one gave a trace of iron, two others gave 0.0123 g. and 0.0228 g. per 100 parts of dried liver respectively; the other two gave 0.26 g. and 0.20 g., these two last being slightly over the normal, the others being very much under. He concludes that the internal anæmia must be due to blood loss, and not to blood destruction. If it were the latter, iron would be found in the liver in great excess (say 0.6 g. or more in 100 parts).

But external blood loss of this kind affects the relation between the number of red corpuscles and their individual richness in hæmoglobin, because the iron of the hæmoglobin is lost to the body, and is not stored in it as occurs when the bleeding is internal. Hence in my case previously cited, where the pernicious anæmia was due to uterine bleeding, the hæmoglobin was reduced to one-tenth and the corpuscles only to one-fifth of the normal. Lappert²³ states also that in anæmia from ankylostoma the hæmoglobin is more diminished than the red discs, and this he regards as very remarkable, because, "as it is a secondary anæmia, the contrary would be expected." Leichtenstern²⁴ confirms this, as he found the corpuscles usually reduced to 25 or 30 per cent. of the normal, while the hæmoglobin was reduced in one such case to 16 per cent. In these cases, however, the simultaneous occurrence of both external and internal bleedings in varying proportions and amounts must complicate such relationships very considerably.

It is evident, however, that in some cases of undoubted "pernicious anæmia" there may be little or no iron in the liver, and the corpuscles may be individually very poor in hæmoglobin. These features, like all other individual features of this condition, are therefore not pathognomonic.

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(To be continued.)

ON THE TREATMENT OF ACUTE PNEUMONIA BY ICE CRADLING.¹

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THE subject of ice cradling first attracted my attention about two years ago,² when Dr. W. Soltau Fenwick reported most encouraging results following the adoption of certain antipyretic proceedings in cases of acute sthenic pneumonia. Out of 108 cases treated by sponging or ice cradling, the mortality amounted to 10 per cent., while the death-rate in 552 cases treated in the ordinary way reached 23 per cent.

During the past two months I have had under my care in the Aberdeen Royal Infirmary, five cases of acute pneumonia, and all of these have been treated, almost exclusively, on the lines recommended by Dr. Fenwick. All the patients recovered.

The mode of carrying out the treatment which I adopted was practically identical with that described by Dr. Fenwick. The patient, clothed in a cotton nightdress, is placed in bed with a sheet covering the mattress. Over the body and legs are arranged two large cradles, extending from the shoulders to the feet. To the arches of the cradles are attached six or eight small pails filled with ice; a thermometer is suspended from the centre of the upper cradle, and both the cradles are covered, first with a blanket, second with a waterproof, and lastly with the ordinary coverlet. The ice pails are recharged as the ice melts (usually about every two or three hours). The temperature of the air under the cradles, as well

as that of the patient, is ascertained at regular intervals, and the treatment is maintained until the temperature becomes normal.

All the cases treated on the above plan were examples of acute sthenic pneumonia occurring in men whose ages ranged from 30 to 40; the whole of them were complicated with pleurisy, and in one instance the pneumonia was double.

With the view of avoiding wearisome repetition I shall relate only two of these cases. In every instance I kept a record of three temperatures as the disease progressed: the temperature of the ward, the temperature of the air under the ice cradles, and the patient's body temperature every four hours. I also determined the temperature of the air under the blankets before the cradles were placed in position, and after they were withdrawn at the termination of the case, that is, the temperature of the bed when prepared in the ordinary way, and, finally, I ascertained the temperature under the cradles before the ice pails were suspended, and I observed what effect was produced on this temperature after ice cooling had been fairly established.

