up this point I applied pieces of ice under the chin while the bulb of the thermometer was maintained under the tongue. On two occasions there was a perceptible rise in the temperature the moment the ice was applied, a phenomenon also observed by Raoul Pictet in his experiments on the application of cold to animals, and this was followed by a slight fall; the fall in three experiments amounted to 0.2° , 0.6° , and 0.5° in the course of from thirty to forty-eight minutes; therefore the application of ice to the submaxillary region affected but very slightly the sublingual temperature.

The temperature of the body while ascending has been for a long time past subject to discussion. In 1865, Professor Marc Dufour, in his inaugural dissertation to the medical faculty of Zurich, stated from experiments made on himself that in the act of ascending the temperature of the body falls rapidly by about 0.4° F. Another gentleman, Professor Fick, has observed the same phenomenon; many observers find that the body temperature is slightly increased by muscular exercise.

In 1869 I began to give attention to this subject, and invariably found that my temperature fell while ascending; the extent of the cooling being dependent chiefly on the time which had elapsed since the last meal was taken, and to a less extent on altitude and atmospheric temperature. In general the fall of temperature was most rapid when ascending quickly, while fasting and perspiring freely. These inquiries were followed closely by those of Professor Lortet, of Lyons, who obtained similar results.

The observations of Dr. Clifford Allbutt, F.R.S., with three exceptions, gave results opposed to ours.

Many other reliable observations have been published which seem to contradict one another. Thus Professor F. A. Forel, of Lausanne, found that the muscular work of ascending raised the body temperature; Mr. Gay, of Strassburg, observed a decrease of temperature on ascending, and the same phenomenon was observed by Professor Ray Lankester. Hence it must be concluded that the influence of climbing on the temperature of the body varies with different persons. Some in thorough training, young, perspiring but little, and producing as a rule a large amount of carbonic acid, or developing much heat under ordinary circumstances, will observe their temperature to rise in the act of ascending; others, who generally produce less carbonic acid, and therefore develop less heat, will generate just the amount of heat they require for the exercise, but the cold air and perspiration cooling the body, its temperature will fall below the normal.

ON THE RELATION OF RETINITIS ALBUMINURICA TO THE INDUCTION OF PREMATURE LABOUR.¹

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THE subject of this short paper is of interest to the obstetrician as well as to the ophthalmic surgeon, and my object in bringing it under the notice of this Society is to discuss with those engaged in obstetric practice the lines to be pursued in dealing with the class of cases to be mentioned.

Not very infrequently cases present themselves in which it is thought advisable to suggest or sanction the termination of pregnancy, but the question has arisen in my mind, especially recently, not so much as to the correctness of that advice but as to the frequency with which the practice may be resorted to in the same patient. It is a moral as well as a medical question.

Albuminuria is one of the serious complications of the puerperal state, and according to different observers is found prevalent in a percentage of 2 to 6, some giving a less proportion than others. Dr. Parvin² had the urine examined of all the puerperal patients admitted into the Philadelphia Hospital, and found that albumen was not present in more than 6 per cent.

From the obstetric side the importance of the renal com-

plication is, I presume, associated chiefly with the liability of such cases to eclampsia³ and its too frequent bad results. It will, however, hardly be deemed necessary to follow the course suggested by an American oculist "for all physicians to caution mothers to have their daughters' urine examined before they contemplate matrimony."⁴

The seriousness of the renal complication is increased by the sight failure, which is present in a certain number of cases. I have shown elsewhere,⁵ as others have done, that the association of retinitis with Bright's disease is indicative of a very limited period of life, frequently only months. With the albuminuria of pregnancy the retinitis is of less grave import in this respect, but, as far as vision is concerned, it is attended with very serious results. Dr. Culbertson⁶ has collected the cases of albuminuric retinitis which have been recorded, and finds that 23.33 per cent. have terminated in blindness; 58.25 have resulted in only partial recovery of sight, and but 18.54 have recovered sight. Silex,⁷ who has followed 26 patients for a long period, gave the following results: Eleven recovered vision above $\frac{1}{2}$, 10 below this, and 5 were nearly blind, this being due to optic atrophy, choroido-retinitis, and detached retina which showed itself late in two cases.

The retinal affection may show itself at almost any period of pregnancy, and infrequently during the first three months. The appearances in the fundus are generally well pronounced. The margins of the optic discs may be hazy and ill-defined; numerous white patches in the macular region with some hæmorrhages may all be observed. In other cases blindness or great impairment of sight may be present, with an absence of ophthalmoscopic signs. In a case recently which Mr. Richard Favell kindly allowed me to examine, and in which labour was induced for eclampsia at term or nearly so, the young woman was apparently quite blind, but yet there was an absence of ophthalmoscopic signs. On the other hand, the gravity of the retinal affection, as shown by the changes in the fundus, is not always commensurate with the defective vision complained of by the patient, and for this reason it is desirable that pregnant women with albumen in their urine should at intervals undergo ophthalmoscopic examination. It is hardly necessary to enter more fully into this part of the question. The gravity of the complication has been sufficiently dealt with.

