naso-pharynx forces the soft palate against the base of the tongue, thus making expiration through the mouth impossible. At this stage, with the soft palate and base of the tongue in contact, if there is no valve at the upper part of the bag, nasal "to and fro" breathing into the bag commences, the patient gradually becoming cyanosed. If there is a valve to prevent this rebreathing, then the only possibility of respiration is by forcing the nose-piece slightly off the face, thus allowing the expired air to escape around it; this obstruction to respiration quickly causes cyanosis. It is quite easy to keep this class of patient unconscious with the ordinary nose-piece, but only at the expense of cyanosis.

II. In a patient who has a small, compact tongue, a short soft palate, the two being widely separated and therefore giving rise to practically no obstruction to respiration, one obtains an ordinary gas anaesthesia; but remove the mouth cover, and continued nasal administration will have very little effect. Even if nitrous oxide is passed rapidly through the nose, the rate of diffusion is so rapid that the patient obtains a mixture of gas and air, which is insufficient to produce anaesthesia; these patients can be controlled by placing an expiratory valve in the fauces.

Between these two extremes are varieties of tongues and soft palate which during the administration give rise to more or less obstruction to respiration, with a corresponding amount of cyanosis or gas anaesthesia.

The most important point dependent on the construction of the fauces is the occurrence of nasal "to and fro" breathing when the soft palate comes in contact with the base of the tongue; this may be brought about by other factors. In cases in which the soft palate does not reach the base of the tongue the slight cyanosis of the gas administration causes the tongue to swell up sufficiently to fill up the space between them. If the oro-pharyngeal aperture is of the largest type, the tongue during an ordinary administration will not swell up sufficiently to reach the edge of the soft palate, and nasal "to and fro" breathing does not occur; but in the average nasal administration during the continuation one observes that the patient is kept cyanosed and the tongue swells up and lessens the oro-pharyngeal aperture; in this way the oral air-way is occluded, and the patient must obtain pure gas by the nose.

It has been stated that "after normal consciousness is lost, a period follows in which psychical disturbances ensue; at this stage there is frequently a change from 'naso-oral' breathing to 'to and fro' nasal breathing, which is evidenced by escape of expired gases around the nose-piece. This is so frequent that it has been taken as a useful sign of unconsciousness and approaching anaesthesia; even the firm application of the mouth cover throughout the inhalation had little if any effect in modifying this phase." The following case will explain the reason:

The patient had a large flabby tongue with an overlapping palate; when anaesthetized with the ordinary nose-piece, the mouth cover being placed in position, for three breaths the valve worked; then "to and fro" nasal breathing commenced, and expired gases tended to escape round the nose-piece, and no air was expired through the mouth. Now, according to the above statement, after four breaths this patient should have been unconscious and nearly ready for operation. What had happened was this: The space between the base of the tongue and soft palate being narrow, directly expiration occurred the soft palate was first pushed against the base of the tongue, and then bulged forwards into the mouth, forcing some of the air out of the mouth and through the valve of the mouth cover. When inspiration started, a slight *minus* pressure formed in the mouth, shown by the valve of the mouth cover being slightly drawn in; as neither gas nor air could enter the mouth, the soft palate was kept fixed down on the base of the tongue. I should describe this as "false action" of the mouth cover, giving rise to early nasal "to and fro" breathing, putting the valve of the mouth cover out of action, and completely obstructing breathing through the mouth.

Whether gas is given by the nasal or ordinary method, the fact remains that the oro-pharyngeal aperture is always obliterated, or nearly so, before the naso-pharyngeal aper-

ture is in any way affected, and the breathing gradually tends to become nasal. This can be easily demonstrated; if gas be given by the face-piece method, when one is near the end of the administration, the face-piece is still kept on, and at the same time the nose is compressed, unless the palate is of the short variety, it gives rise to obstruction to expiration.

Besides the condition of the fauces causing obstruction and giving rise to cyanosis, cyanosis in itself gives rise to obstruction of free breathing in the later stages, the swelling and falling back of the tongue giving rise to false stertor; I have noticed that this trouble occurs to a marked degree in patients with receding chins.

Cyanosis causes distension of the large veins of the neck; and, as is well known to every one, a collar or piece of tape, which was quite loose at the beginning is, if the administration is pushed until the patient jactitates, found to be pressing tightly round the neck, the measurement of the neck having increased $\frac{1}{4}$ in. in circumference. This is clearly due to distension of the superficial veins of the neck, as it is not likely that a structure like the cervical fascia can stretch much. In cases of oedema or suppuration beneath the deep cervical fascia, one is struck by the severe dyspnoea that occurs from pressure beneath this structure without any apparent general swelling of the neck.

