important, for they are so common in children, and are apt to lead to bronchiectasis, fibrosis, or chronic bronchitis. The principal causes of catarrh in children are measles, influenza and, to a less extent, whooping-cough. In 1925 there were 94,769 deaths in England and Wales in children under 15 years of age. Of these 20,637 were due to non-tuberculous respiratory disease, 1,539 to pulmonary tuberculosis, and 4,490 from other forms of tuberculosis.

In lobar pneumonia due to the pneumococcus there is much congestion and exudation which is completely absorbed when the patient recovers. There is no actual destruction of lung tissue, as there is in bronchopneumonia. The cases of so-called unresolved pneumonia are usually those where the pneumonia takes longer to resolve than usual. It is only when there is actual destruction of lung or bronchial tissue that healing takes place by scar tissue, and fibrosis results. It is therefore the bronchopneumonia type of disease following measles or influenza which is most likely to lead to fibrosis.

There is undoubtedly an enormous amount of catarrhal infection of the lungs in early life. Many children are known to be liable to colds or attacks of bronchitis; often it is a general bronchitis, but frequently each attack is localized in a certain area of the lung, and in each attack it is the same part of the lung that is affected. As time goes on fibrosis takes place, and often a bronchiectasis follows. Moreover, it is often found that several children in a family are affected and suffer from bronchitis, and the mother will say, "All my children have weak chests." This suggests an infection spreading through the different members of the family. Treatment, therefore, should be started early, and should be thorough, for by curing the first child and removing the infection the other children are protected. When once fibrosis or bronchiectasis is well established there will always remain damage in the lung. In the case

of a child who has frequent attacks of bronchitis before any definite fibrosis has developed, much more can be done. All sources of infection, such as the tonsils, teeth, gastro-intestinal tract, should be sought for and treated where necessary. A vaccine is more often successful in children than in adults, and if it is impossible to obtain an autogenous vaccine a stock one may be given, and often gives good results if used as a prophylactic. Parke Davis anticatarrhal vaccine has prevented the liability to colds and bronchitis in several of my patients. I usually start with a small dose such as 0.1 c.c. and increase every three or four days by 0.1 until 1 c.c. is reached, or until a reaction is produced, in which case the dose is not increased.

A long holiday will often cure a child, and I have seen very excellent results from a visit to Switzerland or to the seaside, where the child can have plenty of sun and outdoor games. It is a mistake to coddle the child too much. Light clothing, sunlight and fresh air are as good as a hot room and heavy clothes are bad. Of course, during the acute attacks the child should be kept in bed, but afterwards the real treatment, aiming at the prevention of recurrence with possibly a subsequent fibrosis and infection of other children, should begin, and should consist of getting rid of all foci of infection, and training the child into the best possible condition by healthy outdoor games, good food, and as much sunlight as possible.

SURGICAL RESURRECTIONS—IV.

GAS GANGRENE OF THE LOWER LIMB.

ONE morning in August, about six years ago, a girl of 17 was injured in a motor accident, and brought straight to hospital. When admitted she was suffering severely from primary shock. The left knee was found to be dislocated, the left tibia fractured,

and there was an open wound over the popliteal space. At first the collapsed condition precluded any treatment other than dressing the wound and putting the limb in splints. A few hours later under an anæsthetic the wound was enlarged and explored. The muscles at the back of the thigh were seen to be badly torn, but the main artery was not injured. The general condition of the patient was very poor (pulse-rate 146), and no more could be done except draining and dressing the wound. A pint and a half of saline solution was administered intravenously. The next day she was much better, pulse 88, temperature 100° F., and I thought matters were going to quieten down. The day following, however, the picture changed rapidly for the worse. The temperature shot up to 104° F., the pulse became small and very rapid, and most persistent vomiting set in. The face also expressed the seriousness of her condition, though mentally she was alert. On examining the thigh, I found subcutaneous gas in Scarpa's triangle. A colleague kindly saw her in consultation and we both agreed that gas gangrene of the limb was present, and immediate amputation demanded. It was quite clear that no formal amputation could be undertaken, and the thigh would have to be removed by the guillotine method. Just before the operation the pulse was between 160 and 180, and very poor in quality and volume. Gas and oxygen were administered, and the thigh removed in the upper third by a flapless amputation of the guillotine type. The femoral artery was ligatured and there was little bleeding. The anæsthetist had realized the serious condition of the patient and kept me informed as to how she was standing the operation, which took very few minutes. Just after the limb had been removed he remarked that he thought life was extinct. He examined the heart and could find no sign of life. The ordinary means of resuscitation were tried with no result, and I left the theatre sad at heart. Later in the day on

telephoning the hospital about another matter, I remarked to the house surgeon how sad the event had proved in the case of the injured girl. To my astonishment I was told that it was not so sad after all, since the patient was still living. This I could hardly credit until the full story was told me. It appears that the anæsthetist had continued to give oxygen for some time, whilst a trolley was brought in and the patient rapidly taken from the theatre. During the jolting incidental to the journey along the corridors a slight spontaneous movement was noticed. The administration of oxygen was continued all the way back to the ward. Soon after the return to the ward definite signs of life were evident, and by following this up by the recognized means of stimulation and shock-treatment the pulse became perceptible. On the succeeding day conditions had much improved, and though the pulse remained 130-140, the wound was healthy.

The succeeding course of the case was uninteresting but satisfactory. A secondary operation had to be done to remove more bone and bring the skin together, and the patient was discharged well about three months after admission. The pathological report of this case showed acute interstitial myositis with coagulation necrosis of the muscle fibres, but the pathologist did not regard the case as a typical one of gas-gangrene, and the bacillus of Welch was not found. Clinically, however, there was a fairly typical picture, and nothing but amputation would have saved life. The alert mental condition accompanying a clinically desperate state was particularly remarked. I have lately seen this patient and find that, though provided with an artificial leg, she prefers crutches on which she can walk six miles at a time and play a better game of golf than many of those who have both legs to help them. To me the lesson of this case could be expressed by a popular and optimistic proverb of three words.

ZETA.