as much as by the anaesthetic, is liable to render indecision and nervousness in administration more profound. I desire, even at the risk of being considered dogmatic, to lay down two principles for guidance in the administration of chloroform and ether and mixtures of the same, which have been of inestimable value to me in my own practice:

1. Keep the airway clear.

2. Never completely abolish the corneal reflex.

First, the airway must be kept clear throughout anaesthesia, because if the jaw is allowed to fall back at all, carrying the base of the tongue over the epiglottis and producing even moderate stertor, an element of asphyxia is introduced which more than doubles the dangers of the anaesthetic state. I mean by this that it is the administrator's duty to relieve all forms of stertor directly they arise.

Secondly, when an anaesthetic drug is in course of administration we require to know how deeply the patient is affected by its paralysing action at every given moment after loss of consciousness and during surgical manipulation.

It is known and admitted by all that primary reflex actions are paralysed gradually one after another before (always before and never after) the truly automatic reflex actions, examples of the latter being the respiratory and cardiac movements.

The corneal reflex, which is produced by touching the centre of the patient's cornea, and both watching and feeling the responsive closure of the upper eyelid, is one of the last primary reflex actions to become paralysed. When this has been abolished, the fourth stage of dangerous anaesthesia has been entered, because the next centres to become paralysed will be those automatically controlling respiratory and cardiac action. Therefore, whilst some degree of corneal reflex can be elicited, a condition of overdosage is impossible.

What can be more simple than always to retain a trace of corneal reflex? To constantly test it in both the patient's eyes, and to give more or less anaesthetic respectively according to the brisk or slow response elicited from the upper eyelids.

The proper method of eliciting the corneal reflex in the anaesthetized subject is to stand behind the patient and raise the margin of one of the upper eyelids by gently inserting the pulp of one finger only between the lids, then drawing the upper lid upwards with it till the cornea is well exposed to brush definitely against the centre of the cornea and edge of the upper lid with that finger and let go suddenly. Both by feeling and watching the brisk, moderately rapid, or slow responsive closure of the upper eyelid the presence of the first, second, and third stage of narcosis is demonstrated.

There is often a difference in the activity of the two upper eyelids, and if the more active of the two is always taken as the true test it may be trusted to as a sheet anchor for keeping the patient in the harbour of safety.

The principle which this involves is never to abolish the corneal reflex completely—that is, if the drug be pushed unduly till it does disappear, to withhold it until the corneal reflex returns in a slight degree, and to endeavour then so to adjust the subsequent dosage that this condition of a dulled, but not absent, reflex is maintained.

SOME POINTS IN THE TREATMENT OF BRACHIALGIA AND SCIATICA.*

By J. E. HARBURN, L.R.C.P. and S. EDIN., L.F.P.S. GLASG.,
Buxton.

JUDGING from the large and increasing number of cases which are sent to health resorts year by year for special treatment, it would seem that painful affections of the cervico-brachial and sciatic nerves in many instances tend to assume a chronic course, and thus exert a most debilitating and depressing effect on the health of the patients. During the past seven years over 700 cases have been treated by my partner, Dr. Armstrong, and myself at Buxton.

Although in some cases of sciatica and brachialgia the pain is purely neuralgic, in the majority there is an inflammatory condition of the nerves or of their sheaths, and it is desirable to classify them as—

(a) *Sciatic or Cervico-brachial Neuralgia*.—It is frequently of a very temporary character, and may be simply functional, probably showing no change whatever in the sheath or in the nerve. When the general health of the patient is low, however, it is often of considerable duration. The pain is generally intermittent in character, and is not

usually confined to one part of the nerve as it generally is when the condition is due to inflammation.

(b) *Perineuritis*.—It is probable that the majority of cases of sciatica and brachialgia are due to this condition. This pain is of a peculiarly "toothachy" character, and there is tenderness over the roots of the affected nerves as they emerge from the spine and also at various points in their course. In sciatic perineuritis the patellar reflex may be intensified. There is often some degree of tingling and numbness of the extremities.

(c) *Neuritis*.—This is infinitely the most serious and intractable condition with which we have to deal. There is great tenderness of the nerve itself, and sometimes over the parts to which it is distributed. The temperature of the limb is reduced, there are areas of anaesthesia, tingling, and numbness of the extremities, and in the later stages muscular atrophy.

The causes of these affections are in some cases difficult to trace. The great majority of patients have a gouty taint, and many are rheumatic. We found that in a striking number of instances the patients had been subjected to great worry and over-pressure, which had lowered the general nerve tone, thus inducing defective metabolism and tardy excretion of body waste. A large number of these cases occurred in overworked business men. The exciting causes of sciatica and brachialgia are cold, damp, and traumatism. Pressure from tumours or aneurysms, and in sciatica from constipation and uterine displacement must be borne in mind. Neuritis is often caused by the action of such poisons as lead, arsenic, and alcohol, and it should be remembered that the subjects of glycosuria and diabetes are very liable to this affection of the nerves. In not a few cases neuritis occurs as a sequel of influenza.

Treatment.