Now, it has frequently been found that when labour terminates improvement in sight is apparent, and in this way the induction of abortion came to be advocated. Excellent results have followed its adoption. It has been called for occasionally in my own practice. Mr. R. Favell some time ago undertook in the Jessop Hospital the treatment of such a case for me. But another shortly afterwards, who was to have been similarly treated by Dr. Martin, died in convulsions before arrangements for her removal to the hospital were completed.

The following case is a typical one in many respects:

Mrs. S., aged 21, came first to me at the Sheffield General Infirmary on December 19th, 1893. She complained of her sight having failed for the last six weeks, and in each eye vision was very defective; Left V= $\frac{1}{2}$, Right, barely fingers. In both eyes there was retinitis of an extreme degree. The optic discs were hidden by effusion, and there were numerous white patches and a few hæmorrhages. She had been married twelve months, and was now six months pregnant; there had been no previous pregnancy. She only passed a small quantity of water.

The case was recognised as one of albuminuric retinitis, and of such gravity that if the pregnancy was allowed to continue blindness would most certainly result. My colleague, Dr. Dyson, chanced to be present at the infirmary, and he saw the case with me. We agreed that it was one in which the induction of premature labour was urgently called for, not only on account of the eyesight, but also the danger there was to life in allowing gestation to continue. She had not recently been under treatment, but her medical attendant was Dr. R. M. Clark, of Harthill, and I accordingly wrote giving him the opinion just expressed. I am indebted to his assistant Dr. Baker for the particulars of her case which now follow:

"Mrs. S., aged 21, married at 20 years of age. She suffered from scarlet fever as a child. At the age of 17 she became anæmic, and has remained so ever since. Family history good.

³ "Out of the number of pregnant women suffering from albuminuria about a quarter are attacked by eclampsia.....Death occurs in 30 per cent. of these cases (eclampsia)." (Rosenstein), *Diseases of Kidney*, by Fürbringer, translated by Gilbert, p. 56.

⁴ Culbertson, *Amer. Jour. Ophth.*, 1894, p. 137.

⁵ *Trans. Ophth.*, Vol. viii, p. 144.

⁶ *American Journal of Ophthalmology*, 1894, p. 137.

⁷ *Annales d'Oculistique*, February, 1895.

¹ Read before the North of England Obstetrical and Gynæcological Society at Sheffield, March 15th, 1895.

² *Science and Art of Obstetrics*.

"As soon as she became pregnant she became sick, not only in the morning, but very often all day, vomiting everything she took. She also began to suffer from breathlessness and palpitation. During the second month of pregnancy she began to complain of her eyes; they seemed to have something before them; she tried to rub it off, but it always remained the same.

"From the second month onwards she gradually became worse, with no additional symptoms until the fourth month.

"At this period she occasionally complained of peculiar numb feelings in her fingers, which passed up her arm (right). These feelings came over her twice and sometimes three times a day, and remained for a quarter of an hour at first, but were more severe and remained longer as time went on. She compared the sensation to a feeling of lightness coming over her arm, followed by a heavy one.

"About the fifth month the sensations went to the left arm. By this time her eyesight became so bad that she had to be led about, and she could distinguish little more than light and dark. She first consulted me at the fifth month, when I found the urine loaded with albumen. Her feet and hands were very cold and swollen. I recommended her to go into the Sheffield General Infirmary at once. At the sixth month she had what appeared like a paralytic stroke; she lost the feeling and power of her right side and could not speak. This lasted half an hour. The same day week she had a similar attack. In the interval there were still the minor attacks in the right arm. She now suffered very much from palpitation and breathlessness; her pulse was 140 and breathing 36. The third day after the stroke she became so bad that I induced labour by dilating the os and puncturing the membranes. At this time she was quite blind. The third day after labour her eyesight began to return. On the fifth day she took pneumonia, which retarded her recovery for some weeks."

It will have been noticed from Dr. Baker's account that, during the short interval that elapsed from the time of my seeing her in December to the induction of labour that vision had become materially worse, and the gratifying fact will have been observed that from the third day after the labour her eyesight began to improve.

She did not come to see me again until February 27th, when there was a small quantity of albumen still present; specific gravity 1010. The condition of the fundi was distinctly improved and the patches were clearing.

March 13th. Still further clearing, leaving the discs white. Vision in the left eye $\frac{1}{6}$ and right $\frac{1}{10}$.

September 14th. Left $\frac{1}{8}$, right $\frac{1}{10}$. The urine never became free from albumen. It was examined on November 23rd; specific gravity 1010; albumen present.

On January 5th of the present year she informed me she was again pregnant, and had missed two periods. She was anxious to know if abortion should not be induced. Dr. Baker at the same time wrote asking me if it should not be done, and if so whether the present was not a favourable time. There was no further deterioration of vision, but, as had been previously mentioned, the albumen had never been absent from the urine. I saw no reason why Dr. Baker should not act upon his suggestion, which he accordingly did; and he reported as follows:

"Last November (1894) she became pregnant again. The former symptoms began to return. The eyesight was getting worse, so I thought it advisable to produce abortion."

