Whilst on this subject, I may add that I have been in the habit during the past five years of keeping all the patients (except those who were too ill and those engaged in necessary work) out in the open air all day, from 9 a.m. until 6 p.m., during the summer months, letting those patients who formerly had their meals in the wards have them outside in the airing courts. The improvement in the general health of the inmates thereby effected has been quite noticeable, and a concomitant appreciable reduction in the death-rate has been effected.

Clinical Notes and Cases.

A Case of Narcolepsy. By R. DODS BROWN, M.D., M.R.C.P.Edin., D.P.H., Assistant Physician, Royal Asylum, Edinburgh.

NARCOLEPSY is so rare that I deem the following case worthy of record. It is one occurring in a young man suffering from hallucinatory and delusional insanity, who was admitted into the Royal Edinburgh Asylum, in April, 1902, with the following history.

A. B—, æt. 19, of a frank, cheerful disposition and well educated, of good muscular development and athletic habits.

In April, 1900, he became affected by periods of "somnolence" during the day, so marked as to give rise to much anxiety on the part of his friends. He could be roused from the somnolent condition, but was fretful when this was done. It occurred at any time of the day, especially after a good meal. At other times he would be listless and lethargic without passing actually into sleep. He slept badly and had very vivid distressing dreams, which troubled him greatly. He was easily fatigued, and sometimes seemed unable to make much mental effort. His digestive system was often disordered, but when this was attended to the "sleep attacks" were not so pronounced. Towards the end of 1900 the attacks of narcolepsy became more marked, and on one occasion while walking along a busy thoroughfare he passed into a state of somnolence. He had a vacant expression, and when questioned said he "felt very sleepy, but would be all right shortly." He dropped a glove, and though conscious of the fact, he felt he could not pick it up. This condition lasted about fifteen minutes.

There never seemed to be any sudden loss of consciousness. He felt the "sleep attack" coming on gradually, could fight against it for a while, but usually it was overpowering. The only suggestion of uncon-

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sciousness was once while cycling quietly along a road he, suddenly and to his horror, found himself on the point of going over the edge of the road into a loch. Again, while golfing, he would stop when about to hit the ball and be quite unable to make his stroke. He was conscious of the whole thing, but felt a muscular relaxation which he was unable to fight against. This condition was sometimes brought on when he was crossed or irritated. Frequently also he passed into a drowsy state while speaking, and was unable to continue his conversation.

During the six months immediately previous to admission the attacks of somnolence abated somewhat, though within the last two months hallucinations had set in and became very pronounced.

State on admission.—He was a well-developed, strong, muscular youth, 5 ft. 9 in. in height, weighed 14 st. 4 lb., and tended to be fat. The physical examination of all the systems revealed nothing abnormal, except that the bowels tended to be constipated. The urine contained no abnormal constituents. On examination, the eyes showed no pathological condition. Mentally he was somewhat slow and confused. He was good-natured, but puzzled like a child at the strangeness of his malady. His memory was quite good. He suffered from marked hallucinations, and thought he heard his schoolfellows' voices transmitted by telephones and wireless telegraphy.

At first during his residence in the asylum he suffered greatly from hallucinations of sight and hearing, and narcolepsy was a very marked feature of the case. He would fall into the narcoleptic condition at any time of the day, even though placed in the most awkward and uncomfortable position. If he happened to be walking in the grounds he might begin to feel the attack coming on, and although he was only a few yards from the door of the villa he would collapse on the ground, completely overcome. It was quite common for him to go to sleep while taking his food, and very often when playing billiards he would suddenly stop, saying he "felt very sleepy," and leaning over the billiard table he would immediately pass into the somnolent state. He was unable to resist the attacks of drowsiness, although semi-conscious throughout. Sometimes he could be easily roused only to relapse into the same condition. There might be only one or two such attacks, or as many as a hundred in one day.

As far as possible he had regular exercise in the grounds, and after a few weeks there was distinct improvement both as regards the hallucinations and the narcolepsy. He conversed more intelligently and freely.

