empyema for two reasons—(1) If anything were to go wrong with the pump, water would pass into the cavity; (2) if there were much discharge the pump would become dirty and refuse to act. A large bottle was connected between the pump and the chest, and this was partially filled with carbolic lotion; by placing the bottle on a higher level than the pump, it was found that even when the water was flowing extremely slowly, respiratory movements did not lead to sufficient alteration in pressure to draw the water into it. A negative pressure of 80 mm. Hg was used in adult cases, and this was accomplished by having a fall of nearly 2 metres.

Since the apparatus described above, although possessing the advantage of costing less than ten shillings, nevertheless labours from the disadvantage of requiring a slight amount of attention, it was thought worth while to devise one that would work without any attention at all. A small exhaust pump of about 16 c.cm. capacity was run by a small electric motor; with this arrangement it is necessary to place a valve in the system to prevent too great a negative pressure being developed. The arrangement which was adopted consisted in connecting the pump with a large wide-mouthed bottle, through the cork of which three tubes passed. One of these was connected with the pump, one with the chest, and the third was open above, but inside the bottle passed into a cylinder containing mercury.

The depth of the mercury was over 15 cm., the tube could be drawn up so that the distance of the end from the surface of the mercury could be adjusted with ease. It is necessary for the cylinder to be at least 2 centimetres in diameter, because air bubbling through mercury agitates it so greatly that if a small cylinder be used the mercury would be thrown out of it; gauze should be tied over the top of the cylinder. The negative pressure developed depends upon the depth of the opening of the tube below the surface of the mercury and efficiently prevents a dangerous exhaust being established.

The treatment is painless; usually the pulse rate is slightly accelerated, but that may be due to the excitement of having the apparatus by the bedside.

THE ADVANTAGES.

The advantages which may be claimed for this treatment are two: the negative pressure tends to expand the lung without necessarily causing emphysema of the other lung, which may be expected from the use of James's bottles.

The negative pressure produces a hyperaemia of the tissues of the pleural cavity, which probably increases their local resistance.

The comparative opsonic values of exudates from the pleurae under normal and under reduced pressures are being estimated.

This is only a preliminary account, but the results obtained so far seemed to me to justify publication.

IRON ACETATE IN THE TREATMENT OF PNEUMONIA.

By HERBERT J. ROBSON, M.R.C.S., L.R.C.P.,
Leeds.

For the last seven years all cases of pneumonia—whether bronchopneumonia or lobar pneumonia—met with in my practice have been treated by iron acetate, and in severe cases by alternate doses of iron acetate and strychnine, and with surprisingly good results. The statistics I intend publishing later when I get more time at my disposal.

A furred tongue or complications such as bronchitis and pleurisy or whooping-cough seem to make no difference to the good effect of the treatment, though the lower the condition of the patient the better is the value of the treatment demonstrated. The prescriptions used are:

R. *Liquor ferri perchlor. mxv, liquor ammon. acetat. 3ij, aq. chlorof. ad 3ss* (adult dose). Take every 4 hours in water when given alone; take every 6 hours alternately with the strychnine mist when this latter is needed. (It is administered every 6 hours until the patient is well over the crisis; then it is given every 8 hours, and later every 12 hours alternately with the strychnine.)

R. *Liquor strychninae mv, aq. chlorof. ad 3ss; fl. mist.* Take every 6 hours in water alternately with the ferri mist, and as above stated (in severe cases only).

R. Pine oil, for dry inhalation on a clean handkerchief.

Alcohol is seldom given until towards or after the crisis, and often it is not required at all, and then only as the pulse or condition of the patient directs.

Oxygen is seldom required; and, in my opinion, its value is very much overestimated. But when it is given it is administered "warm," being either gently blown into the patient's mouth and nose at a temperature of 90° or 95° F., at which temperature there is no cold draught or feeling of cold, or inhaled directly at a temperature of 65° F. from the oxygen warmer made for me by Messrs. Reynolds and Branson; though always the temperature of the oxygen is regulated by the warmer.

Quinine is never given, as in my opinion it does positive harm in this disease.

Digitalis seems seldom needed if the treatment by iron acetate is adopted early.

Antipyretics of the coal-tar series are carefully avoided, as in this disease I believe them to be dangerous.

Tepid sponging or the cold pack is resorted to for lowering a high temperature; though under the above treatment it seems to be seldom required. The temperature of the bedroom is kept at 63° F., and free ventilation is encouraged.

For *pleuritic pain* an occasional mustard leaf and a flannel binder carefully applied round the chest are resorted to. If these fail to relieve the pain, a small dose of morphine is given. Systematic poulticing is condemned.

For *insomnia*, which is seldom met with, trional is given, 15 gr., repeated in six or eight hours if needful.

Remarks.

The treatment by this alternate administration of the iron and the strychnine (where the latter is called for) seems to be particularly useful under the following conditions:

1. Cases of severe bronchopneumonia occurring in infants or children and in catarrhal and lobar pneumonia occurring in debilitated subjects.

2. Where one has not got two properly-trained nurses for night and day respectively, as by the regular administration of the strychnine through the night as well as through the day, the heart's action is kept up, and the danger of heart failure at the crisis is very much lessened.

3. In that infectious, creeping, and spreading form of pneumonia following influenza.

4. The crisis is hastened and favourably modified, the virulence of the disease is lessened, and the complication of empyema seldom occurs.

5. Even when bronchitis is present, there seldom seems need to order depressing drugs like ipecacuanha, as the iron acetate seems to act as a good expectorant.

NEW METHODS OF STUDYING AFFECTIONS OF THE HEART.

By JAMES MACKENZIE, M.D.,
Burnley.

V.—THE INCEPTION OF THE RHYTHM OF THE HEART BY THE VENTRICLE.

In this series of papers my main object has been to demonstrate the method of investigating the movements of the heart. For this purpose I have used for illustration cases where digitalis has modified the functions of the heart muscle, as thereby we can the more readily appreciate the nature of the changes, and more definitely determine the manner of their production. There are, however, many forms of heart failure in which digitalis has little or no effect, and, truth to tell, where no remedy seems capable of checking the onward progress of the heart failure. But even from the fact that these hearts do not sensibly react to digitalis, certain limited deductions may be drawn. Of such forms of heart failure there is one to which I have been giving special attention for many years, and the treatment of which has been unsatisfactory. This form includes many of those cases of heart failure with enlargement of the organ and a continued irregularity in its action, often without any antecedent history of valvular affection, and in whom *post-mortem* examination reveals no structural changes in the valves. Much has been written concerning such cases, and numerous terms of supposed diagnostic significance have been applied to them, such as chronic myocarditis, fatty degeneration, dilated heart, paroxysmal tachycardia, delirium cordis, chronic bronchitis with irregular heart, and so forth. A careful study of such cases—and particularly of those, now somewhat numerous, whom I have seen start on their downward career—convinces me that the whole train of