can be brought about by any means, it is worth our efforts as physicians. For the damaged mechanism, if it cannot be repaired, can, to a certain extent, be re-educated; and, by learning to make allowance for certain errors, the nerve-centres may reacquire a certain amount of the lost power of co-ordination. Thus we may have apparent, but only apparent, improvement. Our patient Ritchie, by finding that his forefinger, when he tried to touch his nose, went two inches beyond it, learned by practice to correct this error, and could after a time, with his eyes shut, hit the mark much better.

In the earlier stages of the disease, when there is reason to believe that there is a good deal of congestion or even of inflammation, ergot of rye in full doses—a drachm of the liquid extract three times a day—or bromide of potassium or sodium, may be given. Under this treatment, Joseph Hunter, who was in Ward 7 in 1877, and whose case, although not severe, was an unquestionable one and in the early stage, improved greatly. The electric-like pains disappeared, and he recovered the power, which he had lost, of standing with his heels and toes together and his eyes closed, although he swayed from side to side a good deal. Nitrate of silver in quarter-grain doses has been extolled by many authorities, and my experience of it has been satisfactory. The constant galvanic current to the spine and nerves is often useful. The actual cautery is most worthy of trial, having been employed in some cases with encouraging results. The electric-like pains are best treated by means of the subcutaneous injection of morphia. Where a syphilitic history is present, the prognosis is more hopeful, and bichloride of mercury with iodide of potassium should be given.

Some of the facts brought out in these cases seem to indicate that an important part of treatment may consist in stimulating the anæsthetic areas. However, I hope to be able to speak more fully and decidedly on this subject in a future lecture.

ENLARGEMENT OF BRONCHIAL GLANDS WITH RELATION TO WHOOPING-COUGH.

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I WISH to give a few facts in reply to Dr. Gueneau de Mussy's remarks on the above subject in this JOURNAL of October 25th. Since the beginning of 1877, when there was considerable discussion of Dr. Gueneau de Mussy's doctrine, I have seized such few chances as came to my hand of testing, by *post mortem* examination, the statement that the bronchial glands are enlarged in whooping-cough.

1. Out of seven *post mortem* examinations on cases of undoubted whooping-cough, there was one in which the enlargement was considerable; and I took the specimen to the Pathological Society at the same time as the one to which Dr. Gueneau de Mussy has referred. There was one where the enlargement, though slight, was, I believe, definite; and there were five where there was no enlargement. The actual measurements I cannot give; but I have a note about one of the above cases, a child aged four months, that not one of the bronchial glands was as big as a red currant. I strongly suspect, from other observations, that the amount of enlargement of the bronchial glands, when found, must have some sort of relation either to the severity of the bronchitis, or, still more, to the extent of bronchopneumonia, if present. It seems possible, also, that the idiosyncrasy of the patient may have something to do with it. But this is speculative; and I am concerned only at present to state that the enlargement is not constant.

2. Dr. Gueneau de Mussy objects to arguments drawn from chronic enlargement of the bronchial glands, where nothing like whooping-cough had been present; but it is necessary that he should show how such cases anatomically differ from other chronic cases where paroxysmal cough is present, and which he claims in support of his theory. The distinction drawn between the effect likely to be produced by a slow chronic enlargement and an acute sudden congestion is reasonable; and therefore, at present, I will not consider the cases of tuberculosis with involvement of bronchial glands where the process is at all chronic. But, in infants under twelve months, tuberculosis is often moderately acute. I have examined such children in whom the duration of illness had been from six weeks to two months. Paroxysmal cough had not been present, and the tracheo-bronchial glands were considerably enlarged.

To consider still more acute cases: Along with my colleague Dr. David Lees, I have lately made *post mortem* examinations on two children where there was considerable enlargement of bronchial glands, associated in one case with severe bronchitis and collapse, and, in the other, with extensive bronchopneumonia. In neither case had whooping-cough been present during life, nor had the cough been at all

paroxysmal. I have made *post mortem* examinations, also, on cases of diphtheria with bronchopneumonia, where acute enlargement of bronchial glands occurred, although, during life, no cough simulating whooping-cough had been present.

