

deep red with a slight purplish tinge, such as you may see in persons who are out in the street on a sharp, cold day; he informed me also that no sense of suffocation is experienced.

Some years ago, Dr. Carnochan performed an operation, prior and during which, anæsthesia was produced by the nitrous oxide, administered by Dr. Colton, but I suppose not pushed to the full extent, as in extraction of teeth; the patient, a lady, was under the influence during some little time, perhaps a quarter of an hour; my father, the late Dr. Robert Nelson, was present; said nothing about the skin being blue, but remarked that the finger-nails were bluish, which he regarded as a very dangerous sign; this was observed in a marked degree yesterday in the case of my child.

Progress of Medical Science.

THE TREATMENT OF EPILEPSY.

Dr. W. R. Gowers concluded his recent course of Gulstonian Lectures before the Royal College of Physicians with the following interesting remarks on the treatment of epilepsy:

The treatment of epilepsy is a subject on which numerical analysis gives little help. A large number of cases are under observation too short a time to enable the effect of remedies to be fairly estimated; and of the cases in which benefit is derived, we have no means of ascertaining how many relapse when treatment is discontinued. My notes of the result of treatment in this series of cases extend to 562 cases only. In the remainder, either the period of observation was too short for just conclusions to be drawn, or, in the press of out-patient work, the influence of remedies was not noted with sufficient precision. The effect of treatment is more likely to be recorded when it is distinct and considerable than when it is slight. Hence the following figures have no relative value. Of the 562 cases, the attacks ceased while the treatment was maintained in 241; doubtless many of these relapsed when treatment was discontinued, but in a few I have been able to ascertain that the patients remained free from fits even for years after they ceased to take medicine. In 266 cases improvement short of arrest was obtained; the fits being reduced in many to $\frac{1}{20}$, $\frac{1}{30}$, $\frac{1}{40}$, and even $\frac{1}{200}$ of their former frequency. In 55 cases little improvement was obtained by any method of treatment.

Time forbids me to enter at any length on the details of treatment, and I can do little more than mention the remedies which in this series of cases were of most distinct service. The subject of possible modes of action it is better to leave almost

untouched. It may be doubted whether a rational therapeutics of epilepsy is yet possible. At any rate, up to the present time, remedies used empirically have been of most service.

Although the results shown that we must not only rely exclusively upon bromides in our treatment of epilepsy, they show also, as might be expected, that on these our chief trust must still be placed. Of the arrests of fits, 66 per cent., and of the improvements short of arrest, 62 per cent., were due to bromides, given alone. Of the three alkaline salts of bromine, that of potassium deserves, I think, as it has popularly received, the first place. I have made a careful comparison between the salt of sodium and potassium in a series of about fifty cases, substituting the one for the other. In a few cases the sodic salt appeared to do better; in the great majority it was distinctly less useful. Bromide of ammonium possesses slightly more power than bromide of potassium, but this is not greater than the larger quantity of bromine which it contains will account for.

The period after its administration at which the maximum effect of a dose of bromide is obtained varies, I believe, with the dose. The larger the dose the longer is the maximum effect deferred; the smaller the dose the sooner does it occur, and the sooner is its action over. When small doses are employed in cases in which attacks occur at regular times, they should not therefore be given more than two or three hours before the attack is expected. This is contrary to some opinions which have been expressed, but I have several times known attacks arrested when a dose was given some two or three hours before the fit was expected, which were not arrested when the same dose was given twelve hours earlier.

The effect of bromide upon fits appears to be for a time cumulative, just as is, indeed, its action in causing bromism. Attacks may continue under its administration for a time, and yet ultimately cease without any increase in the dose. On the other hand, still later, tolerance, or rather indifference, may be established, and attacks which have been for a time arrested may ultimately recur.

Drugs which increase reflex action, such as strychnia, are now believed to do so by lessening the resistance in the nerve-centres involved. Bromide diminishes reflex action, antagonizes strychnia, and it is probable that it does so by increasing the resistance in the centres. If the view above expressed be correct, that the morbid state in epilepsy is essentially an instability of the resistance in the cells, it is also probable that bromide acts by increasing the stability of this resistance.

Bromide is commonly administered in a continuous course, in such moderate doses as will just suffice to keep the fits in check. Given thus it needs to be given frequently. I have more than once observed that a daily quantity which given in two doses did not quite arrest the fits, arrested them completely when given in three doses. It