lung is an organ as permanently damaged as a heart with diseased valves. In the latter case every effort is made to establish compensation, whereas in the former I am not aware of any real recognition of such a process, which is probably more protective than functional.

To investigate the possibility of inducing compensation, and also the results accruing from it, I devised an appliance controlling the ribs on one side and leaving the opposite side comparatively free. In a suitable case it was found that rib restriction brought about some displacement of the mediastinum in a few weeks; this must be a compensatory process, as fibrous retraction could not be operative. It may be that the obvious is being laboured in this connexion, but its recognition in treatment is not obvious. As to results, I have no hesitation in asserting that, acting on the above basis, healing was effected in cases where other methods, including the sanatorium, had failed, and these patients have remained well over four years. These results are claimed for the principle; no claim of universal cures is intended.

In the production of rest certain factors have to be kept in mind. After considerable work on the question of rest in treatment I defined certain postulates, which are as follows:

1. The method must be capable of comparatively wide application.
2. The method must not restrict unduly those conditions which promote a healthy state of the body and mind.
3. It must promote compensation, and not impair to any considerable extent the normal function of the opposite lung.
4. In the event of healing being effected the patient's physique must be unimpaired.
5. It must recognize the mechanism of respiration.
6. The usual distribution of the disease must be noted and efforts made to promote rest at the zone of extension of the disease, and thus facilitate the formation of "barrier" tissue.

The postulates 1 to 4 require no further elaboration; a note on the last two, however, is indicated.

Enlargement of the thoracic cavity is brought about mainly by movement of the ribs below the second, and by diaphragmatic movement. Lung movements are subservient to these two factors. Thoracic enlargement in any direction causes general enlargement of the lung; thus Keith

has shown that movements of the diaphragm are reflected even at the lung apex. Again, tuberculous disease in the lung more frequently starts in the upper part and spreads downwards.

With these points in mind, it may be permissible for the sake of explanation to suggest that we have a lung fractured at the zone of extension of the disease, with an upper diseased and relatively immobile fragment, and a lower more actively movable fragment. With this conception it will be seen that rest can only be attained if restraint be applied to the more freely moving fragment.

CONCLUSION.

This paper is concerned with principles rather than methods. Further elaboration may be desirable in certain parts, but I think I have indicated sufficient grounds to justify a trial of more widespread surgical measures in treating pulmonary tuberculosis.

Condensation rather tends to give the impression of lack of balance in the statement of a case. Still, if I have made my objective clear, and given some indication of the lines along which it should be sought, my purpose in writing this article is attained.

BRONCHO-PNEUMONIA IN CHILDREN TREATED BY INJECTIONS OF EMETINE HYDROCHLORIDE.

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THE alkaloid emetine, chiefly known for its specific action in amoebic dysentery, has in the past been vaunted as a remedy for other conditions, notably the arrest of hæmorrhage (especially hæmoptysis) and respiratory diseases. Within this latter group falls broncho-pneumonia, to which disease alone the ensuing observations refer. Burdick¹ says, "There is now accumulating evidence that the remedy has some beneficent action in this class of diseases aside from that due to its expectorant properties." He goes on to state that Raeburn, Flandin, and others believe that this action is of a decongestant nature. Little seems to have been written concerning this method of treatment during the past ten years, so some further notes on the matter may perhaps prove of general interest.

The Booth Hall Observations.

The cases treated were not picked ones, but 50 consecutive cases of definite broncho-pneumonia, primary or secondary, admitted to the hospital, which takes patients from birth to 16 years old. As a control, 50 further cases treated by any other method were observed, these only being selected in so far that just the same number of secondary cases were taken as had occurred in the emetine series.

Dosage.

Bertrand² states that for pulmonary conditions he used a smaller dose than that normally given in dysenteric cases. The daily dosage used in this series was roughly in accordance with the following table:

Age up to 4 years ...	...	...	...	1/9 grain
4 to 10 years ...	...	...	...	1/6 "
10 to 15 years ...	...	...	...	1/3 "

These were used as commencing doses, but each case had to be judged by its reaction. In the majority of cases these amounts were found quite adequate to produce effects. The salt of emetine used was the hydrochloride, this being the most readily soluble, and the suitable quantity was administered daily by hypodermic injection.

The number of doses administered to any one case in the series varied from two to nine. In the main it was found that if at the end of six daily injections of the drug the case had not shown definite signs of settling, as regards temperature, pulse, respiration, and clinical picture, little further benefit was to be expected from its use. In a number of cases the doses were discontinued short of six.

Conditions of Dosage.

To ensure that the action of the emetine injections only was observed, no other expectorant or diaphoretic mixture was administered along with the treatment. The only additions permitted were local applications (such as antiphlogistine), brandy, and injections of strychnine where desirable.

Effects Observed.

Even in those cases which did not finally settle after this treatment its effects were evident. These included a fall in the temperature after an injection and a corresponding fall in the pulse rate. The respirations seemed little affected directly, but gradually tended to follow the temperature and pulse. A striking loosening of the expectoration was soon evident, in some cases even after the first injection, and the type of the accompaniments heard on auscultation changed to the coarse bubbling type of râle.

At this point the cases seemed to divide themselves into two groups—one where expectoration became profuse and the chest cleared, the other where the chest appeared to clear up without the occurrence of the free expectoration. It is, of course, possible with children that sputum was swallowed in some of these cases, but this type of clearing seems to have been noted also by Raeburn³ among his first group type of cases (non-tuberculous). Rénon⁴ found that the temperature fell, dyspnoea was reduced, and that the facility of expectoration was greatly increased. These effects he found more evident in broncho-pneumonias than in lobar pneumonias.