If the superficial veins external to the cervical fascia be compared with the deep veins of the neck, one realizes what the pressure in these huge veins must be, on the soft tissue, beneath a fixed structure like the cervical fascia.

The parts likely to be affected are the laryngeal opening, which may get pressed back against the wall of the pharynx, and the space just above the larynx, where the tissue is extremely vascular, and it is quite easy to imagine how, with the increased tension within the cervical fascia occurring in asphyxia, the air-way here may be completely obliterated.

It has been stated that "by compressing the nose at the end of an ordinary administration the patient is more likely to stay under for several extra seconds." This is a general experience; we can conclude that the compression causes obstruction of free breathing, if at the end of an administration instead of compressing the nose we place an ordinary nose-piece over the nose, we completely obstruct expiration through the nose, the nasal air-way being at this stage of the administration the chief means the patient has of breathing.

From the fact of the occurrence of nasal "to and fro" breathing during the induction of anaesthesia by nitrous oxide, and that in the later stages of the induction the respiration is almost entirely by the nose, I draw the conclusion that any nose-piece without an expiratory valve on it causes unnecessary obstruction and cyanosis, not only while anaesthesia is being induced, but also during the continued administration.

THE TREATMENT OF SOME CHRONIC INFLAMMATIONS OF THE EYE.

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SOME three years ago Professor Burnham of Toronto published a small book¹ describing in detail a method of treatment of chronic ocular inflammatory conditions, especially irido-cyclitis and sympathetic ophthalmia. My attention was drawn to this by Mr. Stanford Morton, who advised its use in a case, which we were seeing together, of severe irido-cyclitis, with nearly total loss of the anterior corneal layers.

The "combined" treatment, as it is termed by Professor Burnham, consists in the administration of mercury and potassium iodide, combined with the daily hypodermic injections of pilocarpin, his hypothesis being that the pilocarpin arouses and stimulates the ordinary physiological processes to activity in excess of the normal, so that the tissues are more easily acted upon by the mercury and potassium iodide. It is, of course, in the experience of every one that in certain chronic inflammatory

conditions of the eye mercury and potassium iodide are very uncertain in their action, sometimes much benefit resulting from their administration, and in other cases the results are nil.

I used this treatment in several cases, with much benefit, and in some patients who had previously been treated by other methods without good results; but in my experience the pilocarpin produced such profound depression when injected daily for ten or more days that I cast about to see if there was not some other method of stimulation of the ordinary physiological processes without this great drawback. In fact, in certain cases, the depression was so profound that the patients, although acknowledging their vision was better, refused to continue the treatment, remarking that the remedy was worse than the disease.

Of course the ordinary hot-air bath suggested itself, but was discarded as being too cumbersome, and finally guaiacol was recommended to me by a colleague. It is, I believe, not generally known that if a small quantity of guaiacol be smeared on the skin, profuse diaphoresis results in about one hour.

I have now tried this method in nearly 40 cases with most excellent results, irido-cyclitis, vitreous opacities, and interstitial keratitis seeming to be the most suitable conditions for the treatment.

The following is the routine usually employed: The urine is examined, and the mercury is omitted if any albumen is found. The ordinary alterative mixture of hydrarg. perchlorid. gr. $\frac{1}{8}$ and potas. iodid. gr. $\frac{1}{2}$ is given thrice daily; sometimes instead of the above hydrarg. creta gr. $\frac{1}{2}$ is given in a pill thrice daily, together with a mixture containing potassium iodide and tincture of nuxvomica. The patient is kept in bed between blankets with two hot-water bottles, then 1 drachm of a mixture of equal parts of olive oil and guaiacol is smeared, not rubbed, either in the axilla or over the epigastrium. If this dose does not suffice then 2 drachms are used, and in rare cases three, but mostly 1 drachm is enough. The part is covered with oil silk, and a pad of wool is applied over the silk. A hot drink is now given, and profuse general perspiration begins in from one to two hours and lasts for about five hours. It is difficult to make some patients perspire, and in these cases a hot bath beforehand assists and hastens diaphoresis. In one patient some irritation of the skin was produced by the guaiacol, but this was practically well in a week on ceasing the treatment; but the skin in this case was too irritable to stand the application on the same place two nights in succession.

Generally twelve applications are made, and then treatment is stopped for a few days and begun again if considered necessary. As a rule, the patients are kept in bed the whole time, but occasionally when the applications are made in the morning, I allow them to sit up for an hour or so in the evening, well wrapped up.

Our experience at the Shrewsbury Eye Hospital is that guaiacol is a far more certain diaphoretic than pilocarpin, and does not produce the after-depression of the latter drug, while the results are, as far as I can see, equally good.