In August, 1902, *i.e.*, four months after admission, the hallucinations became more vivid and he now began to labour under delusions. These were so real to the patient that he began to act upon them. He thought that the voices were those of the doctors, the staff, and patients, and as a result he tended to become violent and homicidal towards these persons.

This condition became so aggravated that it was decided in October, 1902, to operate in order to discover any source of irritation on the surface of the brain.

A trephine opening was made over the word-hearing centre and enlarged to 1½ in. in diameter. The dura mater, which was found

markedly thickened and slightly adherent to the calvarium, was incised carefully and the pia arachnoid exposed, but nothing abnormal was found. The dura was stitched up and the scalp flap replaced.

The patient recovered from the operation, but the delusions and hallucinations persisted, and he continued to exhibit great violence to those near him.

In January, 1903, he had so far improved that he was placed in a convalescent ward. The hallucinations and delusions were less marked and the narcolepsy was not so pronounced. Unfortunately this condition of betterness did not continue. He again became irritable, delusional, and impulsive, while the narcolepsy was more marked.

During the year 1904 delusions of persecution were very marked, as were also hallucinations, and he made several homicidal attacks on attendants and others. The narcoleptic condition, however, was greatly moderated. His memory still remained unimpaired, and when his attention was not absorbed with hallucinations and delusions he conversed readily and intelligently. At that time he began to complain of vague pains in the head.

Since 1904 he has remained in much the same condition as regards delusions and hallucinations. The narcolepsy still exists, but not to anything like the same degree as formerly. Occasionally, throughout the day he passes into a state of somnolence, from which he is easily roused, and even when walking out in the grounds it may come on. The patient begins to feel sleepy, and he at once leans against a paling or wall for a minute or two until the "sleep attack" passes off. Sometimes when he is engaged reading or writing he feels it coming, but is unable to withstand it. He is aware of his surroundings all the time.

Treatment.—During his residence in the asylum he has had easily digested food, exercise in the open air, and general tonic treatment. Bromides had no effect, and intestinal antiseptics produced no appreciable benefit.

Whether the improvement can be assigned to the operation or not I think it is impossible to say.

Literature.

In 1880 M. Gélineau described the rare condition of narcolepsy. He characterised it as an irresistible desire to sleep, which was sudden in its onset, lasting for a short time, and recurring at varying intervals. It may last only a few minutes or it may go on for an hour. He limited the term to those cases where there is only a partial disturbance of consciousness usually of short duration. The patient feels he is virtually asleep: he is but semi-conscious. There is an inhibition of thought and volition sometimes, but not always of movement. If the person is talking he may become incoherent and then stop talking altogether. Again, for example, if he is writing or

taking his food he drops the pen or spoon. He can see and hear, but not distinctly. Gélineau thought the disorder depended on a special neurosis.

Later writers have not confined the term "narcolepsy" to the condition originally described. Pathological somnolence has also been included, but this is of comparatively common occurrence in cases of obesity and diabetes. It also may occur in severe anæmia, in heart and lung diseases, in organic brain disease, in uræmia and cholæmia. Neurasthenia, hysteria, and epilepsy also are important in giving rise to morbid sleep. The person suffering from this condition is wakened with greater difficulty than in narcolepsy and the sleep is of longer duration, often, in some cases, lasting for a whole day.

Ribakoff distinguishes pseudo-narcoleptic crises from true narcolepsy by the fact that the former come on suddenly and are followed by a feeling of fatigue and by pains, a condition identical with that seen after a true epileptic attack. He differentiates between a hysterical sleep and narcolepsy by the fact that in the former there are to be found other signs of hysteria, *e.g.*, anæsthesia and paræsthesia, and that there are to be seen tremors and contractions of eyelids which are not to be observed in narcolepsy.