To sum up these conclusions:

1. Enlargement of the bronchial glands in whooping-cough is not constant.

2. Acute and subacute enlargement of bronchial glands occurs without paroxysmal cough.

To these may be added:

3. Dr. Gueneau de Mussy's admission that paroxysmal cough may occur without enlargement of bronchial glands.

Holding these three propositions to be true, I cannot admit that enlargement of bronchial glands pressing on the vagus is the *vera causa* of the characteristic symptom of whooping-cough.

There are many clinical arguments which might be considered, but I do not think with much profit. In spite of all that has been written on the subject, I cannot acknowledge that the diagnosis of enlargement of the bronchial glands during life is sufficiently satisfactory to admit of sound deductions. Where such enlargement is guessed at with a fair amount of probability, it is, in the majority of cases, so much complicated by morbid conditions of lung, pleura, or bronchus, that it seems a fruitless task to attempt to unravel results special to it.

RECURRENT HEADACHES IN CHILDREN, AND ASSOCIATED PATHOLOGICAL CONDITIONS.*

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THE object of this paper is to draw attention to the frequency of recurrent headaches at an early age, and to point out some symptoms and objective conditions commonly associated with headaches in children; some clinical facts which seem to be connected with the development of chorea will also be noted.

In studying a group of cases as to which we have no known pathology to define the class, it appears convenient to start with a general description; and, for this practical purpose, a summary has been made of the principal symptoms of fifty-eight cases of headache in children under fifteen years of age. Though recurrent headache was the most prominent and constant symptom met with in this group of cases, it was not always the one first complained of by the patient or mother. Classifying the symptoms, we find the largest number referable to the mental and cerebral condition of the child. We are told that he is excitable, melancholy, passionate, or fretful; that sleep is restless and disturbed by dreams and night-talking, by attacks of terror and screaming, or by somnambulism. Often there are vague pains in the limbs, chest, or abdomen. The appetite is often variable, voracious or entirely lost; there may be considerable emaciation with a good appetite, and without any accompanying signs of organic disease; often there is considerable nausea or retching with the attacks of headache. Hacking cough, without physical signs to account for it, is often met with, and usually the child is excessively fidgety.

In studying this group of nervous excitable children in whom recurrent headache was a main symptom, it was first necessary to look out for certain objective signs by which they might be identified; and these were principally found in the condition of the nervo-muscular system, the teeth and the urine, but chiefly in the muscular system.

The principal means at our disposal for studying the condition of the brain during life is by observing nervo-muscular phenomena. All expression of the subjective states is effected by muscular action, whether expression be produced by speech in words, by the facial movements or gesture, in which cases voluntary muscles are called into play; and such modes as dilatation of the pupil, erection of the hair, or disturbed action of the heart, are due to the condition of inorganic muscular fibre.

Local paralysis, and, in some cases, localised convulsion, may give definite indication as to the part of the brain affected and its conditions. We commonly recognise certain appearances of the face, and certain positions of the body and limbs, as indicating a fatigued or exhausted condition of the brain; and it is frequently with truth said that such an one looks as if he had a headache. Again, the look of expression in the face, and the tremulous condition of the muscular fibre of the tongue, is characteristic in general paralysis, as the depression of the angles of the mouth and the other signs of mental dejection are in melancholia. All these symptomatic conditions will, I think, if analysed, be found to depend on muscular conditions due to the conditions of the nerve-centres. Indeed, excluding the use of the ophthalmoscope, we have but

* Read before the Hunterian Society.