The first case is that of a man aged 30, who was admitted into the infirmary on the fifth day of his illness. He was suffering from inflammation of the whole of the left lung complicated with pleurisy. His pulse was 106, his respirations 41, and his temperature almost reached 103° F. In this case, before antipyretic treatment was commenced the temperature of the air under the blankets was 88° F. After four hours' simple cradling it fell to 72° F., after four hours' ice cradling it went ten degrees lower, and thereafter during the maintenance of the treatment it oscillated between 60° and 70° F. until the eighth day, when crisis occurred, and the treatment was discontinued. Soon after the removal of the cradles the bed temperature rose to 81 F. With reference to the effect of the treatment on the body heat, I cannot say that any marked depression was observed. The temperature gradually, and in a somewhat fluctuating manner, declined, the fall becoming more rapid as the crisis approached. The pulse and respiration rates, and their ratio to each other, seemed practically unaffected by the treatment.

x, temperature under bed clothes before cradling; x x, temperature under bed clothes after four hours' simple cradling; x x x, temperature under bed clothes after four hours' ice cradling; a, ice pails removed; b, cradles removed; c, temperature under bed clothes.

The second case is also that of a man who was admitted on the fourth day of pneumonia of the apex of the right lung complicated with pleurisy. At the commencement of this case the bed temperature was unfortunately not ascertained, but after the cradles had been in operation for two hours (without ice) the bed temperature stood at 80° F., the body temperature being 105.4°. The pails were then filled with ice, and in two hours more the bed temperature had fallen to 73° F., but there was no material alteration in the body temperature. For the next few days—until the eighth day, when

¹ Read before the Aberdeen, Banff, and Kincardine Branch of the British Medical Association.

² Lancet of January 31st and February 7th, 1891.

crisis took place—ice cradling was maintained, with the result that the bed temperature fluctuated between 74° and 65° F.; and at the end of that time, the cradling having been discontinued, the thermometer under the blankets registered 87° F.

In this case the effect of the treatment on the body heat was not at all evident. On the afternoons of three successive days the thermometer rose to over 105° F., elevating the cradle temperature along with it; but it finally fell rapidly on the eighth day of the disease to the normal figure. With regard to the pulse and respiration rate, the influence of the ice seemed more apparent, for with temperatures of 105° F. the pulse was only 100, and the respirations ranged between 30 and 35 a minute.

On looking over the records of these cases—I refer to the whole of them—I confess I am unable to discover any marked signs of improvement following the complete establishment of the treatment. There was no sudden fall of temperature such as one meets with after the cold bath or after the administration of an antipyretic drug. But though there was no decided reduction in the temperature, the pyrexia (even in one case where both lungs were extensively involved) did not attain a great height, and I am therefore inclined to consider that the treatment exercised a restraining influence on the body heat. The pulse and respirations also seemed to be under restraint, for the heart's action was in no case unduly rapid or weak, and the breathing was never a source of anxiety.

The patients as a rule expressed themselves as feeling comfortable under the treatment. One or two of them, however, complained of cold feet, and in these cases short stockings were permitted to be worn. In one patient inordinate perspiration was a marked feature, but the discomfort arising from this symptom at once disappeared with the establishment of the ice cradling. In the earlier cases some inconvenience was experienced from the accumulation of moisture on the outside of the pails dropping on the patients' body and bed, but this was easily remedied by clothing the pails in flannel.

With regard to the means by which the antipyretic results were brought about, it seems to me that a study of the chart shows in a very decided manner that a twofold influence was at work—the influence of the air under the cradles, and the influence of the ice pails. The temperature under the blankets was materially reduced after simple cradling had been established, and the thermometer became still further lowered on the introduction of the ice pails. It is doubtful which of the factors was the more powerful. I incline to the belief that the lowering of the temperature produced by the cradles was greater than that following the melting of the ice, but possibly this opinion may be modified by future experience, for I intend in my next case of pneumonia to make more careful observations on this point, using pails of different capacities and varying their number.

On the whole, though I am fully alive to the fallacies that attend conclusions based on a small number of cases, I am disposed, from what I have seen of the proceeding, to recommend ice cradling as a mild form of antipyretic treatment, suitable for sthenic cases of acute pneumonia, easy of application, not violent in its effects, comfortable and not fatiguing to the patient, and capable of being carried out in any disease where a restraining influence on pyrexia and its attendant symptoms is desired.

SUPPRESSION OF URINE IN DIPHTHERIA.