The depressant action of emetine never made itself really evident, and these cases did not require any more, in the way of stimulants, than the control series. The only case which showed a possible toxic sign (diarrhoea) was one in which the patient died with this as a terminal complication. Whether or not it was attributable to emetine is very doubtful.

Comparison of the figures obtained in the emetine series and those obtained in the control series is not encouraging. Both series consisted of 50 cases, and in each there were 42 primary and 8 secondary cases. The figures are as follows:

	Emetine Series.	Control Series.
Cured	27 = 54%	30 = 60%
Died	20 = 40%	20 = 40%
Recovered, but not settled after emetine	2 = 4%	Nil
Improving; removed by parents	1 = 2%	Nil

The average duration of febrile symptoms in cured cases was 4.5 days in the emetine series and 6.2 days in the control series.

Conclusions.

Both series give a death rate of 40 per cent., and the percentage of definite cures in each case does not differ greatly. Thus emetine hydrochloride on these results cannot be considered as a cure for broncho-pneumonia. The highness of the death rate in both instances may be condoned to some extent by the fact that the majority of the patients were drawn from the very poorest areas of Manchester, were initially possessed of a poor degree of natural resistance, and in many instances were brought to hospital too late to hope for really effective treatment.

The febrile period seems on an average to be reduced in the emetine series, and in both series the fall was by the usual form of lysis.

As previously mentioned, in no case were definite toxic symptoms present, nor was any undue depressant effect noted, nor did any objectionable local reaction occur following injection of the drug.

While not acclaiming the use of emetine as a specific remedy, it certainly appears to be of clinical value, and this may be summed up briefly as follows:

1. In children the effect gained by the daily injection saves in many instances a struggle with the child to get it to take medicines by the mouth, thus giving patient and attendant alike a more restful time. For this alone it should be a valuable method for the general practitioner,

where difficulty in this direction is only too often present owing to amateur nursing.

2. The febrile period of the disease appears quite definitely shortened when the average of cases is taken.

3. The stomach is left free from any irritation by expectorants and given a better chance with such nourishment as may be taken.

My thanks are due to Dr. J. D'Ewart, medical superintendent, for permission to make use of my observations.

REFERENCES.

¹ *International Clinics*, vol. ii, 1915, p. 42. ² *Bull. de l'Acad. de Méd.*, 1914, p. 557. ³ *British Medical Journal*, March 28th, 1914. ⁴ *Gaz. des Hôpitaux*, March 12th, 1914.

Memoranda:**MEDICAL, SURGICAL, OBSTETRICAL.****SARCOMA OF THE STOMACH.**

Two cases of sarcoma of the stomach have been reported in the pages of the *British Medical Journal* during the past three months by Mr. James S. Hall and Dr. Alexander Smith. As this condition is so rare the following account of a recent case under my care in the Royal Isle of Wight County Hospital may be of interest.

The patient, a gardener, aged 32, had a fainting attack on January 9th, 1928. Previously, although he was anaemic and lackadaisical he had had no severe illness, nor suffered from dyspepsia or pain in the abdomen. On January 11th he had melaena, which lasted until January 20th. From that time onwards his health improved, although he was very weak and profoundly anaemic. The melaena was thought to be due to gastro-duodenal ulceration, for which he was treated. On February 5th, at 2 p.m., he complained of severe epigastric pain, which lasted continuously until he was seen by me at 9 p.m. At that time he looked very ill, and stated that the epigastric pain was still very severe. He had not vomited and his bowels had been well opened. The abdomen was moderately rigid and moved slightly on respiration, and the epigastrium was tender. The liver dullness was not obscured, but extended for two inches below the costal margin. Pulse 72, temperature normal. Nothing abnormal was found in the lungs. In view of this attack of pain supervening on an attack of melaena his condition was thought to be that of a ruptured gastric or duodenal ulcer, so he was removed to hospital for immediate operation.

Operation.—On opening the abdomen through a right paramedial incision a maroon-coloured tumour presented. This was delivered and was found to be pedunculated, having a pedicle one inch long and attached by a two-inch base to the lesser curvature of the stomach. The tumour was very much congested with large vessels coursing over its surface. It was firm, about the size of a foetal head, and had the appearance of sarcoma. The tumour was removed together with one inch of gastric wall beyond the attachment of the growth. The stomach was sutured by a double row of stitches, and the abdominal wound closed.

Except for a slight consolidation of the base of the left lung the patient had an uneventful convalescence, and he was discharged from hospital on March 3rd. On April 7th he reported himself to be much improved and able to take a fair amount of exercise and to do a little work. Before leaving the hospital a radiogram was taken of the patient's chest, but there were no signs of secondary deposits of sarcoma in the lungs.

Pathological Report.—The tumour was sent to Dr. L. Firman-Edwards, pathologist to the hospital, who reports: The tumour is a large brain-like mass about the size of a foetal head, with numerous small haemorrhages in it. It has the macroscopic appearance of a sarcoma. Microscopically the tumour is made up of spindle-shaped cells with large elongated nuclei, arranged in a whorl-like formation. Between the whorls the cells form a fine network like that of areolar tissue. There are no true blood vessels, but embryonic blood spaces occur throughout the section, and these have in many cases a lining of endothelial cells. The structure is typical of a spindle-celled sarcoma, although in some ways suggestive of an endothelioma.

This case is interesting in that, in spite of the size of the tumour, the patient had no symptoms until the fainting attack and the appearance of melaena, and one was led to suspect rupture of a gastric or duodenal ulcer owing to the sudden attack of acute epigastric pain on February 5th. This sudden onset of pain was undoubtedly due to torsion of the pedicle of the tumour. Its maroon appearance at the time of the operation, and the pathological report of numerous small haemorrhages in it, bear out this assumption.

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