few means of ascertaining the condition of the brain, except the neuromuscular phenomena; these are the chief index as to the cerebral condition. For these reasons, the muscular condition was carefully observed in this group of cases. Usually, the child was made to stand with the heels together, looking straight before him, the hands being down by his side. The general steadiness of the body, trunk, and limbs was then observed, as well as the condition of the face and eyes. He was next directed to put out his tongue, and, finally, to hold out both arms straight before him, on a level with the shoulder, at the same time separating the fingers. Observations were then made as to the muscles of these parts. The state of the heart, lungs, teeth, and urine, was examined, and the patient's weight was recorded. As the result of these examinations, it was observed that frequently there was marked fidgetiness, and irregular movement of the trunk and limbs; the trunk was often swayed about, frequently it was inclined backwards, apparently to preserve equilibrium, while the hands were held out in front. Twitchings of the fingers were very commonly seen, the movements being usually of independent digits, and most commonly either lateral or flexor, less commonly extensor; the lateral movements appeared to be the most characteristic. The tongue was usually very unsteady, but not distinctly jerked in and out, as in chorea. Twitchings of the facial muscles were not very common.

A certain passive condition of the hand and face will be referred to presently. In a large proportion of the cases, the teeth were found flattened on their edges, as the result of "tooth-grinding"; the teeth mostly ground were the incisors and canines, but the special teeth flattened depended upon their arrangement in the jaws. The pupils were measured in some cases with a catheter-gauge, after the manner suggested by Mr. Hutchinson. No special conclusion was arrived at; on the average, they were not large, except in a few cases near the age of puberty.

A certain facial expression indicative of depression was often observed, and, when seen, appeared to give strong evidence characterising the child as the subject of recurrent headaches. To analyse this condition of the face, the faces of adults, the subjects of migraine, were studied. The most noticeable point was the look of depression, and heaviness and fulness about the eyes, especially the under eyelid. If a paper were held so as to cover either half of the face, the expression observed still remained, proving the condition of the face bilateral; if the forehead above the eyebrows were covered, or the face below the lower margin of the orbit, in each case the expression seemed still apparent; while if the paper were held so as to cover that portion of the face which lies between the eyebrows and the lower margin of the orbit, it seemed impossible to recognise the peculiar *facies* under consideration. If these observations be confirmed, it appears that this expression must be due principally to the condition of the orbicularis palpebrarum. Specially observing this muscle and the parts adjacent, there seemed to be a loss of tone in the muscle; there was an appearance of fulness and flabbiness about the lower eyelid; the skin hung too loose, with an increase in the number of folds; and, in place of falling against the lower eyelid neatly, as a convex surface, it fell more or less in a plane from the ciliary margin to the lower margin of the orbit, a condition that is often best seen by looking at the patient's face in profile. This condition of the parts about the eye was unaccompanied by any general change in the skin of the face, such as the flabbiness seen in emphysema, and the loose inelastic skin of senile decay; further, the facial expression is not at all necessarily permanent, but may disappear with improving health. It is not suggested that this muscular condition only accompanies headache; it appears common to other conditions of depression.

A peculiar passive condition of the hand was also frequently observed. When the hands were held out, the wrists drooped slightly, thus being partially flexed upon the forearm; at the same time, the first phalanges of the fingers were extended backwards upon the metacarpus, the second phalanges being slightly flexed, and the ungual phalanx either flexed or kept in a straight line with the middle phalanx. This may be the position of all the phalanges equally or in a varying degree. The thumb is usually simply extended backwards, and somewhat abducted from the fingers. Such a cramped position of the hand appears to be very common in these nervous children who suffer from recurrent headaches; the same thing is often seen in those convalescent from chorea. This position of the hand is exactly represented in the statue of the Venus de' Medici at Florence, being used by the unknown sculptor to represent feminine coyness.

Having attempted to demonstrate that we may ascertain something of the condition of the brain by observing these muscular movements, we may now look for signs of irritation of the cranial nerves. Evidence of the motor division of the *fifth nerve* is seen in the great frequency of tooth-grinding; the condition of the muscles supplied by the facial and hypoglossal nerves has been referred to. Irritation of the pneumo-

gastric nerve appears to be indicated by many symptoms. The varying appetite, which is often voracious, though nutrition is deficient, while at other times it is markedly defective; the frequent epigastric pain, and the retching or vomiting with headache, appear to indicate disturbance of the gastric branches; occasional palpitation without heart-disease, and the frequent hacking cough without signs of lung or throat mischief, indicate probable irritation of the cardiac and respiratory branches.