Lamacq says that in epilepsy sleep not only may follow the convulsion, but may also precede it and in rare cases take the place of it. The patient in these cases is not wakened by the strongest stimuli, and if the lids are opened the eyes show irregular involuntary movements. When consciousness is regained the patient has no recollection of what has happened, and there is considerable confusion. He also states that in hysterical pseudo-narcolepsy there may be incomplete closure of the eyelids, which are more or less tremulous. Cataleptic attitudes of limbs or body may be found, while anæsthesia or paræsthesia may be elicited. He attributes the condition to a functional derangement of some of the organs. Eickhorst speaks of narcolepsy as an epileptic manifestation and Oppenheim looks on it as a symptom of hysteria or epilepsy.

M'Carthy and Ribakoff both consider it a phenomenon of degeneration, while M'Carthy has found nothing to suggest that it is a distinct neurosis or disease.

There are many who declare that a toxine is the cause of the affection, and in many cases there are gastric or intestinal

disorders. Among the holders of this theory are Ballet, Blodgett, Furet, and Caton.

Blodgett points out that in many cases of narcolepsy sugar makes its appearance in the urine of the patient often long after the disease is established, while Furet thinks that narcolepsy and epilepsy are often associated symptoms of one intoxication.

Stern has found from careful examination of patients that the output of chlorides is excessive, and he says that there exists in the blood a relatively low osmotic pressure. "Because of this there is diminished nutrition or stimulation of the nerve substance, and therefore interference with its electrical conductivity. The sudden seizures of somnolence are explainable by the lowered nerve impulses conducted through the cells of the central system." He asserts that "sleep seizures seem to be due to diminished ionization of the chlorides in the blood."

It is found that many cases suffer from pain in the head or in the eyes, or from a feeling of weight or compression, though the general bodily and mental health remain usually good.

It has been pointed out that in many cases there is a distinct heredity of nervous or mental trouble. Gastric and intestinal disorders seem to occur in many of the patients. Lamacq reports the case of a girl who had no symptoms of indigestion, but who had a little abdominal distension, and when this was removed by means of laxatives the narcolepsy disappeared.

Foot knew of a lady whose convalescence dated from an attack of epistaxis, and because one of his patients complained of a feeling of weight in the head, and because he had occasional epistaxis, he applied leeches behind the ears. Distinct temporary improvement followed this course of treatment.

The unique interest of this case lies in the fact that one can find no record of narcolepsy and insanity occurring in the same patient. It is easy to understand that the delusional and impulsive conditions had their origin in hallucinations, but the connection between the hallucinations and the narcolepsy would be much more difficult to trace.

As we know nothing of the cause and pathology of this rare disease, so the treatment is uncertain and unsatisfactory. Sedatives give no benefit, and excitants produce only bad results. Light diet and attention to the functions of the stomach and bowels seem in many cases to alleviate the condition.

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Three Cases of Juvenile General Paralysis.

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In the following brief notes nothing is attempted beyond placing on record three undoubted examples of this interesting disease, and thus adding to an ever increasing list of cases.

CASE 1.—F. S—, æt. 20, general servant.

History.—Father and mother drunkards; in poor circumstances. Patient fourth child of family of five; elder children reported healthy, but younger sister mentally deficient. Patient was undoubtedly syphilitic in early childhood; had snuffles. Was always delicate; of average intelligence at school.

On admission, September 29th, 1905, she measured 4 ft. 9 in. Bridge of nose slightly depressed; marked cicatrices running at right angles to circumference of mouth. Teeth irregular but not characteristically syphilitic. Mammæ rudimentary.

The mental condition on admission was one of slight melancholia patient emotional, lachrymose; answers to questions irrelevant. Speech distinctly affected; some words stopped short and some run together; fibrillar twitching of facial muscles; tongue tremulous. Knee-jerks very active; plantar reflexes normal and equal. Pupils equal and react normally to light and accommodation.

Patient speedily recovered from depression and became irritable and peevish; did ward work; clean and tidy in her habits. After six months she became less observant, and was listless, apathetic, and idle. Gait was now affected; patient walked in an ataxic, swaying manner; legs dragged after her and fell with feet extended and wide apart. Mental condition one of increasing dementia; ultimately unable to answer the simplest questions, and during the last three months of life