I have not tried it in any very acute cases, but there does not seem any reason against its use in these conditions. Among the eye diseases for which this modification of the "combined" treatment has been used are interstitial keratitis, irido-cyclitis, vitreous opacities, sympathetic ophthalmia, and optic neuritis. In all there was some benefit, and in some the results were remarkably good. Very many of the patients had been previously treated with ordinary routine methods without good results. Certainly in syphilis the condition is more quickly controlled than when mercury and iodide are used alone. Recently I have been using this treatment in a case of syphilitic perichondritis of the larynx with very good results, when previously the use of mercury and potassium iodide has not influenced the condition very appreciably.

The idea of treating syphilis with diaphoretics and mercury is not new, but has, I believe, been carried out for some years, with the object of shortening the treatment.

REFERENCE.

¹ *The Combined Treatment of Diseases of the Eye.*

HYDATID DISEASE: RECURRENCE: EXTERNAL RUPTURE: RECOVERY.

By ARTHUR W. BRODRIBB, M.A., M.B. OXON., L.R.C.P.,
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In October, 1908, there were published¹ in this JOURNAL notes of a case under my care of hydatid disease in an old lady, in which the disease appeared to be situated in Douglas's pouch. Rupture occurred into the rectum and large numbers of hydatid cysts were discharged. Recovery followed, and for three months the patient seemed completely well.

On October 12th, 1908, I was called in again, as she was in great pain in the abdomen, and was shivering. The temperature was 101°, the pulse feeble, and respirations rapid. I found some sharp crepitations at the left base, and in the abdomen a tender swelling to the left of the umbilicus, dull to percussion, and about the size of a seven months' fetal head. It appeared probable that there was recurrence of the hydatid disease, and possibly some pneumonia setting in, as she was suffering also from a short, painful cough. There was no obstruction in the bowels, as in the former illness.

The next day she was better, the temperature 100°, and the cough and crepitations less. By October 16th the chest symptoms had disappeared, the temperature had fallen to 98°, and the pulse to 88, but the patient did not seem so well; the abdominal pain was greater and the abdomen decidedly larger, the tumour developing a resonant prominence to the left and below the umbilicus. In the left flank there was some resistance and impaired percussion note, and great tenderness.

During the next week her condition varied; at times the abdomen was enormously distended with flatulence, and the tumour was larger, the skin over it becoming red and oedematous. The whole of the left side of the abdomen and left flank was dull to percussion. On October 26th the prominence was much larger, the skin more angry in appearance, and she was extremely weak.

On October 29th she passed from the bowel about a pint of mud-coloured liquid, very offensive, but containing no cysts. The next day she passed another three-quarters of a pint, and was evidently relieved; the abdomen was smaller and less tender. During the next few days she seemed better, but the tumour began to increase again, and the condition of the skin became worse. On November 6th she was decidedly worse, and became delirious. Small beads of clear fluid began to ooze through the skin over the tumour from two minute holes. In this way large quantities of clear fluid came away during the next few days, the small holes developing into wounds half an inch long with jagged edges. No cysts were passed. The tumour became rapidly smaller, and the general condition of the patient improved. On November 11th, instead of clear fluid, white creamy very offensive pus was coming away. The wounds were beginning to heal, and an attempt was made to keep them open to get as much drainage as possible. The tumour no longer projected. Within ten days of the first discharge of liquid the tumour had disappeared, and no further discharge occurred. The wounds healed remarkably quickly. The patient made a rapid recovery, and is now in splendid health, in spite of her age, which I believe to be well over 80. She seems none the worse for her two severe illnesses.

The contrast between the two illnesses was chiefly marked by the different direction in which the cyst pointed. Probably the peritoneum was the seat of the trouble, and it may have been the same large cyst in each case, but in the first illness it pointed into the colon, which was almost blocked by it. This cyst refilled, and fortunately pointed, and burst, externally. An alternative view is that in the second illness an entirely new hydatid cyst developed, and the fluid was drained off through the abdominal wound, leaving the daughter cysts within where they have atrophied.

A hydatid cyst situated in the peritoneum can only point in four ways: (1) Into the gastro-intestinal tract; (2) into the bladder; (3) into the peritoneal cavity; (4) externally.

REFERENCE.

¹ BRITISH MEDICAL JOURNAL, vol. ii, 1908, p. 1271.

INTRA-ABDOMINAL HAEMORRHAGE ASSOCIATED WITH LABOUR.

By MAURICE C. BARBER, M.R.C.S. ENG., L.R.C.P. LOND.,
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THE intra-abdominal haemorrhage which occurred in the following case must, I think, be a very unusual complication of labour.

C. B., aged 32, enjoyed good health until the age of 15, when her mother says she was paralysed in both lower extremities for