As to the disturbance of sensory nerves, it was difficult to obtain evidence, as the patients were often unable to describe their sensations with accuracy. In five cases, varying from nine to fourteen years of age, distinct dysæsthesia of vision accompanied the attacks of headache, the patient seeing colours, sparks, or other illusions during the attack of headache; in all but one case, the mother also suffered such spectra with headache.

As to the condition of the higher nerve-centres, we must look to the mental state and conditions of sleep; as to these points, some account has already been given. Disturbed and restless sleep was very common; night-terrors were frequent; often the child would scream out that "a lot of people were coming to kill him", that he "saw the School-board man" coming, etc. In six cases, there was the distinct history of somnambulism; in four of these, the acts performed during sleep had been complicated and curious; in one case, that of a boy nine years old, such attacks were frequent at the time he came under observation, on account of his headaches; in the remaining cases, somnambulism had occurred at an earlier period.

Seeing that these cases resembled chorea in the amount of irregular muscular movement, other points of similarity were looked for. The history of rheumatism in the individual or in the family was very unfrequent; so, also, was the presence of heart-disease. As in chorea, so here, the urine was often of high specific gravity, reaching up to 1030-1035, and so loaded with urea as to crystallise readily on the addition of an equal bulk of nitric acid. Uro-hæmatin was found to be abundant in many cases; the urine, when floated on sulphuric acid, developing a deep red or purple colour at the junction of the fluids; this test was applied in cases not under the influence of bromine or iodine. Dr. George Harley has shown that the amount of uro-hæmatin is dependent upon the amount of tissue-consumption in the body.

In seeking the lines of causation of recurrent headaches in children, the cases were arranged in a tabular form according to age and sex.

Ages	3-4	4-5	5-6	6-7	7-8	8-9	9-10	10-11	11-12	12-13	13-15
Males	25	1	2	2	8	2	1	2	4	1	0
Females ..	33	0	2	3	1	2	5	4	2	4	5
Totals ..	58	1	4	5	9	4	6	7	6	5	5

As among other groups of nervous cases, the preponderance of number is with the female sex. Heredity appeared to produce a marked predisposition to this neurotic condition. There was a history of recurrent headaches in the mother in twenty-four cases, and in the father in eight, while in three cases there were examples of insanity in the family. As to treatment, the restless excitable condition of these children, and the great want of rest in sleep, appeared to indicate the use of bromides and other sedatives; and this plan of treatment was generally adopted, tonics being occasionally used, together with small doses of chloral at night for short periods, till the habit of sleep was induced. Following upon such treatment without any hygienic change, marked improvement occurred in many cases, the child gaining one or two pounds in weight in a month or six weeks, at the same time losing the headaches, sleeping quietly at night, and again becoming fit for a child's school-life. It must, however, be acknowledged that many cases relapsed on discontinuing the treatment.

Dr. Hughlings Jackson (*Lancet*, July 11th, 1875) has shown that, in cases of chorea, paroxysmal headaches are of common occurrence. Dr. Herman collected the histories of seventy-six cases of chorea, and found that paroxysmal headaches occurred in fifty-three cases; in these, the headaches were not often preceded by ocular spectra. In the group of cases described in this paper, certain active and passive conditions of the muscles, especially the small muscles, are commonly met with in conjunction with disturbance of the higher nerve-centres; this appears to afford evidence that the two conditions may be owing to disturbance of the same nerve-centres, possibly the same as are affected in a greater degree in chorea. A girl, thirteen years of age, came under observation complaining of frequent headaches, with ocular spectra, restless nights, tooth-grinding, and slight muscular twitchings, such as have been described. She had never suffered from rheumatism, but the family were rheumatic; she had no cardiac disease. Three years previously, she had had acute general chorea for four months; it is submitted that probably the same nerve-centres were affected in the greater and lesser illness, but in a different degree.