"At the second month I introduced a sound into the uterus, and rotated it freely but gently. Two days after the operation she aborted, and since then she had been improving."

"Five days after the abortion she had the peculiar sensation in her right arm which she had experienced in her first pregnancy."

A few days ago I examined Mrs. S. again. Vision remained the same as at the last entry. The optic discs are white, and vessels attenuated; there is pigmentation and development of connective tissue round the papillae. Albumen is still present, but no casts were found.

I do not think there can be much question as to the propriety of inducing labour in such a case as this. To have permitted gestation to continue to the normal period would have been fraught with considerable danger to life, and with more certainty it may be asserted that blindness would have resulted. The second pregnancy was treated early. A recurrence of the retinitis would have destroyed in all probability the vision preserved from the previous pregnancy.

A matter of consideration in these, as in all cases in which induction of labour is indicated, is the desire for a living child, but is it not often or generally the case that even if gestation proceeds the foetus perishes?

It seems to me that in these cases we may draw a distinction between those in which the retinal affection shows itself in the early months, and those in which it only appears towards the end of pregnancy. In the latter case the period during which the affection would become worse is more limited, and as a rule it is probably true that vision is less seriously injured than in those in which the retinitis has appeared early. I would therefore say:

1. For retinitis appearing before or about the sixth month induction of labour should be recommended.

2. That when it shows itself only in the last few weeks it may often be unnecessary, but that each case must be judged by the severity of the affection.

3. That a case in which retinitis has shown itself in one pregnancy should be carefully watched both as to the presence of albumen in the urine and as to the eye affection, and treatment adopted accordingly.

The importance of this is often demonstrated. An instance of a lady occurs to me as I write, whom I saw after confinement at term with a medical friend, and who recovered then from retinitis with fair vision, but in a subsequent pregnancy, eighteen months after this one, going on to full time, and attended with eclampsia, absolute blindness resulted. This very day also a woman presented herself with total blindness. Partial recovery had occurred after confinement fifteen months ago, but another pregnancy twelve months later (three months since) had led to the result mentioned.

Whilst then recognising fully the advisability and propriety of induction of labour in these cases, a further question presents itself—How often is it justifiable to recommend hastening of labour in these cases?

The woman whose case has been related has required it twice in scarcely over twelve months. She is only 21, and in the natural course of events other pregnancies will occur, and the question of inducing labour, as it was recently, will again be presented by the patient or her friends.¹ On the one side it is clear that, should a return of the retinitis take place, which in her case it would appear specially prone to do owing to the albumen having never disappeared, blindness would result, and this quite apart from the danger to life from the kidney affection. On the other side is the disagreeable position of the medical man being again and again called upon to interfere with the natural course of gestation.

Should such a case be treated in a more radical manner by the removal of the ovaries, and would the condition of such a patient be sufficiently favourable to allow of such a proceeding being recommended?

THE NEW ANTIDOTE FOR OPIUM POISONING.

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THE number of deaths caused annually by opium poisoning is so great that the knowledge of a prompt, efficient, and safe antidote to opium is a matter of importance. Special studies and experiments extending over a period of two years have convinced me that permanganate of potassium is the true antidote to opium and its alkaloids, especially morphine. While it was known long ago that morphine is readily oxidised by this salt of potassium, the latter being reduced to hydrated manganese dioxide, yet it has not been shown that the oxidation of morphine renders it perfectly innocuous, entirely void of any toxic properties. Furthermore, it may have been thought that the contents of the stomach would reduce the permanganate so quickly as to render the latter useless for antidotal purposes. I have shown² that a solution of permanganate of potassium will decompose sulphate of morphine infinitely more rapidly than it would decompose albuminous matter. A striking demonstration of the astonishing selective faculty of permanganate of potassium for morphine can be shown by mixing 250 grains of the white of an egg with 1 ounce of water, dissolving in this mixture 1 grain of sulphate of morphine, and adding rapidly to the whole just 1 grain of the permanganate dissolved in 1 ounce of water. After thoroughly mixing, not a trace of morphine can be detected, which conclusively proves that the molecules of the antidote instantaneously selected the molecules of morphine without being interfered with by albumen, though the quantity of the latter so greatly exceeded the quantity of morphine. I should state here that 1 grain of permanganate oxidises exactly 1 grain of morphine.

My experiments with the new antidote were made chiefly upon myself. This should not be deemed an unnecessary procedure when we consider how unsatisfactory is experimentation on animals with opium or morphine. It is well known what enormous quantities of this poison the lower animals can ingest with impunity. H. C. Wood and David Cerna have given to a dog, weighing 15½ kilogrammes, 2.4 grammes (37 grains) of morphine; yet at the end of the experiment the air movement and the rate of respiration were practically what they had been in the beginning.³

¹ The patient fell down dead on June 8th.

² New York Medical Record, February 17th, 1894.

³ See *Journal of Physiology*, Cambridge, England, page 870, 1892.