In the acute stage, whatever variety of the disease is present, rest is absolutely essential. The leg may be placed on a well-padded splint, or the arm in a sling. Dry heat applied by means of the Greville or Dowsing apparatus, or, if these are not available, by indiarubber hot-water bottles, will be found most effective.

With regard to drugs no combination has, in our experience, been found so effective as the following: Aspirin 6 gr., phenacetin 5 gr., salicylate of quinine 2 gr., and codeine $\frac{1}{4}$ to $\frac{1}{2}$ gr. The bowels should be well cleared with small doses of calomel followed by salines. In those cases in which the pain is not relieved an occasional injection of morphine with atropine may be necessary, but this is a remedy which should be used with great caution and not too frequently repeated, as it tends to interfere with the excretion of body waste, and may also lead to the establishment of the morphine habit.

Subacute Stage.

It is in this stage, which is often so protracted and troublesome, that the various spas become of service. In sciatica we have found nothing so serviceable as the half-combined bath. The patient sits in a vapour bath which comes up to the waist line only; this, while not exhausting the patient as much as the full vapour bath, allows a higher temperature to be borne by the affected parts. Thus, a temperature of 115° F. can be tolerated with advantage from ten to fifteen minutes. At the end of this time the patient sits in a bath of the Buxton thermal mineral water heated to a temperature of 95° F. for eight minutes, and during the last three minutes a hot undercurrent douche at 102° to 110° F. is applied to the affected limb.

In affections of the brachial nerves the full combined bath is used, or if the patient is too weak for this, the arm alone is placed in the vapour box before he goes into the immersion bath. In this stage also electricity in various forms is used with excellent results. The sinusoidal electric water bath (200 alternations per second) or the high frequency currents of d'Arsonval are the most useful, as they have a distinctly anaesthetic effect upon the nerve whilst improving its nutrition. Acupuncture has often been found beneficial at this stage, as has also the application of a blister over the head of the affected nerve or the use of the thermo-cautery. The administration of fairly large doses of potassium iodide three times a day for three or four days is sometimes beneficial, as is also the application of a menthol liniment or plaster.

Chronic Forms.

In the treatment of the chronic forms of sciatica and brachialgia it is essential that distinction should, as far as possible, be made between true neuritis and other forms of these complaints. Where neuritis is not present the Aix massage bath with the douch applied to the painful part is of great value, as are also dry and electric massage, followed by gentle stretching of the nerve in cases where adhesions are

* Communicated to the Derby Division of the British Medical Association.

present. The Buxton swimming bath at the natural temperature of 82° F. is one of the most valuable remedies at our disposal. In true neuritis, however, massage is as a rule not beneficial and nerve stretching is quite contraindicated. The combined bath, alternating with the natural swimming bath and the application of electricity in the form of the constant current (5 to 15 milliamperes), ascending and descending over the affected nerve, or in the form of the constant current bath, are of much service. The affected limb should be kept warm by the wearing of double-sleeves or double-legged pants of wool. The injection of $\frac{1}{2}$ gr. of pilocarpin nitrate on alternate days for two or three weeks, except in cases where there is organic heart mischief, has been highly praised by Dr. Farquhar of Marlborough.

CASE OF PRECOCIOUS PUBERTY IN A FEMALE CRETIN.

By F. WELLESLEY KENDLE, M.R.C.S.,
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THE case was exhibited and described before a recent meeting of the Division.

B. H., aged 9, is the youngest of seven children. The father is robust, but intemperate; the mother died at 39, of acute pulmonary phthisis; the mother's sister died at 25, of acute phthisis; an elder brother, a cretin, lived fifteen years; other brothers, sisters, and relatives healthy. In past generations there has been much intermarrying of near relations on both sides.

The district in which the patient resides is loose shillet and compact limestone, rich in mineral; both parents were reared near a large manganese mine; both cretins were born within a mile of it.

The child showed signs of backwardness about the time she was weaned; the fontanelles remained open. She had no teeth, was unintelligent, and had an unmistakable cretinous appearance. She was treated with freshly-made glycerine extract of sheep's thyroid with marked success for two years. As her mother died when the child was about 3 years old, and she was left in the charge of a sister who was only 11, treatment became fitful and was gradually discontinued. I lost sight of her for six years.

She next came under treatment in April, 1904. I found that not only had she not grown since I last saw her, but that she had retrograded both mentally and physically, until she presented the appearance of a confirmed cretin. Her height was 36 in., weight 47 lb., girth 25 in., and chest 26 in. Her expression was dull and vacuous, but she brightened up a little when addressed; she had lack-lustre eyes, short broken lashes, heavy drooping lids, scant eyebrows, wrinkled forehead, depressed bridge of nose, protruding tongue, dribbling mouth, with thick lower lip. She had twelve teeth, all decayed; none had been shed nor had molars been cut. The head was large, the fontanelles and median sutures both depressed. The hair was straight, coarse, dull and brittle, the neck short and fat, the sternum misshapen, the belly full and pendulous, the back broad, hunched, fat, and covered with silky down; the shoulders rounded, marked lordosis, the pelvis tilted, the buttocks ill-developed, the legs short but the bones too thick for their length. The patellae were remarkably small. There was considerable genu valgus, causing the child to walk on the inside of the foot, though there was no true talipes; the gait was jerky and unsteady, with frequent stumbling. She did not play about like other children, but sat still for hours together, as if hypnotized. She had not been able to learn much, understood and spoke but few words, and uttered these indistinctly in a deep, harsh, unchildlike voice. The urine was offensive (phosphatic), and she wetted the bed. The bowels were constipated, and the appetite very capricious; she objected to animal food and sweets, but liked condiments and pickles.