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SUPPRESSION of urine occurring in the course of diphtheria has been described by Oertel and mentioned by Roberts. Hilton Fagge believed it to be due to unrecognised scarlet fever. As, however, it has recently been attributed to the effects of antitoxin, the following 3 cases, which were admitted into the Croydon Borough Hospital for Infectious Diseases during the past twelve months, and in which this exceptional complication occurred without any antecedent injection of antitoxin, may be of interest.

Cases I and II were admitted before antitoxin was in general use in this country, and Case III, although clinically indistinguishable from true diphtheria, was not bacterioscopically confirmed, and the patient therefore was not injected.

For the notes of the cases I am indebted to Mr. A. Kidd, resident medical officer.

CASE I. Pharyngeal and Nasal Diphtheria: Suppression of Urine during the Second Week of Illness.—A girl, A. H., aged 4, was admitted on June 20th, 1894. There was a history of two days' antecedent sore throat. The tonsils were ragged and inflamed, and covered with a grey pultaceous exudation. There was a foetid nasal discharge, and considerable swelling of the upper cervical glands. The temperature was 101.6°, the pulse 126 and regular; the respirations were 26, and air was entering both lungs freely. The urine was normal. On June 22nd the child was very pale, and extension of membrane had occurred over the soft palate and uvula. Several large pieces came away from the throat and nose. The temperature continued about 101°. On June 24th paralysis of the soft palate was observed, and the knee-jerks and plantar reflexes were absent. Vomiting and diarrhoea, accompanied by a diminution of urine and the presence of albumen were noted. During the following three days intractable diarrhoea and vomiting continued, the urine progressively decreased, and the child was very anæmic, apathetic, and weak. On June 28th the temperature dropped to 96.4°, and total suppression of urine supervened, which continued until death occurred on June 29th, thirty-six hours after the onset of anuria.

CASE II. Pharyngeal and Nasal Diphtheria: Suppression of Urine on the Sixth Day of the Disease.—N. B., a girl aged 3, was admitted on September 27th, 1894, with a history of indefinite illness for the previous three days. On admission, the child was pale and appeared to have considerable difficulty in breathing, though air was freely entering both lungs. The tonsils were enlarged and covered with thick yellow exudation. There was profuse foetid nasal discharge and foul breath. The glands at the angle of the jaw were enlarged. The temperature was 100.2° F. and the pulse 132. The urine was normal in quantity but contained a trace of albumen. The knee-jerks were absent. On the following day some shreds of membrane were coughed up; the condition of the throat remained the same and paralysis of the soft palate appeared. On September 29th recurrent vomiting and diminution in the quantity of urine were noted. On September 30th, no urine having been passed since the previous day, a catheter was introduced and 3 ounces of urine containing one-eighth albumen withdrawn. The bowels were constipated but acted freely after enemata. Vomiting continued. The temperature was 99.6°. The child was very languid and anæmic. Death occurred on October 1st, there having been complete anuria for thirty-six hours prior to death.

CASE III. Pharyngeal and Nasal Diphtheria: Suppression of Urine on the Fourteenth Day of Illness.—J. P., a girl, aged 4, was admitted on April 3rd, 1895. She had been feverish, and complained of headache since March 30th. Sore throat and swelling of the neck were noticed on April 2nd. On admission the tonsils were swollen, and covered with grey membrane, and the upper cervical glands were much enlarged. The temperature was 103° F., the pulse was 132, the respirations 24. The chest was clear and the urine normal. On April 5th there was some extension of membrane on the right side, the tongue was dirty, and slight epistaxis occurred. The knee-jerk was absent on the left side. The face was of good colour, the temperature 101° F. On April 6th an offensive nasal discharge appeared, and both tonsils and the soft palate were covered with false membrane. The urine showed a trace of albumen on April 8th. She looked pale, and vomiting and diarrhoea commenced; shreds of membrane came away from the nose. During the following four days there was some improvement in the condition of the throat and less foetor. The quantity of albumen increased to one-fifth, and the vomiting was intermittent. The child was anæmic and languid. On April 12th and 13th the improvement in the throat and nose continued, but the vomiting and diarrhoea were almost continuous. The heart's action was occasionally irregular, and the child was somewhat drowsy. The temperature was normal. The urine had decreased in quantity, and contained only a trace of albumen. On April 14th total sup-