Thus far she presented the appearance of a typical cretin, but in one particular she was distinguished from every other recorded case of female cretinism—she was a remarkable example of precocious puberty. The breasts were fully developed, each with a diameter of $3\frac{1}{2}$ in., with well-shaped, prominent nipples; there was coarse hair in the axillae and pubes. Menstruation commenced at 5 years and 2 months of age, and continued at irregular intervals of from two to four months; the discharge was abundant, quite equal to that of a mature woman, lasting from three to five days,

occasionally offensive on the last day, with dysmenorrhoea the first day. The urine was particularly offensive during the whole period.

October 26th, 1904. She has now been on thyroid extract for six months, and has made immense progress; she has grown nearly 5 in., and has lost 7 lb. in weight; she is much more intelligent, plays, laughs, sings, runs about, and is in constant mischief. She has cut four double teeth and is shedding her decayed incisors. She no longer wets the bed, and the urine has ceased to be offensive; the bowels are regular and the appetite good. Her expression has so completely changed for the better that she is quite unrecognizable even by her nearest relatives who have not seen her for a few months. The coarse hair has been replaced by a much finer growth; that on the back has disappeared; the skin is soft and natural—indeed, the improvement in every respect is most remarkable.

Strange to say, she has not menstruated since she resumed the thyroid extract; the breasts are much smaller, the nipples less prominent; the hair has disappeared from the axillae and pubes; the voice is less deep, and her whole organism seems to have reverted to a more childlike type. This is the more astonishing, since it is a well-known fact that puberty is invariably delayed in cretins, and that treatment tends to ripen the uterine functions in those cases in which puberty has not run *pari passu* with adolescence. It almost seems as if the energy of growth initiated by the earlier treatment had become monopolized by the generative organs when the thyroid extract was intermitted, and that on its resumption this has been again diverted for the purposes of bodily and mental growth. So far as I have been able to discover, the case is unique.

January, 1905. Progress still continues; menstruation has not returned. Has grown another 2 in.

MEMORANDA: MEDICAL, SURGICAL, OBSTETRICAL, THERAPEUTICAL, PATHOLOGICAL, ETC.

SLOUGHING OF INTUSSUSCEPTED GUT: SPONTANEOUS RECOVERY.

ON August 23rd, 1904, I saw a child aged 4 years, the history of whose case was as follows:

History.—On Friday and Saturday, August 19th and 20th, the child had suffered with what appeared to be an ordinary attack of diarrhoea attended with slight vomiting. On the evening of the 20th it for the first time passed a little blood per rectum. After this the child passed at intervals small quantities of blood and mucus per rectum, but, as the mother expressed it, the diarrhoea stopped, but the child vomited everything it took by the mouth. This condition lasted until the time of my visit on August 23rd.

State on Examination.—The child was looking extremely pinched and ill, the pulse small and very rapid, the eyes hollow and sunken, and the mouth almost dry. The abdomen was very much distended and highly tympanitic. The outline of the coils of the small intestine were most markedly visible on inspection. The napkins which the child had worn were all stained with blood and mucus. There was nothing to be felt on rectal examination. In the upper part of the right iliac region I could detect slight resistance on palpation, but no definite sausage-shaped tumour.

Treatment.—I diagnosed ileo-caecal intussusception, and decided to try injection of the colon with warm water. With a stomach-tube passed well into the rectum I poured in about three pints of warm water, having the child practically inverted and allowing about 3 ft. of pressure on the water. This manoeuvre seemed to cause the child some pain. After retaining the child for about ten minutes in the inverted position, I allowed the water to be returned, when I found that the last portion to be expelled was bloodstained and extremely evil-smelling, having exactly the aroma of gangrenous tissue.

Progress.—On my visit some two hours later I found that the symptoms of obstruction were still entirely unrelieved, so I asked my friend Dr. Mathews to see the case with me. We decided that in the child's bad condition an abdominal section would probably be fatal in its result, and that, seeing that the gut was probably gangrenous, and that further attempts at reduction by injection would be almost equally dangerous, the only thing to do was to make the child as comfortable as possible, and to hope that Nature might effect a cure. I accordingly ordered the child 1-minim doses of liq. morph. hydrochlor., to be given every hour until sleep was obtained.

Result.—During the next day, August 24th, the patient's condition was very grave; the vomiting was persistent and the distension very pronounced; nothing whatever had passed per rectum. On the morning of the 25th the condition was still the same, and I thought the child's end was near. In the evening of the 25th I again saw the patient, when I was